

Summary

INTRODUCTION

The California State Water Resources Control Board (SWRCB) and the U.S. Army of Corps of Engineers (Corps) have prepared this draft environmental impact report/environmental impact statement (EIR/EIS) for the Delta Wetlands (DW) project. The draft EIR/EIS was prepared in accordance with the provisions of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The applicant's proposed project, as evaluated in this draft EIR/EIS, would involve:

- diverting and storing water on two Sacramento-San Joaquin Delta (Delta) islands (Bacon Island and Webb Tract, or "reservoir islands") for later discharge for export sales or to meet outflow requirements for the San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta) estuary;
- seasonally diverting water to create and enhance wetlands and to manage wildlife habitat on two Delta islands (Bouldin Island and Holland Tract, or "habitat islands");
- constructing recreation facilities along the perimeter levees on all four DW project islands; and
- during periods of nonstorage, managing shallow water within an inner levee system on the reservoir islands.

To operate its project, DW would improve and strengthen levees on all four islands and install additional siphons and water pumps on the perimeters of the reservoir islands. DW would operate the habitat islands to support wetlands and wildlife habitat.

BACKGROUND

The Delta is part of an interconnected system that includes Suisun Marsh, San Francisco Bay, and the

Sacramento and San Joaquin Rivers. The Bay-Delta estuary is one of the most important and complex estuaries on the Pacific Coast, providing important aquatic and terrestrial habitat for fish, waterfowl, and other wildlife. Water that flows through the Delta supplies a portion of the domestic water supply for over two-thirds of the state's population and irrigates several million acres of farmland.

DW originally applied for water rights to seasonally store water on all four project islands. The DW project, as originally proposed, was analyzed in a draft EIR/EIS released in December 1990. In August 1993, DW submitted new water right applications that revised the DW project description. This new draft EIR/EIS presents the environmental assessment of the DW project based on the new project description.

The purpose of the DW project is to divert surplus Delta inflows, transferred water, or banked water for later sale and/or release for Delta export or to meet water quality or flow requirements for the Bay-Delta estuary. Additionally, the DW project would provide managed wetlands and wildlife habitat areas and recreational uses.

CEQA/NEPA PROCESS

The purposes of this EIR/EIS are to analyze and disclose the environmental effects of DW's project, to identify ways to reduce or avoid potential adverse environmental impacts resulting from the project, and to identify and assess alternatives to the proposed action.

CEQA and NEPA require environmental analyses for local, state, and federal permitting processes. DW has applied to SWRCB's Division of Water Rights for the necessary permits to divert water, store it on the DW project islands, and discharge it into Delta channels for export or to meet Bay-Delta estuary outflow requirements. DW also has applied to the Corps for a permit under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 to discharge dredged or fill material into waters of the United States and for other project activities in navigable waters.

Because of DW's applications to SWRCB and the Corps, SWRCB is deemed the lead agency under CEQA and the Corps is deemed the lead agency under NEPA. The joint draft EIR/EIS has been prepared under the direction of the lead agencies to comply with the regulatory requirements of both CEQA and NEPA.

EIR/EIS Public Review Period

This draft EIR/EIS is being circulated for a 60-day public review period, during which the public and interested agencies are encouraged to submit comments on the document. Comments should be sent directly to the Corps or SWRCB, the joint lead agencies. A public hearing will be conducted during the review period to solicit oral comments on this EIR/EIS. Once all comments have been assembled and reviewed, the Corps and SWRCB will prepare responses on all notable environmental issues that have been raised. These responses to comments, combined with the draft EIR/EIS, will constitute the final EIR/EIS.

Water Right and Permit Application Process

DW has applied for water right permits for direct diversion or diversion to storage of surplus Delta inflows, storage of water, and discharge of water from the reservoir islands and the habitat islands to Delta channels to meet Bay-Delta estuary water quality or flow requirements, or redirection of water from the Delta for export. SWRCB's decision on DW's water right applications will therefore address the availability of water for direct diversion, diversion to storage, discharge of water into the Delta, and export of stored water. Separate authorization would be required from SWRCB for approval of use/point of diversion of the DW project to divert and discharge transferred or banked water. The EIR/EIS describes the analysis of the effects of the diversion of water onto the DW project islands and redirection of water for export at the Delta export pumps and discusses the relationship of such diversions and pumping to applicable federal and state restrictions.

Department of the Army Corps Permit Application Process

Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States, including wetlands, unless a permit is ob-

tained from the Corps. Section 10 of the Rivers and Harbors Act of 1899 prohibits placement of materials in navigable waters of the United States without a permit from the Corps. DW is required to obtain a permit from the Corps for DW project fill activities associated with perimeter and interior levee work on the reservoir islands; habitat enhancement activities on the habitat islands; and construction of boat docks, pumps, and siphons in Delta channels. As part of compliance with the Clean Water Act, Section 401 requires SWRCB certification that the proposed discharge complies with state water quality standards.

