

PHASE 2 MERIDIAN FARMS FISH SCREEN PROJECT
Draft Initial Study/Mitigated Negative Declaration
Environmental Assessment/Finding of No Significant Impact

Prepared for:
U.S. Bureau of Reclamation
California Department of Fish and Game

August 2012

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SECTION 1

Introduction

1.1 Introduction

The United States Department of Interior (DOI) Bureau of Reclamation (Reclamation) and the United States Fish and Wildlife Service (USFWS) jointly manage the Anadromous Fish Screen Program (AFSP). The AFSP was established in 1994 to help meet the fish restoration objectives required in the Central Valley Project Improvement Act (CVPIA) Section 3406 (b)(21). The AFSP has provided cost share funding for several fish screen construction projects in California. Fish screens are designed to protect juvenile anadromous fish from water diversion entrainment along the Sacramento and San Joaquin rivers, their tributaries, and the Sacramento-San Joaquin Delta.

In accordance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) this Initial Study/Environmental Assessment (IS/EA) discloses potential environmental impacts associated with the construction and operation of the following elements by the Meridian Farms Water Company (MFWC): (1) a new 135 cubic feet per second (cfs) diversion with fish screen and pumping plant adjacent to the existing Meridian Diversion; (2) increased capacity of the Main Canal to convey flows to the Drexler Service Area; (3) a new 35 cfs re-lift pump station to deliver flows to the Drexler Service Area via the new Drexler Pipeline; (4) extension of the Drexler Pipeline; (5) removal of the existing Meridian Diversion/Pumping Plant; (6) removal of the existing Drexler Pumping Plant; and (7) lining of approximately 2,500 feet of the Grimes Canal. For the purposes of CEQA, the project is the Proposed Project; for the purposes of NEPA, it is the Proposed Action. The project is referred to as the Proposed Project/Action throughout this document. Additional information on specific project facilities and components is included in Chapter 2.

This document was prepared as a joint CEQA/NEPA document because the Proposed Project/Action is a discretionary project of a local lead agency with federal involvement. Because MFWC is a private water distribution company and cannot act as lead agency under CEQA, the California Department of Fish and Game (CDFG) has agreed to be the CEQA lead agency. Reclamation is the federal lead agency under NEPA, because design and construction of the Proposed Project/Action involves federal funds through the AFSP. A list of other state and federal agencies that may have discretionary approval over the proposed project is provided in Section 1.6.

This IS/EA is a public document that analyzes the environmental impacts of the Proposed Project/Action, presents feasible measures to reduce or avoid potential environmental impacts,

and evaluates alternatives to the project. It complies with environmental requirements established by both CEQA and NEPA. This IS/EA serves as an informational document to be used in the decision-making process and does not recommend either approval or denial of the Proposed Project/Action.

This section provides a description of the study area, a summary of the project background, identification of the purpose and need and objectives for the proposed project, discussion of anticipated regulatory requirements and permits for construction and implementation of the proposed project, and the scope and organization for this IS/EA.

1.2 Study Area

MFWC is located in Sutter County, California, between Interstate 5 and Highway 99 east of the Sacramento River and southwest of the Sutter Bypass. **Figure 1-1** depicts the approximate limits of MFWC's service area. MFWC provides irrigation water to three separate service areas encompassing 9,150 total acres, with an estimated annual water delivery of 35,000 acre-feet (af).

1.3 Project Background

MFWC has diverted water from the Sacramento River under the provisions of a License for Diversion and Use of Water with a priority date of September 10, 1918. The existing Sacramento River diversions are located near the communities of Meridian, Drexler, and Grimes. These diversions presently utilize unscreened diversions, and may have entrained Chinook salmon, steelhead trout, and other anadromous fish species that pass by the intake. These diversions fall within the criteria established by the CVPIA, passed in 1992, for the protection and recovery of fisheries and fish habitat.

In March of 2002, MFWC's engineers (MWH Americas, Inc. [MWH]) completed a *Surface Water Diversion and Fish Screening Feasibility Study* that evaluated alternatives for improvements to the existing MFWC diversion facilities to provide a positive barrier fish screen for anadromous fish at each pump intake. The alternative selected by the MFWC Board of Directors (MFWC Board) for further design and environmental analysis was a plan to consolidate the three existing diversions into two new pump station facilities with positive barrier fish screens.

In 2008 the plan was divided into two phases for construction (Phase 1 and Phase 2) and an IS/MND and Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) was prepared that addressed both Phase 1 and Phase 2 elements (2008 IS/EA). Funds were available to construct one of the planned diversions and fish screen and providing some benefit to fish species. The MND was certified (for Phase 1 and Phase 2) and FONSI was adopted for Phase 1 only. Phase 1 was completed in 2010 and included the following elements:

- New Grimes Diversion/Pumping Plant. Construction of a new 30 cfs diversion with fish screen and pumping plant installed north of the existing Grimes Diversion/Pumping Plant.

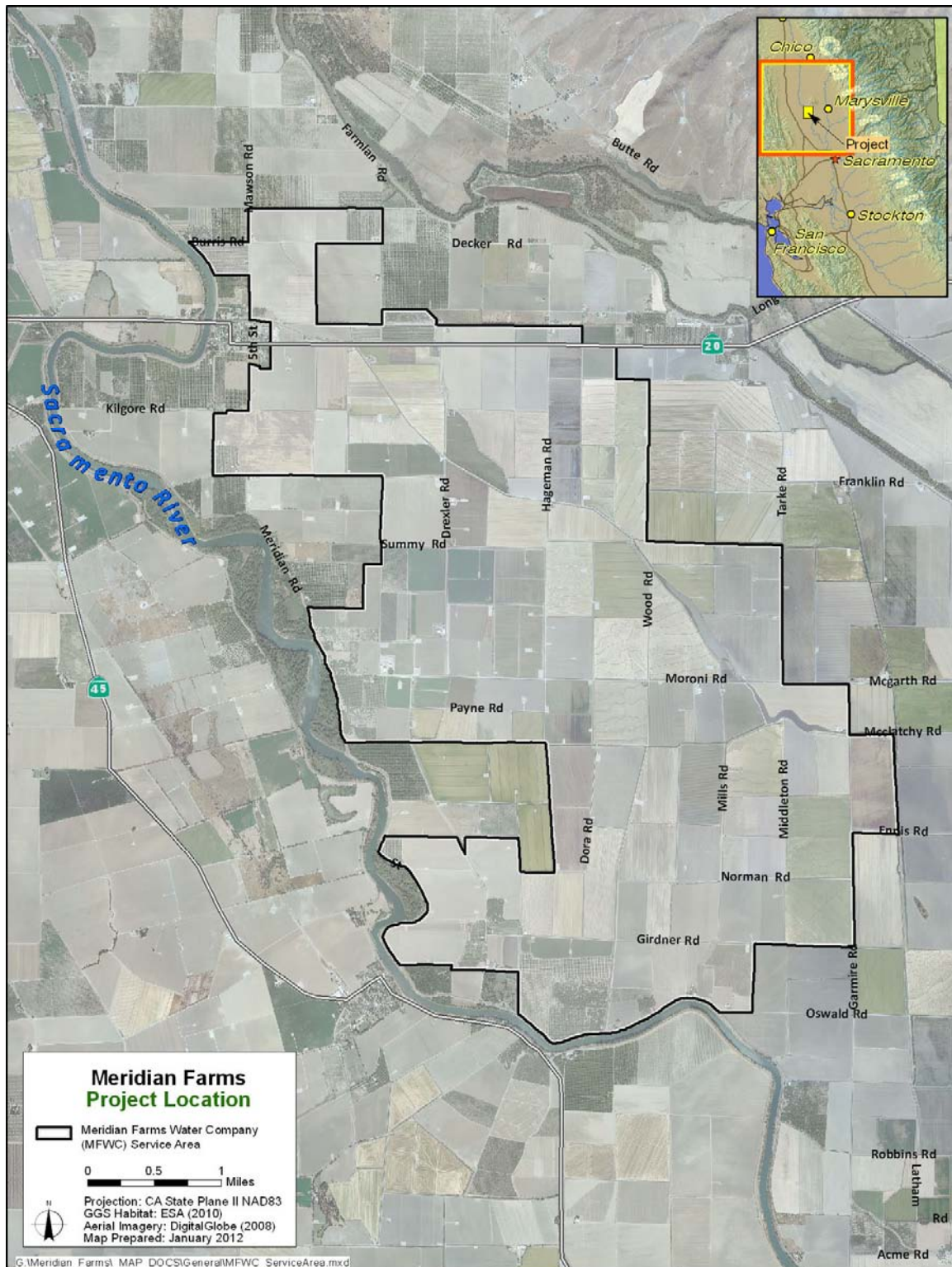


Figure 1-1. Meridian Farms Water Company Service Area

- New Grimes Pipeline and Modifications to the existing Main Canal. Approximately 650 lineal feet of 36-inch diameter pipeline was installed and approximately 3,800 lineal feet of the existing earthen canal was modified to deliver flows from the New Grimes Diversion/Pumping Plant to the Grimes Service Area. Approximately 1,200 linear feet of ditch was concrete lined and approximately 3,250 feet of earthen ditch was left unlined.
- Drexler Pipeline. Approximately 6,500 lineal feet of a 36-inch diameter pipeline was installed beginning at the Drexler Pumping Plant and terminating at the intersection of Summy Road and the Main Canal.
- Existing Grimes Diversion/Pumping Plant. The existing pumping facility was removed.

Phase 2 described in the 2008 plan included the following elements:

- New Meridian Diversion/Pumping Plant. A new 135 cfs diversion with fish screen and pumping plant would be installed adjacent to and would replace the existing Meridian Diversion.
- Main Canal Modifications. The capacity of approximately 15,200 lineal feet of the Main Canal would be increased to convey flows over to the Drexler Service Area in order to accommodate the consolidation of the Meridian and Drexler diversions.
- New Drexler Re-lift Pumping Plant. A new 35 cfs pumping plant would be installed at the end of the Main Canal modifications to deliver flows to the Drexler Service Area via the new Drexler Pipeline.
- Removal of Existing Meridian Diversion/Pumping Plant. The existing diversion/pumping facility would be removed after the new Meridian Diversion/Pumping Plant was constructed and operational.
- Removal of the Existing Drexler Pumping Plant. The existing pumping facility would be removed after the new pumping plant was constructed.

The new diversion with fish screen proposed as part of Phase 2 would increase diversion capacity at the existing Meridian Diversion to compensate for the abandonment and removal of the Drexler Diversion while reducing fish entrainment in the pumps. Note that the increase in capacity at the Meridian diversion would not exceed the existing allowable capacity of the Meridian and Drexler diversion combined. The Main Canal modifications would increase conveyance capacity in order to handle increased flows resulting from the consolidation of the existing Drexler and Meridian diversions. A relift pump station would be constructed to deliver flows to the Drexler Service Area via the Drexler Pipeline.

As stated in Section 1.1, this document will evaluate the Proposed Project/Action which includes the construction and operation of Phase 2 which has been modified to include the following additional elements. A complete description of the Proposed Project/Action is included in Section 2.

- Drexler Pipeline. Phase 2 would include the possible extension of the Drexler Pipeline to improve service to a portion of the Drexler Service Area and to reduce pumping costs.
- Grimes Canal. Phase 1 of the Project included concrete lining of 1,080 linear feet of the Grimes Canal while the remaining 2,500 linear feet were re-graded, but not lined. When the canal was put in operation, it was found that significant leakage was occurring in the unlined portion. Phase 2 may include concrete lining of the remaining portion of the canal. (Note: this element of the Proposed Project/Action has independent utility and the

adequacy of environmental compliance for the remaining portions of the project would not be affected if this component is not funded.)

1.4 Purpose and Need

Under NEPA, the federal purpose of the Proposed Project/Action is to screen existing unscreened diversions owned by the MFWC with a state-of-the-art fish screen that meets current National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG) fish screen design criteria, thereby reducing fish entrainment associated with MFWC diversions (CDFG, 2000; NMFS, 1997). The Proposed Project/Action is needed to provide long-term water supply reliability for MFWC and to minimize diversion impacts to outmigrating anadromous fish on the Sacramento River.

1.5 Project Objectives

Under CEQA, MFWC and CDFG have two primary project objectives for the Proposed Project/Action:

1. To construct a new screened intake facility that meets current NMFS and CDFG fish screen design criteria, and
2. To protect MFWC's existing water rights so that it can maintain a reliable long-term supply to its service area while reducing impacts to listed species in the vicinity of the intake facility.

1.6 Anticipated Regulatory Requirements and Permits for the Project

The permits and approvals that may be required for the Proposed Project/Action, as well as the regulatory agencies that may rely on this document and the aforementioned permits and/or approvals for consideration, are identified in **Table 1-1**. Some state and federal agencies will use this document for compliance with NEPA and CEQA, to the extent applicable, to issue necessary federal and state permits and approvals.

**TABLE 1-1
ANTICIPATED REGULATORY REQUIREMENTS AND PERMITS
FOR PROJECT IMPLEMENTATION**

| Agency | Type of Approval |
|---|--|
| Federal Agencies | |
| U.S. Bureau of Reclamation | NEPA Lead Agency |
| U.S. Army Corps of Engineers | NEPA Lead Agency Clean Water Act Section 404 Permit Rivers & Harbors Act Section 10 Permit Federal Endangered Species Act compliance (Section 7) |
| U.S. Fish and Wildlife Service | Federal Endangered Species Act compliance (Section 7) |
| National Marine Fisheries Service | Federal Endangered Species Act compliance (Section 7) |
| State Agencies | |
| California Department of Fish & Game | CEQA Lead Agency State Endangered Species Act compliance Section 1601 Streambed Alteration Agreement Consistency Determination or Incidental Take Permit |
| Central Valley Flood Protection Board | Encroachment Permit |
| Central Valley Regional Water Quality Control Board | National Pollutant Discharge Elimination System General Construction Storm Water Permit (Section 402) Clean Water Act Section 401 Water Quality Certification General Order for Dewatering and Other Low Threat Discharge to Surface Waters Permit |
| State Historic Preservation Office | National Historic Preservation Act Section 106 |
| Local/Other Agencies | |
| Feather River Air Quality Management District | Authority to Construct Permit to Operate |
| County of Sutter | Building Permit County Road Encroachment Permit |

1.7 Scope and Organization

This IS/EA describes the affected environment, identifies and discloses potential environmental impacts of the Proposed Project/Action, and describes mitigation measures to avoid, minimize, or compensate for potentially significant impacts. Chapter 2 describes the Proposed Project/Action. Chapter 3 describes the affected environment of the project area. Chapter 4 describes the resources that would be affected by implementation of the Proposed Project/Action, including impacts, and mitigation measures to reduce these impacts. This Environmental Checklist presented in Chapter 4 is based on the checklist suggested in Appendix G of the CEQA Guidelines. The checklist has been modified to address both CEQA and NEPA requirements, including NEPA requirements to evaluate Indian Trust Assets, Environmental Justice, and Socioeconomic Effects.

MFWC would ensure that construction and operation of the Proposed Project/Action would be implemented consistent with the mitigation, monitoring and enforcement requirements of the 2008 IS/EA Mitigation Monitoring and Reporting Program (MMRP) (Appendix A). These measures are included along with all new mitigation measures proposed as part of implementation of Phase 2.

This IS/EA is being circulated for review and comment by the public and other interested parties, agencies, and organizations for a 30-day review period beginning on August 8, 2012 and ending at 5 pm on September 7, 2012. Please send your comments to: **Tracy McReynolds, Environmental Scientist, Department of Fish and Game, 2545 Zanella Way. Suite F, Chico, CA 95928.**

During the review period copies of the IS/EA will be available for review at:

U.S. Bureau of Reclamation

Mid-Pacific Region

2800 Cottage Way,
Sacramento CA, 95825-1898

Sutter County Library Main Branch

750 Forbes Avenue
Yuba City, CA 95991

The IS/EA will also be available on the U.S. Bureau of Reclamation Mid-Pacific Region website.

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SECTION 2

Description of Proposed Project/Action

2.1 Background

As described in Subsection 1.1 of Section 1, in 2008 the plan was divided into two phases for construction (Phase 1 and Phase 2). A MND and FONSI were signed for the Phase 1 which was completed in 2010. The Proposed Project/Action includes the construction and operation of Phase 2 elements as described in the 2008 Plan, as modified. A complete description of the Proposed Project/Action is provided in subsection 2.3.

2.2 No Action Alternative

Under the No Action Alternative, construction and operation of Phase 2 facilities would not occur. Operation of the existing unscreened Meridian Diversion/Pumping Plant and Drexler Diversion/Pumping Plant would continue to put migrating salmon, steelhead, and other native fish species at risk of entrainment associated with operations.

2.3 Proposed Project/Action

The Proposed Project/Action would include the construction and operation of: (1) a new 135 cfs diversion with fish screen and pumping plant adjacent to the existing Meridian Diversion; (2) increased capacity of the Main Canal to convey flows to the Drexler Service Area; (3) a new 35 cfs re-lift pump station to deliver flows to the Drexler Service Area via the new Drexler Pipeline; (4) extension of the Drexler Pipeline; (5) removal of the existing Meridian Diversion/Pumping Plant; (6) removal of the existing Drexler Pumping Plant; and (7) if funding is available, the lining of approximately 2,500 feet of the Grimes Canal (**Figure 2-1**). The new Meridian Diversion with fish screen would increase diversion capacity to compensate for the abandonment and removal of the existing Drexler Diversion while reducing fish entrainment in the pumps, but would not increase the amount of diversion capacity overall. The Main Canal modifications would increase conveyance capacity in order to handle increased flows resulting from the consolidation of the existing Drexler and Meridian diversions. A re-lift pump station would be constructed to deliver flows to the Drexler Service Area via the Drexler Pipeline. The 2,500 linear feet of the Grimes Canal that was re-graded as part of Phase 1 will be lined with concrete to prevent leakage on to adjacent fields. Operation of the Phase 2 facilities would be the responsibility of MFWC.

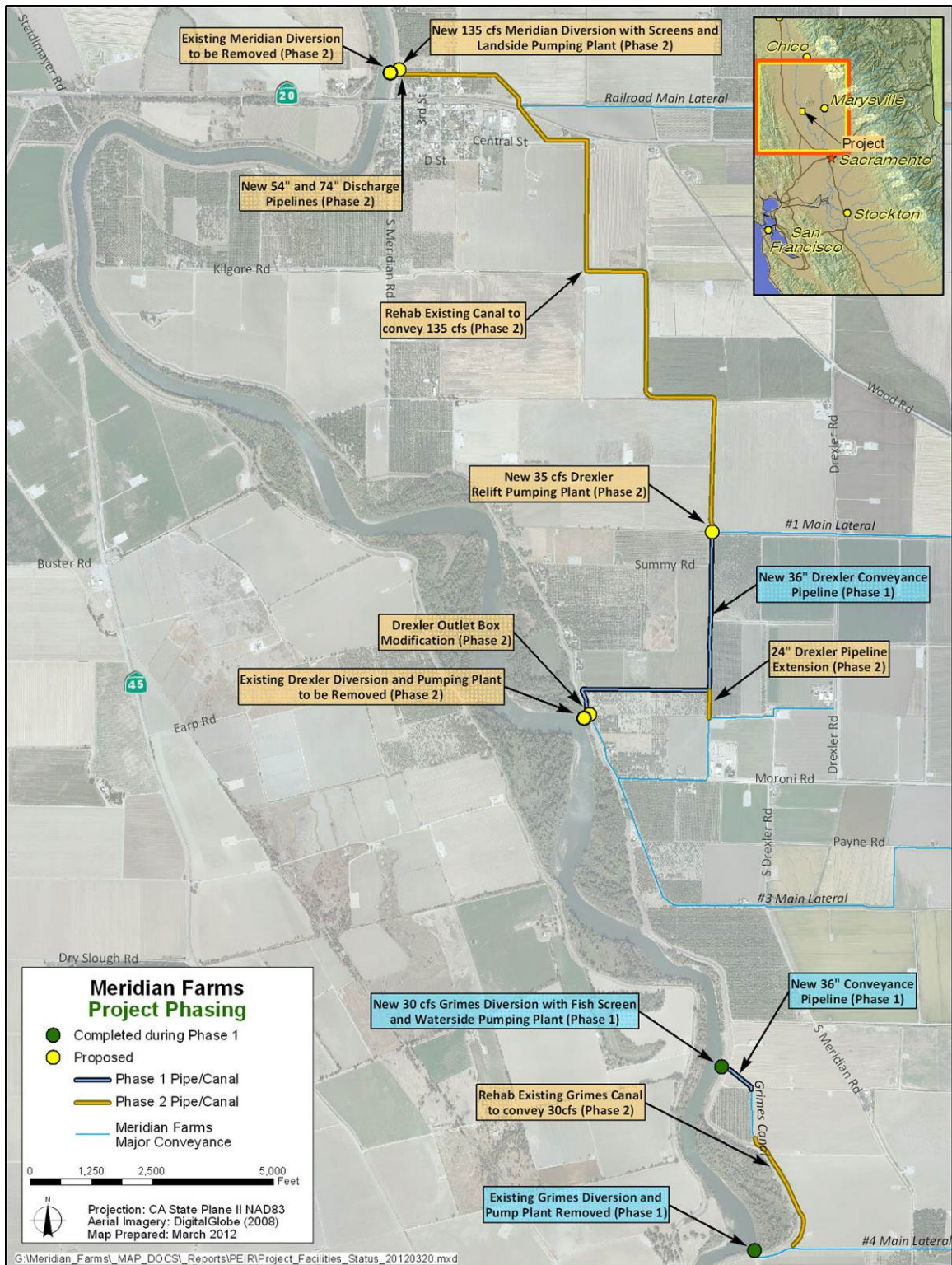


Figure 2-1. Phase 1 and 2 Project Components

The Proposed Project/Action would not increase MFWC's overall diversion capacity from the Sacramento River. Once the new diversions are completed at the new Meridian and Grimes site locations, the existing diversions at Meridian and Drexler would be removed in compliance with Central Valley Flood Protection Board (CVFPB), CDFG, National Marine Fisheries Service (NMFS), USFWS, and U.S. Army Corps of Engineers (Corps) requirements.

Specifically, the Proposed Project/Action includes the following elements:

- **New Meridian Diversion/Pumping Plant.** A new 135 cfs diversion with fish screen and pumping plant would be installed adjacent to the existing Meridian Diversion.
- **New Drexler Re-lift Pumping Plant.** A new 35 cfs pumping plant would be installed at the end of the Main Canal modifications to deliver flows to the Drexler Service Area via the new Drexler Pipeline.
- **Main Canal Modifications.** Approximately 15,200 linear feet of the Main Canal would be widened up to three feet, depending on the location, to provide adequate capacity to convey flows to the Drexler Service Area in order to accommodate the consolidation of the Meridian and Drexler diversions.
- **Drexler Pipeline Extension.** The Drexler Pipeline would be extended by approximately 500 feet to improve service to a portion of the Drexler Service Area and reduce pumping costs. The outlet box at the end of the Drexler Pipeline could be modified to reduce pumping costs.
- **Removal of Existing Meridian Diversion/Pumping Plant.** The existing diversion/pumping facility would be removed after the new Meridian Diversion/Pumping Plant is constructed and operational.
- **Removal of the Existing Drexler Diversion/Pumping Plant.** The existing pumping facility would be removed after the new Drexler Re-Lift Pumping Plant is construction and operational.
- **Grimes Canal Modifications.** Concrete lining of approximately 2,500 linear feet of the Grimes canal. (Note: this element of the Proposed Project/Action has not yet been funded, and implementation is to be determined based on funding support. The adequacy of environmental compliance for the remaining portions of the project would not be affected if this component is not funded.)

Each of the Proposed Project/Action elements are described in more detail below.

2.3.1 Meridian Diversion/Pumping Plant

The Meridian Diversion/Pumping Plant would consist of a new 135 cfs diversion and pumping plant that would be installed immediately upstream of the existing Meridian Diversion. The pumping plant would be located on the land-side of the levee.

Meridian Diversion Fish Screen

The retractable cylindrical fish screen with brush cleaning system would consist of two 20-foot long, 60-inch-diameter cylindrical screens. The total capacity of the screens would be 135 cfs. Pile-supported retrieval tracks that parallel the riverside levee face would be installed for screen removal during periodic maintenance or in the irrigation off-season. The pile-supported tracks would allow the screens to be removed out of the water via a motorized hoist and cable system.

The screens would be designed to have a minimum of 3 feet of submergence during low river levels (Water Surface Elevation 32.6 feet). When in operation, the screen mounts to a docking inlet. The docking inlet is covered by a trash-rack to prevent debris from entering the manifold when the screens are out of the water. This docking inlet would be part of an approximately 20-foot-long header manifold fabricated by the system manufacturer. This header manifold would connect to the 72-inch intake pipeline that runs through the levee to the pump station. The header manifold would either be supported on a concrete slab and H piles, similar to the stationary cylindrical design, or be mounted directly to the piles. A platform would be constructed at the top of the tracks to provide access to the screens when in a retracted position, as well as to mount the system control panel. **Figure 2-2** provides an overall site plan of the retractable cylindrical fish screen structure and pumping plant.

The brush cleaning system would consist of cylindrical screens equipped with hydraulic motors that rotate the screen against fixed external and internal brushes (see **Figure 2-3**).

Conveyance from River Inlet to Sump

The inlet structure would consist of two 66-inch steel tees, each with two fish screens mounted on top. The tees would be connected to a short segment of 84-inch steel pipeline. The 84-inch pipeline would then be reduced to a 72-inch steel pipeline, which would transition to a reinforced concrete pipe before passing through the levee and underneath North Meridian Road to the pump station wet-well. The fish screens, tees and the segment of 84-inch pipe would be supported by a three-foot six-inch thick concrete pad supported on piles.

The layout of the screens could change to allow the motors to be spaced properly and removed from the river for inspection and maintenance. This would require tracks mounted on piles for the screens to be pulled from the river by a winch. Short lengths of pipe would convey the intake water from the individual fish screens to the 84-inch intake pipe.

Deflection Piles

If necessary, approximately 10 steel deflection piles would be installed just upstream of the fish screens in the river. The flanges on the piles would be approximately 15 inches wide and 14 inches deep, with a steel weight of 89 pounds per foot. The purpose of the deflection piles would be to protect the fish screens from large debris floating down the river. The top of the piles would be submerged a minimum of three feet as required for navigable waterways. The use of deflection piles may not be necessary with use of a retractable screen.

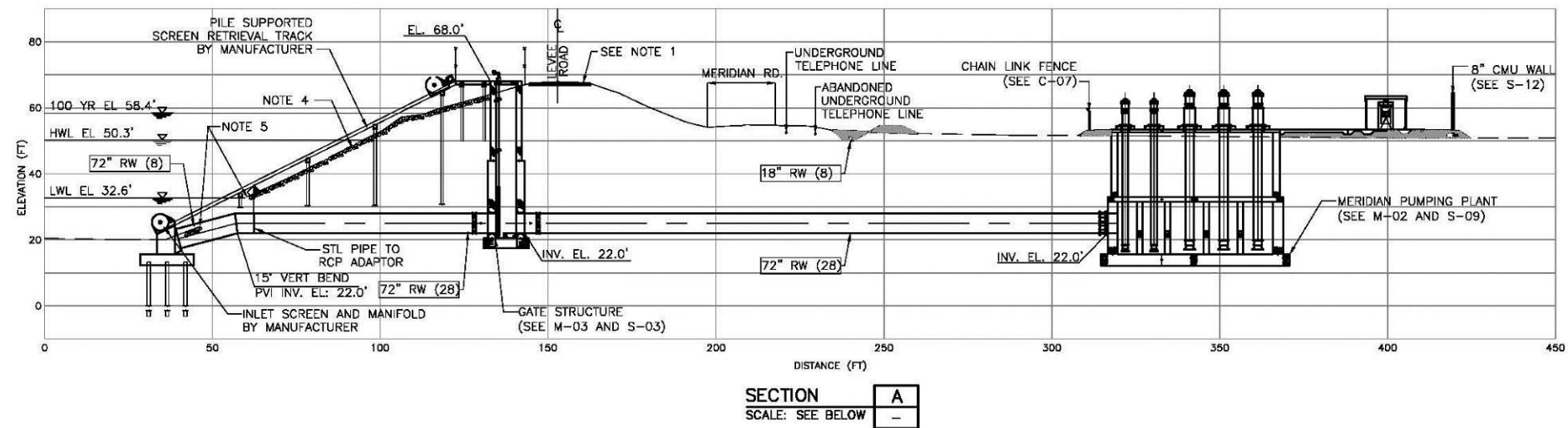
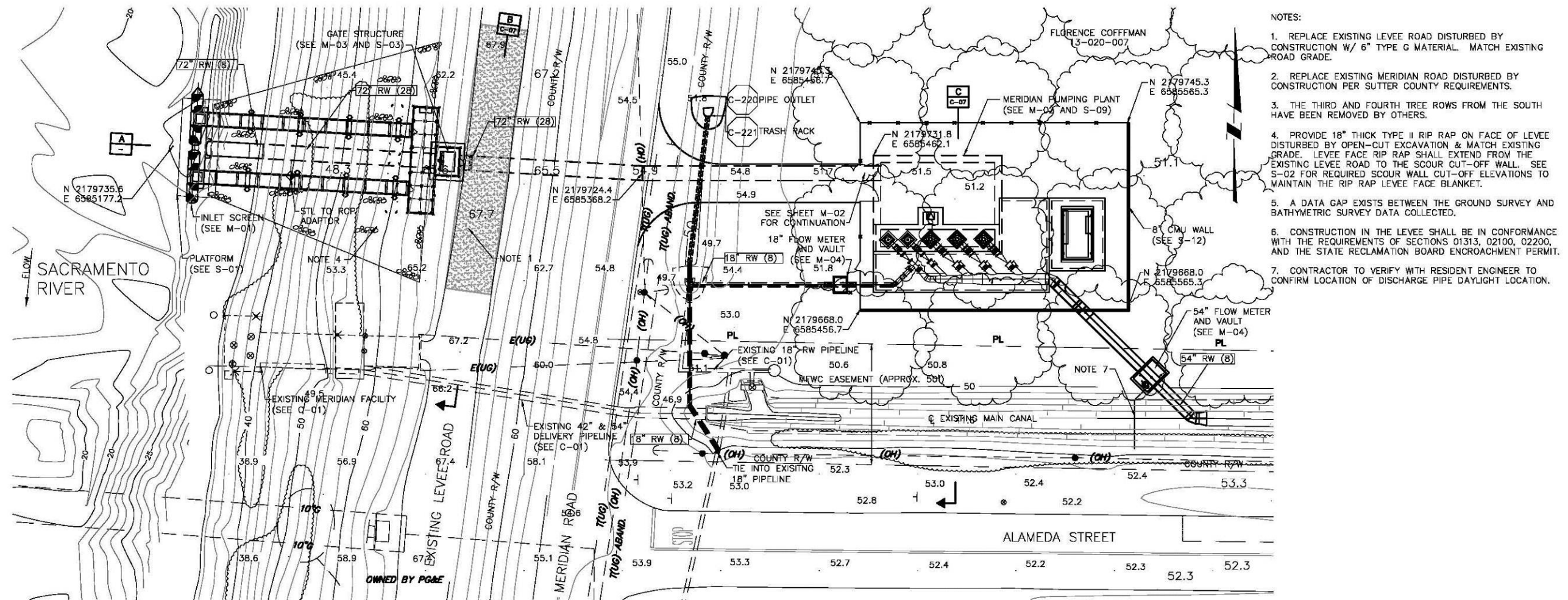
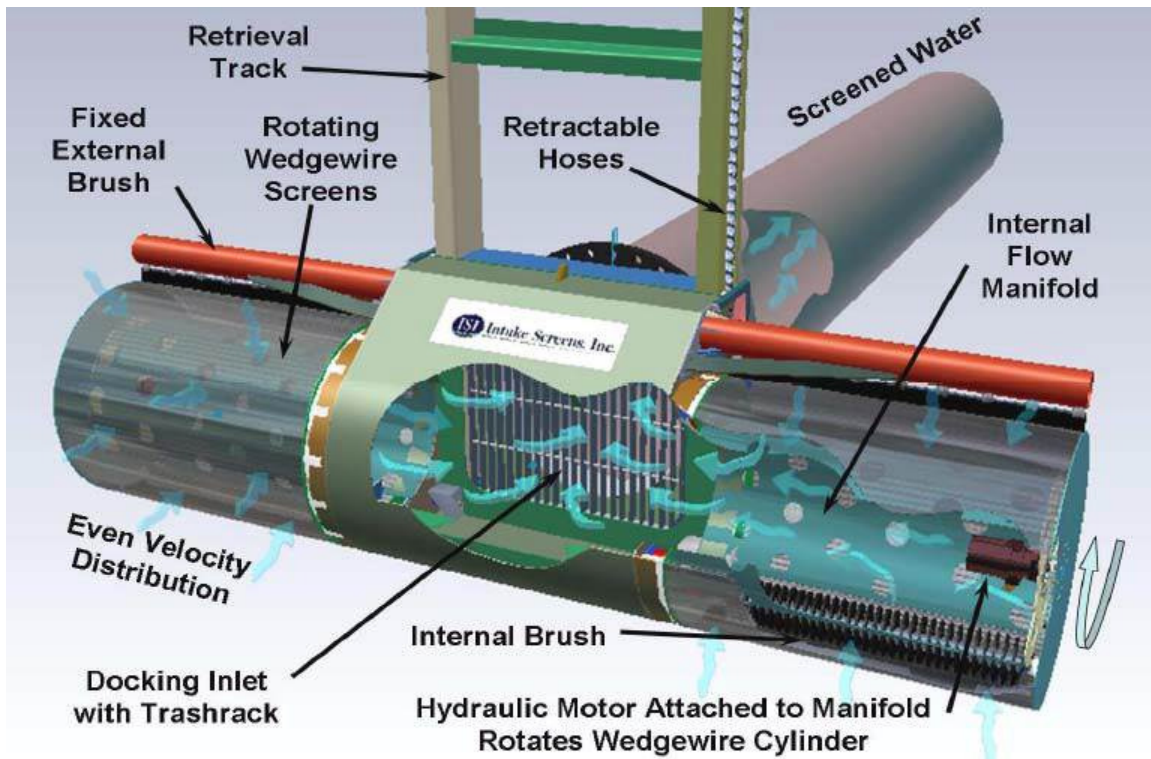


Figure 2-2. Retractable Cylindrical Fish Screen

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**Figure 2-3. Typical Rotating Cylinder Brush Cleaning System
(Image by Intake Screens, Inc.)**

Gate Structure

The gate structure would provide a means for positive closure of the levee penetration by the 72-inch inlet pipeline. A sluice gate with 72-inch diameter thimbles would be mounted in a concrete structure on the water-side of the levee.

Wet Well

The pumping plant wet well structure would be constructed on the east side of the Sacramento River at the northeast corner of North Meridian Road and Alameda Street near the community of Meridian. The inside dimensions of the sump are 35-feet wide by 46-feet long. The inlet pipeline would enter the sump with the pipe invert approximately 30 feet below grade. The wet well would direct the intake water to the five vertical turbine pumps.

Meridian Diversion Pumping Plant

The pumping plant would be equipped with two 16.5 cfs and three 34 cfs mixed flow pumps. The pumps would be mixed flow, vertical shaft pumps, with the electric motors mounted on the concrete deck, directly above the wet well described above. The concrete deck is at approximately the same elevation as the existing surrounding grade (elevation 53.5 feet).

The pumping plant site would be surrounded by a chain link fence on the north and west sides of the site and a masonry wall on the east and south sides. The masonry wall would provide a visual barrier between the pumping plant and nearby residences. The wet well, pumping pad, pumps, air compressor, air tank, and an electrical building would be located within the fenced site. A driveway and 15-foot access gate would allow vehicle access into the site off North Meridian Road. A three-foot gate would be located at the southeast corner of the site just off Alameda Street.

Pumps

Two 16.5 cfs and three 34 cfs mixed flow pumping units would be installed to pump the total design flow of 135 cfs into MFWC's Main Canal. At minimum speed, the low capacity pumps would be able to pump at a rate of 8.3 cfs. This provides MFWC the same pumping flexibility they have at their existing Meridian and Drexler pumping plants. The pumping plant would operate up to capacity when the Sacramento River water surface elevations vary between 32.6 and 50.3 feet.

Discharge Piping

The 16.5 cfs pumps and 34 cfs pumps would discharge into their respective 20-inch and 30-inch, above ground, pump discharge header pipes. The water would be conveyed from the discharge header into a common 54-inch, above ground, manifold pipeline. The 54-inch pipeline would drop underground just before exiting the fenced area of the pumping plant site. Underground, the pipeline would transition to a 72-inch discharge pipeline that would eventually discharge into the Main Canal near Mawson Road.

A separate 18-inch discharge would connect to the most westerly 16.5 cfs pump and would branch off and head both north and south to existing irrigation ditches. The north branch would serve the existing walnut orchard located next to the pumping plant. The south branch would serve the property located immediately south of the pumping plant on the other side of Alameda Street.

Flow Measurement

The water pumped from the Sacramento River would be measured with a 54-inch flowmeter just downstream from the pumping plant, and an 18-inch flowmeter located just west of the most westerly 16.5 cfs pump. The 54-inch flowmeter would measure the amount of water being diverted and pumped into the Main Canal. The 18-inch meter would be used to measure the water being pumped into the 18-inch waterline serving the north and south properties. The meter would be either above ground inside the pumping plant wall or housed in a concrete vault below ground. Flow measurements would be used by MFWC and Reclamation to log and report diversions.

Construction Considerations

Diversion and Fish Screen

Construction of the fish screen, intake piping and valve vault must be inside a sheet pile coffer dam to protect the site from flooding. Interlocking sheet piles would be driven into the river bottom using a vibratory or impact hammer attached to a crane. The crane would be floated to the

site on a barge. The sheet piles would be driven one at a time to form the coffer dam. This work would begin after July 1 to minimize impacts to listed aquatic species.

After completion of the coffer dam, the river bottom would be excavated to a level approximately five feet below the top of the H piles that would support the fish screen foundation. The piles would then be driven and a concrete tremie seal poured. These piles must be driven with an impact hammer to verify they are properly imbedded and providing required support. All this work must be done without dewatering the site. Before the concrete in the tremie seal sets, there is a danger the difference in water pressure inside and outside the coffer dam could cause the river bottom to rise; therefore, the concrete tremie seal must be in place before water inside the dam is pumped out. Prior to cofferdam dewatering, a fish rescue and salvage plan would be implemented to minimize potential construction-related effects to species present in the project area (see Appendix B). The contractor will have a contingency plan in place to prevent water contamination in the event of concrete tremie seal failure. Sump pumps inside the coffer dam would pump the river water out and then operate continuously to keep seepage from flooding the work site.

The reinforced concrete support pad would then be poured above the support piles and the screens themselves and intake piping would be mounted on the pad. The levee would be excavated at this time allowing placement of the intake to the pumping plant and the valve vault.

Alternatively, the levee could be excavated first. This would provide a way to move equipment and material to the fish screen installation site without a barge. The contractor would need to compare the cost of the additional excavation and backfill of the levee material versus the time saved by not need to work from a barge. This would also allow the contractor to install the sheet piles for the intake pipe trench construction at the same time, saving overall construction time. The levee would then be replaced with the excavated material, if it meets requirements for levee use. The material would be placed in 6-inch lifts and compacted to 90% relative density in accordance with CVFPB requirements.

Pumping Plant

The proposed site for the pumping plant, on the land side of the levee, is currently a walnut orchard and several walnut trees would be removed to accommodate construction. The depth of the wet well (approximately 40 feet to the bottom of the concrete bottom slab) would require sheet piling to support the excavation and protect workers. The sheet piles would be driven by vibratory or impact methods. Sump pumps would be installed to remove groundwater and keep the excavation dry. Once the vertical walls of the wet well are in place the excavation would be backfilled and the sheet piles would be removed or abandoned in place. The pumps, piping and electrical equipment would be installed and a perimeter fence constructed.

After placement through the levee, the 72-inch RCP intake pipe would be placed in an approximately 30-foot deep by 10-foot wide sheet pile supported trench. Material excavated from the trench would be placed adjacent to the trench and used as backfill after pipe installation. The intake pipe would also be placed under North Meridian Road. To accommodate its installation, North Meridian Road would be closed for approximately one month and traffic would be detoured to Mawson Road and Burris Road to access areas north of the construction site.

Following pipe installation, the trench would be backfilled and the road repaved to repair any damage done during construction activities.

The pumping plant 54-inch steel discharge pipe would be placed in a trench approximately 50-foot long by 10-foot deep by 8 feet wide. The contractor could opt to slope walls back in lieu of using sheet piles for trench support. At the end of the trench the pipe would transition to a 72-inch RCP and would be placed in the bottom of the existing canal for approximately 1,050 feet. The soil in the bottom of the canal would be wet and unusable for pipe support, so it would be removed and replaced with gravel. The discharge pipe would be placed beneath Mawson Road which would require a road closure and detour. The closure of North Meridian Road, described above and Mawson Road would not be done at the same time to allow traffic to access areas north of Meridian.

2.3.2 Main Canal Modifications

The Proposed Project/Action would increase the capacity of approximately 15,200 lineal feet of the Main Canal to convey flows to the Drexler service area needed as a result of the consolidation of the Meridian and Drexler diversions. The current maximum capacity of the Main Canal is estimated at 120 cfs from the outlet of the existing pumping plant to Siphon 2 (State Highway 20) which is not large enough to convey the new maximum flow (135 cfs) from the proposed new Meridian Pumping Plant; therefore, the canal would be widened and relined as shown in **Figure 2-4**.

The concrete lined canal would have a trapezoidal shape and side slopes of 1.5 horizontal to 1 vertical (1.5:1). The canal section would be lined with four-inch-thick un-reinforced, cast-in-place concrete. The maximum bottom width would be 5.5 feet and the minimum bottom width would be 3.5 feet depending on the capacity requirements of the reach. The new canal invert elevation would be the same as the current elevation in order to continue utilizing existing siphons wherever hydraulic capacity is available. See **Table 2-1** for a summary of the Main Canal Modifications.

**TABLE 2-1
PROPOSED CANAL MODIFICATIONS**

| Description | Existing Bottom Width (ft) | Proposed Bottom Width (ft) | Flow (cfs) | Velocity (ft/s) |
|--|----------------------------|----------------------------|------------|-----------------|
| End of 54-inch Manifold pipe to Siphon 1 | 6.0-6.5 | 6 Pipe | 135 | 4.8 |
| Check Structure (moved from original location before Siphon) | 5.2-7.9 | 5.5 | 135 | 2.5 |
| Siphon 2 to Siphon 3 | 1.7-3.6 | 5.5 | 120 | 2.9 |
| Siphon 3 to Bend Transition | 2.6-3.5 | 5.5 | 120 | 2.7 |
| Bend Transition to Check Structure | 2.6-3.1 | 5.5 | 70 | 2.0 |
| Check Structure to Siphon 4 | 3.1-3.3 | 3.5 | 70 | 2.0 |
| Siphon 4 to Siphon 5 | 2.6-3.4 | 3.5 | 70 | 2.2 |

SOURCE: MWH Americas, Inc., 2004

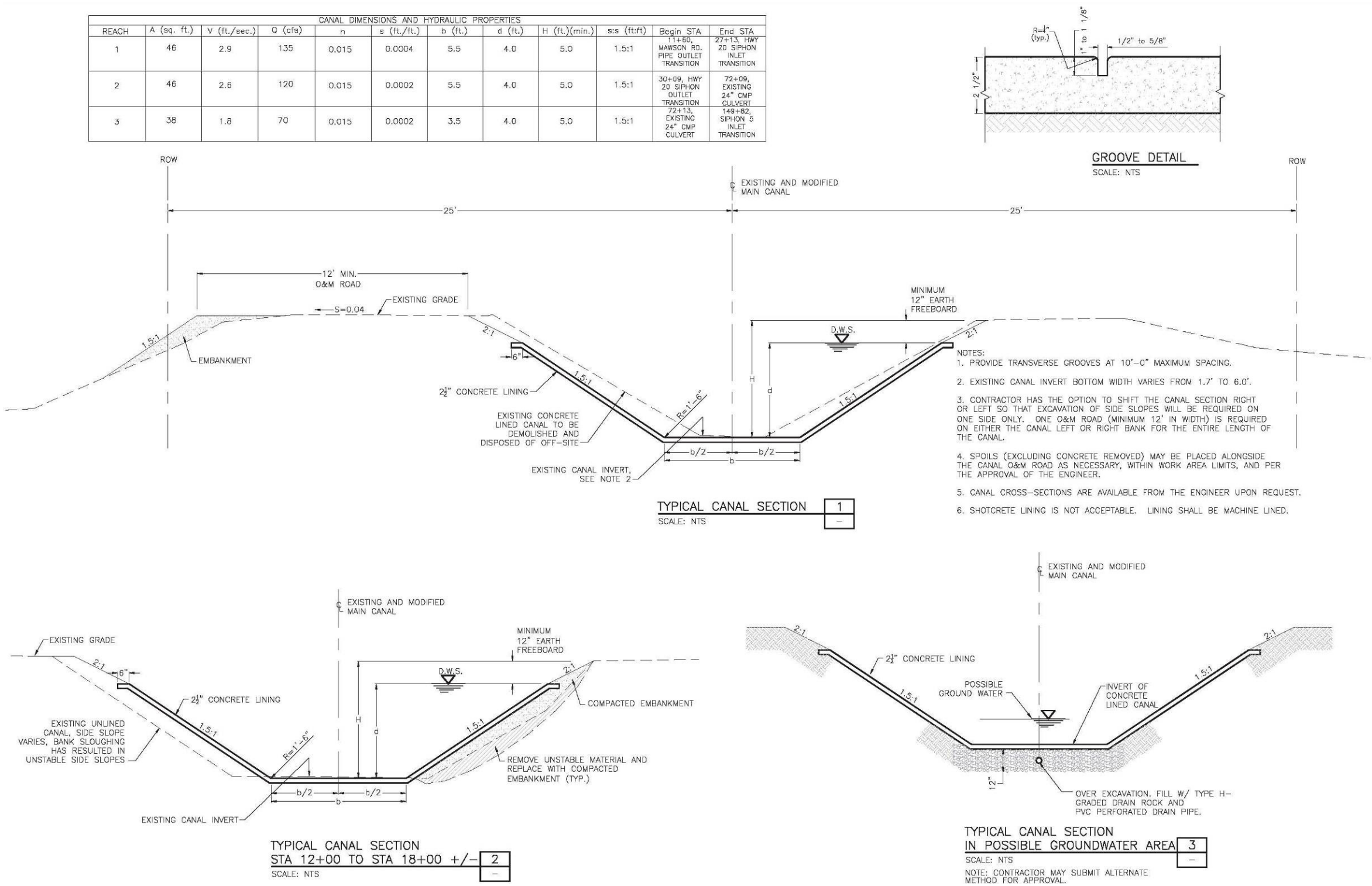


Figure 2-4. Main Canal Modifications

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The close proximity of the open canal to traffic on Alameda Street between the pumping plant and Mawson Road presents a safety hazard. The 72-inch discharge pipe would be extended to Mawson Road and backfilled to address the safety hazard. A two-foot deep drainage ditch would be constructed along Alameda Street to convey surface runoff that previously discharged to the canal.

The existing canal would be demolished and widened from one side or the other depending on the needed expanded width and the availability of right-of-way. The Operations and Maintenance (O&M) road would be widened, as necessary, to a width of 12-feet, as shown in **Figure 2-3**. Typical construction of the canal widening would involve a backhoe moving along the O&M road to remove the existing concrete lining by breaking the lining with the bucket into pieces which could be removed and placed into dump trucks. Due to the narrow work area, one dump truck at a time would need to back in from the nearest access point. At this time, the only access to the canal work area are from Mawson Road, Highway 20, Central Street, Blackmer Road and Summy Road. The next truck would need to wait for the previous truck to pull off the access road. The contractor may try to bring a second dump truck on the opposite side of the canal and load it while waiting for a dump truck on the near side of the canal. Or a second excavator could start at the other end of the Main Canal and load dump trucks accessing the site from Summy Road. The old concrete lining would be landfilled.

It has been estimated that approximately 550 dump truck trips will be required to remove the old concrete lining. At 15 minutes per truck, it will take 24 working hours or about 3 days to remove the concrete. If truck access can maintain that rate, it should take about 4 weeks to remove all the concrete with one excavator working.

The same backhoe used to remove concrete or a second backhoe would then excavate the sides of the canal to the required dimensions. A surveyor would need to work with the excavator operator. The soil removed would be used to widen or raise the O&M road. Where the soil along the side of the canal is not suitable for supporting the concrete lining, it would be removed and replaced.

The existing canal width varies, but is generally between 16 feet and 20 feet wide. North of the transition at Station 72+09 the canal must be widened to approximately 21.5 feet wide. South of the transition it must be widened to approximately 19.5 feet wide. The width of the limits of work available to the contractor vary between approximately 40 feet and 50 feet. The canal is generally in the center of the limits of work with an access road on one side or the other. However, the levee on the side opposite of the access road is generally not wide enough for trucks. Small backhoes or excavators are 8 to 10 feet wide, and the access road would be too narrow in some locations to allow access. It would also not be wide enough to allow other trucks with equipment and work crews to move around the work area, so access along both sides of the canal will be needed. Therefore, the access road will need to be widened before the start of work in some locations.

Once the canal is widened, it would be lined with four inches of concrete. It is expected that the new concrete lining would be shotcrete. However, the contractor could opt to use a concrete lining machine. In either case, concrete delivery trucks with a 10 cubic yard capacity would need to access the shotcrete crew or lining machine. At an estimated rate of 400 feet per day, the lining

would require 35 working days or 7 weeks. Approximately 105 cubic yards of concrete or about 10 concrete truck deliveries would be required per day. One concrete truck every 45 minutes would need to access the site.

Check Structures and Turnouts

Seven reinforced concrete check structures and 15 turnouts to local irrigation ditches exist at various locations along the existing Main Canal. Of the seven check structures two would remain in place, one is no longer needed and would be demolished and the remaining four would be demolished and then replaced to accommodate the canal widening. Of the 15 existing turnouts, three would be maintained in place, two are no longer needed and would be demolished, 10 would be demolished and replaced to accommodate the canal widening. One new turnout is required in a new location, so a total of 11 turnouts would be constructed. It may be necessary to install a small pump in the canal to provide the required flow through the turnout and into the irrigation ditch at the Mawson Road crossing. Turnouts would be installed within the canal and would not increase the canal footprint.

Construction of the turnouts would likely not be initiated until the completion of the old lining removal. The turnout construction could take place concurrently with canal widening. An excavator would excavate the area for the new turnout and remove the old pipe. Then forms and rebar are placed and concrete poured. The gate mechanism would be installed at the end of the job. This work should not take more than a week per structure. More than one crew may be required.

The estimated duration of construction activities during the Main Canal widening is 5 months. This includes 4 weeks for removal of old concrete, 8 weeks for canal widening and turnout construction, and 8 weeks for canal lining.

Siphons

Two siphons (Siphon 1 and Siphon 3) would be replaced as part of the canal modifications. Siphon 1 under Mawson Road would be removed and replaced with the 72-inch diameter RCP which is part of the Pumping Plant discharge piping. The replacement of Siphon 1 would require a closure of Mawson Road to facilitate the pipe installation. Mawson Road would be restored and repaved following the pipe installation.

Siphon 3 would be replaced by a 72-inch diameter RCP. Replacement of Siphon 3 would require a shutdown and replacement of Central Road and would be subject to Sutter County Public Works' design standards. Siphon 3 would be lengthened to 200 feet (is currently 44-feet long) to extend it past a home on Central road that is situated next to the canal.

The remaining siphons (2, 4, and 5) provide adequate capacity and would be left in-place. Upstream and downstream transitions at each siphon would be constructed of four-inch thick cast-in-place concrete.

2.3.3 Drexler Re-Lift Pumping Plant

The Drexler Re-Lift Pumping Plant would be installed on the main canal, just upstream of the existing Siphon 5 and Pump #10. The purpose of the pumping plant would be to divert 35 cfs from the main canal to the Drexler Service Area. The existing Drexler Diversion would be abandoned. Water would be pumped up to a new turnout structure via the Drexler Pipeline installed under Phase 1. This pipeline consists of approximately 6,500 feet of 36-inch pipe and a turnout structure. From the turnout structure, the water would gravity flow to the original Drexler canal outfall via approximately 600 feet of 36-inch pipe.

Figure 2-5 provides a general schematic of the proposed Drexler Re-Lift Pumping Plant. The pumping plant would include a 14-foot wide by 32-foot long forebay that would draw water off the Main Canal to two vertical turbine pumps. The forebay would be 10 feet deep and would be divided into two individual bays by a concrete wall with the pumps set at the end of each bay. The pump motors and discharge piping would be supported above a concrete slab that also forms the roof of the forebay. The individual pump discharge pipes would connect to a below ground 36-inch pipeline that would tie into the beginning of the Drexler Pipeline about 200 feet south of the Re-Lift Pumping Plant. An existing drainage ditch that parallels the Main Canal to the west would be filled to allow the construction of the pumping plant, and a new 24-inch storm drain would convey drainage from the ditch to the existing Reclamation District 70 canal to the south. The site construction also includes a 50-foot long by 21-foot wide concrete spillway in the O&M road opposite the Re-Lift Plant location. A 36-inch flow meter would be located in a below ground vault or sited above ground on the concrete pad.

Construction of the wet well and the overflow spillway must be done when the Main Canal is empty. However, the relocation of the drain from the seep to the ditch west of Summy Road and the connection to the Drexler Pipeline could be done during summer months.

2.3.4 Drexler Pipeline Extension

The Drexler Pipeline was connected to an existing 18-inch corrugated metal pipe (CMP) that discharges to an existing outlet box. The connection to the CMP was made with a concrete collar that would likely leak when under pressure. An alternative to replace the CMP and outlet box is being considered to provide a permanent connection and improve pump hydraulics.

A 24-inch branch of the Drexler Pipeline could be extended by approximately 500 feet to connect to the #3 Lateral Canal. This would improve pumping hydraulics by by-passing 3,000 feet of pipe and 3,000 feet of canals. Service to the Drexler Service Area would be improved and pumping costs would be reduced.

2.3.5 Removal of Existing Meridian Diversion/Pumping Plant and Drexler Pumping Plant

Once the New Meridian Diversion/Pumping Plant and Drexler Relift pumping plant are constructed and operational, the existing Meridian and Drexler Diversion/Pumping Plants would be removed.

At a minimum, removal of these facilities would include the removal of the pumps, equipment platforms, electrical equipment, gauging stations, pile supports to required level, and river side-piping. It would also include the excavation of the levee so the discharge pipe through the levee could be removed. The replacement levee section would be constructed to Corps and CVFPB requirements. Sheet pile coffer dams would likely be required to protect the work in the levee and landside flooding.

Removal of the existing diversions would require a large crane sited on the top of the levee or on a barge in the river. As the pumps, piping and support structures are cut into manageable sections, they would be lifted and removed to a stockpile on the landside and hauled away by trucks. Some of the equipment such as the pumps could be reused, but most of the scrap would be landfilled. The contractor would attempt to pull the support piles out of the river, but most likely they would be cut three feet below river bottom and abandoned, in accordance with CVFPB requirements. The concrete vaults would be difficult and costly to remove. If CVFPB requires removal, the vaults would need to be demolished with jackhammers or a wrecking ball. The debris would then need to be removed from the river bank and bottom with a backhoe and hauled to a landfill.