PROJECT ALTERNATIVES

Three project alternatives and the No-Project Alternative, described below, were selected to represent the range of project operations for purposes of determining environmental impacts; all alternatives are designed to operate within the objectives of SWRCB's 1995 Water Quality Control Plan for the San Francisco Bay/ Sacramento-San Joaquin Delta Estuary (1995 WQCP):

- Alternative 1 consists of operation of two reservoir islands and two habitat islands and implementation of a habitat management plan (HMP). Under Alternative 1, DW discharges would be subject to "percent of inflow" export limits specified in the 1995 WQCP.
- Alternative 2 consists of operation of two reservoir islands and two habitat islands and implementation of an HMP. Under Alternative 2, DW discharges for export would not be subject to strict interpretation of the 1995 WQCP "percent of inflow" export limits.
- Alternative 3 consists of operation of four reservoir islands, with limited compensation habitat provided in the North Bouldin Habitat Area (NBHA) on Bouldin Island. Under Alternative 3, discharges for export would not be subject to strict interpretation of the 1995 WQCP "percent of inflow" export limits.
- The No-Project Alternative consists of intensified agricultural production on all four DW project islands.

Alternatives 1 and 2

Alternatives 1 and 2 entail the potential year-round diversion and storage of water on Bacon Island and Webb Tract, and wetland and wildlife habitat creation and management, with the incidental sale of water used for wetland and wildlife habitat creation, on Bouldin Island and Holland Tract. Recreation facilities would be constructed along the perimeter levees of all four islands.

To operate Alternative 1 or 2, DW would improve levees on the perimeters of the reservoir islands and install additional siphons and water pumps. Inner levee systems would also be constructed on both the reservoir and habitat islands for shallow-water management.

Under Alternative 1 or 2, during periods of availability throughout the year, water would be diverted onto the reservoir islands to be stored for later sale or release and would be discharged from the islands into Delta channels for sale for beneficial uses for export or for Bay-Delta estuary needs during periods of demand. Discharges from the islands would be subject to state and federal regulatory standards, endangered species protection measures, and Delta export pumping capacities. Storage capacity on the reservoir islands would total an estimated 238 thousand acre-feet (TAF), allocated between Bacon Island and Webb Tract as 118 TAF and 120 TAF, respectively. Water would be diverted onto the habitat islands to be used for creation and management of wetlands and wildlife habitat during periods of availability and need.

Portions of the habitat islands and the reservoir islands would support recreational activities. Up to 38 private recreation facilities may be located on the perimeter levees of all four islands. These recreation facilities, with up to 40 bedrooms each, will include boat docks in adjacent channels, with 30 boat berths, and boat docks on the island interiors, with up to 36 boat berths, that may be operated year round. Subject to restrictions in the HMP, waterfowl hunting would be allowed on all four DW project islands.

DW would operate a private airstrip on Bouldin Island for maintenance and recreational use. Use of the airstrip would be restricted by the HMP during the waterfowl season to minimize disturbance to wildlife. No restrictions would apply during other times of the year.

Alternative 3

Under Alternative 3, all four DW project islands would be managed for year-round diversion and storage of water. This alternative represents the maximum water appropriations that would be achieved if SWRCB grants DW's water right applications. It also represents the maximum amount of water storage that would be feasible on the four project islands based on levee height and internal elevation. Storage capacity under Alternative 3 would total an estimated 406 TAF. Project operations under this alternative would be the same as those under Alternative 2 with respect to diversion, discharge, and recreation operations and construction of recreation facilities. Water storage operations would require substantial investments in internal levee construction on Bouldin Island. A habitat reserve would be created north of State Route (SR) 12 on Bouldin Island to compensate for some of the wildlife and wetland impacts associated with water storage operations. Additional offsite wildlife habitat and wetland compensation would be required for this alternative.

No-Project Alternative

The No-Project Alternative entails DW implementing intensive agricultural operations on the four project islands or selling the property to another entity that would likely implement intensive agriculture. The No-Project Alternative is based on the assumption that intensified agricultural conditions represent the most realistic scenario for the DW project islands if permit applications are denied. It is assumed that no new DW recreation facilities would be built.

IMPACT ASSESSMENT OF ALTERNATIVES

Approach to Impact Analysis

The impact analysis for each resource topic in the EIR/EIS identifies and compares the probable impacts of each alternative specific to the resource topic. These comparative analyses highlight differences and similarities in predicted impacts between the alternatives.

For those chapters not addressing water resources, impacts were addressed through comparison between expected conditions associated with the DW project alternatives and existing conditions. For those chapters assess-

sing water resource effects of the DW project (Chapter 3A, "Water Supply and Water Project Operations"; Chapter 3B, "Hydrodynamics"; Chapter 3C, "Water Quality"; and Chapter 3F, "Fishery Resources"), impacts were assessed through comparison between simulated (modeled) conditions associated with each alternative and with the No-Project Alternative as described below.

Evaluating Environmental Changes and Effects on Water Resources

Simulated effects of DW project operations on the Delta cannot be directly compared with the historical record of Delta operations for purposes of impact assessment because historical Delta operations did not include current operating criteria; facilities; and conditions, such as upstream and export demands for water. To provide a point of reference for assessing the impacts of simulated operations of the DW project alternatives, it was therefore necessary to also simulate a baseline condition consisting of the same operating conditions but without operations of the DW project. This point of reference is the simulated No-Project Alternative. Simulation results for the DW project alternatives and the No-Project Alternative are shown corresponding to the 70-year hydrologic record for water years 1992-1991. These simulation results, however, do not correspond to historical Delta operations and should not be confused with actual Delta operating conditions for these years. They represent Delta operations, based on monthly averages, that would likely have occurred under the hydrologic conditions of those water years with a regulatory scenario consisting of the 1995 WQCP and with current facilities and upstream and export demand for water.