Removal of the pipes through the levee would require excavation of the levee by backhoe down to the pipe. A cofferdam should not be required if the construction is done during low river flow periods. CVFPB requires excavations in the levee to have trench walls sloped back at 1.5 to 1.0 side slopes. This means the trench would be approximately 80 feet wide at the top. If the pipe sections are welded together, it would need to be cut into sections with a cutting torch. A crane would then lift the sections out of the trench to trucks for recycling or landfilling. The soil removed to uncover the pipe would be stockpiled at a nearby staging area. If the soil meets minimum requirements for use in a levee, it would be hauled back, placed in six-inch lifts and compacted to 90 percent relative density, in accordance with CVFPB requirements. The levee would be restored to pre-existing grades.

2.3.6 Grimes Canal Modifications

Under Phase 1 the existing unlined canal was widened and the banks were raised to accommodate a change in the how the canal is used. Previously, the canal flowed from south to north because the old diversion was at the south end of the canal. With the relocation of the New Grimes Diversion to the north end of the canal, the water would flow from north to south resulting in a higher water surface along most of the canal. New check structures and turnouts were also installed under Phase 1, and about 1,080 feet of the canal was lined with concrete. Under Phase 2, it is proposed that the remaining 2,500 linear feet of canal be lined with a 4 inches of concrete (shotcrete). The canal was widened under Phase 1, so the only work necessary is to remove and silt in the bottom of the canal and apply the shotcrete. The proposed Phase 2 Grimes Canal modifications are an optional component of the Phase 2 Proposed Project/Action; implementation of this component will be determined at a later date based on available funding.

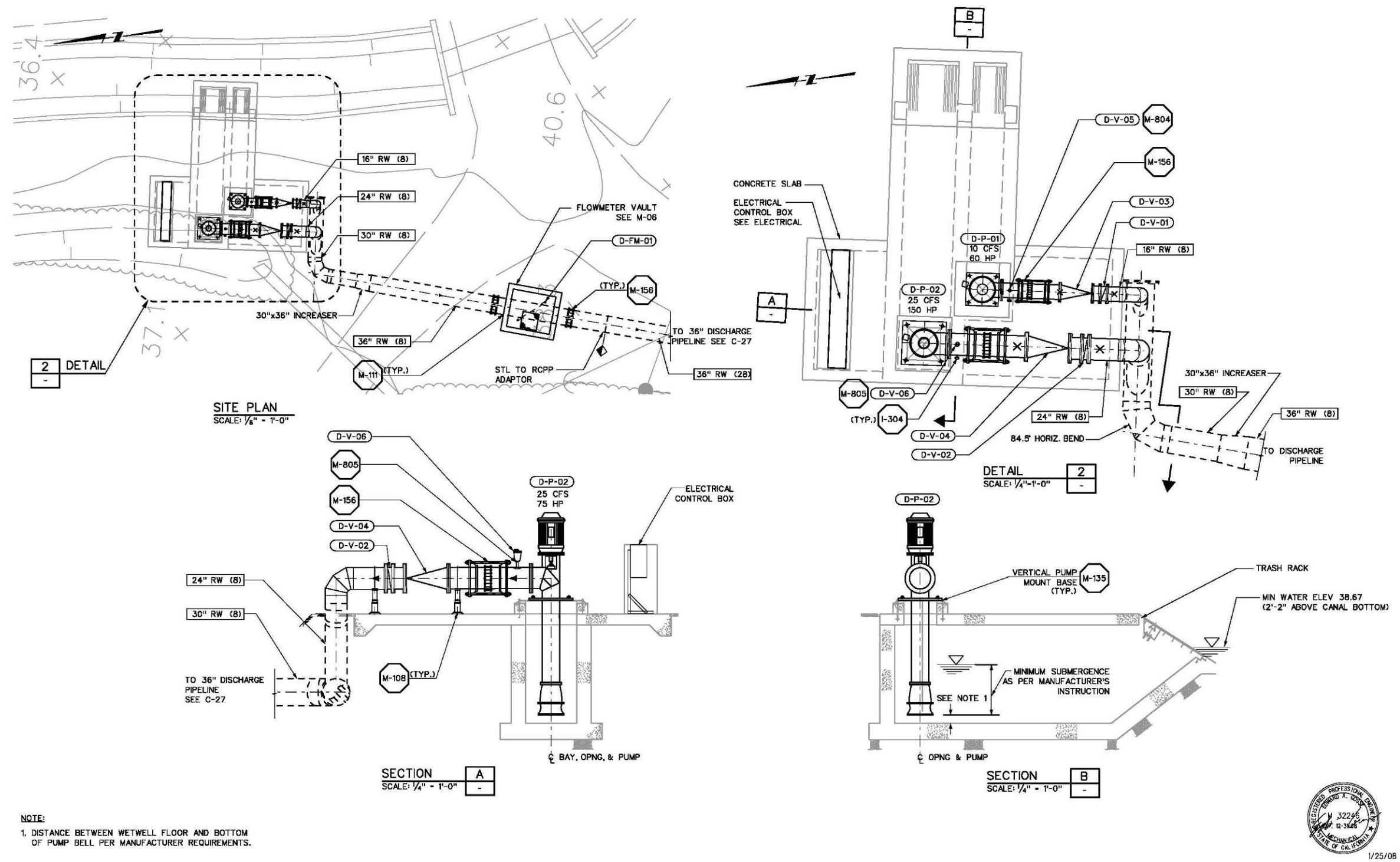


Figure 2-5. Drexler Re-Lift Pumping Plant

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2.4 Construction Phase

Construction Personnel and Equipment

The estimated construction personnel and equipment for the Proposed Project/Action is shown in **Table 2-2**. The actual equipment used during construction would be determined by the contractor and the construction schedule. Listed equipment includes all aspects of construction for facility construction and materials handling.

The specific routes to transport equipment, dispose excavated materials, or to obtain imported fill and other materials would likely vary for each project component. Because a number of construction materials sources are located in the surrounding area and urban centers, the selected routes use a combination of highways (e.g., Interstate-5 (I-5), State Route (SR)-99, SR-20, and SR-45), arterials and designated truck routes in the project vicinity. Construction worker trips are assumed to originate from the major urban areas in the project region and nearby communities primarily within Sutter County, Sacramento County, and Yolo County.

**TABLE 2-2
ESTIMATED CONSTRUCTION EQUIPMENT AND PERSONNEL**

| Activity | Personnel | Equipment/Quantity |
|--------------------------------------|-----------|---|
| Meridian Diversion and Pumping Plant | 20 | Excavator, large (1), Excavator small (1), Loader (1), Crane (1),, Backhoe/loader (1), Bulldozer (1), Compactor (1), Portable Generator (1), Concrete Pumper (1), Welder truck w/generator (1), Equipment truck (1) Dump trucks (4) Concrete trucks |
| Main Canal Modifications | 8 | Excavator (1), Dump truck (2), Concrete lining machine (1), Concrete pumper (1), Concrete trucks, Equipment truck (1) |
| New Drexler Re-Lift Pumping Plant | 15 | Excavator (1), Crane (1),, Backhoe/loader (1), Portable Generator (1), Concrete Pumper (1), Welder truck w/generator (1), Equipment truck (1) Dump trucks (1) Concrete trucks |
| Drexler Pipeline Extension | 6 | Excavator (1), Loader (1), Equipment truck (1) |

**TABLE 2-2
ESTIMATED CONSTRUCTION EQUIPMENT AND PERSONNEL**

| Activity | Personnel | Equipment/Quantity |
|---|------------------|--|
| Removal of Existing Meridian Diversion/Pumping Plant | 8 | Excavator (1), Bulldozer (1), Crane (1), Loader (1) Dump trucks (4), Equipment truck (1) |
| Removal of Existing Drexler Pumping Plant | 8 | Excavator (1), Bulldozer (1), Crane (1), Loader (1) Dump trucks (4), Equipment truck (1) |
| Grimes Canal Modification | 6 | Shotcrete pumper (1), Equipment truck (1), Backhoe (1) |

SOURCE: MWH, 2011; ESA 2011

Staging Areas

Main staging areas would be located in an easily accessible area adjacent to the construction footprint. The staging area for the Meridian Diversion would be located east of the diversion. A linear area south of the Drexler Diversion would be used for storing material from the levee to remove the diversion discharge pipe. These staging areas are included in the analysis area and are encompassed in the ASIP Action Area (see Figure 2-1 in Appendix B). Arrangements would be made between the contractor and property owner for all stored construction and equipment materials. Temporary staging of raw materials could occur in existing rights-of-way when short-term storage is needed. Site preparation for staging areas would incorporate appropriate measures to prevent unnecessary vegetation removal. Ingress and egress roads would be covered with rock base at a minimum to prevent off-tracking of dirt.

Main staging areas would be large enough to safely store heavy equipment, work crew vehicles, long-term storage of construction materials, and job site trailer(s). The long-term staging area(s) would be used for storage of construction equipment and materials, as a reporting location for workers, and as the location of the job site trailer and parking area for vehicles and equipment.

The contractor would be responsible for securing the job site with temporary chain link fencing or other fencing acceptable to the project engineer. Power to the job site will be provided by existing electrical utilities, if needed.

Affected Roadways

The roadways identified in **Table 2-3** will be affected during construction. All roadways would be restored to original condition or better and subject to Sutter County Public Works' design standards.

**TABLE 2-3
AFFECTED ROADWAY SEGMENTS**

| Segment | Anticipated Level of Disruption |
|---------------------|---|
| North Meridian Road | Temporary closure and detour (6 months) |
| Mawson Road | Temporary closure and detour (1 month) |
| Central Road | Temporary closure and detour (1 month) |
| South Meridian Road | Temporary closure and detour (1 month) |

Construction Considerations

Construction activities would comply with the requirements set by the Central Valley Regional Water Quality Control Board (CVRWQCB) to minimize construction-related impacts to water quality. In addition, silt screens and/or silt fences would be used where construction activities could possibly cause sediment to enter the river. All water-side construction activities, with the exception of riprap installation, would be confined within a sheet-pile cofferdam, which would be put in place and removed during the “dry” season from July 1 to October 1, although this could be extended to November 1 with NMFS approval. In addition, canal modifications would occur between October 1 and April 30 to avoid disruption to the irrigation delivery schedule and growing season.

All construction contracts would specify staging areas for heavy equipment on the land-side of the Sacramento River so that spills of oil, grease, or other petroleum by-products would not be discharged in the Sacramento River. All machinery would be properly maintained and cleaned to prevent spills and leaks. Any spills and leaks from equipment would be reported immediately and cleaned up in accordance with applicable local, state, and/or federal regulations.

Construction contracts would note the location of staging areas for stockpiling material and would be required to maintain Storm Water Pollution Prevention Plan (SWPP) Best Management Practices (BMPs) to prevent the migration of material off site.

2.5 Environmental Commitments

Measures to protect sensitive environmental resources during the construction have been incorporated into the proposed project. These environmental commitments are consistent with those incorporated into the 2008 Meridian Farms Fish Screen Project IS/MND EA/FONSI. The following are the environmental commitments that are part of the Proposed Project/Action:

2.5.1 Biological Resources

- Project construction and operations will result in no net loss of wetland resources.

- Construction of the temporary cofferdam will only take place after July 1 and prior to October 1. The in-water work period may be extended to November 1 with approval from NOAA Fisheries.
- Pump(s) used for dewatering the cofferdam during Phase 2 construction will be screened according to NMFS fish screening criteria for anadromous salmonids (NMFS, 1997b). After installation of the cofferdam and any time the cofferdam is flooded during construction, a fish rescue and salvage plan will be implemented to minimize potential construction-related effects to species present in the project area (see Appendix B). A qualified biologist will be on-site during such pumping activities to ensure that any fish that may be present within the construction area are relocated to suitable habitat near the project area.
- Additional measures to avoid impacts to sensitive biological resources, including special-status fish and the giant garter snake, are included in Chapter 4.

2.5.2 Cultural Resources

- All construction contracts would inform the contractor(s) of the potential for accidental discovery of subsurface archaeological, paleontological, and/or significant cultural resources artifacts or human remains. In the event of the discovery of any buried archeological or paleontological deposits, construction activities in the vicinity (within 50 feet) of the find will be temporarily halted and a Reclamation cultural resources staff will be contacted and provide direction on how to proceed to the next step. Possible management recommendations for important resources could include resource avoidance or data recovery excavations.

In the event that human remains are discovered, the discovery will be treated in accordance with the requirements of §750.5(b) of the California Health and Safety Code (CHSC). Pursuant to §7050.5(c) of the CHSC, if the County Coroner determines that the human remains are, or may be of Native American origin, then the District will ensure that the discovery shall be treated in accordance with the provisions of §5097.98(a)-(d) of the California Public Resources Code.

No Project Personnel will be allowed to collect cultural resources.

2.5.3 Land Use

- Unless the affected landowner and the District mutually agree to another solution, the District will compensate for any temporary or permanent easements, property loss, and/or damage to third-parties. Compensation will be at fair market value, determined by qualified and objective third-party real estate appraisers.

2.5.4 Air Quality

- The District will coordinate with the Feather River Air Quality Management District (FRAQMD) to determine the need for preparation of a construction-generated emissions control plan or to identify measures that would be implemented during construction to

control fugitive dust or other vehicle or equipment emissions. At a minimum, fugitive dust will be controlled by watering the soil surface and covering haul vehicles and exposed dirt piles. All construction contracts will specify such dust and emission control requirements and any additional controls as required by FRAQMD.

2.5.5 Hazards and Hazardous Materials

- Construction, welding and other areas where spark-producing equipment will be used will be cleared of dried vegetation or other materials that could serve as fire fuel. Any construction equipment that normally includes a spark arrester will be equipped with an arrester in good working order.
- All construction-related hazardous materials will be transported, stored, and handled in a manner consistent with relevant regulations and guidelines, including those recommended and enforced by the state and federal Departments of Transportation, CVRWQCB, Sutter County, the local Fire District and other appropriate fire districts, among others as appropriate.
- A Hazardous Materials Management Plan (or equivalent) will be prepared and/or followed to provide specific emergency response protocols for the accidental release or threatened release of hazardous materials used as part of the construction and operation of the Proposed Project/Action. In the event a release was to occur, this emergency response plan will provide emergency responders with a protocol for continuing and disposing of the release.

2.5.6 Noise

- Standard noise abatement measures will be implemented during construction to reduce noise impacts from construction activities. Construction activities will be limited to the hours between 7:00 a.m. and 5:00 p.m. on weekdays to reduce potential noise impacts to area residents. In addition, staging areas and stationary noise generating construction equipment will be located as far as possible from sensitive receptors, and all construction equipment will be maintained with the manufacturer's specified noise-muffling devices.
- Final design of the facilities in the Proposed Project/Action will incorporate noise attenuating technologies and/or noise barriers to mitigate that noise emanating from the facilities at maximum operational load will not exceed applicable standards or lead to cumulative increases in ambient noise levels.

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SECTION 3

Environmental Setting/Affected Environment

This section provides an overview of the environmental setting and affected environment, which represents the baseline condition for assessing the potential for the Proposed Project/Action to impact the environment.

3.1 Aesthetics

The project area is characterized by relatively flat terrain with generally expansive viewsheds. The Sutter Buttes, remnant volcanoes with a peak elevation approximately 2,000 feet above the surrounding valley floor, are located within two miles of the project area (Sutter County, 2008). Much of the land in the project area is agricultural with the exception being the town of Meridian. The project area is also located adjacent to the Sacramento River which provides scenic views along the western border of the County and project area. Also in the project area is the existing Grimes Pumping Plant and existing Main Canal and Grimes Canal which contribute to the existing viewshed in the project area.

3.2 Agricultural and Forest Resources

The project area is located along the western edge of Sutter County. The project area is zoned for agriculture with the exception of the Town of Meridian, a rural community. In 2011, approximately 57 percent of the irrigated agricultural land comprised of rice, which was the predominant grain crop. Tomatoes, wheat, and sunflower are also important crops, with each comprising six to seven percent of the cropping pattern during the same year. Permanent tree crops (orchards) encompass about 10 percent of the planted area, with walnuts being the predominant crop.

The land within the project area is zoned as Prime Farmland and also includes several Williamson Act parcels. No forest resources are located within the project area (Sutter County, 2008).

3.3 Air Quality

Sutter County is located within the Sacramento Valley Air Basin (SVAB) which consists of the northern half of the Central Valley and approximates the drainage basin for the Sacramento River and its tributaries. Regionally, some portions of the SVAB have fewer air quality problems than others. Only the southern portion of the SVAB is in non-attainment for federal ozone standards, which includes the southern portion of Sutter County. Regarding State standards, the entire SVAB is in nonattainment for ozone and PM standards.

3.4 Biological Resources

Biological communities in the study area include valley foothill riparian, ruderal/annual grassland, agricultural land, and riverine habitat (the Sacramento River). The Sacramento River provides freshwater habitat for fish, amphibians, reptiles, and waterfowl. Roads, levees, and agricultural activities have modified the adjacent riparian habitat. Inland project areas, beyond the Sacramento River and associated habitats, are characterized as agricultural (field crops and orchards). Human presence within the project area is minimal based on the surrounding land use; however river recreation activities increase during the late spring, summer and fall. **Figure 3-1** presents the general habitat types surrounding the project components, including the proposed Meridian diversion and pumping plant, as well as around the proposed Drexler re-lift pumping plant.

3.4.1 Habitats

Valley Foothill Riparian

Valley foothill riparian habitat in the study area occurs in small strips adjacent to the Sacramento River system as it winds south along the western boundary of the Meridian Farms service area, and is usually located within the flood plain and levee system. In the areas of the diversions, habitat is disturbed and density and structure vary. Some relatively open areas are interspersed with multi-layer areas containing, and can include large trees, dense shrubs, California grape vines (*Vitis californica*), and a well-developed herbaceous layer. Trees and shrubs include narrowleaf willow (*Salix exigua*) and black willow (*Salix gooddingii*), Himalayan blackberry (*Rubus discolor*), poison oak (*Toxicodendron diversilobum*), cottonwood (*Populus fremontii*), ash (*Fraxinus latifolia*), and boxelder (*Acer negundo*). The herbaceous layer contains native and non-native species, including black mustard (*Brassica nigra*), Canada horseweed (*Conyza canadensis*), tall amaranth (*Amaranthus rudis*), epazote (*Chenopodium ambrosioides*), and barnyard grass (*Echinochloa crusgalli*). Mature cottonwood stands dominate the closed canopy overstory and characterize the riparian forest areas adjacent to and within the riverine environment (during high flow season).

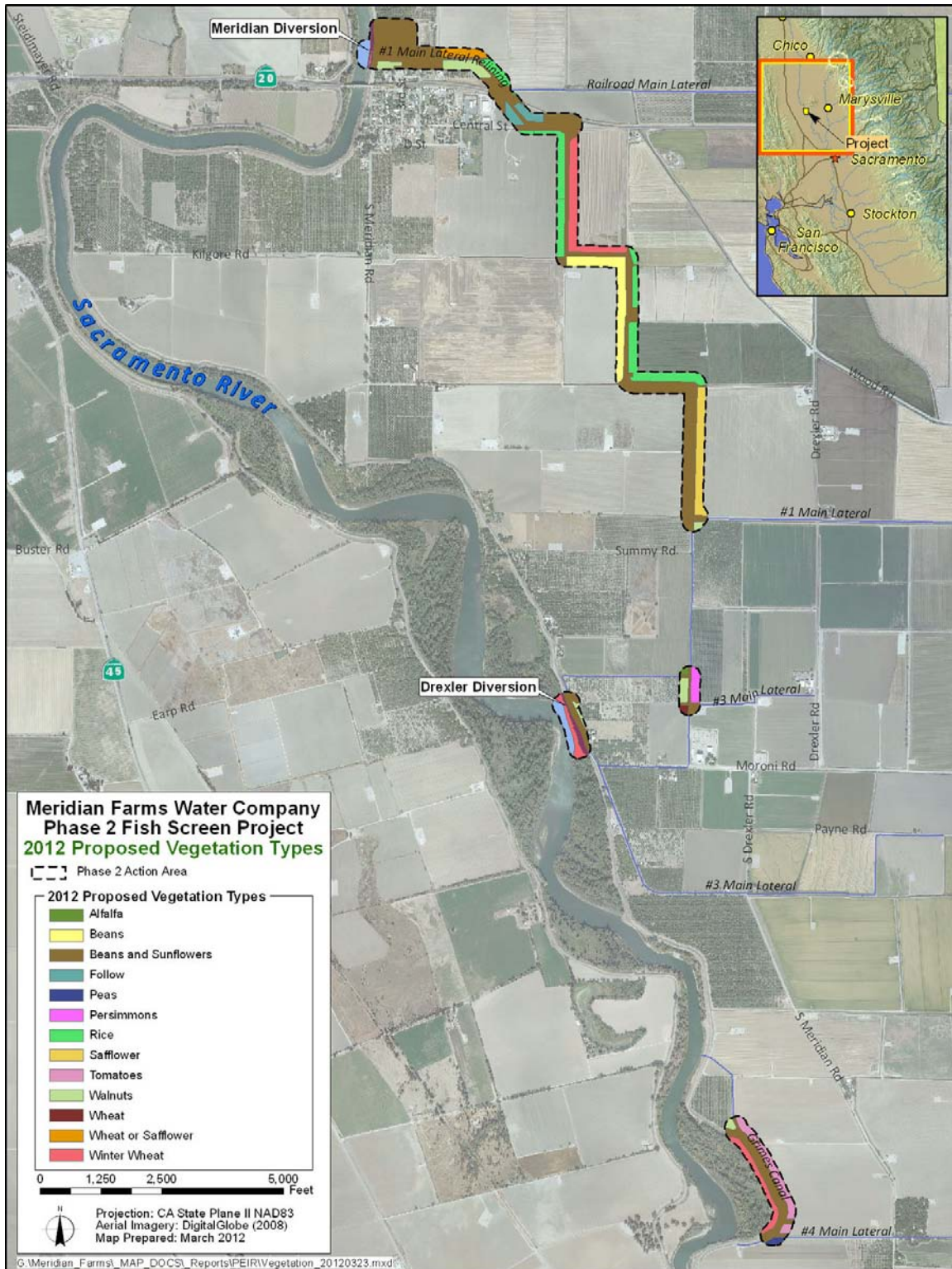


Figure 3-1

Valley riparian habitats provide food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. At least 50 amphibians and reptiles and 147 bird species occur in lowland riparian systems. Additionally, 55 species of mammals are known to use California's Central Valley riparian communities.

Mature riparian habitat is not located within the immediate vicinity of proposed activities near or in the Sacramento River. However, disturbed valley foothill riparian habitat does occur along the opposite bank of the existing Drexler Diversion pumping plant, which is proposed to be demolished. Mature riparian habitat also occurs in the vicinity (west) of a segment of the Grimes Canal proposed to be concrete lined.

Ruderal/Annual Grassland

In the study area, ruderal habitats dominated by non-native annual grasses occur in narrow strips adjacent to roads, canals, and the Sacramento River levee. Species in these areas include ripgut brome (*Bromus diandrus*), and wild oats (*Avena barbata*). Other common species include Johnson grass (*Sorghum halepense*), wild rye (*Leymus triticoides*), sow thistle (*Sonchus asper*), filaree (*Erodium moschatum*), mugwort (*Artemisia douglasiana*), and cocklebur (*Xanthium strumarium*). Many of these species are also found in the disturbed understory of the valley foothill riparian habitat along the Sacramento River.

Sacramento River

Within the vicinity of the project area the Sacramento River riverine habitat is characterized by fresh-water aquatic and shaded riparian. The adjacent riparian habitat has been modified by trails (both paved and unpaved), levees, and general recreation activities. The river is approximately 800 feet wide and flows year-round. Flows are relatively slow within the project area, exhibiting deep channel characteristics with levied banks. Vegetative cover/shading along the channel banks is dependant upon the adjacent habitat (i.e., exposed annual grassland or riparian habitat). Channel substrate generally consists of fine sandy-loam with sparse areas imported rip-rap along the banks used to reinforce the adjacent levees. At the proposed new diversion location the channelized river bank habitat is exposed and dominated by annual grassland, exhibiting a deep, cold and slow moving flow.

The Sacramento River in the vicinity of the proposed intake location serves as a migratory corridor for the upstream migration of adult salmon and steelhead, and the downstream migration of juvenile salmon and steelhead. Other fish species common in the Sacramento River near the proposed intake location include striped bass, threadfin shad, American shad, catfish, Sacramento pikeminnow, tule perch, sculpin, bullhead, white and green sturgeon, Sacramento splittail, and a variety of other resident fish species. The Sacramento River near Sacramento also provides habitat for a variety of invertebrates, including planktonic species such as copepods, and epibenthic species such as crawfish and amphipods.

Agricultural

The predominant land use within the project area is agriculture. Although the specific crop cultivated on a parcel of land may vary annually, the general types of crops grown in the region remain relatively consistent. The major crops include rice, safflower, sunflower, tomatoes, and beans. Hay crops, such as alfalfa, are widely grown, and orchards in the area grow walnuts and persimmons. These crops are irrigated by a series of canals that deliver water from the Sacramento River. The delivery canals within the project area are generally well maintained and concrete lined, and support minimal vegetation. There are unlined overflow ditches characterized by emergent aquatic vegetation such as cattails (*Typha latifolia*) and tules (*Scripus californicus*) that occur in the vicinity, adjacent or perpendicular to the Main Canal. All ditches owned and managed by MFWC are maintained annually, and generally lack dense upland or aquatic vegetation. A few ditches that are owned by the local Reclamation District are not maintained as regularly and support denser stands of tules and cattail. Agricultural crops and irrigation drainages provide foraging and cover habitat for a variety of wildlife such as birds, mammals, and some reptiles.

All project components are located in or adjacent to agriculture. The Main Canal and other delivery canals that are proposed for widening (increased conveyance) are surrounded by lands in active crop production. These canals are generally concrete-lined; although, in some locations, the concrete bed is damaged and there are places where the canals are unlined. The proposed Drexler Re-Lift Pumping Plant is adjacent to existing canals and ditches. Irrigation ditches lateral to the Main Canal in the vicinity of the project support emergent aquatic vegetation. Canals and ditches may provide habitat for fish, aquatic invertebrates, and aquatic snakes.

3.4.2 Special Status Species

Table 3-1 lists the species of concern, their preferred habitats, and whether, based on the activities the project proposes, a given species has the potential of being affected. Species that may be affected by the Proposed Project/Action (and are therefore addressed in detail in this document) are in bold type.