Levels of Impacts Considered

The impact analysis used in the resource chapters was designed to comply with CEQA and NEPA guidelines. For each resource topic, three levels of impacts were considered:

- direct impacts on the DW project islands and on adjacent Delta channels;
- indirect impacts on the project vicinity, including the Delta, Suisun Marsh, San Francisco Bay and, in some cases, upstream areas, induced by direct project-related changes in the environment; and
- cumulative impacts.

The study area for analysis of direct project impact consists of the four project islands, surrounding channels, and adjacent islands. The study area for analysis of indirect impacts is the vicinity of the statutory Delta, as defined by Section 12220 of the California Water Code, and the hydrologically related Suisun Marsh and San Francisco Bay. In some cases, upstream areas are included in the study area for indirect impacts. The study area for cumulative impact analysis consists of the combination of the direct and indirect impact areas.

Where uncertainty exists in predicting the extent of project construction and operations, the impact analysis is based on "worst-case" conditions. For example, because DW is not certain of the size of the various recreation facilities, the impact analysis is based on the assumption that the largest possible facility would be built at all locations, even though it may not be realistic to have a facility of this size at every location.

Mitigation Measures

Where the DW project alternatives are predicted to cause significant impacts, mitigation measures are identified. In accordance with CEQA and NEPA guidelines, measures are proposed that would avoid, minimize, rectify, reduce, or compensate for the predicted impacts.

The feasibility and effectiveness of the mitigation measures are described to the extent possible. Mitigation measures may include modifying the project design or operations to reduce predicted impacts to less-than-significant levels wherever feasible. Mitigation measures are presented for effects of the No-Project Alternative to provide information to the reviewing agencies regarding measures that would reduce effects of the No-Project Alternative. These measures would not be required under the No-Project Alternative; however, this information will allow the reviewing agencies to make a more realistic comparison of the DW project alternatives.

Comparison of Impacts of Alternatives

Results of impact analyses for each alternative are summarized in Table S-1. This table shows impacts by resource topics, level of significance without mitigation, mitigation measures to reduce impacts, and level of significance with mitigation. The sequence of resource topics in the table conforms to the sequence of chapters in the document.

PERMIT AND ENVIRONMENTAL REVIEW AND CONSULTATION REQUIREMENTS

In addition to the entitlements required by SWRCB and the Corps, the DW project will require compliance with other state and federal laws, including Section 7 of the Endangered Species Act, the Fish and Wildlife Coordination Act, Section 106 of the National Historic Preservation Act, and the California Endangered Species Act. Entitlements may also be required from regional and local agencies, including the Bay Area Air Quality Management District, San Joaquin Valley Unified Air Pollution Control District, Contra Costa and San Joaquin County planning and public works departments, State Division of Aeronautics, and reclamation districts. Chapter 4, "Permit and Environmental Review and Consultation Requirements", describes these requirements.

IMPACT CONCLUSIONS

In accordance with CEQA and NEPA, this EIR/EIS focuses on the predictable changes in the environment for each of the project alternatives. The changes in the environment analyzed in this document encompass water resources and the aquatic ecosystem; vegetation, wetlands, and wildlife resources; flood control; public services and health; land uses; cultural resources; traffic and air quality; and economic issues.

This EIR/EIS analyzes the environmental effects of DW's project, identifies ways to reduce or avoid potential environmental impacts resulting from the project, and identifies and assesses alternatives to the proposed action. The following sections identify the environmentally superior alternative, the irreversible or irretrievable commitments of resources, growth inducement, unresolved issues, and areas of controversy regarding the proposed project.

Environmentally Superior Alternative

The alternatives selected for analysis in this EIR/EIS comply with the CEQA and NEPA requirement to analyze a reasonable range of alternatives and with the U.S. Environmental Protection Agency's (EPA's) Section 404(b)(1) guidelines requirement for the Corps to demonstrate that it is issuing a permit under Section 404 of the Clean Water Act to the least environmentally damaging practicable alternative. The lead agencies initially considered a broad range of actions that potentially

could have been considered as alternatives to the proposed project. This list of alternatives was then narrowed to those analyzed in this EIR/EIS to include only those reasonably foreseeable alternatives that could meet the overall project purpose, given considerations of cost, existing technology, and logistics. The Section 404(b)(1) Alternatives Analysis for the Delta Wetlands Project, prepared under a separate cover for submittal to EPA and included as Appendix 4 of the draft EIR/EIS, presents the alternatives analysis leading up to the selection of alternatives for assessment in this EIR/EIS. The environmental impact assessment of this EIR/EIS, in combination with the Section 404(b)(1) alternatives analysis, presents the lead agencies' process for determining the environmentally superior alternative for CEQA and NEPA purposes and the least environmentally damaging practicable alternative for Section 404(b)(1) purposes.

All the alternatives, including the No-Project Alternative, would cause significant and unavoidable environmental impacts. Although no mitigation measures would be implemented if the lead agencies denied approval of the DW project and "adopted" the No-Project Alternative, it could be argued that because the No-Project Alternative would not involve any significant water operations, it would cause the least severe environmental impacts. However, the No-Project Alternative was eliminated from consideration as a practicable alternative to the proposed project because it would not meet the project purpose. It is analyzed in this EIR/EIS only to satisfy the requirements of CEQA and NEPA. Therefore, it is not considered the environmentally superior alternative.

Among those alternatives considered practicable, Alternative 3 would cause the most severe environmental impacts (see Table S-1). All impacts associated with reservoir island water operations under Alternatives 1 and 2 would occur with implementation of Alternative 3, but would be greater because Alternative 3 would generally have twice the storage capacity of Alternative 1 or 2. Alternative 3 would affect resources through water storage operations on Bouldin Island and Holland Tract that would not occur under Alternatives 1 and 2. Additionally, Alternative 3 would not have the benefits associated with implementation of the HMP that would occur with Alternatives 1 and 2.

The environmental effects of Alternative 1 and 2 are nearly identical. The project descriptions of the two alternatives differ only with regard to discharges of stored water. As stated above, under Alternative 2, discharges from storage would not be subject to strict interpretation of the 1995 WQCP "percent of inflow" export limit and would therefore be slightly more frequent than discharges under Alternative 1. Alternative 2 would allow more frequent discharges from the DW reservoir islands for

export at the CVP and SWP pumping plants and would have a slightly larger potential to increase the supply of water for export from the Delta. However, the period of discharge may be shorter for Alternative 2. Therefore, the monthly average changes in export simulated for Alternatives 1 and 2 were very similar.

Because the difference between Alternatives 1 and 2 is related to water operations, the differences in the environmental effects described below are related to water resources and the aquatic ecosystem:

- Alternative 1 would allow a smaller average volume of discharge for export at the CVP and SWP pumping plants and would have slightly more evaporation loss from the reservoirs than Alternative 2. Therefore, Alternative 1 would have slightly more of an effect on consumptive use than Alternative 2.
- Alternative 2 could allow higher or more frequent discharges for export at the CVP and SWP pumping plants consistent with the maximum monthly average and daily average discharge rates of the DW project and would result in slightly higher flows in the Delta channels between the DW reservoir islands and the pumping plants (i.e., Old and Middle River channels) than Alternative 1. Therefore, Alternative 2 would have slightly greater adverse hydrodynamic effects on these south Delta channels during DW discharge periods.
- Alternative 2 would allow slightly more discharges for export than Alternative 1 during February, March, May, and June, months when fish are more sensitive to habitat changes. Therefore, Alternative 1 would have slightly less adverse effect on fish populations.

Irreversible or Irrecoverable Commitments of Resources

Irrecoverable commitment of resources would occur as a result of implementation of the proposed project. The resources that would be irretrievably committed are associated with construction, operation, and maintenance of the project facilities and include building materials, fossil fuels, labor, energy resources, and land converted from its present uses. However, most of the land converted for water storage and wetland and wildlife habitat creation could physically be converted back to existing land uses, although project permit conditions would make this unlikely.

Growth Inducement

The EIR/EIS estimates that annual mean monthly discharges for export under the DW project alternatives would total from 188 TAF to 302 TAF. According to DWR, current demands for water in California are estimated to exceed dependable supplies, and the water provided by the DW project could help reduce that deficit. However, the proposed project is considered growth inducing because it either would add water directly for export to municipal water supplies or agricultural production to support growth, or would be used for water quality or environmental requirements in substitution for other water that could be used to support growth.

Unresolved Issues

For purposes of the EIR/EIS analysis, the DW project is analyzed without consideration of subsequent environmental effects caused by the delivery of purchased DW water or by the storage of water under a third party's water rights because the identity of the end user of the DW water remains speculative. The DW project islands could also be used for interim storage of water being transferred through the Delta from sellers upstream to buyers served by Delta exports or to meet Bay-Delta estuary outflow requirements (water transfers), or for interim storage of water owned by parties other than DW for use to meet scheduled Bay-Delta estuary outflow requirements or for export (water banking). The effects caused by this type of use of the DW project are unresolved and, if proposed by some party in the future, would be required to be addressed in a separate environmental analysis.

Opportunities may exist to operate the DW project conjunctively with the CVP and SWP, but these arrangements remain speculative and are beyond the scope of this EIR/EIS. A separate entity purchasing DW water could divert that water from Delta channels to storage on the DW islands and discharge it, probably through CVP or SWP facilities, for direct use, to increase groundwater or surface water storage, or for estuarine or Delta beneficial uses (increased outflow). The purchasing entity would affect SWP or CVP operations to the same extent as any entity that diverts, stores, and discharges water in California.