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**TABLE 3-1
SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

| Scientific Name Common Name | Federal Status | State Status | CNPS Listing | Habitat Description / Blooming Period | Potential to Occur in the Action Area |
|---|-------------------|-----------------|-----------------|--|---|
| Fish | | | | | |
| <i>Acipenser medirostris</i> North American green Sturgeon (Southern DPS) | FT | CSC | -- | Spawns in large cobble in deep and turbulent river mainstem. The Southern DPS spawns in the Sacramento River basin and in the Sacramento-San Joaquin Delta and Estuary. | High. Migratory route in the Sacramento River; also provides suitable rearing habitat in riparian bank areas. |
| <i>Hypomesus transpacificus</i> Delta smelt | FT | CT | -- | Found in the Sacramento-San Joaquin delta, Suisun bay, Carquinez Straight, and San Pablo Bay. | Unlikely. Project site outside area designated as Critical Habitat and does not have habitat required for reproduction or cover. Project site likely outside of the upstream migratory extent. |
| <i>Oncorhynchus mykiss</i> Central Valley steelhead | FT | -- | -- | Spawns in Sacramento River and tributaries where gravelly substrate and suitable water conditions occur. | High. Migratory route in the Sacramento River; also provides suitable rearing habitat in riparian bank areas. |
| <i>Oncorhynchus tshawytscha</i> Central Valley spring-run Chinook | FT | CT | -- | Spawns in Sacramento River and few select tributaries where gravelly substrate and suitable water conditions occur. | High. Migratory route in the Sacramento River; also provides suitable rearing habitat in riparian bank areas. |
| <i>Oncorhynchus tshawytscha</i> Sacramento River winter-run Chinook | FE | CE | -- | Spawns primarily in upper reaches of the mainstem Sacramento River. | High. Migratory route in the Sacramento River; also provides suitable rearing habitat in riparian bank areas. |
| Reptiles | | | | | |
| <i>Emys marmorata</i> Western pond turtle | -- | CSC | -- | Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks. | Unlikely. No suitable habitat within or adjacent to the project site. |
| <i>Thamnophis gigas</i> Giant garter snake | FT | CT | -- | Generally inhabits marshes, sloughs, ponds, slow-moving streams, ditches, and rice fields which have water from early spring through mid-fall, emergent vegetation (such as cattails and bulrushes), open areas for sunning, and high ground for hibernation and escape cover. | Moderate. Limited aquatic habitat in Main Canal, in adjacent Reclamation Drains or within adjacent seasonally inundated rice fields. Potential upland habitat in unpaved areas up to 200 feet from aquatic habitat. |
| Amphibians | | | | | |
| <i>Ambystoma californiense</i> California tiger salamander | FT | CSC | -- | Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Needs underground refuges and vernal pools or other seasonal water sources. | Unlikely. No suitable habitat within or adjacent to the project site. |
| <i>Rana aurora draytonii</i> California red-legged frog | FT | CSC | -- | Breeds in slow moving streams with deep pools, ponds, and marshes with emergent vegetation. | Unlikely. No suitable habitat within or adjacent to the project site. |

**TABLE 3-1
SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

| Scientific Name Common Name | Federal Status | State Status | CNPS Listing | Habitat Description / Blooming Period | Potential to Occur in the Action Area |
|---|-------------------|-----------------|-----------------|--|--|
| <i>Spea (=Scaphiopus) hammondi</i> Western spadefoot toad | -- | CSC | -- | Occurs seasonally in grasslands, prairies, chaparral, and woodlands, in and around wet sites. Breeds in shallow, temporary pools formed by winter rains. Takes refuge in burrows. | Unlikely. No suitable habitat within or adjacent to the project site. |
| Birds | | | | | |
| <i>Agelaius tricolor</i> Tricolored blackbird | -- | CSC | -- | Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, wheat and barley crops, and other tall herbs near fresh water. | Unlikely. Marginal riparian nesting habitat along Sacramento River banks. However, no suitable nesting habitat in the immediate vicinity of the project. |
| <i>Ardea alba</i> (nesting) Great egret | -- | -- | -- | Colonial nester in large trees. Rookery sites located near marshes, tideflats, irrigated pastures and margins of rivers and lakes. | Low. No suitable nesting habitat in the immediate vicinity of the project. Potential for species to forage within or in the vicinity of the project. |
| <i>Ardea herodias</i> (nesting) Great blue heron | -- | -- | -- | Colonial nester in tall trees, cliff sides and isolated marsh habitats. | Low. No suitable nesting habitat in the immediate vicinity of the project. Potential for species to forage within or in the vicinity of the project. |
| <i>Athene cunicularia</i> Western burrowing owl | -- | CSC | -- | Utilizes ground squirrel (or other mammal) burrows within open grasslands, prairies, savanna, or agricultural fields. | Moderate. Potential nesting habitat along the perimeter of agricultural fields and along the banks/levees of the Sacramento River. |
| <i>Branta hutchinsii leucopareia</i> Cackling (=Aleutian Canada) Goose | FD | -- | -- | Breeds in open or forested areas near water. Often found in wetlands, grasslands, or cultivated fields during migration. | Moderate. The CNDDDB (2011) records an occurrence near the project site. Marginal foraging habitat occurs in agricultural fields adjacent to project. |
| <i>Buteo swainsoni</i> Swainson's hawk | -- | CT | -- | Breeds in California's Central Valley. Winters primarily in Mexico. Typically nests in scattered trees or along riparian systems adjacent to agricultural fields or pastures. | Moderate. The CNDDDB (2011) records an occurrence near the project site. Suitable nesting habitat occurs within trees along the Sacramento River and within the Action Area. The Action Area also provides foraging for this species. |
| <i>Carduelis (Spinus) lawrencei</i> Lawrence's goldfinch | -- | -- | -- | Dry grassy slopes with weed patches, chaparral, and open woodlands; nests in trees or shrubs. | Unlikely. No suitable habitat within or adjacent to the project site. |
| <i>Charadrius montanus</i> Mountain plover (wintering) | -- | CSC | -- | In California, winters in open short grasslands and plowed agricultural fields in the Central Valley and in foothill valleys west of San Joaquin Valley, and in Imperial Valley. Winters below 1000 m (3200 ft). | Unlikely. Project area is outside of known species range. |
| <i>Circus cyaneus</i> Northern harrier | -- | CSC | -- | Forages over open ground. Nests on ground in shrubby vegetation, usually at marsh edge in emergent wetland or along rivers or lakes, but also in grasslands, grain fields, or on sagebrush flats several miles from water. | Unlikely. Forages over open ground. Nests on ground in shrubby vegetation, usually at marsh edge in emergent wetland or along rivers or lakes, but also in grasslands, grain fields, or on sagebrush flats several miles from water |
| <i>Coccyzus americanus occidentalis</i> Western yellow-billed cuckoo | FC | CE | -- | Nests in extensive riparian forests (at least 40 hectares). | Unlikely. Riparian area surrounding project site is highly fragmented. |

**TABLE 3-1
SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

| Scientific Name Common Name | Federal Status | State Status | CNPS Listing | Habitat Description / Blooming Period | Potential to Occur in the Action Area |
|---|-------------------|-----------------|-----------------|---|--|
| <i>Grus canadensis tabida</i> Greater sandhill crane | -- | CSC | -- | Open habitats, shallow lakes, and emergent wetlands. In winter also uses dry grasslands and croplands near wetlands. | Low. Potential foraging and roosting habitat within farm fields in the vicinity of the project, particularly rice fields and croplands near wetlands. Species is known to occur in the region during winter months. |
| <i>Laterallus jamaicensis coturniculus</i> California black rail | -- | CT | -- | Freshwater, brackish, or tidal salt marshes. | Unlikely. No suitable habitat within or adjacent to the project site. Project area is outside of known species range. |
| <i>Pandion haliaetus</i> Osprey | -- | WL | -- | Habitat varies greatly and usually includes adequate supply of accessible fish, shallow waters, open and elevated nest sites (10-60 feet in height), and artificial structures such as towers. Builds large platform stick nests near or in open waters such as lakes, estuaries, bays, reservoirs, and within the surf zone. | Moderate. Potential nesting habitat along the banks of the Sacramento River in the vicinity of the project. |
| <i>Plegadis chihi</i> White-faced ibis | -- | CSC | -- | Nest and forages in freshwater marshes and rivers, respectively. | Unlikely. No suitable nesting habitat within or adjacent to the project site. |
| <i>Riparia riparia</i> (nesting) Bank swallow | -- | CT | -- | Nests in holes dug in sandy cliffs and river banks near water. | Low. Potential nesting habitat along the banks of the Sacramento River in the vicinity of the project. |
| <i>Spinus lawrencei</i> Lawrence's goldfinch | -- | -- | -- | Breeds in open oak or other arid woodland and chaparral, near water. Requires open woodland or shrubland, a nearby source of water, and forb and shrub seeds. | Unlikely. Project area is outside of known species range. |
| Mammals | | | | | |
| <i>Antrozous pallidus</i> Pallid bat | -- | CSC | -- | Prefers caves, crevices, hollow trees, or buildings in areas adjacent to open space for foraging. Associated with lower elevations in California. | Unlikely. No suitable roost or maternity sites occur in the immediate vicinity of the project. |
| <i>Dipodomys californicus eximius</i> Marysville California kangaroo rat | -- | CSC | -- | Needs friable soil, grass stages of chaparral. Only found in the area of the Sutter Buttes. | Unlikely. No suitable habitat within or adjacent to the project site. |
| <i>Lasiurus blossevillei</i> western red bat | -- | -- | -- | Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging. | Unlikely. No suitable roost or maternity sites occur in the immediate vicinity of the project. |
| <i>Lasiurus cinereus</i> hoary bat | -- | CSC | -- | Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths; requires water. | Unlikely. Limited roosting habitat within forested areas along the Sacramento River; however, dense foliage for roosting is not available in the Action Area. |

**TABLE 3-1
SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

| Scientific Name Common Name | Federal Status | State Status | CNPS Listing | Habitat Description / Blooming Period | Potential to Occur in the Action Area |
|---|-------------------|-----------------|-----------------|---|--|
| <i>Myotis ciliolabrum</i> western small-footed myotis | -- | -- | -- | In association with steep limestone outcrops and talus slopes. Forages over a wide range of habitats, mostly open, arid wooded and brushy uplands near water. Seeks cover in caves, buildings, mines and crevices. | Unlikely. No suitable roost or maternity sites occur in the immediate vicinity of the project. |
| <i>Myotis yumanensis</i> Yuma myotis | -- | -- | -- | Often near reservoirs, optimal habitats are open forests and woodlands with water sources to feed over. Roosts in buildings, trees, mines, caves, bridges, and rock crevices. Maternity colonies active May through July. | Unlikely. Limited roosting habitat within forested areas along the Sacramento River; however, dense foliage for roosting is not available in the Action Area. |
| <i>Perognathus inornatus inornatus</i> San Joaquin Pocket Mouse | -- | -- | -- | Uses arid annual grassland, savanna, and desert scrub, with sandy washes, fine soils, and scattered vegetation between 1,100 and 2,000 feet in elevation. | Unlikely. Marginal vegetation along irrigation ditch and not within the required elevation range. |
| Invertebrates | | | | | |
| <i>Branchinecta conservatio</i> Conservancy fairy shrimp | FE | -- | -- | Lifecycle restricted to large, cool-water vernal pools with moderately turbid water. | Unlikely. No suitable habitat within or adjacent to the project site. |
| <i>Branchinecta lynchi</i> Vernal pool fairy shrimp | FT | -- | -- | Lifecycle restricted to vernal pools. | Unlikely. No suitable habitat within or adjacent to the project site. |
| <i>Lepidurus packardii</i> Vernal pool tadpole shrimp | FE | -- | -- | Found in vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, or ditches. | Unlikely. No suitable habitat within or adjacent to the project site. |
| <i>Cicindela hirticollis abrupta</i> Sacramento Valley (Hairy-necked) tiger beetle | -- | -- | -- | Larvae and usually adults occur on sand bars, sandy shores, flood scours etc. immediately associated with rivers. Requires fine sand that is damp at, or a few centimeters below, the surface, and sparse or absent vegetation. Habitats must also not be subject to inundation for more than a few days at a time. | Unlikely. The project site habitat conditions are not suitable for this species. |
| <i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle | FT | -- | -- | Breeds and forages exclusively on blue elderberry shrubs (<i>Sambucus mexicana</i>) below 3,000 feet in elevation. | Unlikely. No elderberry shrubs with stems measuring at least one inch in diameter occur within 100 feet of the Proposed Project/Action. |
| Vascular Plants | | | | | |
| <i>Astragalus tener</i> var. <i>ferrisiae</i> Ferris's milk-vetch | -- | -- | 1B.1 | Vernally mesic meadow and seeps, and sub alkaline flats in valley and foothill grasslands. 5-75 meters elevation / April-May | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Atriplex cordulata</i> Heartscale | -- | -- | 1B.2 | Chenopod scrub, alkali seasonal wetlands, and grassland. Often found in the sandy soils of alkaline flats and scalds in the Central Valley / April-October | Unlikely. No suitable habitat within the immediate vicinity of the project site. |

**TABLE 3-1
SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

| Scientific Name Common Name | Federal Status | State Status | CNPS Listing | Habitat Description / Blooming Period | Potential to Occur in the Action Area |
|---|-------------------|-----------------|-----------------|--|--|
| <i>Atriplex depressa</i> Brittlescale | -- | -- | 1B.2 | Chenopod scrub, valley and foothill grasslands, meadows and seeps / May-October | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Atriplex joaquiniana</i> San Joaquin saltbrush | -- | -- | 1B.2 | Chenopod scrub, valley and foothill grasslands, meadows and seeps / April-October | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Atriplex minuscula</i> Lesser saltscale | -- | -- | 1B.1 | Annual herb occurring in chenopod scrub, playas, and in valley and foothill grassland with sandy, alkaline substrate. Found at 15-200 meters elevation / May-October | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Atriplex persistens</i> Vernal pool smallscale | -- | -- | 1B.2 | Found in alkaline vernal pools, 10-115 m elevation / June-October | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Atriplex subtilis</i> Subtle orache | -- | -- | 1B.2 | Valley and foothill grassland up to 400 feet in elevation. | Unlikely. Project is outside of known species range. No records of species occurrence within Sutter County. |
| <i>Brasenia schreberi</i> Watershield | -- | -- | 2.3 | Freshwater marshes and swamps. 30-2200 m elevation / June-September | Unlikely. No suitable habitat within the immediate vicinity of the project site. No records of species occurrence within Sutter County. |
| <i>California macrophylla</i> Round-leaved filaree | -- | -- | 1B.1 | Valley grasslands and foothill woodlands, 0-3937 feet in elevation / March – May. | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Castilleja rubicundula</i> ssp. <i>rubicundula</i> Pink creamsacs | -- | -- | 1B.2 | Annual herb occurring in open areas of chaparral, in cismontane woodland, in meadows and seeps, and on serpentinite substrate in valley and foothill grassland. Found at 20-900 m elevation / April-June | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Centromadia parryi</i> ssp. <i>parryi</i> Pappose tarplant | -- | -- | 1B.2 | Vernally mesic, often alkaline sites in coastal prairies, meadows and seeps, coastal salt marshes, and valley and foothill grasslands. 2-420m. | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Chloropyron palmatum</i> Palmate-bracted bird's-beak | FE | CE | 1B.1 | Chenopod scrub, valley and foothill grassland, often alkaline sites. | Unlikely. No suitable habitat within the immediate vicinity of the project site. No records of species occurrence within Sutter County. |
| <i>Cuscuta obtusiflora</i> var. <i>glandulosa</i> Peruvian dodder | -- | -- | 2.2 | Freshwater marshes and swamps at 15-280 meters / July-October | Unlikely. No suitable habitat within the immediate vicinity of the project site. No records of species occurrence within Sutter County. |
| <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i> Rose mallow | -- | -- | 1B.2 | Marshes and freshwater swamps / June-September | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields | -- | -- | 1B.1 | Annual herb occurring in coastal salt marshes and swamps, playas, and vernal pools. 1-1220 m elevation. / February-June | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Layia septentrionalis</i> Colusa layia | -- | -- | 1B.2 | Annual herb occurring in chaparral, cismontane woodland, and valley and foothill grassland on sandy, serpentine substrate. 100-1095 m elevation / April-May | Unlikely. No suitable habitat within the immediate vicinity of the project site. |

**TABLE 3-1
SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

| Scientific Name Common Name | Federal Status | State Status | CNPS Listing | Habitat Description / Blooming Period | Potential to Occur in the Action Area |
|--|-------------------|-----------------|-----------------|---|---|
| <i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia | -- | -- | 1B.1 | Annual herb occurring in cismontane woodland, lower montane coniferous forest, meadows and seeps, Valley and foothill grassland, and vernal pools / May-July | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Silene verecunda</i> San Francisco campion | -- | -- | 1B.2 | Perennial herb occurring in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, and in Valley foothill grassland in sandy substrate. 30-645 m elevation / March-June (uncommon in August) | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Trichocoronis wrightii</i> var. <i>wrightii</i> Wright's Trichocoronis | -- | -- | 2.1 | Primarily associated with alkali floodplains of the San Jacinto River in association with Willows, Domino, and Traver soils. | Unlikely. No suitable habitat within the immediate vicinity of the project site. |
| <i>Wolffia brasiliensis</i> Brazilian watermeal | -- | -- | 2.3 | Shallow freshwater marshes and swamps at 30-100 meter elevation / April-December | Unlikely. No suitable habitat within the immediate vicinity of the project site. |

SOURCE: USFWS (12/2011), CDFG (12/2011), CNPS (12/2011).

Notes:

The "Potential for Effect" category is defined as follows:

| | |
|---------------------|---|
| Unlikely: | The project site and/or immediate area do not support suitable habitat for a particular species. Project site is outside of the species known range. |
| Low Potential: | The project site and/or immediate area only provide limited habitat for a particular species. In addition, the known range for a particular species may be outside of the Proposed Project/Action Area. |
| Moderate Potential: | The project site and/or immediate area provide suitable habitat for a particular species. |
| High Potential: | The project site and/or immediate area provide ideal habitat conditions for a particular species. |

Species that have medium or high potential to be impacted by the proposed project are shown in boldface type.

STATUS CODES:

FEDERAL:

| | | |
|-----|---|---|
| FE | = | Listed as "endangered" under the federal Endangered Species Act |
| FT | = | Listed as "threatened" under the federal Endangered Species Act |
| FSC | = | NMFS designated "species of concern" |
| FPD | = | Proposed delisted |
| FD | = | Delisted |

STATE:

| | | |
|-----|---|--|
| CE | = | Listed as "endangered" under the California Endangered Species Act |
| CT | = | Listed as "threatened" under the California Endangered Species Act |
| CSC | = | California Department of Fish and Game designated "species of special concern" |
| CFP | = | California Department of Fish and Game designated "fully protected" |
| WL | = | California Department of Fish and Game designated "watch list" |

CNPS:

| | | |
|---------|---|---|
| List 1B | = | Plants rare, threatened, or endangered in California and elsewhere |
| List 2 | = | Plants rare, threatened, or endangered in California, but more common elsewhere |
| List 3 | = | Plants about which we need more information--a review list |
| List 4 | = | Plants of limited distribution--a watch list |

North American Green Sturgeon

Sturgeon are an anadromous fish species, spending the majority of their life in marine waters and then moving into freshwater throughout the fall and winter to spawn in the spring. Upon hatching the young green sturgeon develop in the fresh water and are known to return to the ocean within one to four years (COSEWIC, 2004). Historically, green sturgeon were found in the lower reaches of the San Joaquin River and Delta. Today, they occur in the upper Sacramento River and tributaries to the Sacramento River including the Feather, Yuba and American Rivers. Green sturgeon are frequently caught along the coast; but are present in limited numbers in the estuaries (COSEWIC, 2004).

Green sturgeon have diverse habitat needs ranging from freshwater streams, rivers, estuarine habitat as well as marine waters depending upon their life stage. The specific habitat requirements for green sturgeon are poorly understood but are thought to resemble those of white sturgeon. Green sturgeon spawning is thought to occur in deep pools in areas of large cobbles, but can range from clean sand to bedrock in turbulent river mainstems. The larger eggs and higher growth rates of developing green sturgeon in comparison to white sturgeon suggest that a higher oxygen demand may be required for proper embryonic development. Therefore, green sturgeon may subsequently require colder, cleaner water for spawning relative to white sturgeon (COSEWIC, 2004).

On April 7, 2006, National Oceanic and Atmospheric Administration /U.S. National Marine Fisheries Service (NMFS) listed the Southern Distinct Population Segment (DPS) of the North American green sturgeon as threatened. Final Critical Habitat for the green sturgeon was designated on October 9, 2009.

Central Valley Steelhead

The Sacramento and San Joaquin Rivers offer the only migration route to the drainages of the Sierra Nevada and southern Cascade mountain ranges for steelhead. Information on migration and spawning tendencies of steelhead is difficult to determine due to the low abundance of spawners and the high flows and turbid waters occurring during winter spawning periods. NMFS reports limited data on the recent abundance of this evolutionarily significant unit (ESU), but its present total run size based dam counts, hatchery returns, and past spawning surveys is probably less than 10,000 fish (NMFS, 1996). The most widespread run type of steelhead is in the winter (ocean-maturing) steelhead. Winter steelhead occurs in essentially all coastal rivers in California, while summer steelhead is far less common. In California, both winter and summer steelhead generally begin spawning in December. Spawning occurs December through April in the Sacramento River mainstem and tributaries. Eggs are buried by the females in the loose gravel, usually at the lower end of a pool. Newly hatched larvae initially stay in the gravel nesting area until their yolk sacs are absorbed (about two weeks) and then move into adjacent shallow and quiet pools. Juvenile steelhead remain in freshwater streams from one to three years before entering the ocean. Downstream migration predominantly occurs during fall and spring. Generally, steelhead will return to their natal streams in one to three years.

Adult steelhead typically migrate upstream within the Sacramento River during the winter (November - January) to spawning areas upstream of the proposed diversion location and juvenile smolts migrate downstream during the spring (March – May). Steelhead inhabit the upper Sacramento River and occur seasonally in the vicinity of the proposed diversion location. Within the immediate vicinity of the Proposed Project/Action, there is limited quality juvenile rearing habitat (riverine aquatic habitat) in the Sacramento River. Areas of shaded riverine aquatic are most likely to provide rearing habitat. Riparian habitat occurring along the river banks in the area provides more suitable rearing opportunities, and is located at the existing Drexler Diversion and west of the Grimes canal within the Action Area.

On September 2, 2005, NMFS issued the final designated critical habitat for Central Valley steelhead. The project area is located within the Colusa Basin Hydrologic Unit (5520) of Critical habitat for Central Valley steelhead. This unit includes the Sacramento River upstream to and including: Tisdale Bypass, Butte Creek, Butte Slough, Nelson Slough, Sacramento Slough, Sutter Bypass, Colusa Bypass, Little Chico Creek, and Little Dry Creek.

Central Valley Spring-Run Chinook Salmon

Chinook salmon runs (fall-run, late fall-run, winter-run, and spring-run) are named for the time of season that upstream spawning migration occurs, and are defined by the combined timing of adult migration, the amount of time juveniles reside in a stream, and the time of year the smolts migrate out to sea. Timing of adult upstream migration varies within individual runs depending upon the region (Yoshiyama, 1998). Central Valley spring-run Chinook enter the Sacramento River system from March to July, and spawning occurs from late August through early October (Yoshiyama, 1998). Due to the longer period of time between upstream migration and spawning, spring-run Chinook must hold out in the cold temperatures of mountain headwaters to avoid excessive summertime temperatures of the valley and foothills. Spring-run ascent to mountain elevations can only be accomplished if there are no obstructions within the drainage system preventing passage.

Life histories (migration, holding, spawning, rearing, and juvenile emigration) of Chinook salmon vary within the separate runs, but essential habitat requirements including substrate, temperature, dissolved oxygen, stream flow, and water quality are consistent throughout the runs. Chinook salmon require a water temperature from 43° to 56° F to successfully spawn (Boles, 1988). Spawning can occur in habitats ranging from small tributaries to large river beds, and generally requires coarse gravel riffles. Chinook salmon eggs incubate in the gravel for approximately 35 to 50 days, depending on the temperature. The newly emerged fry remain in the gravel until most of the yolk sac is absorbed.

Successful rearing of juvenile Chinook requires cool streams/rivers with significant vegetative cover providing shade for protection from predation. Emigration strategies within the Sacramento-San Joaquin system can vary depending on the time of emergence. Spring-run emigration timing is dependant upon the tributaries of origin, and can occur through the period of November through June. Based upon Butte Creek research conducted by CDFG, over 95% of spring-run emigrate as

fry/young-of-the-year. Only a small portion of the population will over-summer emigrating the subsequent fall as yearlings (McReynolds et al., 2006).

Sacramento River Winter-Run Chinook Salmon

Winter-run Chinook salmon generally begin migrating upstream from December through February and hold-over in the river system (Sacramento River) for a couple of months before peak spawning occurs between May and July (Groot 1998). Temperatures must be suitable for the winter-run to hold over. Winter-run Chinook emigration to the Delta has been known to occur from November through April, after only four to seven months of river life (Groot 1998). Juveniles may exhibit a sustained residence in the middle or lower Sacramento River or Upper Delta prior to seaward migration.

Adult winter-run typically migrate to spawning areas upstream of the proposed diversion location, and occur seasonally in the vicinity of the proposed diversion location. In the immediate vicinity of the proposed new diversion location, suitable winter-run Chinook rearing habitat does not occur.

Critical habitat for the endangered Sacramento River winter-run Chinook ESU was designated on June 16, 1993. Critical habitat is designated to include the Sacramento River from Keswick Dam, Shasta County (River Mile 302) to Chipps Island (River Mile 0) at the westward margin of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. Major river basins containing spawning and rearing habitat for this ESU comprise approximately 9,329 square miles in California.

Adult winter-run typically migrate to spawning areas upstream of the proposed diversion location, and occur seasonally in the vicinity of the proposed diversion location. In the immediate vicinity of the proposed new diversion location, suitable winter-run Chinook rearing habitat does not occur.

Giant Garter Snake

Giant garter snake preys primarily on aquatic species such as fish and amphibians. Generally active from April through September, the giant garter snake breeds from March into May, and again briefly in September. Young are brooded internally by females, who give birth to 10 to 46 (average is 23) live young from late July into September. Young disperse into dense cover and reabsorb their yolk sacs, then begin feeding on their own. They reach sexual maturity in three to five years. From early October to April, the giant garter snake takes refuge in winter retreats and is generally not active (USFWS, 1999).

The giant garter snake is endemic to wetlands of California's Central Valley. This snake inhabits irrigation and drainage canals, rice lands, marshes, sloughs, ponds, small lakes, low-gradient streams, and adjacent uplands. The snake requires enough water during their active season to maintain high densities of prey; emergent wetland vegetation for cover and foraging; and adjacent uplands and

openings in streamside vegetation for basking sites. Higher uplands are used for cover and refuge from floodwaters during their non-active season. The giant garter snake is typically absent from wetlands with sand, gravel, or rock substrates, and from riparian woodlands.

The giant garter snake population was probably always disjunct, with a southern population occurring from the vicinity Buena Vista Lake in Kern County to Merced County, and a northern population occurring from San Joaquin County to Butte County. To the east and west, the populations were probably confined by the foothills of the Sierra Nevada Mountains and the Coast Ranges. There are 13 separate populations presently recognized by the USFWS, coinciding with historic flood basins and tributary streams in the Central Valley (USFWS, 1999). These populations are discontinuously distributed from the Fresno area in the south to Butte Creek in the north. Dispersal corridors do not exist between the populations.

Giant garter snakes have been recorded in one location near the Proposed Project/Action Area. The record dates back to 1983 and is approximately six miles southwest of the Proposed Project/Action Area (CNDDDB, 2011). No giant garter snakes were observed during field reconnaissance for this project; however, given the cryptic and evasive nature of this species, determination of presence more often relies on the habitat characteristics, the most current information about the extant range of the species, surrounding locality records, and the biology and ecology of the giant garter snake.

Agricultural land use within the region generally provides suitable giant garter snake habitat, with abundant rice fields and associated irrigation ditches, rodent burrows for upland refugia, and open upland areas for basking. Within the project area, there are several types of drainage ditches that border various types of crops and in rice fields as well. Available emergent or aquatic vegetation for cover and basking varies with each ditch, the season, and the operations of MFWC. Also, installation of fish screens may reduce available fish prey for the giant garter snake by preventing fish entrainment into the irrigation system. Potential giant garter snake habitats are described in detail within the ASIP in Appendix B (see ASIP Section 3.1.5). Within the Action Area, all habitats within 200 feet of suitable giant garter snake aquatic habitat are considered either aquatic or upland habitat for the snake. However, upland areas that are covered by a walled structure such as a building or more than 200 feet from suitable aquatic habitat are generally not considered suitable habitat for giant garter snake.

Western Burrowing Owl

Western burrowing owls inhabit open grasslands and shrub lands with perches and burrows. These owls eat mainly insects, with small mammals, reptiles, and birds making up a portion of the diet as well. For cover and breeding, old rodent burrows, as well as debris piles are used. The western burrowing owl generally breeds from March through August, peaking in April and May.

In the Proposed Project/Action vicinity, potential nest/burrow sites occur along the adjacent agricultural fields as well as the exposed banks and levees of the Sacramento River and drainage canals.

Cackling (=Aleutian Canada) Goose

The cackling goose is a small, island-nesting subspecies of the Canada goose. This subspecies nests on the Aleutian Islands and winters in the Central Valley where it forages in meadows, agricultural fields, pastures, and moist grasslands near open water (lakes and ponds) and wetlands. The cackling goose was federal-listed endangered in 1967 due to a severe decline in populations. Hunting and loss of migration and wintering habitat contributed to this species' decline, although the introduction of Arctic and red foxes to the breeding islands was the main reason for population decline. However, due to reintroductions of wild geese onto fox-free islands and other conservation efforts, populations of cackling goose have recovered from approximately 6,300 individuals in 1989 to 37,000 individuals in 1999 (Kraege, 2005). The cackling goose was reduced to federal-listed threatened status in 1989, and finally delisted in 2001 (FR 66:54, 15642-15656, March 2001). Monitoring of goose populations will continue for 5 years after delisting, as required by the Endangered Species Act to ensure full recovery of the species. The cackling goose is still protected under the Migratory Bird Treaty Act, and is a federal species of concern.

Within the Proposed Project/Action Area, suitable foraging habitat exists in the surrounding agricultural fields along the Sacramento River and the MFWC Service Area. The only occurrence in the CNDDDB (2011) is from 1978, documenting this species at Davis Ranch, 5 miles north of Grimes and within two miles of the MFWC service boundary.

Swainson's Hawk

The Swainson's hawk is a migratory raptor listed as threatened by the State of California, and federally as a species of special concern. It breeds in western North America and winters for the most part in South America. It nests in trees, usually in riparian areas, but forages over pasturelands and open agricultural fields. In the Central Valley it is associated with riparian corridors adjacent to field crops and grasslands and subsists largely on small mammals, especially California vole, California ground squirrel, and large insects. Suitable foraging habitat within an energetically efficient flight distance from active Swainson's hawk nests has been found to be of great importance. Because the prey base for Swainson's hawk is highly variable from year to year, depending on cycles of agriculture, rainfall, and other natural cycles, large acreages of potential foraging habitat must be allotted per breeding pair.

The decline of the species in the Central Valley has been associated with extensive reduction of Swainson's hawk habitat. Suitable foraging habitat is present within the Proposed Project/Action Area in agricultural fields, where populations of prey species are supported. Suitable nesting habitat occurs within the riparian woodland habitats adjacent with the Proposed Project/Action site. Large valley oak and cottonwood trees occur adjacent to the river on the bank opposite from the proposed intake structures and fish screens. The most recent CNDDDB (2011) occurrence for Swainson's hawk within the MFWC service boundary was observed in 1989 within riparian forest along the Sacramento River, approximately 0.5-mile north of Grimes. Within two miles of the MFWC service area, an active nest was observed in a strip of riparian forest on the north bank of the Sacramento River, east of Colusa. One active nest was observed in 2003, located on the west side of the Sacramento

River at Twenty Mile Bar, 2.3 miles north of Grimes. The active nest was approximately 0.5 miles south of the existing Drexler Diversion and Pumping Plant.

Osprey

The osprey is a migratory raptor that occurs in northern California from Cascade Ranges south to Lake Tahoe and along the coast south to Marin County. The osprey arrives in California around mid-March to early April and begins breeding activities until September. Ospreys use large trees, snags, and dead-topped trees in open forest habitats for cover and nesting. Nests are platforms of sticks located high above ground, sometimes reaching as much as 250 feet tall. Breeding population was estimated in 1975 at 350-400 pairs in Northern California; numbers of breeding pairs have increased in recent years (Zeiner et al., 1988-1990).

The osprey preys primarily on fish; sometimes mammals, birds, reptiles, amphibians, and invertebrates. This species require open, clear waters for foraging. Suitable foraging habitat includes rivers, lakes, reservoirs, bays, estuaries, and surf zones (Zeiner et al., 1988-1990).

In the general Proposed Project/Action Area there is potential for nesting along the banks of the Sacramento River. There are no CNDDDB occurrences of osprey within the MFWC service area.

Bank Swallow

The bank swallow is the smallest North American swallow, with a body length of about 4.75 inches. The bank swallow nests in colonies and creates nests by burrowing into vertical banks consisting of fine-texture soils. Bank swallows breed in California from April to August and spend the winter months in South America. Currently, bank swallows are locally common only in restricted portions of California where sandy, vertical bluffs or riverbanks are available for the birds to dig their burrows and nest in colonies. Most of California's remaining populations nest along the upper Sacramento River where it still meanders in a somewhat natural manner. In this alluvial plain, the river system provides suitable soil types and erosion needed for prime nesting habitat. Seventy-five percent of the State's population is concentrated on the banks of Central Valley streams, including several colonies on the Sacramento River.

Since 1900, the range of bank swallows in California has been reduced by approximately 50 percent largely attributed to habitat loss. The rip-rapping of natural stream banks is the single most serious, human-caused threat to the long-term survival of the bank swallow in California. Existing colonies and areas of potential habitat may be lost over the next several years if current planning is implemented. Rip-rap installed by the U.S. Corps of Engineers (Corps) under the Sacramento River Bank Protection Project has already affected almost 150 miles of Sacramento River bank since 1960. Additional rip-rap proposed under this project may result in extensive loss of essential, eroding bank habitat.

On the Sacramento River, bank swallow populations continue to decline. Based on an average occupancy rate of about 45 percent of all burrows dug into river banks, an estimated population of 13,170 pairs of bank swallows nested in Sacramento River habitats in 1986. In 1998 the population

reached its lowest level of 4,990 pairs and then rebounded dramatically in 1999 to 8,210 pairs regaining some habitat from which it was extirpated (in 1998) on the lower end of its Sacramento River range. The significance of the apparent turnaround may not be known for a few years if it continues. The 1999 result may be a beginning of an expanding population boom for the species or just a momentary upswing. Further monitoring will be necessary to determine the true population trend, if any. Currently, the status of the bank swallow is still considered declining (CDFG, 2000).

In the general Proposed Project/Action Area there is potential for nesting along the banks of the Sacramento River. The CNDDDB documents two occurrences of bank swallow within the MFWC service area. The most recent observation is from 1987; approximately 0.5-mile north of Grimes a colony of bank swallows was observed nesting in the river bank. There are three more observations, dated 1986-1987, of nesting colonies within two miles outside of the MFWC service area. The bank swallow prefers steep, open cliff-like banks for nesting. However, at the location of the proposed Meridian diversion and pumping plant, the shore slopes gradually up to the levee and is largely vegetated with annual grasses.

3.5 Cultural Resources

3.5.1 Prehistory

Central California archaeology has been described as a series of patterns. Fredrickson (1973) defines pattern as an essentially nontemporal, integrative cultural unit — the general life way shared by people within a given geographic region. Specifically, three such patterns which overlap somewhat in adjoining areas are recognized for central California: the Windmill, Berkeley, and Augustine Patterns.

The Windmill Pattern, which may represent the advent of early Penutian speaking populations extends from approximately 4,500 to 3,000 B.P. This pattern was focused primarily on the lower Central Valley and Delta regions and reflects the influence of a lacustrine or marsh adaptation. This economic stance may have preadapted them for the environment of the lower Sacramento-San Joaquin Valley and Delta and may have entered the region with this adaptation more or less fully developed.

The Berkeley Pattern extends roughly from 3,000 to 1,500 B.P. and became more widespread or at least more archaeologically visible than the antecedent complex. The Berkeley Pattern has a greater emphasis on the exploitation of the acorn as a staple. The Berkeley Pattern initially may represent the spread of proto Miwok and Costanoans, collectively known as Utians, from their hypothesized lower Sacramento Valley/Delta homeland.

The last complex in this sequence is the Augustine Pattern which extended temporally from circa 1,500 B.P. to European contact. Augustine initially appears to be largely an outgrowth of the Berkeley Pattern but may have become a blend of Berkeley traits with those carried into the state by the migration of Wintuan populations from the north (Moratto, 1984).

3.5.2 Ethnographic Background

The project area was once inhabited by the Patwin Indians, who held an extensive region within north-central California. Patwin territory included the lower portion of the west side of the Sacramento Valley west of the Sacramento River from about the location of the town of Princeton in the north to Benicia in the south (Kroeber, 1925). The Patwin were bounded to the north, northeast, and east by other Penutian-speaking peoples (the Nomlaki, Wintu, and Maidu, respectively), and to the west by the Pomo and other coastal groups. Within this large territory, the Patwin have traditionally been divided into River, Hill and Southern Patwin groups, although in actuality a more complex set of linguistic and cultural differences existed than is indicated by these three geographic divisions. Near the project area, the Patwin are believed to have reached the Carquinez/Suisun area by about 1,500 B.P. (Whistler, 1977; McCarthy, 1985).

As with most of the hunting-gathering groups of California, the “tribelet” represented the basic social and political unit. Typically, a tribelet chief would reside in a major village where ceremonial events were also typically held. The status of such individuals was inherited patrilineally among the Patwin, although village elders had considerable power in determining who actually succeeded to particular positions. The chief’s main responsibilities involved administration of ceremonial and economic activities. Such individuals often decided when and where various fishing, hunting or gathering expeditions would occur, and similarly made the critical decisions concerning the more elaborate ceremonial activities. He also played a central role in resolving conflicts within the community or during wars which occasionally broke out with neighboring groups. Apparently, a Patwin chief had more authority than his counterparts among many of the other central California groups (McKern, 1922; Kroeber, 1925).

The onslaught of Euro-American culture brought the end of Patwin culture. By 1871–72, when Stephen Powers surveyed the state gathering ethnographic information, the Patwin culture appeared to him to be virtually extinct.

3.5.3 Historic Setting

The first European to see the Sutter Buttes was Gabriel Moraga, a Spaniard trying to locate mission sites in 1808. Another Spaniard, Luis Arguello, led an expedition in 1817 to explore Northern California by water and called the Buttes *Los Picacho* or “the peaks.” He also named the Feather River *El Rio de las Plumas*, due to the quantities feathers he observed in the river. In 1828, the renowned mountain man Jedediah Smith trapped in the vicinity of the Buttes. It was in 1833 a brigade of French fur trappers from the Hudson Bay Company first referred to these mountains as the “buttes.” This group is purportedly responsible for the introduction of the small pox virus to the Native American population. This had a decimating effect on the local indigenous populations (Sutter County, 1996).

The town of Meridian was founded in 1852 by Lewis O’Neill who built a crude cabin to the south of present-day Main Street. In 1857, a settler named John F. Fouts came to Meridian and, in 1860, established a ferry over the Sacramento River. By 1862, the settlement became known as Fout’s

Ferry. “However, W. C. Smith arrived and the growing town was renamed Meridian, being barely one-fourth mile from the Meridian Line of the U.S. Survey of California, which stretches from Mt. Diablo baseline through the Sacramento Valley. In 1879 there were 120 residents of the town which was a regular stop for the stage and mail pick-up station between Marysville and Colusa which continued through the early 1900’s with the addition of the Sacramento Northern Railroad line. Meridian was also the center for riverboats to load and unload cargo for the rich farming area” (Sutter County, 1996).

The Sacramento Valley remained relatively isolated and sparsely populated until the advent of the Gold Rush period. But, with Sacramento’s proximity to mining areas, and its accessibility to maritime traffic, the area quickly became a trading and economic center. Sutter County itself experienced little mining, but was attractive for its agricultural potential and was primarily settled by former miners who became interested in agriculture after 1860. The burgeoning commerce along the Sacramento River encouraged continued population growth, with many of the miners and farmers settling along the natural levees of the Sacramento River. The settlements recognized that the active flood plain deposited fertile soils in the lands nearest to the river, which supported bountiful crops and provided easy access to transportation corridors along the river itself. When floods continued to beset agricultural activities in the area, a comprehensive flood control plan was designed and implemented by 1912 and irrigation projects were initiated and continue to the present time.

3.5.4 Known Cultural Resources

The effort to identify cultural resources in the area of the Proposed Project/Action included a cultural resources records search, contacts with Native Americans, and a field reconnaissance conducted by Registered Professional Archaeologists. The records search, which consisted of a review of all pertinent survey and site data was conducted at the Northeast Information Center at California State University, Chico on April 7, 2004 (IC File # D04-20). The records were accessed by utilizing the Meridian and Grimes USGS 7.5-minute quadrangle maps, T14N, R1E; T15N, R1E; and T15N, R1W in Sutter County. The review included the Proposed Project/Action footprint (proposed pump locations, existing pump locations, and proposed pipelines and canals) as well as a ¼ mile around the Proposed Project/Action locations. The records search included a review of the Directory of Properties in the Historic Property Data File for Sutter County for information on sites of recognized historical significance within the National Register of Historic Places, the California Register of Historic Resources, the California Inventory of Historic Resources (1976), the California Historical Landmarks (1996), and the California Points of Historical Interest (1992). The records search indicated that no archaeological or historical resources have been previously recorded within the boundaries of the Proposed Project/Action, but that most of the area has not been previously inspected for the presence of these resources. The records search also indicated that one historical resource (the Meridian Railroad Depot) has been recorded within ¼ mile of the Proposed Project/Action.

The Native American Heritage Commission was contacted on March 11, 2004 and again on November 7, 2007 to request a search of their Sacred Lands File and for a list of Native Americans that should be contacted concerning the Proposed Project/Action. A letter was sent to each individual

or organization on the list on March 26, 2004 and again in November, 2007. To date, no responses have been received.

An archaeological field inspection of the project area was conducted on May 7, 2004 by two ESA Registered Professional Archaeologists. The surface of the locations of proposed pump facilities, existing pump facilities that would be removed, and proposed pipeline and canal alignments were inspected using systematic survey transects spaced approximately 10 to 15 meters apart. Segments of the existing canal that will be rehabilitated were inspected using cursory survey techniques.

The cultural resources field reconnaissance conducted for the Proposed Project/Action resulted in the identification of no potentially significant historical or archaeological resources in the project area. A small, concrete-lined irrigation canal extending south from the existing Meridian pumping facility was noted. Although an exact date of construction of this canal is not known, available information indicated that it was built in 1964 (Hargrove Personal Communication) and is not yet 50 years old. Other existing facilities that were examined included the existing Meridian pumping facility, also built in 1964; the existing Drexler pumping facility, a minimal structure which was moved to its present location; and the existing Grimes pumping facility, also a minimal structure that has been modified several times since its original construction in the 1920s. No archaeological remains were identified as a result of the field reconnaissance.

On January 23, 2008, Reclamation initiated National Historic Preservation Action (NHPA) Section 106 Consultation with the California State Historic Preservation Officer (SHPO). Reclamation concluded that both Phase 1 and Phase 2 of the Proposed Project/Action would not result in an affect to historic properties. On February 5, 2008, SHPO concurred with these findings.

3.6 Geology, Soils, and Seismicity

Published geologic mapping indicates that the project area is underlain by Quaternary age natural levee and river deposits within the floodplain of the Sacramento River. No faults are shown on published mapping to pass through the project area. The nearest mapped faults are the Coast Ranges-Sierran Block Boundary Zone (or Great Valley fault) to the west and elements of the Foothill fault system to the east. The project area is within Seismic Zone 3 and peak ground acceleration is anticipated to be 0.14g with 10 percent chance of exceedance in 50 years (MWH, 2008).

Soils encountered in the test borings consist mostly of clay with silty and sandy zones – identifiable with Sacramento River basin deposits. The consistency of these soils is typically soft to stiff with relatively common zones of very soft consistency and one occasion of “hard” materials. In sandy zones, native soils were found to be persistently very loose. Soils along the project area are considered adequately stable and capable of supporting the proposed improvements. No site specific geologic hazards (landslides, active faults, etc.) are indicated. The primary geotechnical considerations for design and construction are expected to include shallow groundwater and the potential compressibility, low strength and shrink/swell characteristics of native soils (MWH, 2008).

3.7 Greenhouse Gas Emissions/Climate Change

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, similar to a greenhouse. The accumulation of GHGs has been implicated as a driving force for Global Climate Change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and the impact of human activities that alter the composition of the global atmosphere. Both natural processes and human activities emit GHGs. Global Climate Change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, the vast majority of the scientific community now agrees that there is a direct link between increased emission of GHGs and long term global temperature. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. GHG impacts are considered to be exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (California Air Pollution Control Officers Association, 2008).

Carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) are the principal GHGs, and when concentrations of these gases exceed natural concentrations in the atmosphere, the greenhouse effect may be enhanced. CO₂, CH₄ and N₂O occur naturally, but are also generated through human activity. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing associated with agricultural practices and landfills. Other human generated GHGs, which have much higher heat-absorption potential than CO₂, include fluorinated gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆) which are byproducts of certain industrial processes. The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential (GWP),¹ and is expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG emissions are typically measured in terms of pounds or tons of CO₂e.

3.8 Hazards/Hazardous Materials

Information about hazardous materials sites in the Proposed Project Area was collected by conducting a review of the California Environmental Protection Agency's (Cal EPA) Cortese List Data Resources (Cortese List). The Cortese list includes the following data resources that provide information regarding the facilities or sites identified as meeting the Cortese list requirements: the list of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database; the list of Leaking Underground Storage Tank (LUST) sites from GeoTracker database; the list of solid waste disposal sites identified by Water Board; the list of active Cease and

¹The potential of a gas or aerosol to trap heat in the atmosphere.

Desist Orders and Cleanup and Abatement Orders from Water Board; and the list of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code identified by DTSC. The Cortese List is a reporting document used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. The Cortese List is updated at least annually, in compliance with California regulations (California Code Section 65964.6(a)(4)). The Cortese List includes federal superfund sites, state response sites, non-operating hazardous waste sites, voluntary cleanup sites, and school cleanup sites.

Only one open site was found within one mile of the Proposed Project/Action. The site is listed as inactive. Potential contaminants of concern are listed as: other inorganic/salt. Two other sites listed sites were related to leaking underground storage tanks (LUST); however, cleanup has been completed and the cases are now closed (DTSC, 2011).

3.9 Hydrology and Water Quality

MFWC received a License (No. 4676-B) from the State of California, State Water Rights Board in 1955 to divert water from the Sacramento River under the provisions of a License for Diversion and Use of Water. This license recognizes a priority date of September 10, 1918. The License, as amended in 1992, provides for the irrigation on approximately 9,150 acre service area, and allows for a diversion flow of 138 cfs from a period of about March 1 through about November 1. Historical monthly diversion usage for MFWC for the years 1982 to 2000 based upon the Water Account Record data as recorded by Reclamation indicate that diversion demands reach levels of 165 cfs on a short-term basis primarily due to the need to accommodate flood-up deliveries for rice fields and to meet peak short-term demands.

MFWC diverts water from the Sacramento River under the terms of a Contract for Project Water Service and Agreement on Diversion Water (Contract No. 14-06-200-838A) with Reclamation. The contract with Reclamation provides MFWC with a total annual water supply of 35,000 af, consisting of 23,000 af base supply and 12,000 af project water supply.

Surrounding land uses largely affect surface water quality, with both point-source and nonpoint-source discharges contributing contaminants to surface waters. A majority of the surrounding land area consists of agricultural land, vineyards and a small residential community to the south. Pollutant sources in residential areas include streets, roof tops, exposed earth at construction sites, automobiles and landscaped areas. Water quality impacts from construction are of particular concern. Grading for construction activity removes vegetation and exposes soil to erosion from wind and water. Erosion can result in sedimentation that ultimately flows into surface waters. Other contaminants in urban runoff include sediment, hydrocarbons, metals, pesticides, bacteria, and trash. Runoff from agricultural areas is characterized by constituents such as fertilizers, herbicides, and pesticides, and often contains bacteria, high nutrient content and dissolved solids.

3.10 Land Use and Land Use Planning

As depicted in **Figure 1-1** in Section 1, the project area is located in unincorporated Sutter County, between Interstate 5 and Highway 99, east of the Sacramento River and southwest of the Sutter Bypass. The overall project area covers the MFWC service areas near Meridian, Grimes, and Drexler. Access to the project area is provided via State Route (SR) 20 (see **Figure 2-1**). The Sacramento River depicts the western edge of the project area. Land use to the east of the Sacramento River is predominantly agricultural with scattered rural residences (see **Figure 2-1**). Denser residential clusters are located in the vicinities of Meridian and Drexler. The closest recreational facility to the Proposed Project/Action is Lovey's Landing located 2.7 miles north of Meridian on Levee Road along the Sacramento River. It provides recreational facilities including a boat launch ramp and RV campground (Sutter County General Plan, 2008).

3.11 Mineral Resources

The Sutter County Surface Mining Code and the Zoning Code provide for the extraction of mineral resources from unincorporated lands. The extraction of mineral resources in Sutter County has historically been limited to the extraction of clay, sand, soils, and rock. Construction aggregate, consisting primarily of sand, gravel, and crushed stone, is currently the County's main mining resource. No active mining operations are within the project area (Sutter County, 2008).

3.12 Noise and Vibration

Noise

Sound is mechanical energy transmitted by pressure waves through the air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called "A-weighting," referred to as dBA. In general, a difference of more than three dBA is a perceptible change in environmental noise, while a five dBA difference typically causes a change in community reaction. An increase of 10 dBA is perceived by people as a doubling of loudness (USEPA, 1974).

Cumulative noise levels from two or more sources will combine logarithmically, rather than linearly. For example, if two identical noise sources produce a noise level of 50 dBA each, the combined noise level would be 53 dBA, not 100 dBA.

Time variation in noise exposure is typically expressed in terms of the average energy over time (L_{eq}), or alternatively, as a statistical description of the sound level that is exceeded over some fraction of a given period of time. For example, the L_{50} noise level represents the noise level that

is exceeded 50 percent of the time – half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_8 and L_{25} represent the noise levels that are exceeded eight and 25 percent of the time, respectively, or for five and 15 minutes during a 1-hour period, respectively.

Several methods have been devised to relate noise exposure over time to human response. The Day-Night Noise Level (L_{dn}) is a 24-hour L_{eq} that adds a 10 dBA penalty to sounds occurring between 10 PM to 7 AM to account for the increased sensitivity to noise events that occur during the quiet late evening and nighttime periods. A commonly used noise metric for this type of study is the Community Noise Equivalent Level (CNEL). The CNEL, originally developed for use in the California Airport Noise Regulation, adds a five dBA penalty to noise occurring during evening hours from 7 PM to 10 PM, and a 10 dBA penalty to sounds occurring between the hours of 10 PM and 7 AM to account for the increased sensitivity to noise events that occur during the quiet late evening and nighttime periods. Thus, the CNEL noise metric provides a 24-hour average of A-weighted noise levels at a particular location, with an evening and a nighttime adjustment, which reflects increased sensitivity to noise during these times of the day.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA, 2006). Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly and sick), and vibration sensitive equipment. Fragile buildings can be exposed to ground-borne vibration levels of 0.5 PPV without experiencing structural damage. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV. The human annoyance response level is 80 RMS.

3.13 Public Services

The Sutter County Sheriff's Department has the responsibility for providing law enforcement services to the unincorporated county area as well as being contracted to provide service to the City of Live Oak. The CHP provides traffic enforcement on all highways and roadways in the unincorporated area. Additional law enforcement services are provided to the county through the

District Attorney's office. The Sutter County Sheriff's Department is authorized to staff 58 sworn deputies, 54 correctional officers, and 34 civilian staff (Sutter County, 2008).

The project area is within the Meridian Fire District, an independent district covering approximately 93 square miles providing fire protection to areas bounded by the Sacramento River, Tisdale Weir, Sutter Bypass and County Service Area-F. One fire station is located within this district. The Meridian Fire Station Number 65 is located in the community of Meridian and is a part time station staffed with 1 paid firefighter during the week. The station is supplemented with 18 or more volunteer firefighters during high fire season. Seven fire station vehicles are housed on site for use in the service area (Sutter County, 2008).

The project area lies within the Meridian Elementary School District. Elementary education (K-8) is provided for students within the district, at a single school. Following eighth grade, Meridian students attend middle school and high school in the Sutter Union High School District (Sutter County, 2008).

3.14 Recreation

The closest recreational facility to the project area is Lovey's Landing. The facility is approximately 2.7 miles north of Meridian on Levee Road along the Sacramento River. It provides recreational facilities such as a boat launch ramp and a RV campground (Sutter County General Plan, 2008). The Sacramento River provides for water recreation in the area.

3.15 Transportation and Traffic

State Routes 20, 99 and 113 provide regional access to the project area (Sutter County, 2008). State Route 20 is a two, four and six lane roadway which extends through Sutter County from Colusa County to Yuba County. This roadway is one of the two roadways that cross the Sacramento River in Sutter County. State Route 99 extends from the Sacramento County line north through Sutter County to the Butte County line. The roadway has two and four lanes over its length and provides regional access to the Sacramento metropolitan area in the south and the cities of Gridley and Chico in the north and beyond. State Route 113 within the county extends from the Yolo County line over the Sacramento River to SR 99 near the community of Tudor. This two-lane roadway is one of the two roadways that cross the Sacramento River in Sutter County. The project area is served locally by rural roadways. Rural Collectors typically serve intra-county rather than regional or statewide circulation needs. Their primary function is to provide access to adjacent properties and connections between rural local roads and other roadways that are higher in the classification hierarchy. Rural local roads provide access to adjacent properties and distribute traffic to rural collectors. They differ from their urban counterparts in their design cross section and location.

3.16 Utilities and Service Systems

Potable water in the project area is provided by groundwater sources. The groundwater is pumped by privately owned wells. Groundwater supplies provide adequate supply; however, the quality of the groundwater supplies is at risk. Two areas within the project area have elevated levels of naturally occurring arsenic. The groundwater around Meridian also has elevated levels of iron and manganese. Sutter County is currently preparing a groundwater management plan that will help protect the County's groundwater resources. Wastewater within the project area is treated and disposed of through privately owned septic systems. Stormwater drainage is provided by open channel systems. Minor flooding may occur rarely and flood damage from local runoff to homes and other structures occurs very rarely. Solid waste services are provided by the Yuba-Sutter Regional Waste Management Authority. The Ostrom Landfill is the primary disposal site for the County and has enough capacity to remain open through 2066 (Sutter County, 2008). PG&E provides electrical and gas services with the project area.

3.17 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property rights held by the United States for Indian Tribes or individuals. Trust status originates from rights imparted by treaties, statutes, or executive orders. ITAs are lands, including reservations and public domain allotments, minerals, water rights, hunting and fishing rights, or other natural resources, money or claims. Assets include real property, physical assets, or intangible property rights. ITAs cannot be sold, leased, or otherwise alienated without Federal approval. ITAs do not include things in which a tribe or individuals have no legal interest, such as off-reservation sacred lands or archaeological sites in which a tribe has no legal property interest. There are no ITAs within the vicinity of the project area.

3.18 Environmental Justice and Socioeconomics

Executive 12898 requires each federal agency to achieve environmental justice as part of its mission, by identifying and addressing disproportionately high and adverse human health on environmental effects, including social and economic effects of its programs, policies, and activities on minority populations and low-income populations of the United States. The Proposed Project/Action would involve the construction and operation of a replacement diversion system that would help protect and enhance the anadromous fisheries in the Sacramento River and ensure that MFWC continues to divert water from Sacramento River for irrigation purposes without regulatory restrictions. The Proposed Project/Action does not propose any features that would result in adverse human health or environmental effects, have any physical effects on minority or low-income populations, and/or alter socioeconomic conditions of populations that reside or work in the vicinity of the project site.

SECTION 4

Environmental Consequences/Initial Study

4.1 Introduction

The following sections describe effects of the Proposed Project/Action. To maintain consistency with the 2008 Meridian Farms Fish Screen Project IS/MND (2008 IS/EA), the format of this chapter is based on the CEQA Environmental Checklist; however this analysis also satisfied the requirements of NEPA. This Environmental Checklist identifies the project-specific effects of the Proposed Project/Action, and whether or not those effects were adequately addressed in the 2008 IS/EA. Consistent with CEQA Guidelines Section 15150, the 2008 IS/EA is incorporated by reference into this Environmental Checklist, including applicable environmental setting and impact analysis.

4.2 Public Agency Approvals

Detailed below are other public agencies whose approval is required prior to construction of the Proposed Project/Action. Types of approval include permits, financing approval, or participation agreement.