Areas of Known Controversy

The DW project alternatives would increase the supply of water available for export from the Delta. As stated above, the identity of the end user of the DW water remains speculative. However, the potential end use of the DW project water is considered one of controversy because of the diverse interests in competing demands for water for municipal, agricultural, and environmental needs. Other areas of controversy center around the direct effects of the DW project. The DW project would involve significant direct adverse impacts on water quality, utilities and highways, fisheries, vegetation and wetlands, wildlife, visual resources, traffic, cultural resources, and mosquitos and public health that can be reduced to a less-than-significant level with implementation of mitigation. The DW project would involve significant direct adverse impacts on land use and agriculture, recreation and visual resources, traffic, cultural resources, and air quality that are not mitigable and are considered unavoidable.

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
CHAPTER 3A. WATER SUPPLY AND WATER PROJECT OPERATIONS			
Impact A-1: Increase in Delta Consumptive Use (LTS)	Impact A-2: Reduction in Delta Consumptive Use (B)	Impact A-3: Increase in Delta Consumptive Use (SU)	
• No mitigation is required.	• No mitigation is required.	• No mitigation is available.	
Cumulative Impacts			
Impact A-4: Reduction in Delta Consumptive Use under Cumulative Conditions (B)	The cumulative impact listed for Alternative 1 is the same for Alternative 2.	The cumulative impact listed for Alternative 1 is the same for Alternative 3.	
• No mitigation is required.			
CHAPTER 3B. HYDRODYNAMICS			
Impact B-1: Hydrodynamic Effects on Local Channel Velocities and Stages during Maximum DW Diversions (LTS)	The impacts listed for Alternative 1 are the same for Alternative 2.	Impact B-4: Hydrodynamic Effects on Local Channel Velocities and Stages during Maximum DW Diversions (LTS)	
• No mitigation is required.		• No mitigation is required.	
Impact B-2: Hydrodynamic Effects on Local Channel Velocities and Stages during Maximum DW Discharges (LTS)		Impact B-5: Hydrodynamic Effects on Local Channel Velocities and Stages during Maximum DW Discharges (LTS)	
• No mitigation is required.		• No mitigation is required.	
Impact B-3: Hydrodynamic Effects on Net Channel Flows (LTS)		Impact B-6: Hydrodynamic Effects on Net Channel Flows (LTS)	
• No mitigation is required.		• No mitigation is required.	
Cumulative Impacts			
Impact B-7: Cumulative Hydrodynamic Effects on Local Channel Velocities and Stages during Maximum DW Diversions (LTS)	The cumulative impacts listed for Alternative 1 are the same for Alternative 2.	The cumulative impacts listed for Alternative 1 are the same for Alternative 3.	
• No mitigation is required.			
Impact B-8: Cumulative Hydrodynamic Effects on Local Channel Velocities and Stages during Maximum DW Discharges (LTS)			
• No mitigation is required.			
Impact B-9: Cumulative Hydrodynamic Effects on Net Channel Flows (S)			
• Mitigation Measure B-1: Operate the DW Project to Prevent Unacceptable Hydrodynamic Effects in the Middle River and Old River Channels during Flows That Are Higher Than Historical Flows (LTS)			

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
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CHAPTER 3C. WATER QUALITY

Impact C-1: Salinity (EC) Increase at Chipps Island during Months with Applicable EC Objectives (S)

- **Mitigation Measure C-1: Restrict DW Diversions to Limit EC Increases at Chipps Island (LTS)**

Impact C-2: Salinity (EC) Increase at Emmaton during April-August (S)

- **Mitigation Measure C-2: Restrict DW Diversions to Limit EC Increases at Emmaton (LTS)**

Impact C-3: Salinity (EC) Increase at Jersey Point during April-August (S)

- **Mitigation Measure C-3: Restrict DW Diversions to Limit EC Increases at Jersey Point (LTS)**

Impact C-4: Salinity (Chloride) Increase in Delta Exports (S)

- **Mitigation Measure C-4: Restrict DW Diversions or Discharges to Limit Chloride Concentrations in Delta Exports (LTS)**

Impact C-5: Elevated DOC Concentrations in Delta Exports (CCWD Rock Slough, SWP Banks, CVP Tracy) (S)

- **Mitigation Measure C-5: Restrict DW Discharges to Prevent DOC Increases of Greater Than 0.8 mg/l in Delta Exports (LTS)**

Impact C-6: Elevated THM Concentrations in Treated Drinking Water from Delta Exports (CCWD Rock Slough, SWP Banks, CVP Tracy) (S)

- **Mitigation Measure C-6: Restrict DW Discharges to Prevent Increases of More Than 20 µg/l in THM Concentrations or THM Concentrations of Greater than 90 µg/l in Treated Delta Export Water (LTS)**

Impact C-7: Changes in Other Water Quality Variables in Delta Channel Receiving Waters (S)

- **Mitigation Measure C-7: Restrict DW Discharges to Prevent Adverse Changes in Delta Channel Water Quality (LTS)**

The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2

Impact C-9: Salinity (EC) Increase at Chipps Island during Months with Applicable EC Objectives (S)

- **Mitigation Measure C-1: Restrict DW Diversions to Limit EC Increases at Chipps Island (LTS)**

Impact C-10: Salinity (EC) Increase at Emmaton during April-August (S)

- **Mitigation Measure C-2: Restrict DW Diversions to Limit EC Increases at Emmaton (LTS)**