**TABLE 4-1
ANTICIPATED REGULATORY REQUIREMENTS AND PERMITS
FOR PROJECT IMPLEMENTATION**

| Agency | Type of Approval |
|--------------------------------------|---|
| Federal Agencies | |
| U.S. Bureau of Reclamation | NEPA Lead Agency |
| U.S. Army Corps of Engineers | NEPA Lead Agency Clean Water Act Section 404 Permit Rivers & Harbors Act Section 10 Permit Federal Endangered Species Act compliance (Section 7) |
| U.S. Fish and Wildlife Service | Federal Endangered Species Act compliance (Section 7) |
| National Marine Fisheries Service | Federal Endangered Species Act compliance (Section 7) |
| State Agencies | |
| California Department of Fish & Game | CEQA Lead Agency State Endangered Species Act compliance, 2081 Incidental Take Permit Section 1600 Lake and Streambed Alteration Application, 1601 Streambed Alteration Agreement |

| | |
|---|---|
| | Consistency Determination or Incidental Take Permit |
| Central Valley Flood Protection Board | Encroachment Permit |
| Central Valley Regional Water Quality Control Board | National Pollutant Discharge Elimination System General Construction Storm Water Permit (Section 402) |
| | Clean Water Act Section 401 Water Quality Certification |
| | General Order for Dewatering and Other Low Threat Discharge to Surface Waters Permit |
| State Historic Preservation Office | National Historic Preservation Act Section 106 |
| Local/Other Agencies | |
| Feather River Air Quality Management District | Authority to Construct |
| | Permit to Operate |
| County of Sutter | Building Permit |
| | County Road Encroachment Permit |

4.3 Environmental Checklist

This Environmental Checklist is based on the checklist suggested in Appendix G of the CEQA Guidelines. The checklist has been adapted to assist in evaluating the environmental effects of the proposed project under CEQA and NEPA with respect to the analysis in the Phase 1 Meridian Farms Fish Screen Project IS/EA as well as specific NEPA topics related to Indian Trust Assets, Environmental Justice, and Socioeconomic Effects.

Each environmental issue includes a discussion applicable 2008 IS/EA mitigation measures; and discussion of environmental checklist items, including findings for potential project effects. The Environmental Checklist identifies potential project effects as corresponding to the following categories of environmental impacts:

- **Potentially Significant Impact.** Adverse environmental consequence that has the potential to be significant according to the threshold criteria identified for each resource, even after mitigation strategies are applied. This classification also applies to adverse effects that could be significant and for which no mitigation has been identified. If any potentially significant impacts are identified, an Environmental Impact Report (EIR) and/or an Environmental Impact Statement (EIS) must be prepared to meet CEQA and/or NEPA requirements, respectively.
- **Less-than-Significant Impact with Mitigation.** Adverse environmental consequence that has the potential to be significant, but can be reduced to less-than-significant levels through incorporation of mitigation measures adopted by the CDFG in the 2008 IS/EA. MFWC would ensure that construction and operation of the Proposed Project/Action would be implemented consistent with the mitigation, monitoring and enforcement requirements of the 2008 IS/EA Mitigation Monitoring and Reporting Program (MMRP) **AND/OR** new or modified mitigation measures would reduce potentially significant impacts to a less-than-significant level (Appendix A).
- **Less-than-Significant Impact.** Adverse environmental consequence has been identified; however, the level of significance does not meet or exceed the significance threshold for that resource.

- **No Impact.** No adverse environmental consequences have been identified for the resource or the consequences are negligible, undetectable and/or not applicable.

4.3.1 Aesthetics

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---|--|---|-------------------------------------|
| 1. AESTHETICS — Would the project: | | | | |
| a) Have a substantial adverse effect on a scenic vista? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a) **Less-than-Significant Impact.** The proposed improvements for the Proposed Project/Action are not located in areas within local or state-designated scenic vistas. Additionally, as the Proposed Project/Action would entail the consolidation of existing water diversion structures, views along the Sacramento River would not substantially change following project construction. In this context, the Proposed Project/Action would not result in substantial adverse impacts to a scenic vista and the impact would be less than significant.
- b) **No Impact.** The proposed improvements for the Proposed Project/Action are not located in close proximity to a state-designated scenic highway. Review of the 2010 Sutter County General Plan and Department of Transportation's list of designated scenic highways indicates that there are no officially designated scenic highways in Sutter County (DOT, 2012). For this reason, the Proposed Project/Action would not damage any scenic resources within a state highway and no impact would occur.
- c) **Less-than-Significant Impact.** Construction equipment and activities would be visible from the Sacramento River during construction of the Meridian Diversion and during demolition of the existing Meridian Diversion and Drexler diversion. Construction equipment and activities would also be visible from rural roads and agricultural areas during construction of all project facilities. However, construction would occur over no more than two seasons, and aesthetics impacts associated with construction activities would be temporary and less than significant.

Once completed, the new Meridian Diversion and Pumping Plant and Drexler re-lift Pumping Plant would be visible to the several residences located in the project vicinity. However, given that the project represents the consolidation of existing diversions structures, the overall visual character of the riverfront area of the project would experience a desired benefit. In this

context, the Proposed Project/Action would not substantially degrade the existing visual character or quality of the project area and the impact would be less than significant.

- d) **No Impact.** Given that the project would not include the installation of any exterior lighting and that any new internal lighting would be comparable to existing conditions, impacts resulting from light and glare would be less than significant.

4.3.2 Agricultural and Forest Resources

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 2. AGRICULTURAL AND FOREST RESOURCES — | | | | |
| In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. | | | | |
| Would the project: | | | | |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a) **Less-than-Significant Impact.** With exception of the town of Meridian, the entire land base within the project area is designated as Prime Farmland according to Important Farmland maps prepared by the Department of Conservation (DOC, 2011). Project facilities that could affect local agricultural lands include the proposed Meridian Diversion and Pumping Plant located to the north of the town of Meridian, the new Drexler re-lift Pumping Plant, and the Drexler pipeline extension. Construction of the land-side Meridian Pumping Plant north of the town of Meridian in the southwest corner of a walnut orchard may require removal of two to five trees. The Drexler re-lift Pumping Plant would be located at the edge of an agricultural parcel and the Drexler pipeline extension would cross a small portion

of the agricultural land. However, the pipeline would be buried deep enough, where appropriate, so it would not preclude future agricultural activities. Other temporary construction related impacts to important farm land would be associated with materials staging areas. In these instances where temporary and permanent disruption to agricultural operations would occur, (MFWD) would compensate affected land owners in accordance with State and local laws and ordinances related to compensation for impacts to agricultural lands. As a result, the Proposed Project/Action would not result in the conversion of Prime Farmland to non-agricultural use and the impact would be less than significant.

- b) **No Impact.** The overall project area contains numerous agriculturally zoned properties as well as parcels listed under Williamson Act contracts. However, construction of permanent Proposed Project/Action facilities would be confined to existing disturbed facilities, including existing roadways, canal rights-of-way, and levees along the Sacramento River. For this reason, the Proposed Project/Action would not conflict with any existing Williamson Act Contracts and no impact would occur.
- c-e) **No Impact.** The Proposed Project/Action is not located in an area zoned as forest, timberland or used for timber production. Therefore, the Proposed Project/Action would not convert timber or forest lands to other uses or conflict with existing forest and timberland zoning. The Proposed Project/Action would continue to serve existing agricultural uses and would not result in the conversion of existing agricultural lands to non-agricultural use. As a result, there would be no conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. No impact would occur.

4.3.3 Air Quality

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|--------------------------|
| 3. AIR QUALITY — | | | | |
| Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. | | | | |
| Would the project: | | | | |
| a) Conflict with or obstruct implementation of the applicable air quality plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Expose sensitive receptors to substantial pollutant concentrations? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|-------------------------------------|
| e) Create objectionable odors affecting a substantial number of people? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The following mitigation measures from 2008 IS/EA were adopted by CDFG and would mitigate air quality impacts associated with implementation of the Proposed Project/Action. CDFG and MFWC would ensure that construction and operation of the Proposed Project/Action would be implemented consistent with the mitigation, monitoring and enforcement requirements for the 2008 IS/EA MMRP (See Appendix A).

Mitigation Measure AIR-1. Implement FRAQMD Best Available Mitigation Measures For Construction Activity:

- (A) Implement PM₁₀ control measures outlined in the FRAQMD Fugitive Dust Control Plan.
- (B) MFWC shall require its construction contractor(s) to assemble a comprehensive inventory list (i.e., make, model, engine year, horsepower, emission rates) of all heavy-duty off-road (portable and mobile) equipment (50 horsepower and greater) that will be used an aggregate of 40 or more hours for both Phases 1 and 2 construction activities and apply the following mitigation measure:

Reducing NOx emissions from off-road diesel powered equipment

MFWC or its construction contractor(s) shall provide a plan for approval by FRAQMD demonstrating that the heavy-duty (equal to or greater than 50 horsepower) off-road equipment to be used in construction of Phases 1 and 2, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate reduction 1 compared to the most recent CARB fleet average at time of construction. A Construction Mitigation Calculator (MS Excel) may be downloaded from the SMAQMD web site to perform the fleet average evaluation <http://www.airquality.org/ceqa/index.shtml>.

Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, perform offsite mitigation projects, provide funds for air district offsite mitigation projects, and/or other options as they become available. The District should be contacted to discuss alternative measures.

- (C) Construction equipment exhaust emissions shall not exceed FRAQMD Regulation III, Rule 3.0, Visible Emissions limitations (40 percent opacity or Ringelmann 2.0). Operators of vehicles and equipment found to exceed opacity limits shall take action to repair the equipment within 72 hours or remove the equipment from service. Failure to comply may result in a Notice of Violation.

- (D) The primary contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained.
- (E) Minimize idling time to 10 minutes – saves fuel and reduces emissions.
- (F) No open burning of removed vegetation during infrastructure improvements. Vegetative material should be chipped or delivered as waste to energy facilities.
- (G) Portable engines and portable engine-driven equipment units used at the project work site, with the exception of on-road and off-road motor vehicles, may require California Air Resources Board (CARB) Portable Equipment Registration with the State or a local district permit. The owner/operator shall be responsible for arranging appropriate consultations with the CARB or the District to determine registration and permitting requirements prior to equipment operation at the site.

Discussion

- a) **Less-than-Significant Impact.** The project area is located near the center of the Sacramento Valley Air Basin (SVAB) and under the jurisdiction of the Feather River Air Quality Management District (FRAQMD). The SVAB is designated non-attainment for several ambient air quality standards established under the federal and state Clean Air Acts¹. Pollutants of particular concern in the project region include ozone² and respirable particulate matter (PM₁₀)³. Areas within the SVAB are designated as being in nonattainment for these standards during warmer times of the year when climatic conditions are favorable for their development.

The Proposed Project/Action would take place in an area for which ozone and PM₁₀ plans have been developed. These plans describe how the project area will achieve the national and state standards and how the area will continue to make progress towards achieving more stringent state standards. Based on the nature of the Proposed Project/Action, construction would not alter existing land use designations in the project area and would not facilitate any new growth not previously envisioned in the County's currently adopted General Plan. At the completion of the Proposed Project/Action, operational vehicle trips would be similar to existing conditions. Consequently, construction and operation of the

-
- ¹ An "ambient air quality standard" represents the level of air pollutant in the outdoor (ambient) air necessary to protect public health. The Federal Clean Air Act (FCAA) requires the USEPA to identify National Ambient Air Quality Standards (national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria.
- ² Ozone is a reactive pollutant, which is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_x). ROG and NO_x are precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.
- ³ "Respirable" particulate matter (PM₁₀) and "fine" particulate matter (PM_{2.5}) consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (A micron is one-millionth of a meter). PM₁₀ and PM_{2.5} represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects.

Proposed Project/Action would not conflict with or obstruct implementation of any applicable air quality regulation, plan, or policy and the impact would be less than significant.

- b) **Less-than-Significant Impact with Mitigation.** Construction-related activities resulting from the Proposed Project/Action would result in emissions of air pollutants from construction equipment, truck exhaust, soil disturbance, and wind erosion. **Table 4-2** estimates the typical daily construction emissions for the project assuming a total of three work crews working simultaneously (e.g., trenching and one boring).

The air pollutants of primary concern during construction projects are generally particulate matter less than 10 microns (PM_{10}), fine particulate matter ($PM_{2.5}$) and oxides of nitrogen (NO_x). Reactive organic gasses (ROG) are generated by the use of gasoline-powered vehicles (and, to a lesser extent, diesel-fueled vehicles); however, this type of construction project is likely to generate only minor amounts of ROG. Diesel fuel would generate primarily NO_x emissions, but also ROG, PM_{10} and $PM_{2.5}$ in varying amounts depending largely on fuel oil grade and existing emission controls. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and that can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, grading and construction, and motor vehicle use. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

PM_{10} and $PM_{2.5}$ is less of a concern for linear projects, such as the Proposed Project/Action, within existing streets and canals and the minimal demolition expected during the dismantling of the existing diversions. Major PM_{10} problems generally occur during mass grading, when several acres of ground are simultaneously stripped bare of vegetation and thus are subject to wind erosion or disturbance from vehicles traveling on the site.

As shown in **Table 4-2**, the projected construction-related emissions for NO_x exceed significance thresholds established by the FRAQMD. Consequently, the FRAQMD will require implementation of its best available mitigation for construction activity to reduce impacts associated with NO_x to a less-than-significant level.

Earth moving and construction activities may also result in short-term localized increases in ambient concentrations of dust or Particulate Matter PM_{10} . As mentioned above, these dust emissions are expected to be minor, but would vary from day to day, depending on the level and type of activity, silt content of the soil, type of equipment used, and the prevailing weather. On days when construction would involve extensive site preparation activities, earth-moving activities, or during periods when these activities would occur when wind speeds are relatively high, construction dust could be substantial and could violate the state standard for PM_{10} without proper controls. Several residences are located adjacent to proposed construction areas and may experience visibility and nuisance

effects associated with construction-related dust. However, implementation of the 2008 IS/EA Mitigation Measure AIR-1 would reduce impacts associated with construction air quality emissions to a less-than-significant level.

**TABLE 4-2
ESTIMATED UNMITIGATED CONSTRUCTION-PHASE EMISSIONS FOR TRENCHING AND BORING
(POUNDS/DAY)**

| Pollutant | Maximum Daily Construction Scenario ^{a, b} | | | Significance Criteria ^c | |
|---|---|------------------------------|---|------------------------------------|--------------------------|
| | 1 Crew Trenching (pounds / day) | 1 Crew Boring (pounds / day) | Total Emissions 2 Crew Trenching + 1 Crew Boring (pounds/day) | FRAQMD (pounds / day) | Significant? (Yes or No) |
| Reactive Organic Gases (ROG) | 3 | 5 | 11 | 25 | No |
| Nitrogen Oxides (NO _x) | 26 | 16 | 68 | 25 | Yes |
| Particulate Matter (PM ₁₀) ^d | 3 | 2 | 7 | 80 | No |

a Maximum daily construction scenario would involve no more than three construction crews (e.g., 2 trenching crews and 1 boring crew).

b Calculations based on street trenching and boring 1-crew daily totals.

c Significance criteria are from FRAQMD Air Quality Thresholds of Significance.

d No established significance criteria for PM_{2.5}.

SOURCE: Meridian Farms Water Company, 2007

- c) **Less-than-Significant Impact.** Operation of the Proposed Project/Action would be similar to existing conditions however, with the operation of one less water diversion. Additionally, the new pumps are proposed to operate via electricity and would not lead to any cumulative increase of criteria air pollutant. As a result, implementation and operation of the Proposed Project/Action would not generate air emissions in excess of existing condition and therefore would not result in a cumulatively considerable net increase of any criteria pollutant. Thus, the impact would be less than significant.
- d) **Less-than-Significant Impact with Mitigation.** Residential areas tend to be sensitive areas for air pollution because residents (children and the elderly) tend to be at home for extended periods of time resulting in sustained exposure to any pollutants present. However, the Proposed Project/Action would be located in a predominately rural area with few sensitive receptors that could be exposed construction-related emissions. There is a residential neighborhood in the vicinity of the land-side pump station in Meridian, and a few residences in the proximity of the re-lift pump station in Drexler. Additionally, a few residences are interspersed along the Main Canal right-of-way. With the implementation of 2008 IS/EA Mitigation Measure AIR-1, construction of the Proposed Project/Action would not significantly affect local sensitive receptors and the impact would be less than significant.
- e) **No Impact.** Implementation of the Proposed Project/Action would not involve the storage and/or spreading of materials or involve activities such as prescribed burns or sewage treatment that would generate objectionable odors. Consequently, operation of the Proposed

Project/Action would not generate any objectionable odors that would adversely affect sensitive receptors located near the proposed facility improvements and no impact would occur.

4.3.4 Biological Resources

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 4. BIOLOGICAL RESOURCES — Would the project: | | | | |
| a) Adverse impact, either directly or through habitat modifications, any endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The following mitigation measures from 2008 IS/EA were adopted by CDFG and would mitigate biological resources impacts associated with implementation of the Proposed Project/Action.

CDFG and MFWC would ensure that construction and operation of the Proposed Project/Action would be implemented consistent with the mitigation, monitoring and enforcement requirements for the 2008 IS/EA MMRP (See Appendix A).

2008 IS/EA MITIGATION MEASURES

| Biological Resources | |
|-----------------------------|--|
| BIO-1 | Traffic Routing and Movement. During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the project site will be restricted to established roadways to minimize habitat disturbance. Project-related vehicles shall observe a 20-mile-per-hour speed limit within construction areas, except on County roads and on State and Federal highways. This is particularly important during periods when the snake may be sunning or moving on roadways. All heavy equipment, vehicles, and supplies will be stored at the designated staging area at the end of each work period. |
| BIO-4 | Timing of Construction. Construction activity within giant garter snake habitat (e.g. aquatic, upland, and rice habitat) shall be conducted between May 1 and October 1. This is the active period for the snake and direct mortality is lessened, because snakes are expected to actively move and avoid danger. If it appears that construction activity may go beyond October 1, the project proponents shall contact the USFWS as soon as possible, but not later than September 15 of the year in question, to determine if additional measures are necessary to minimize take. Construction activities within 200 feet from the banks of snake aquatic habitat will be avoided during the snake's inactive season. If this is not feasible, the Project Proponent must consult with USFWS to determine measures to avoid impacts to giant garter snake. |
| BIO-6 | Worker Awareness Training. A Worker Environmental Awareness Training Program for construction personnel shall be conducted by the USFWS-approved biologist for all construction workers, including contractors, prior to the commencement of construction activities. The program shall provide workers with information on their responsibilities with regard to the snake, an overview of the life-history of this species, information on take prohibitions, protections afforded this animal under the Act, and an explanation of the relevant terms and conditions of this biological opinion. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Office within 30 days of the completion of training. As needed, training shall be conducted in Spanish for Spanish language speakers. |
| BIO-7 | Install Snake Exclusion Fencing. Prior to the commencement of construction activities, high visibility fencing will be erected around the habitats of federally listed species to identify and protect these designated ESAs from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected by the Contractor before the start of each work day and maintained by the Contractor until completion of the project. The fencing may be removed only when the construction of the project is completed. Fencing will be established in upland immediately adjacent to aquatic snake habitat and extending up to 200 feet from construction activities. Silt fencing, if properly installed, may serve as suitable snake exclusion fencing. |
| BIO-8 | Provide Adequate Signage. Signs will be posted by the Contractor every 50 feet along the edge of the ESAs, with the following information: "This area is habitat of federally-threatened and/or endangered species, and must not be disturbed. These species are protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained by the Contractor for the duration of construction. |
| BIO-9 | Implement BMPs. Best Management Practices (BMPs), including a Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP), will be implemented to minimize effects to the snake during construction. Best management practices will be implemented to prevent sedimentation from entering ESAs and to reduce erosion, dust, noise, and other deleterious aspects of construction related activities. These BMPs may include, but are not limited to, silt fencing, temporary berms, restrictions on cleaning equipment in or near ESAs, installation of vegetative strips, and temporary sediment disposal. Runoff from dust control and hazardous materials will be retained on the construction site and prevented from flowing into the ESAs. |
| BIO-10 | Erosion Control Materials. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material shall be used for erosion control and other purposes at the ESA to ensure that the giant garter snake is not trapped or becomes entangled. This limitation shall be communicated to the contractor using special provisions included in the bid solicitation package. |
| BIO-11 | Properly Dispose of Garbage. To eliminate an attraction to predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps, must be disposed of in closed containers and removed at the end of each workday from the entire project site. |
| BIO-12 | Use Approved Aggregate, Fill or Borrow Materials. The Contractor shall provide documentation that aggregate, fill, or borrow material provided for the proposed project was obtained in compliance with the State Mining and Reclamation Act (SMARA). Evidence of compliance with the Act shall be demonstrated by providing the resident engineer with one of the following: 1) a letter from the USFWS stating that the use of the borrow pit will not result in the incidental take of species; 2) an incidental take permit for contractor-related activities issued by the USFWS pursuant to section 10(a)(1)(B) of the Act; |

| | |
|--------|--|
| | 3) a biological opinion or letter concurring with a “not likely to adversely affect” determination issued by the USFWS to the Federal agency having jurisdiction over contractor-related services’ 4) a letter from the USFWS concurring with the “no effect” determination for contractor-related activities; or 5) contractor submittal of information to the resident engineer indicating compliance with the SMARA and provision of County land use permits and California Environmental Quality Act (CEQA) clearance. |
| BIO-13 | Restore Temporarily Affected Habitat. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored to their pre-project conditions. An area subject to “temporary” disturbance includes 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 re-vegetated. All ESA snake habitats subject to temporary ground disturbances, including storage and staging areas and temporary roads, will be restored to pre-project conditions. If appropriate, these areas shall also be re-contoured to pre-project conditions. A written report shall be submitted to the USFWS within ten (10) working days of the completion of construction at the project site and restoration of the site to pre-project conditions. |
| BIO-14 | Post-construction Monitoring. An inspection of the site, with a photo documentation report showing pre- and post-project area photos, will be conducted and photos and a brief report will be submitted to USFWS one year from implementation of restoration to pre-project conditions. |
| BIO-17 | A USFWS-approved biologist shall inspect construction-related activities at the proposed project site to ensure that no unauthorized take of federally listed species or destruction of their habitat occurs. The biologist shall be available for monitoring throughout all phases of construction that may result in adverse effects to the giant garter snake. This includes clearing and grubbing and other construction activities in the areas of wetland vegetation/aquatic habitat, adjacent upland habitat, and during exclusion fence installation. Furthermore, the biologist shall have the authority through communication with the resident engineer to stop construction activities in the immediate area if a giant garter snake is encountered during construction until appropriate corrective measures have been completed or until the snake is determined to be unharmed. Snakes encountered during construction activities shall be allowed to move away from the area on their own volition. The biologist shall notify the USFWS immediately if any listed species are found on-site, and will submit a report, including date(s), location(s), habitat description, and any corrective measures taken to protect the species found. The biologist shall be required to report any take of listed species to the USFWS immediately by telephone at 916/ 414-6600 and by electronic mail or written letter addressed to the Chief, Endangered Species Division, within three (3) working days of the incident. The Service does not authorize any handling or moving of a giant garter snake by other than USFWS-permitted biologist. |
| BIO-19 | Pile Driving Activities. For Phases 1 and 2, the contractor shall use vibrational pile driving to the greatest extent feasible. If percussive pile driving is necessary, its use shall be minimized to the maximum extent possible and comply with the following <i>Interim Criteria for Injury of Fish to Pile Driving Operations</i> (Popper et al., 2006): <ul style="list-style-type: none"> • The Sound Exposure Level (SEL) shall not exceed 187 dB (re: 1 µPa²•sec) in any single strike, measured at a distance of 32.8 ft from the source; • The peak sound pressure level should not exceed 208 dB (re: 1 µPa_{peak}) in any single strike, measured at a distance of 32.8 ft from the source. |
| BIO-20 | Dewatering. For Phase 2 only, pump(s) used for dewatering the construction site will be screened according to NMFS fish screening criteria for anadromous salmonids (NMFS, 1997b). A qualified biologist will be on-site during such pumping activities to ensure that any fish that may be present within the construction area are relocated to suitable habitat near the project area. |
| BIO-21 | Tree Removal Period. Some trees will be removed on the Chesney property for the Drexler pipeline, and some walnut trees removed on the Coffman property for the Meridian Pumping Plant. All of these trees are outside the Sacramento River riparian areas. If possible, trees required for removal shall be removed outside of the nesting period (nesting period = March 1st through August 31st). |

Discussion

A field reconnaissance of the Project Site was conducted in 2006 by Environmental Science Associates (ESA), which covered both Phase 1 and Phase 2 Action areas (Phase 2 is known as the Proposed Project/Action), to determine the potential for Project impacts on endangered, threatened, and/or rare plant and wildlife species (special-status species) or their habitats. In addition, a wetland delineation was performed by MWH on November 7, 2011 to identify features within the Proposed Project/Action area that could be considered waters of the United States (U.S.) and that would therefore be subject to Section 404 of the Clean Water Act (CWA). Concurrently, MWH also identified giant garter snake (GGS) upland and aquatic habitats within the Proposed Project/Action

Area. Updated species lists were obtained from the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), California Natural Diversity Database (CNDBB), and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (December 2011). These lists are included as **Table 3-3** in Section 3. The following analysis summarizes potential effects to special status species and habitats. Please refer to the ASIP (Appendix B) for detailed analysis.

- a) **Less-than-Significant with Mitigation.** The Proposed Project/Action may have potentially significant adverse impacts, either directly or through habitat modifications, to GGS, an endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12). The Proposed Project/Action would have a less-than-significant impact to other special-status species within the Action Area. Impacts to GGS and other special-status species are described below.

Giant Garter Snake

The Proposed Project/Action includes the construction of the New Meridian Diversion/Pumping Plant, Main Canal Modifications, Drexler Re-lift Pumping Plant, Drexler Pipeline Extension, and removal of the existing Meridian Diversion/Pumping Plant and Drexler Pumping Plant as described in Section 2.2 of this IS/EA. Construction activities associated with the Main Canal modifications and the construction of the Drexler Re-lift Pumping Plant would potentially impact suitable habitat for GGS. 38.9 acres of GGS aquatic habitat and 21.3 acres of GGS upland habitat were mapped within the Proposed Project/Action Area in the ASIP (Section 3.1.5). Of this area, approximately 6.4 acres of GGS upland habitat and 3.4 acres of GGS aquatic habitat in the Main Canal would be temporarily impacted when the existing canal is demolished and widened. The Main Canal provides marginal habitat for the giant garter snake, with the only suitable habitat value being as a possible movement corridor between other drains and rice fields. As a result of the proposed widening modifications, there would be some conversion of GGS upland habitat to GGS aquatic habitat.

In order to construct the Drexler Re-lift Pumping Plant, an existing drainage ditch would be replaced with a new 24-inch storm drain to allow for placement of a concrete pad. Construction of the pumping plant and storm drain would result in permanent effects to approximately 512 square feet of GGS upland habitat. An additional minimal area of the Reclamation District 70 canal would be disturbed temporarily when the storm drain is connected. The total permanent impacts are 0.05 acre. (ASIP, Section 4.3.2).

Because the operation of the Main Canal is essential for MFWC water delivery in the spring and summer, the Proposed Project/Action improvements to the Main Canal must occur during the fall and winter (October 1st through April 30th), during the GGS inactive period of October 1st to May 1st. Upland GGS habitat in the Action Area is primarily composed of frequently disturbed agricultural lands and relatively shallow canal berms with few evident rodent burrows. These areas are not optimal habitat for GGS hibernation;

however, there is some potential for snakes to remain in the Project Area/Action Area during the inactive season. Construction activities, either permanent or temporary in nature, from October 1 to May 1 are assumed to likely result in take (injury or death) of GGS that may be hibernating in the area, rather than harm and harassment. Therefore, the applicant proposes restoration and 1:1 replacement of 6.4 acres of upland habitat through the purchase of conservation credits from a Service-approved GGS bank. Permanent impacts related to construction of the pumping plant and associated structures are very minimal (0.05 acre) and would occur during the GGS active period; therefore, no additional compensation measures are proposed.

The level of compensation specified for temporary impacts associated with the modifications of the Main Canal is comparable to the requirements for level 2 mitigation outlined in the *Programmatic Formal Consultation for the U.S. Army of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California* (USFWS 1997). The Programmatic Consultation specifies level 2 mitigation for projects that have less than 20 acres of temporary disturbance during two active GGS seasons. Although the work on the Main Canal is expected to occur within one calendar year, it cannot be conducted during the GGS active season; therefore, the disturbance could be considered similar to impacts spanning more than one active GGS season.