Impact C-11: Salinity (EC) Increase at Jersey Point during April-August (S)

- **Mitigation Measure C-3: Restrict DW Diversions to Limit EC Increases at Jersey Point (LTS)**

Impact C-12: Salinity (Chloride) Increase in Delta Exports (S)

- **Mitigation Measure C-4: Restrict DW Diversions or Discharges to Limit Chloride Concentrations in Delta Exports (LTS)**

Impact C-13: Elevated DOC Concentrations in Delta Exports (CCWD Rock Slough, SWP Banks, CVP Tracy) (S)

- **Mitigation Measure C-5: Restrict DW Discharges to Prevent DOC Increases of Greater Than 0.8 mg/l in Delta Exports (LTS)**

Impact C-14: Elevated THM Concentrations in Treated Drinking Water from Delta Exports (CCWD Rock Slough, SWP Banks, CVP Tracy) (S)

- **Mitigation Measure C-6: Restrict DW Discharges to Prevent Increases of More Than 20 µg/l in THM Concentrations or THM Concentrations of Greater than 90 µg/l in Treated Delta Export Water (LTS)**

Impact C-15: Changes in Other Water Quality Variables in Delta Channel Receiving Waters (S)

- **Mitigation Measure C-7: Restrict DW Discharges to Prevent Adverse Changes in Delta Channel Water Quality (LTS)**

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact C-8: Potential Contamination of Stored Water by Pollutant Residues (S)</p>		<p>Impact C-16: Potential Contamination of Stored Water by Pollutant Residues (S)</p>	
<ul style="list-style-type: none"> • Mitigation Measure C-8: Conduct Assessments of Potential Contamination Sites and Remediate as Necessary (LTS) 		<ul style="list-style-type: none"> • Mitigation Measure C-8: Conduct Assessments of Potential Contamination Sites and Remediate as Necessary (LTS) 	
<p>Cumulative Impacts</p>			
<p>Impact C-17: Salinity (EC) Increase at Chipps Island during Months with Applicable EC Objectives under Cumulative Conditions (S)</p>	<p>The cumulative impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.</p>	<p>The cumulative impacts and mitigation measures listed for Alternative 1 are the same for Alternative 3.</p>	
<ul style="list-style-type: none"> • Mitigation Measure C-1: Restrict DW Diversions to Limit EC Increases at Chipps Island (LTS) 			
<p>Impact C-18: Salinity (EC) Increase at Emmaton during April-August under Cumulative Conditions (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure C-2: Restrict DW Diversions to Limit EC Increases at Emmaton (LTS) 			
<p>Impact C-19: Salinity (EC) Increase at Jersey Point during April-August under Cumulative Conditions (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure C-3: Restrict DW Diversions to Limit EC Increases at Jersey Point (LTS) 			
<p>Impact C-20: Salinity (Chloride) Increase in Delta Exports under Cumulative Conditions (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure C-4: Restrict DW Diversions or Discharges to Limit Chloride Concentrations in Delta Exports (LTS) 			
<p>Impact C-21: Elevated DOC Concentrations in Delta Exports (CCWD Rock Slough, SWP Banks, CVP Tracy) under Cumulative Conditions (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure C-5: Restrict DW Discharges to Prevent DOC Increases of Greater Than 0.8 mg/l in Delta Exports (LTS) 			
<p>Impact C-22: Elevated THM Concentrations in Treated Drinking Water from Delta Exports (CCWD Rock Slough, SWP Banks, CVP Tracy) under Cumulative Conditions (S)</p>			

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Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<ul style="list-style-type: none"> Mitigation Measure C-6: Restrict DW Discharges to Prevent Increases of More Than 20 µg/l in THM Concentrations or THM Concentrations of Greater than 90 µg/l in Treated Delta Export Water (LTS) <p>Impact C-23: Changes in Other Water Quality Variables in Delta Channel Receiving Waters under Cumulative Conditions (S)</p> <ul style="list-style-type: none"> Mitigation Measure C-7: Restrict DW Discharges to Prevent Adverse Changes in Delta Channel Water Quality (LTS) <p>Impact C-24: Increase in Pollutant Loading in Delta Channels (SU)</p> <ul style="list-style-type: none"> Mitigation Measure C-9: Clearly Post Waste Discharge Requirements, Provide Waste Collection Facilities, and Educate Recreationists regarding Illegal Discharges of Waste (SU) 			

CHAPTER 3D. FLOOD CONTROL

<p>Impact D-1: Increase in Long-Term Levee Stability on Reservoir Islands (B)</p> <ul style="list-style-type: none"> No mitigation is required. <p>Impact D-2: Potential for Seepage from Reservoir Islands to Adjacent Islands (LTS)</p> <ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. <p>Impact D-3: Potential for Wind and Wave Erosion on Reservoir Islands (LTS)</p> <ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. <p>Impact D-4: Potential for Erosion of Levee Toe Berms at Pump Stations and Siphon Stations on Reservoir Islands (LTS)</p> <ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. 	<p>The impacts listed for Alternative 1 are the same for Alternative 2.</p>	<p>Impact D-7: Increase in Long-Term Levee Stability on Reservoir Islands (B)</p> <ul style="list-style-type: none"> No mitigation is required. <p>Impact D-8: Potential for Seepage from Reservoir Islands to Adjacent Islands (LTS)</p> <ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. <p>Impact D-9: Potential for Wind and Wave Erosion on Reservoir Islands (LTS)</p> <ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. <p>Impact D-10: Potential for Erosion of Levee Toe Berms at Pump Stations and Siphon Stations on Reservoir Islands (LTS)</p> <ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. 	<p>Decrease in Long-Term Levee Stability</p> <ul style="list-style-type: none"> Buttress Perimeter Levees <p>Increase in Potential for Seepage onto Project Islands</p> <p>Increase in Potential for Levee Failure during Seismic Activity</p>
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Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact D-5: Decrease in Potential for Levee Failure on DW Project Islands during Seismic Activity (B)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact D-11: Decrease in Potential for Levee Failure on DW Project Islands during Seismic Activity (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact D-6: Increase in Long-Term Levee Stability on Habitat Islands (B)</p> <ul style="list-style-type: none"> No mitigation is required. 			
Cumulative Impacts			
<p>Impact D-12: Decrease in Cumulative Flood Hazard in the Delta (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	<p>The cumulative impacts listed for Alternative 1 are the same for Alternative 2.</p>	<p>The cumulative impacts listed for Alternative 1 are the same for Alternative 3.</p>	<p>Increase in Cumulative Risk of Levee Failure in the Delta</p> <ul style="list-style-type: none"> Buttress Perimeter Levees
<p>Impact D-13: Decrease in the Need for Public Financing of Levee Maintenance and Repair on the DW Project Islands (B)</p> <ul style="list-style-type: none"> No mitigation is required. 			

CHAPTER 3E. UTILITIES AND HIGHWAYS

<p>Impact E-1: Increase in the Structural Integrity of County Roads (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	<p>The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2</p>	<p>Impact E-13: Increase in the Structural Integrity of County Roads (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	<p>Increase in the Risk of Road Failure and Maintenance and Repair Needs</p> <ul style="list-style-type: none"> Buttress Perimeter Levees
<p>Impact E-2: Reduction in Ferry Traffic from Jersey Island to Webb Tract (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact E-14: Increase in the Risk of Structural Failure of SR 12 (LTS)</p> <ul style="list-style-type: none"> Mitigation Measure E-8: Coordinate Design and Construction of Wilkerson Dam with Caltrans and DSOD (LTS) 	<p>Increase in Maintenance Requirements for Gas Lines on Bacon Island</p>
<p>Impact E-3: Increase in the Risk to Gas Lines Crossing Exterior Levees on Bacon Island (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact E-15: Increase in the Fog Hazard on SR 12 (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 	<p>Increase in the Risk of Structural Failure and Increase in Maintenance Requirements for Existing Transmission Utilities</p> <ul style="list-style-type: none"> Buttress Perimeter Levees
<p>Impact E-4: Increase in PG&E Response Time to Repair a Gas Line Failure on Bacon Island (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact E-16: Reduction in Ferry Traffic from Jersey Island to Webb Tract (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact E-5: Inundation of Electrical Transmission Utilities on the Reservoir Islands (S)</p> <ul style="list-style-type: none"> Mitigation Measure E-1: Relocate Electrical Transmission Lines to the Perimeter Levee around Webb Tract (LTS) 		<p>Impact E-17: Increase in the Risk to Gas Lines Crossing Exterior Levees on Bacon Island (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact E-6: Possible Need to Increase Capacity of the Existing Electrical Transmission Lines on the DW Project Islands (LTS)</p>		<p>Impact E-18: Increase in PG&E Response Time to Repair a Gas Line Failure on Bacon Island (LTS)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact E-7: Possible Need to Expand the Existing Electrical Transmission Lines on Webb Tract, Bouldin Island, and Holland Tract to Serve a Proposed Siphon Station and Recreation Facilities (S)</p>		<p>Impact E-19: Inundation of Electrical Transmission Utilities on the Reservoir Islands (S)</p>	
<ul style="list-style-type: none"> Mitigation Measure E-2: Extend Electrical Transmission Lines to Serve New Siphon and Pump Stations and Recreation Facilities (LTS) 		<ul style="list-style-type: none"> Mitigation Measure E-9: Relocate Electrical Transmission Lines to the Perimeter Levees around Webb and Holland Tracts and Bouldin Island (LTS) 	
<p>Impact E-8: Increase in Demand for Police Services on the DW Project Islands (S)</p>		<p>Impact E-20: Possible Need to Increase Capacity of the Existing Electrical Transmission Lines on the Reservoir Islands (LTS)</p>	
<ul style="list-style-type: none"> Mitigation Measure E-3: Provide Adequate Lighting in and around Buildings, Walkways, Parking Areas, and Boat Berths Mitigation Measure E-4: Provide Private Security Services for Recreation Facilities and Boat Docks (LTS) 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact E-9: Increase in Demand for Fire Protection Services on the DW Project Islands (S)</p>		<p>Impact E-21: Possible Need to Expand the Existing Electrical Transmission Lines on Webb Tract, Bouldin Island, and Holland Tract to Serve Proposed Siphon and Pump Stations and Recreation Facilities (S)</p>	
<ul style="list-style-type: none"> Mitigation Measure E-5: Incorporate Fire Protection Features into Recreation Facility Design Mitigation Measure E-6: Provide Fire Protection Services to Webb Tract and Bacon Island (LTS) 		<ul style="list-style-type: none"> Mitigation Measure E-2: Extend Electrical Transmission Lines to Serve New Siphon and Pump Stations and Recreation Facilities (LTS) 	
<p>Impact E-10: Increase in Demand for Water Supply Services (LTS)</p>		<p>Impact E-22: Increase in Demand for Police Services on the DW Project Islands (S)</p>	
<ul style="list-style-type: none"> Mitigation Measure E-7: Obtain Appropriate Local and State Permits for Recreation Facility Services and Utilities (LTS) 		<ul style="list-style-type: none"> Mitigation Measure E-3: Provide Adequate Lighting in and around Buildings, Walkways, Parking Areas, and Boat Berths Mitigation Measure E-4: Provide Private Security Services for Recreation Facilities and Boat Docks (LTS) 	
<p>Impact E-11: Increase in Demand for Sewage Disposal Services (LTS)</p>		<p>Impact E-23: Increase in Demand for Fire Protection Services on the DW Project Islands (S)</p>	
<ul style="list-style-type: none"> Mitigation Measure E-7: Obtain Appropriate Local and State Permits for Recreation Facility Services and Utilities (LTS) 		<ul style="list-style-type: none"> Mitigation Measure E-5: Incorporate Fire Protection Features into Recreation Facility Design Mitigation Measure E-6: Provide Fire Protection Services to Webb Tract and Bacon Island (LTS) 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact E-12: Increase in Demand for Solid Waste Removal (LTS)</p> <ul style="list-style-type: none"> • Mitigation Measure E-7: Obtain Appropriate Local and State Permits for Recreation Facility Services and Utilities (LTS) 		<p>Impact E-24: Increase in Demand for Water Supply Services (LTS)</p> <ul style="list-style-type: none"> • Mitigation Measure E-7: Obtain Appropriate Local and State Permits for Recreation Facility Services and Utilities (LTS) <p>Impact E-25: Increase in Demand for Sewage Disposal Services (LTS)</p> <ul style="list-style-type: none"> • Mitigation Measure E-7: Obtain Appropriate Local and State Permits for Recreation Facility Services and Utilities (LTS) <p>Impact E-26: Increase in Demand for Solid Waste Removal (LTS)</p> <ul style="list-style-type: none"> • Mitigation Measure E-7: Obtain Appropriate Local and State Permits for Recreation Facility Services and Utilities (LTS) 	
Cumulative Impacts			
<p>Impact E-27: Cumulative Decrease in the Risk of Structural Failure of Roadways and Utilities (B)</p> <ul style="list-style-type: none"> • No mitigation is required. 	<p>The cumulative impact listed for Alternative 1 is the same for Alternative 2.</p>	<p>The cumulative impact listed for Alternative 1 is the same for Alternative 3</p>	<p>Cumulative Increase in the Risk of Structural Failure of Roadways and Utilities</p> <ul style="list-style-type: none"> • Buttress Perimeter Levees