To reduce and minimize impacts to GGS as a result of the implementation of the Proposed Project/Action, the Programmatic BO measures and those described below would be implemented as appropriate. As mentioned above, compensation would be required for permanent loss of GGS habitat. With implementation of 2008 IS/EA Mitigation Measures BIO-1, BIO-4, BIO-6 through BIO-14, and BIO-17, and modified 2008 IS/EA Mitigation Measures BIO-2, BIO-3, BIO-16 and BIO-18, presented below, impacts to GGS would be less than significant.

Mitigation Measure BIO-2: Staging Areas. During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and exclusive of the Environmentally Sensitive Areas (ESAs). A solid barrier fence, such as silt fencing, will be installed along the boundaries of the staging area to prevent contamination of ESAs during such operations.

Mitigation Measure BIO-3: Pre-construction Surveys. No more than 24-hours prior to the commencement of construction activities, a USFWS-approved biologist shall survey areas deemed suitable GGS habitat for the presence of GGS. The biologist will provide the USFWS with a written report that adequately documents the methodology and results of the pre-construction survey within three days of the survey. These areas shall be re-inspected by the biologist whenever a lapse in construction activity of two and removed at the end of each workday from the entire project site.

Mitigation Measure BIO-16: De-watering GGS Habitat. During the GGS active period (May 1-September 31), GGS aquatic habitat may be dewatered starting on

April 15. Any dewatered habitat must remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling the dewatered habitat.

Mitigation Measure BIO-18: Compensation. Compensation for temporary and permanent impacts to GGS habitat is the responsibility of MFWC. Temporary impacts shall be restored to pre-project conditions. Areas subject to temporary impacts shall be limited to one season (the calendar year period between May 1 and October 1) and be restored within two seasons. . In addition, GGS habitats temporarily disturbed during the inactive season (3.4 acres of aquatic habitat and 6.4 acres of upland habitat) will be replaced at a level of 1:1 by purchasing credits in a USFWS-approved mitigation bank prior to project construction.

Fish Species: The Proposed Project/Action would involve work within the Sacramento River; therefore, the special-status species to consider in this habitat are the threatened North American green sturgeon (Southern DPS), threatened Central Valley steelhead, threatened Central Valley spring-run Chinook salmon and endangered Sacramento River winter-run Chinook salmon.

Construction and operation of a surface water diversion in the Sacramento River has the potential to adversely impact various salmonid and other fish species and their habitats through several mechanisms, including entrainment into the water diversion, impingement on the intake screen, increased vulnerability to predation mortality, increased levels of turbidity and suspended solids, and underwater sound pressure waves. Direct mortality of fish species may also occur during cofferdam installation and dewatering.

Fish screen design criteria outlined by the Proposed Project/Action would reduce potential effects from entrainment and impingement substantially. Placement of structures within the Sacramento River, including a positive barrier fish screen, would modify local velocity and current patterns, create localized turbulence and eddies, and provide cover habitat for a variety of predatory fish species, such as striped and smallmouth bass. Structural components of the positive barrier fish screen may result in the potential for increased localized predation mortality for juvenile Chinook salmon, steelhead, and other fish species within the river. However, placement of the new diversion structures is within areas with adequate flow velocities, thereby minimizing backwater eddy effects and potential impacts to salmonids from predatory species. And ultimately, construction of the proposed new facilities fitted with fish screens would benefit these and all fish species.

In-water construction activities would take place during the construction period that would impact the least number of individuals of special-status fish. This in-water work period is June 1 to October 1, for this stretch of the Sacramento River; however, with NMFS approval, the work period may be extended through November 1. This period coincides with when Central Valley steelhead, and Chinook salmon are least likely to be present in the vicinity of the Action Area. Green sturgeon, however, may occur in the Action Area on a year-round basis. The construction of the proposed Meridian Diversion fish screen facility would require placement and removal of a sheet-pile cofferdam to isolate the work site from the rest of the river. This would result in a temporary localized disturbance with minor siltation of the

water. Increased sedimentation may cause reduced survival of eggs or alevins, reduce primary and secondary river productivity, interfere with feedings, cause behavioral avoidance, and cause a breakdown of social organization to native species downstream of the discharge area. Furthermore, installation of sheet piles and beams during construction of the cofferdam may require the use of vibratory or percussion (impact) hammer methods. Both methods produce underwater sound pressure waves that can be perceived by fish. However, while vibrating hammers do not produce sound pressure levels that would result in injury or mortality to fish, fish may be injured or killed by the impact sounds generated by percussive pile driving. Their hearing may also be affected or their behavior altered such that it constitutes harassment or harm. The specific effects of pile driving on fish depend on a wide range of factors including the type of pile, type of hammer, fish species, environmental setting, and many other factors (Popper et al., 2006). The percussion hammer, if needed for cofferdam installation, would be used on an intermittent and short duration basis. Use of the percussion hammer would be minimized to the maximum extent possible. All these impacts to special status fish are considered potentially significant.

The construction of the Meridian Diversion and Pump Station would span 6 and 10 months, respectively; however, all in-water construction (including the cofferdam) would be completed within the in-water work period to avoid effects to salmonids and special-status fish. The Proposed Project/Action also includes abandonment of the existing Meridian Diversion and the Drexler Diversion, which would require minimal in-river to cap and seal the existing intake pipe manifold. Any in-water activities involved in removal of these facilities would also occur within the in-water work period to reduce impacts to fish.

Given the overall benefit to fish as a result of the Proposed Project/Action, as well as the use of a cofferdam, the fish salvage requirement for dewatered work sites, the localized and minimal in-river disturbances, and constructing within the work period when fish would least likely be in the area, the Proposed Project/Action is expected to result in minimal impacts to the fisheries resources of the Sacramento River. With the implementation of 2008 IS/EA Mitigation Measures BIO-19, BIO-20 and proposed Mitigation Measures BIO-A through BIO-H⁴, presented below, impacts to listed and special-concern fish species would be reduced to a less-than-significant level.

Mitigation Measure BIO-A: Spoil Sites. Spoil sites shall be located so they do not drain directly into the waterways. If a spoil site drains into a water body, catch basins shall be constructed to intercept sediment before it reaches the channels. Spoil sites shall be graded to reduce the potential for erosion.

Mitigation Measure BIO-B: Hazardous Materials. A spill prevention plan for potentially hazardous materials shall be prepared and implemented. The plan shall include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting of any spills. If necessary,

⁴ Mitigation measures BIO-A through BIO-H are identified with alphabetical letters instead of numbers to avoid confusion with mitigation measures from the 2008 IS/EA.

containment berms shall be constructed to prevent spilled materials from reaching the creek channels.

Mitigation Measure BIO-C: Storage. Equipment and materials shall be stored at least 50 feet from waterways. No debris such as trash and spoils shall be deposited within 100 feet of waterways. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall 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 shall be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles shall be moved away from the stream prior to refueling and lubrication.

Mitigation Measure BIO-D: Vehicle Maintenance. Proper and timely maintenance for vehicles and equipment used during construction shall be provided to reduce the potential for mechanical breakdowns leading to a spill of materials into or around the creeks. Maintenance and fueling shall be conducted in an area that meets the criteria set forth in the spill prevention plan (i.e., away from sensitive drainages).

Mitigation Measure BIO-E: Dust Prevention. Water used for dust abatement, if necessary, shall be acquired from an authorized off-site source. Water shall be a clean water source in accordance with California RWQCB Construction Storm Water Program and/or as authorized under a separate National Pollutant Discharge Elimination System (NPDES) permit.

Mitigation Measure BIO-F: Daily Monitoring. A qualified biological monitor shall be on site during in-water construction activities. The biological monitor shall be authorized to halt construction if impacts to special-status salmonid species are evident.

Mitigation Measure BIO-G: Riparian Habitat. Current riparian vegetation shall be retained to extent feasible.

Mitigation Measure BIO-H: Fish Rescue Plan. A fish rescue plan shall be prepared by MFWC prior to the implementation of the project and provided for review and comment to NMFS, USFWS and CDFG as appropriate. A qualified fisheries biologist will design and conduct a fish rescue and relocation effort to collect fish from the area within the cofferdam involving the capture and return of those fish to suitable habitat within the Sacramento River. To ensure compliance, a fisheries biologist shall provide observation during initial dewatering activities within the cofferdam. Following the fish rescue effort, a report shall be prepared by the fisheries biologist and submitted to NMFS within 30 days.

Valley Elderberry Longhorn Beetle (VELB). The Project site was surveyed for the presence of suitable habitat for the federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*, VELB). No elderberry shrubs were observed within 100 feet of the project site. Based on this survey, no impacts to VELB would result from the Proposed Project/Action.

Swainson's Hawk. No known Swainson's hawk nesting habitat is proposed to be modified or eliminated by the Proposed Project/Action. Suitable nesting habitat is found adjacent to the Sacramento River within the valley riparian habitat. Habitat in this area includes riparian woodlands with large diameter (i.e., greater than 30 inches diameter at breast height) valley oak (*Quercus lobata*), cottonwood (*Populus fremontii*) and black willow (*Salix goodingii*). These overstory trees provide moderate to high (i.e., greater than 50%) canopy closure in this area. However, this riparian habitat would not be impacted by project activities. Scattered native trees also occur sparsely throughout the Action Area, and a few may be suitable for Swainson's hawk nesting. Disturbances to potential foraging habitat (i.e., annual grassland and agricultural areas) would be minimal and temporary, and are not expected to impact this species based on the overall regional abundance of these habitat types.

The Swainson's hawk is listed as threatened by the State of California. With numerous records of Swainson's hawk nests occurring within one mile of the project site along the Sacramento River (CNDDDB, 2011) there is a moderate to high potential this area may be used by this species for nesting. Impacts to an active Swainson's hawk nest would be potentially significant. To compensate potential disturbance and to avoid impacts to active nest sites, the following mitigation measures are proposed. With implementation of 2008 IS/EA Mitigation Measures BIO-21, and modified 2008 IS/EA Mitigation Measures BIO-22 and BIO-23, presented below, potential impacts to Swainson's hawk would be reduced to a less-than-significant level.

Mitigation Measure BIO-22: Swainson's Hawk, Nesting Raptors and Other Nesting Bird Survey. For any construction activities that will occur between March 1 and August 31 of any given year, the applicant shall conduct preconstruction surveys in suitable nesting habitat within 0.5 mile of the construction area for nesting raptors. Surveys shall be conducted by a qualified biologist. In addition, all trees slated for removal during the nesting season shall be surveyed by a qualified biologist no more than 48-hours before removal to ensure that no nesting birds are occupying the tree.

If active nests are found during the survey, the applicant shall implement appropriate mitigation measures to ensure that the species will not be adversely affected, which will include establishing a no-work buffer zone as, approved by the CDFG, around the active nest. The no-work buffer may vary depending on species and site specific conditions as approved by CDFG. Appropriate mitigation measures include delaying construction activities until a qualified biologist determines that juveniles have fledged the nest(s), or establishing a "no construction" zone buffer around the nest.

The results of the survey shall be documented in a letter report that is distributed to the CDFG. These measures would ensure compliance with the Migratory Bird Treaty Act and California Department of Fish and Game Code 3503.5.

Mitigation Measure BIO-23: Riparian Habitat Exclusion. Where construction work occurs adjacent to riparian habitat (i.e., at the existing Drexler Diversion and

Pumping Plant and the Grimes Canal modifications), there shall be no encroachment by construction equipment or personnel into existing riparian habitat areas located along the Sacramento River. Storage or parking of equipment shall be restricted within 100 feet of riparian habitat.

- b) **Less-than-Significant with Mitigation.** Based on the habitats present in the project site, the following special-status species may be impacted by the Proposed Project/Action:

- Western burrowing owl
- Bank Swallow
- Cackling (Aleutian Canada Goose)
- Osprey

Western burrowing owl, bank swallow, cackling goose, and osprey. Potential nest sites for these birds may be directly or indirectly affected by project construction. In addition, other nesting birds such as migratory birds protected by the Migratory Bird Treaty Act may also be impacted by the Proposed Project/Action. To compensate for these potential impacts, the following mitigation measure is proposed. With implementation of 2008 IS/EA Mitigation Measures BIO-21, modified 2008 IS/EA Mitigation Measures BIO-22, and proposed Mitigation Measure BIO-H potential impacts to these species would be reduced to a less-than-significant level.

Mitigation Measure BIO-I: Pre-construction surveys for burrowing owls shall be conducted by a qualified biologist as approved by the California Department of Fish and Game (CDFG) within 30-days prior to the start of work activities where land construction is planned in known or suitable habitat. If construction activities are delayed for more than 30 days after the initial preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the CDFG/California Burrowing Owl Consortium survey protocols. This survey can be conducted concurrently with Mitigation Measure BIO-22.

If burrowing owls are discovered in the proposed project site vicinity during construction, the onsite biologist shall be notified immediately. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFG verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

If this criteria is not met, occupied burrows during the nesting season will be avoided by establishment of a no-work buffer of 250-foot around the occupied/active burrow. Where maintenance of a 250-foot no-work buffer zone is not practical, the applicant shall consult with the CDFG to determine appropriate avoidance measures. Burrows occupied during the breeding season (February 1 to August 31) will be closely monitored by the biologist until the young fledge/leave the nest. The onsite biologist shall have the authority to stop work if it is determined that construction related activities are disturbing the owls.

If criterion 1 or 2 above are met and as approved by CDFG, the biologist shall undertake passive relocation techniques by installing one-way doors in active and suitable burrows

allowing owls to escape but not re-enter. Owls should be excluded from the immediate impact zone and within a 160-foot buffer zone by having one-way doors placed over the entrance to prevent owls from inhabiting those burrows.

After nesting season ends (August 31) and the burrow is deemed unoccupied by the biologist, passive relocation techniques shall take place. Construction activities may occur once a qualified biologist has deemed the burrows are unoccupied.

- c) **Less-than-Significant with Mitigation.** The sensitive natural community that would be potentially impacted by the Proposed Project/Action is the Sacramento River and associated Valley foothill riparian. However, with avoidance, minimization, and erosion control measures outlined in Section 2 (Project Description), impacts to the Sacramento River and riparian habitats are considered less-than significant. Both communities provide habitat for a range of terrestrial wildlife species, including several species of songbirds, small mammals, mesocarnivores, and herptiles. Implementation of 2008 IS/EA Mitigation Measure BIO-1, modified 2008 IS/EA Mitigation Measures BIO-2 and BIO-23 and Mitigation Measure BIO-G would ensure no disturbance and encroachment into these sensitive riparian habitat areas, and would reduce this impact to a less-than significant level.
- d) **Less-than-Significant with Mitigation.** The Proposed Project/Action would temporarily and permanently fill perennial stream channel (Sacramento River) with the proposed placement of the Meridian diversion facilities within the ordinary high water mark of the Sacramento River. These features are navigable and therefore regulated under Section 10 of the Rivers and Harbors Act. In addition, existing irrigation channels would be modified to improve conveyance from the proposed diversion facilities. These channels would likely be considered jurisdictional by the Corps per Section 404 of the Clean Water Act and RWQCB per Section 401 of the Clean Water Act. Lastly, alteration to the beds or banks of the Sacramento River would require entering into a Streambed Alteration Agreement with the CDFG as required per Section 1602 of the State Fish and Game Code. According to a wetland delineation prepared by MWH in 2011, the only feature that may qualify as a wetland and/or waters of the U.S. in the Proposed Project/Action area is the Sacramento River. The location and extent of wetlands or waters of the U.S., as identified in the wetland delineation, will be confirmed when the Corps verifies the wetland delineation. Therefore, implementation of BIO-I and modified 2008 IS/EA Mitigation Measure BIO-28 would reduce impacts to wetlands in the event that the potential fill of these features requires compensation to a less-than-significant level.

Mitigation Measure BIO-J: Wetlands. If it is determined that the Proposed Project/Action impacts waters of the U.S., the MFWC shall obtain all required permit approvals from the Corps, RWQCB, CDFG and any other agencies with permitting responsibilities for construction activities within jurisdictional features. Permit approvals and certifications would likely include the following:

Clean Water Act Section 404. Permit approval from the Corps shall be obtained for the placement of dredge or fill material in waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. The Section 404 permit application would require a delineation of wetlands and other waters of the U.S., a jurisdictional determination

from the Corps, and preparation of a Pre-Construction Notification (PCN) and supporting documentation. A PCN outlines project activities, areas of impact, construction techniques, and methods for avoiding and reducing impacts to jurisdictional features. State and federal regulations require that the project applicant avoid or minimize impacts to wetlands and waters and develop appropriate protection for wetlands. Wetlands that cannot be avoided must be compensated to result in “no net loss” of wetlands to ensure that the project would maintain the current functions and values of onsite wetland habitats.

Clean Water Act Section 401 Water Quality Certification/Porter-Cologne Act. Approval of Water Quality Certification (WQC) under the CWA and/or Waste Discharge Requirements (WDRs) under the Porter-Cologne Act shall be obtained from the RWQCB for work within jurisdictional waters. Application for a WQC requires an application and supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance. Application for a WDR requires an application and supporting materials, including a characterization of the discharge which includes but is not limited to: design and actual flows; a list of constituents and the discharge concentration of each constituent; a list of other appropriate waste discharge characteristics; a description and schematic drawing of all treatment process; a description of any BMPs used; and a description of disposal methods. Proof of CEQA compliance is also required.

California Fish and Game Code Section 1602. CDFG requires a Streambed Alteration Agreement for activities that result in alteration of the bed or bank of a stream (typically the top of bank or edge of riparian habitat, whichever is greater), or that adversely impact fish or wildlife resources. The notification package must include supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance.

Mitigation Measure BIO-28: Compensation for Loss of Jurisdictional Wetlands.

If the Proposed Project/Action results in the permanent degradation of riverine and wetland habitat, those impacts shall be compensated for at a 1:1 ratio through the purchase of similar habitat value from a USFWS-approved conservation bank. Compensation shall take the form of wetland and/or riverine preservation or creation in accordance with the Corps and CDFG mitigation requirements, as required under project permits. Preservation and creation may occur onsite through a conservation agreement or offsite through purchasing credits at a Corps approved mitigation bank.

- e) **Less-than-Significant Impact.** Construction of the Proposed Project/Action may have a temporary impact to the movements of some terrestrial wildlife during construction. In addition, salmonids and other fresh water fish species may be temporarily displaced during construction. However, construction of the Proposed Project/Action would not result in any permanent barriers to species movement, and migratory corridors for fish and wildlife would be unaffected. In addition, as part of the Fish Rescue Plan a fish-salvage program would be implemented during coffer dam construction as described in the Project Description (attached). Therefore, this impact would be less than significant.

- f) **No Impact.** The Proposed Project/Action is not anticipated to conflict with any local policies or ordinances protecting biological resources. No impact would occur.
- g) **No Impact.** The Proposed Project/Action is not located within a defined Habitat Conservation Area and therefore is not expected to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

4.3.5 Cultural Resources

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|--------------------------|
| 5. CULTURAL RESOURCES — Would the project: | | | | |
| a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Disturb any human remains, including those interred outside of formal cemeteries? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

A records search of all pertinent survey and site data was conducted at the Northeast Information Center at California State University, Chico on April 7, 2004 (IC File # D04-20). The records search covered the Phase 1 and Phase 2 project area (which included the Proposed Project/Action facilities). The records were accessed by using the Meridian and Grimes U.S. Geological Survey (USGS) 7.5-minute quadrangle maps, T14N, R1E; T15N, R1E; and T15N, R1W in Sutter County. The review included proposed Phase 1 and Phase 2 facilities footprints (proposed pump locations, existing pump locations, and proposed pipelines and canals) as well as a ¼ mile around the Phase 1 and Phase 2 facilities locations. The records search included a review of the *Directory of Properties in the Historic Property Data File for Sutter County* for information on sites of recognized historical significance within the *National Register of Historic Places*, the *California Register of Historic Resources*, the *California Inventory of Historic Resources* (1976), the *California Historical Landmarks* (1996), and the *California Points of Historical Interest* (1992).

An archaeological field inspection of the project area was conducted on May 7, 2004 by two ESA Registered Professional Archaeologists. The proposed Phase 1 and Phase 2 facilities sites inspected using systematic survey transects spaced approximately 10 to 20 meters apart. Segments of the existing canal that would be rehabilitated were inspected using cursory survey techniques.

On January 23, 2008, Reclamation initiated National Historic Preservation Action (NHPA) Section 106 Consultation with the California State Historic Preservation Officer (SHPO). Reclamation concluded that both Phase 1 and Phase 2 of the Proposed Project/Action would not result in an affect to historic properties. On February 5, 2008, SHPO concurred with these findings.

The January 2008 Cultural Resources Inventory Report includes the results of the records search and field inspection. The results of the January 2008 Report adequately cover the potential effects of the Proposed Project/Action and no further analysis was required. Therefore, the analysis of potential impacts to cultural resources resulting from implementation of the Proposed Project/Action is based on the findings included in that 2008 Report.

- a) **Less-than-Significant Impact.** The cultural resources inventory conducted for the proposed Phase I and Phase 2 facilities identified one potentially significant historical resource, the Main Canal, a small, concrete-lined irrigation canal extending south from the existing Meridian pumping facility. Although an exact date of construction of this canal is not known, available information indicated that it was built prior to 1952 but after 1912. Other existing facilities that would be modified under the Proposed Project/Action include: the existing Meridian pumping facility, built in 1964; and the existing Drexler pumping facility, also a minimal structure which was moved to its present location.

None of the facilities described above meet significance criteria established under CEQA and Section 106 of the NHPA; and therefore, are not considered to be significant resources and any alteration of these structures, including demolition, would be considered less than significant. In addition, as described in subsection 2.5, measures have been incorporated into the Proposed Project/Action that will be made conditions of approval which minimize potential damage or destruction of cultural resources discovered during construction activities. The measures state that if any potential historical resources should be encountered during construction of the Proposed Project/Action, all work within a 50-foot radius of the resource would stop until the resource can be evaluated and a determination made of its significance and need for additional studies. As a result, construction and operation the Proposed Project/Action would result in less-than-significant impacts to historical resources.

- b) **Less-than-Significant Impact.** According to the results of the records search, the Phase 1 and Phase 2 project area has never been previously inspected for the presence of archaeological remains and no archaeological remains have been identified within the project area or within a ¼ mile radius. The archaeological field survey conducted by ESA Registered Professional Archaeologists on May 7, 2004 did not result in the identification of any archaeological remains in or adjacent to the project area. The Native American Heritage Commission was contacted on March 11, 2004 and again on November 7, 2007 and requested to search their Sacred Lands File and requested to provide a list of Native American that should be contacted concerning the Proposed Project/Action. A letter was sent to each individual or organization on the list on March 26, 2004 and again in November of 2007. On December 27, 2007, ESA received a letter from the Enterprise Band of Maidu Indians requesting that if during ground disturbing activities, any resources are uncovered, all work cease within the area of the find pending an examination of the site and materials by a professional archaeologist. The contact information provided by the NAHC for the

Strawberry Valley Rancheria included only a mailing address, and on January 24, 2008, ESA sent a follow up letter to the Strawberry Rancheria requesting that they contact ESA if they had any questions or concerns. To date, no responses have been received.

Although no archaeological remains have been identified for the project area, there is a remote chance that construction activities could result in accidentally discovering previously unidentified archaeological resources. As described in subsection 2.5, measures have been incorporated into the Proposed Project/Action that will be made conditions of approval which minimize potential damage or destruction of cultural resources discovered during construction activities. The measures state that if any potential historical resources should be encountered during construction of the Proposed Project/Action, all work within a 50-foot radius of the resource would stop until the resource can be evaluated and a determination made of its significance and need for additional studies. As a result, construction and operation the Proposed Project/Action would result in less-than-significant impacts to archeological resources.

- c) **Less-than-Significant Impact.** No known paleontological resources or unique geologic features exist within the project area. Therefore, the Proposed Project/Action is not likely to destroy, either directly or indirectly, a unique paleontological resource or site, or geological feature. However, it is possible that previously unidentified paleontological resources could be uncovered during construction activities. As described in subsection 2.5, measures have been incorporated into the Proposed Project/Action that will be made conditions of approval which minimize potential damage or destruction of cultural resources discovered during construction activities. The measures state that if any potential historical resources should be encountered during construction of the Proposed Project/Action, all work within a 50-foot radius of the resource would stop until the resource can be evaluated and a determination made of its significance and need for additional studies. As a result, construction and operation the Proposed Project/Action would result in less-than-significant impacts to paleontological resources.
- d) **Less-than-Significant Impact.** Based upon a records search, contacts with Native Americans, and a field survey, no human remains are known to exist within the project area. However, As described in subsection 2.5, measures have been incorporated into the Proposed Project/Action that will be made conditions of approval which minimize potential damage or destruction of cultural resources or human remains discovered during construction activities. The measures state that in the unlikely event that human remains are discovered, work within the area would be stopped and Sutter County Sheriff-Coroner would be notified immediately. Work would only resume after the investigation and in accordance with any requirements and procedures imposed by the Sutter County Sheriff-Corner. In the event that the bone most likely represents a Native American interment, the Native American Heritage Commission would be notified so that the most likely descendents can be identified and appropriate treatment can be implemented. As a result, construction and operation the Proposed Project/Action would result in less-than-significant impacts to archeological resources.

4.3.6 Geology, Soils, and Seismicity

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 6. GEOLOGY, SOILS, AND SEISMICITY — Would the project: | | | | |
| a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: | | | | |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| ii) Strong seismic ground shaking? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iii) Seismic-related ground failure, including liquefaction? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iv) Landslides? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Result in substantial soil erosion or the loss of topsoil? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a i.) **No Impact.** The project site is not located in an Alquist-Priolo Earthquake Fault Zone, as defined by the California State Department of Conservation, Geological Survey (CGS, formerly the Division of Mines and Geology), and no active or potentially active faults exist on, or in the immediate vicinity of the site (Sutter County, 2008). The Proposed Project/Action would involve trenching and excavating to a depth of no more than 25 feet on primarily level terrain and will incorporate the use of trench shoring measures consistent with the CBC and CAL/OSHA requirements for trenching and excavation activities. As a result the potential for slope instability hazards and landslides during construction and operation of the proposed project is not anticipated and no impact would occur.
- aii-iv.) **Less-than-Significant Impact.** According to the Fault Activity Map for California (Jennings, 1994), the project area is located approximately 38 miles northeast of the Concord/Green Valley fault; 15 miles east of the Great Valley thrust fault (segments 4 and 5); 40 miles west of the Foothills Fault System; and 50 miles west of the Marsh Creek-Greenville fault system. It is likely that the project area would experience at least

one major earthquake, greater than Magnitude 6, within the next 30 years. In the event of an earthquake in the eastern San Francisco Bay Area or along the Coast Range-Central Valley, severe ground motion could occur within the project area. The intensity of such an event would depend on the active fault, the distance to the epicenter, the magnitude of the event, and the duration of shaking.

The project area is generally level with the exception of the levee in the vicinity of the Meridian Diversion and Drexler diversion. Levees within the project area are inspected and maintained by the various Reclamation Districts that have jurisdiction and the California Department of Water Resources (DWR). These levees could be susceptible to failure during excessive ground motion, and areas where earthen fills are present could experience differential settlement. Construction of the Meridian Diversion and the demolition of the existing Meridian and Drexler diversions have the potential to alter the structural integrity of the levee by placing additional structural stress on the levee during a seismic event. Settling of a levee during an earthquake could result in failure of the earthen structure and result in damage to Proposed Project/Action facilities and damage to areas being protected by levees.

Proposed Project/Action facilities would be designed and constructed to industry standards to protect against impacts from adverse geological impacts associated with seismic activity and other site specific soils and geology constraints, including compliance with Uniform Building Code (UBC) standards for Seismic Risk Zone 3, California Building Code (CBC), International Building Code (IBC), and American Society of Civil Engineers (ASCE) standards. With respect to the levee in the proposed project site, construction of new and removal of existing diversion would require compliance with Central Valley Flood Protection Board (CVFPB) and Corps requirements. As a result, impacts associated with strong seismic ground shaking and seismic related ground failure would be less than significant.

- b) **Less-than-Significant Impact.** During construction of the Proposed Project/Action, grading and other soil disturbing activities may introduce the potential for soil erosion. See the discussion under Checklist Item 8 a,f for a discussion of the effects of soil erosion on water quality. As discussed under Checklist item 8 a,f, the MFWC would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) in accordance with Section 402 of the Clean Water Act. In addition, to the extent possible and practical, topsoil that is removed in the farmed areas as part of project construction would be stockpiled separately and then replaced at the conclusion of construction. Stockpiles that are to remain on the site would be protected to prevent wind and water erosion according to measures outlined in the SWPPP. As a result, any potential impacts related to soil erosion and loss of top soil associated with the Construction of the Proposed Project/Action would be less than significant.

- c,d) **Less-than-Significant Impact.** As described under Checklist Item aii-iv, construction and demolition activities associated with the Proposed Project/Action would be accomplished according to industry standards, including conformance with the CBC, UBC, IBC, and

ASCE standards to protect proposed project facilities against hazards associated with unstable soil conditions, expansive soils, landslides, lateral spreading, subsidence, and/or liquefaction. As a result, impacts related to unstable and expansive soils would be less than significant.

- e) **No Impact.** No additional new on-site wastewater treatment systems would be installed to support the Proposed Project/Action and no impact would occur.

4.3.7 Greenhouse Gas Emissions

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---|--|---|--------------------------|
| 7. GREENHOUSE GAS EMISSIONS — Would the project: | | | | |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Discussion

- a,b) **Less-than Significant Impact.** The Proposed Project/Action would result in minor emissions of GHGs associated with construction and operational activities. During construction, the proposed project would generate short-term, less than significant CO₂ emissions associated with combustion of gasoline and diesel fuel during the trenching, grading, clearing, and other site preparation activities. Operation of the Proposed Project/Action would result in the consolidation of existing intake facilities and would likely result in similar to or less than operational emissions as existing conditions. Lastly, both construction and operational GHG emissions would be intermittent and would be less than the lower reporting limit for major stationary sources established by the California Air Resources Board and the EPA, which typically include fossil fuel burning power plants, petroleum refineries, petrochemical plants, and food processing plants. As a result, the Proposed Project/Action would not represent a major source of GHGs and would be less than significant.

4.3.8 Hazards and Hazardous Materials

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 8. HAZARDS AND HAZARDOUS MATERIALS — Would the project: | | | | |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Discussion

- a,b) Construction and operation of the Proposed Project/Action could involve the use, storage and disposal of small quantities of hazardous materials. The use, storage, and transport of hazardous materials would be required to comply with applicable local, state, and federal regulations. Transportation of hazardous materials on area roadways is regulated by CHP and Caltrans, and use of these materials is regulated by DTSC, as outlined in Title 22 of the CCR. Any project facilities that would use or store hazardous materials would be required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases. Because the Proposed Project/Action is required by law to implement and comply with existing hazardous material regulations, impacts related to the creation of significant hazards to the public through routine, transport, use, disposal, and risk of upset are less than significant. In addition, measures described in subsection 2.5, have been incorporated into the Proposed Project/Action that will be made conditions of approval, which minimize potential impacts associated with hazards and hazardous materials during construction and operation. These measures include

- protocols for the handling and transportation of potentially hazardous materials and the preparation of a hazardous materials management plan in the event of an accidental release or threatened release of hazardous materials. As a result, construction and operation the Proposed Project/Action would result in less-than-significant impacts related to hazards and hazardous materials.
- c) **Less-than-Significant Impact.** Winship Elementary is located within one quarter mile of Proposed Project/Action facilities. However, construction and operation of the pump station would be confined to the land parcel at the intersection of Alameda Street and South Meridian Road and would not affect the school facility. In considering the distance of these schools from proposed facilities and minimal quantities and types of hazardous substances used during construction, there would be negligible impacts to existing schools. In addition, measures described in subsection 2.5, have been incorporated into the Proposed Project/Action that will be made conditions of approval, which minimize potential impacts associated with hazards and hazardous materials during construction and operation. These measures include protocols for the handling and transportation of potentially hazardous materials and the preparation of a hazardous materials management plan in the event of an accidental release or threatened release of hazardous materials. As a result, construction and operation the Proposed Project/Action would result in less-than-significant impacts to existing schools.
 - d) **Less-than-Significant Impact.** None of the Proposed Project/Action facilities are located on a site which is known to be included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. As indicated in Section 3, one site was identified within one mile of the Proposed Project/Action; however, the site is a sufficient distance (e.g. > 400 feet) away from actual construction activities and; therefore, would not create a significant hazard to the public or the environment and this impact would be less than significant.
 - e,f) **No Impact.** The closest airport is Sutter County Airport, which is located over 10 miles to the east of the project area. The construction and operation of the Proposed Project/Action would have no effect on preexisting safety hazards relative to any nearby public airport operations; therefore, no impact would occur.
 - g) **Less-than-Significant Impact.** The Proposed Project/Action would not affect any roads identified in the Sutter County General Plan as primary evacuation routes. However, several other temporary lane or road closures may be required as identified in Table 2-3 in Proposed Project/Action Description. MFWC would be required to obtain encroachment permits for all temporary and permanent road closures for all County road rights-of-way (ROW). Compliance with the terms of the encroachment permits would ensure that construction and operation of the Proposed Project/Action does not physically interfere with any adopted emergency response plan or emergency evacuation plan. As a result, the impact would be less than significant.

- h) **Less-than-Significant Impact.** The project area is classified as primarily non-fuel in nature, with one area having a moderate risk for wildfire (CalFire, 2008). As described in the Proposed Project/Action description, during construction, staging areas, welding areas, or areas slated for development using spark-producing equipment would be cleared of dried vegetation and other materials that could serve as fire fuel. Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. Therefore construction and operation of the Proposed Project/Action would not be expected to expose people or structures to a significant risk of loss, injury or death involving wildland fires and this impact would be less than significant.

4.3.9 Hydrology and Water Quality

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 9. HYDROLOGY AND WATER QUALITY — Would the project: | | | | |
| a) Violate any water quality standards or waste discharge requirements? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f) Otherwise substantially degrade water quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| j) Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The following mitigation measures from the 2008 IS/EA were adopted by CDFG and would mitigate hydrology and water quality associated with implementation of both Phase 1 and Phase 2 of Proposed Project/Action. CDFG and MFWC would ensure that construction and operation of the Proposed Project/Action would be implemented consistent with the mitigation, monitoring and enforcement requirements for the 2008 IS/EA MMRP (See Appendix A).

2008 IS/EA MITIGATION MEASURES

Hydrology and Water Quality

HYDRO-1 Identify Site Specific Control Measures

Discussion

- a,f) **Less-than-Significant.** At the onset of project construction, there would be a potential for surface runoff to transport upland construction spoils into the adjacent river, which could result in temporary increases in turbidity and sedimentation in downstream portions of the Sacramento River. Construction operations within the river channel during trenching operations would also result in increases in turbidity. Excessive sediment in the water column (increased turbidity) can reduce channel capacity, alter drainage characteristics, or affect aquatic organisms through reduced water quality.

The removal of riparian vegetation along drainages and disturbance of the riverbed, bank or levees could also result in increased erosion during construction activities. Disturbing the geomorphic characteristics and stability of the channel bed and banks could lead to chronic erosion problems in the river's channel. Such impacts could be exacerbated if the riparian vegetation is not reestablished and stabilized prior to the next high-flow or precipitation event or if appropriate stream channel restoration actions are not taken.

Prior to construction, MFWC would be required to obtain an National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Stormwater Associated with Construction Activities (NPDES General Stormwater Permit), from the CVRWQCB. Conditions of this permit would include adherence to requirements of the revised NPDES General Permit, effective July 1, 2010. Permit requirements would include:

- Preparation of hazardous material spill control and countermeasure programs;
- Stormwater quality sampling, monitoring, and compliance reporting;
- Development and adherence to a Rain Event Action Plan;
- Adherence to numeric action levels and effluent limits for pH and turbidity; monitoring of soil characteristics on site;
- Mandatory training under a specific curriculum; and
- Mandatory implementation of Best Management Practices (BMPs), which may include, but would not be limited to:

- Physical barriers to prevent erosion and sedimentation including setbacks and buffers, rooftop and impervious surface disconnection, rain gardens and cisterns, and other installations;
- Construction and maintenance of sedimentation basins;
- Limitations on construction work during storm events;
- Use of swales, mechanical, or chemical means of stormwater treatment during construction, including vegetated swales, bioretention cells, chemical treatments, and mechanical stormwater filters; and
- Implementation of spill control, sediment control, and pollution control plans and training.

The specific BMPs to be implemented would be determined prior to issuance of the NPDES General Permit, in coordination with the CVRWQCB. Adherence to these BMPs would be required as a condition of the permit, and would substantially reduce or prevent waterborne pollutants from entering natural waters, per CVRWQCB standards.

The project would also be required to obtain Clean Water Act Section 401 and 404 permits which include requirements for the preparation of a SWPPP. The SWPPP would include measures to minimize erosion and sediment transport to streams and identify best management practices (e.g., water diversion and sediment containment devices, protection of construction spoils, installation of water bars), site restoration, post-construction monitoring of the effectiveness of best management practices, contingency measures, responsible parties, and agency contacts.

Groundwater extracted during construction dewatering would be undertaken in accordance with RWQCB General Order No. 5-00-175 for NPDES General Permit No. CA G995001. This General Order and NPDES permit covers waste discharge requirements for dewatering and other low threat discharges to surface water.

Compliance with NPDES permit requirements and development and implementation of a SWPPP would reduce construction water quality impacts to less-than-significant level.

- b) **Less-than-Significant Impact.** The use of groundwater wells for potable or irrigation water is not proposed and no existing wells are located within the footprint of proposed facilities. It is recognized that dewatering operations would occur and may result in localized and temporary lowering of the water table. However, as described under Checklist Item 8a,f, these operations would implement standardized methods as required by the RWQCB and the MFWC's adopted NPDES General Dewatering Permit. Methods for treating this water would also be outlined in the MFWC's SWPPP. Consequently, impacts to groundwater quantity and quality during the construction and operation of the Proposed Project/Action would be less than significant.
- c) **Less-than-Significant Impact.** Construction activities would occur during periods of low flow (July through September) to minimize bank erosion. Once fully implemented, the Proposed Project/Action would result in a net reduction in the number of diversion

impoundment along the Sacramento River. In addition, implementation of 2008 IS/EA Mitigation Measure HYDRO-1 would minimize the exposure of sediments to runoff and would not result in the permanent alteration of the river's channel and this impact would be reduced to a less-than-significant level.

- d) **Less-than-Significant Impact.** Existing drainage patterns would be temporarily disrupted during project construction. Two small drainage ditches are located near the proposed Drexler re-lift pump station on the western side of the Main Canal. Berm widening and the placement of the pump pad would impact these two locations. These activities, however, are not likely to affect the overall capacity of the drainages. As a result, drainage related impacts would be less than significant.
- e) **Less-than-Significant Impact.** Implementation of the Proposed Project/Action would overall create up to a half acre of new impervious surface but is not expected to substantially create runoff that would exceed the capacity of an existing or planned stormwater drainage system; therefore, this impact would be areas of low permeability. Consequently, the amount of additional runoff expected to be generated by the project would be minimal. Therefore, the Proposed Project/Action is not expected to exceed the capacity of existing or planned storm water drainage systems, and impacts would be less than significant.
- g) **No Impact.** The Proposed Project/Action would include the construction or placement of housing within floodplains; therefore, no impact would occur.
- h) **Less-than-Significant Impact.** MWH engineers (2002) conducted a preliminary hydraulic analysis for sections of the Sacramento River in the vicinity of the project. Based upon the data from 1950 through 2000, the 90 percent and 10 percent exceedance flows at Meridian were used to calculate the stage elevations. The stage elevations used for the design at Meridian were 32.6 feet at 90% exceedance flows and 50.3 feet at 10% exceedance flows. Likewise, the stage elevations used for the design at the Grimes diversion were 27.7 feet at 90 % exceedance flows and 45.6 feet at 10% exceedance flows. The 90% exceedance flow elevation was used as a starting point to determine the upper limit of the fish screens that would lead to submergence. The pump motors at the proposed Meridian Diversion would be located on the land-side of the levee.

Control structures utilized during construction of the Proposed Project/Action would be used during the summer months when surface flows are at their minimum. It is the MFWD's intention to complete all river-side work during the lowest possible levels. In addition, the Proposed Project/Action would result in the consolidation of existing surface water diversions, thereby resulting in a net reduction in the number of diversion impoundments with the Sacramento River. Therefore, no new structures would be placed within a 100-year flood hazard that would redirect or impede flood flows and this impact would be less than significant.

- i) **Less-than-Significant Impact.** All structures constructed on or adjacent to the Sacramento River levee would be designed and built to Corps and CVFPB standards and requirements

to mitigate the risk of levee failure and flooding. Compliance with Corps and CVFPB standards would reduce impacts associated with flooding to less than significant.

- j) **No Impact.** The project area is located on and near flat topography remote from major water bodies capable of producing a seiche, tsunamis, or significant mudflows. No impact would occur.

4.3.10 Land Use and Land Use Planning

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 10. LAND USE AND LAND USE PLANNING — Would the project: | | | | |
| a) Physically divide an established community? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Conflict with any applicable habitat conservation plan or natural community conservation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a,b) **No Impact.** Implementation of the Proposed Project/Action would not directly or indirectly physically divide an established community as there are no established communities in the project area. The Proposed Project/Action would continue to serve existing agricultural uses in the vicinity of the project area and would not conflict with or be incompatible with existing land use and zoning plans related to agriculture. Therefore, no impact would occur. Never the less, measures described in subsection 2.5, have been incorporated into the Proposed Project/Action that will be made conditions of approval, which would require compensation for temporary and permanent easements and for property loss and/or damage to property.
- c) **No Impact.** The Project/Action area is not within a defined Habitat Conservation Plan Area and therefore, construction and operation of the Proposed Project/Action is not expected to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

4.3.11 Mineral Resources

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 11. MINERAL RESOURCES — Would the project: | | | | |
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a,b) **No Impact.** As identified in the Sutter County General Plan, there are no active mines or sources of mineral extraction in the vicinity of the project site (Sutter County, 2008). Therefore, implementation of the Proposed Project/Action would not result in the loss of availability of a known mineral resource and would not result in the loss of availability of a locally-important mineral resource recovery site. No impact would occur.

4.3.12 Noise

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 12. NOISE — Would the project: | | | | |
| a) Result in Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Result in Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Result in A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Result in A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e) For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The following mitigation measures from the 2008 IS/EA were adopted by CDFG and would mitigate noise impacts associated with implementation of both Phase 1 and Phase 2 of Proposed Project/Action. CDFG and MFWC would ensure that construction and operation of the Proposed Project/Action would be implemented consistent with the mitigation, monitoring and enforcement requirements for the 2008 IS/EA MMRP (See Appendix A).

2008 IS/EA MITIGATION MEASURES

Noise

| | |
|---------|--|
| NOISE-1 | Minimization of Construction and Operational Noise |
|---------|--|

Discussion

- a) **Less-than-Significant Impact with Mitigation.** Sutter County does not have a community noise ordinance, but regulates noise and noise land use incompatibility through implementation of its General Plan Noise Element (Sutter County, 2011). Policy N 1.4 requires that all new non-transportation noise (e.g., stationary sources) be mitigated to levels in Table 11-3 of the Sutter County General Plan Noise Element (Sutter County, 2011). Table 11-3 establishes an hourly noise level of 55 dBA and maximum noise level of 70 dBA for non-transportation noises sources during daytime hours (7:00 am to 10:00 pm) (Sutter County, 2011). In addition, the Noise Element establishes noise level performance standards.

The project site is located in rural Sutter County. Sensitive receptors in the vicinity of the Proposed Project/Action area are generally limited to scattered rural residences and small residential areas in the town of Meridian. The Meridian pump station would generate noise comparable to that of the existing pump station facility; no long-term changes to the ambient noise environment are anticipated. The Drexler re-lift pump station is located over 3,000 feet from the closest resident and therefore would have little or no effect on the existing ambient noise environment. In addition, measures described in subsection 2.5, have been incorporated into the Proposed Project/Action that will be made conditions of approval, which would require noise attenuation during construction activities to minimize exposure of persons to noise levels in excess of applicable standards. In addition, implementation of 2008 IS/EA Mitigation Measure NOISE-1 would further minimize increases in noise levels. Therefore, this would be considered a less-than-significant impact.

- b,d) **Less-than-Significant Impact with Mitigation.** Construction activities could lead to temporary or periodic increases in ambient noise levels in the project vicinity above the existing ambient noise levels. Construction of the Proposed Project/Action would also involve the use of pile-driving activities which could generate noise in excess of 95 dBA at a distance of 50 feet, despite the incorporation of feasible noise control measures. The nearest residence to the proposed Meridian Diversion is located at a distance of approximately 630 feet.

Using this distance in conjunction with an attenuation rate of 6 dBA per doubling of distance from the source, noise at the nearest residence during pile driving activities could reach 74 dBA. This value is above the County's maximum standard of 70 dBA during daytime hours.

Measures described in subsection 2.5, have been incorporated into the Proposed Project/Action that would be made conditions of approval, which would require noise attenuation during construction activities to minimize exposure of receptors to increased noise levels. In addition, implementation of 2008 IS/EA Mitigation Measure NOISE-1 would further minimize increases in noise levels. Therefore, increases in noise levels associated with pile driving and other construction activities would be less than significant.

- c) **Less-than-Significant Impact.** As described in Checklist Item 11a, noise generated from the operation of the Proposed Project/Action would be comparable to the existing ambient noise environment once constructed. In addition, measures described in subsection 2.5, have been incorporated into the Proposed Project/Action that will be made conditions of approval, which would require noise attenuation be incorporated into final project design to minimize exposure of persons to increases in operational noise levels. Therefore, the Proposed Project/Action would not result in a substantial permanent increase in noise levels and this impact would be less than significant.
- e) **No Impact.** The closest airport, Sutter County Airport, is located at approximately 14 miles from the Proposed Project/Action. Furthermore, no new development of noise sensitive land uses is proposed as part of the Proposed Project/Action. For this reason, the Proposed Project/Action would not expose people residing or working in the project area to excessive noise levels associated with air traffic. No impact would occur.
- f) **No Impact.** The Proposed Project/Action is not located within the immediate vicinity of a private airstrip. No impact would occur

4.3.13 Population and Housing

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 13. POPULATION AND HOUSING — Would the project: | | | | |
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a) **No Impact.** The Proposed Project/Action is designed to protect and enhance anadromous fisheries on the Sacramento River and comply with state and federal Endangered Species

Acts as MFWC continues to divert water from the Sacramento River for agricultural irrigation. The Proposed Project/Action would not increase the amount of entitled water diverted from the Sacramento River and all diverted water would continue to be used exclusively for agricultural irrigation. Therefore, construction and operation of the Proposed Project/Action would not contribute to an increase in regional or local populations and no impact would occur.

- b,c) **No Impact.** The Proposed Project/Action would not require the demolition of existing housing, thereby displacing substantial numbers of people necessitating the construction of housing elsewhere. As a result, no impacts related to population and housing would occur.

4.3.14 Public Services

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---|--|---|-------------------------------------|
| 14. PUBLIC SERVICES — Would the project: | | | | |
| a) Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: | | | | |
| i) Fire protection? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| ii) Police protection? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| iii) Schools? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| iv) Parks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| v) Other public facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- ai-v) **No Impact.** The Proposed Project/Action is designed to divert water from the Sacramento River for agricultural irrigation and would not increase the amount of entitled water diverted from the Sacramento River. Therefore, construction and operation of the Proposed Project/Action would not contribute to an increase in regional or local populations resulting in an increased demand for public services. No impact would occur.

4.3.15 Recreation

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 15. RECREATION — Would the project: | | | | |
| a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a,b) **No Impact.** The Proposed Project/Action is the construction and operation of an agricultural water system to support existing agricultural uses. Implementation of the Proposed Project/Action would not contribute to an increased in demand for parks or other recreational facilities or require the construction or expansion of new recreational facilities. No impact to recreational resources would occur.

4.3.16 Transportation and Traffic

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|---|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 16. TRANSPORTATION AND TRAFFIC — Would the project: | | | | |
| a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in inadequate emergency access? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Discussion

- a,b) **Less-than-Significant Impact with Mitigation.** Construction of the Proposed Project/Action would intermittently and temporarily generate increases in vehicle trips by construction workers and construction vehicles on area roadways. Construction activities would also result in a temporary reduction in the number of, or the available width of, travel lanes on roads where full or partial closures are required, resulting in short-term traffic delays for vehicles traveling past the construction zones, and in some cases, temporary closure of road segment, with resulting disruption to access for adjacent land uses and streets for both general traffic and emergency vehicles.

Construction activities would also generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways to and from construction areas. Construction-generated traffic would be temporary and therefore would not result in any long-term degradation in operating conditions or level of service (LOS) on any local roadways. The primary off-site impacts from the movement of construction trucks, primarily any materials hauling trucks, would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles.

Implementation of the following mitigation measures would reduce potential conflicts during construction activities to a less-than-significant level.

Mitigation Measure TRAFFIC-1: Following completion of construction activities, contractor(s) shall restore any damage to construction access routes to existing conditions or better.

Mitigation Measure TRAFFIC-2: Prior to and during construction activities, contractor(s) shall prepare and implement a Traffic Control Plan in accordance with professional engineering standards prior to construction. The Traffic Control Plan should include the following requirements, or equally effective measures:

- Emergency services access to local land uses shall be maintained at all times for the duration of construction activities. Local emergency service providers shall be informed of road closures and detours.
- For roadways requiring full closures, contractor(s), in coordination with Sutter County, shall develop circulation and detour plans to minimize impacts to local street circulation. This would include the use of signing to guide vehicles onto alternative roads around the construction zone.
- Advanced warning signs of construction activities shall be posted to allow motorists to select alternative routes in advance. This will include noticing of residents and businesses fronting the alignment at least two weeks prior to the commencement of construction activities.
- Access for local land uses including during construction activities shall be maintained.
- Roadside safety protocols shall be complied with, so as to reduce the risk of accident.
- A telephone resource shall be arranged to address public questions and complaints during project construction.

- c) **No Impact.** The proposed project would not involve aircraft, nor would the project structures intrude into aircraft flight paths or air traffic spaces. Therefore, the Proposed Project/Action would not impact on air traffic patterns that results in substantial safety risks. No impact would occur.
- d) **No impact.** The Proposed Project would not include the design, construction or operation of any roadways. Therefore, it would not substantially increase hazards due to sharp curves or dangerous intersections or incompatible uses. No impact would occur.
- e) **Less-than-Significant Impact with Mitigation.** Construction activities would affect access for emergency vehicles traveling past the construction zones. Construction within or across streets, and temporary reduction in travel lanes, could result in delays for emergency vehicle access in the vicinity of the worksites. In addition, access to driveways and to cross streets along the construction route could be temporarily blocked due to trenching and paving. This could be an inconvenience to some and a significant problem for others, particularly emergency service providers (e.g., police and fire). Travel through the construction zone by emergency vehicles would be maintained at all time. With the incorporation of Mitigation Measure TRAFFIC-2 impacts to emergency access would be less than significant.
- f) **No Impact.** The project area is not served by designated transit, bicycle, or pedestrian facilities. Therefore impacts to adopted plans or policies related to public transit, bicycle, or pedestrian facilities are not anticipated and no impact would occur.

4.3.17 Utilities and Service Systems

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|-------------------------------------|
| 17. UTILITIES AND SERVICE SYSTEMS — Would the project: | | | | |
| a) Conflict with wastewater treatment requirements of the applicable Regional Water Quality Control Board? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Require or result in the construction of new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| g) Comply with federal, state, and local statutes and regulations related to solid waste? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Discussion

- a,b,e) **No Impact.** The Proposed Project/Action is designed to divert water from the Sacramento River for agricultural irrigation and would not increase the amount of entitled water diverted from the Sacramento River. Therefore, construction and operation of the Proposed Project/Action would not contribute to an increase in regional or local populations resulting in the construction of new or expanded wastewater or water treatment facilities. Therefore, implementation of the Proposed Project/Action would not exceed wastewater treatment requirements of the CVRWQCB. Therefore, no impact would occur.
- c) **No Impact.** The Proposed Project/Action would not increase impervious surface cover over existing condition so that it would require the construction of a new storm drainage system or expansion of an existing stormwater drainage facility. Therefore, no impact would occur.
- d) **No Impact.** MFWC has sufficient water supplies and existing entitlements to serve the Proposed Project/Action. Therefore, no new or expanded entitlements would be required for the Proposed Project/Action and no impact would occur.
- f,g) **Less-than-Significant Impact.** Construction activities would not generate a significant amount of solid wastes. It is anticipated that solid wastes generated by construction activities would be disposed by the contractor(s) at the Ostrum Road Landfill in Yuba County, which has an expected closure date of 2066 (Sutter County, 2008). The Ostrum Road Landfill is the primary location for the disposal of waste by the Yuba Sutter Disposal, Inc. Once constructed, operation of the Proposed Project/Action would continue to produce solid wastes approximately equivalent to the existing operations and therefore would not substantially increase the amount of wastes to be collected, transported and disposed of at the YSDI landfill. As a result, the Proposed Project/Action is expected to have less-than-significant impact on solid waste disposal.

4.3.18 Environmental Justice, Socioeconomics, and Indian Trust Assets

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|--------------------------|
| 18. Environmental Justice, Socioeconomics, and Indian Trust Assets — Would the project: | | | | |
| a) Adversely affect minority or low-income populations and Indian Trust Assets? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Discussion

- a) Demographic analysis of the local population indicates that no minority or low-income communities of concern are located within the affected environment for the Proposed

Project/Action that warrant environmental justice analysis. Reclamation has determined that there are no ITAs within the vicinity of the project area. Consequently, no environmental justice, socioeconomic or Indian trust impacts are associated with the Proposed Project/Action.

4.3.19 Mandatory Findings of Significance

| <i>Issues (and Supporting Information Sources):</i> | <i>Potentially Significant Impact</i> | <i>Less Than Significant with Mitigation Incorporation</i> | <i>Less Than Significant Impact</i> | <i>No Impact</i> |
|--|---------------------------------------|--|-------------------------------------|--------------------------|
| 19. MANDATORY FINDINGS OF SIGNIFICANCE — Would the project: | | | | |
| a) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Discussion

- a) **Less-than-Significant with Mitigation.** As discussed in the Air Quality, Geology Soils and Seismicity, Hydrology and Water Quality, Noise, and the Transportation and Traffic, sections of this Initial Study, the Proposed Project/Action would result in potentially significant temporary impacts as a result of construction of the Proposed Project/Action that would have the potential to degrade the quality of the environment. However, adoption and implementation of mitigation measures described in this Initial Study would reduce these individual impacts to less than significant levels.
- b) **Less-than-Significant with Mitigation.** The impacts of the Proposed Project/Action are individually limited and not considered "cumulatively considerable". Although incremental changes can be expected as a result of the implementation of the Proposed Project/Action, all environmental impacts that could potentially occur would be reduced to a less than significant level through implementation of the mitigation measures recommended in this Initial Study for the following resource areas: Air Quality, Geology Soils and Seismicity, Hydrology and Water Quality, Noise, and Transportation and Traffic.

- c) **Less-than-Significant with Mitigation.** Proposed Project/Action impacts include the potential for an accidental release of hazardous materials stored in the proposed project construction area that could enter nearby waterways, adjacent lands, or public roadways. With implementation of mitigation measures provided in the Hazards and Hazardous Materials section, the proposed project would not result in environmental effects that could cause adverse effects on human beings, either directly or indirectly. Temporary impacts to human beings through degradation of local air quality and noise could occur during construction. However, with implementation of mitigation measures provided in the Air Quality and Noise sections, these temporary impacts would be less than significant.
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