CHAPTER 3F. FISHERY RESOURCES

Impact F-1: Alteration of Habitat (S)

- **Mitigation Measure F-1: Implement Fish Habitat Management Actions (LTS)**

Impact F-2: Increase in Temperature-Related Mortality of Juvenile Chinook Salmon (S)

- **Mitigation Measure F-2: Monitor the Water Temperature of DW Discharges and Reduce DW Discharges to Avoid Producing Any Increase in Channel Temperature Greater Than 1°F (LTS)**

Impact F-3: Potential Increase in Accidental Spills of Fuel and Other Materials (LTS)

- No mitigation is required.

The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.

Impact F-9: Alteration of Habitat (S)

- **Mitigation Measure F-1: Implement Fish Habitat Management Actions (LTS)**

Impact F-10: Increase in Temperature-Related Mortality of Juvenile Chinook Salmon (S)

- **Mitigation Measure F-2: Monitor the Water Temperature of DW Discharges and Reduce DW Discharges to Avoid Producing Any Increase in Channel Water Temperature Greater than 1°F (LTS)**

Impact F-11: Potential Increase in Accidental Spills of Fuel and Other Materials (LTS)

- No mitigation is required.

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact F-4: Potential Increase in the Mortality of Chinook Salmon Resulting from the Indirect Effects of DW Project Diversions and Discharges on Flows (S)</p> <ul style="list-style-type: none"> • Mitigation Measure F-3: Operate the DW Project under Operations Objectives That Would Minimize Changes in Cross-Delta Flow Conditions during Peak Out-Migration of Mokelumne and San Joaquin River Chinook Salmon (LTS) <p>Impact F-5: Reduction in Downstream Transport and Increase in Entrainment Loss of Striped Bass Eggs and Larvae, Delta Smelt Larvae, and Longfin Smelt Larvae (S)</p> <ul style="list-style-type: none"> • Mitigation Measure F-4: Operate the DW Project under Operations Objectives That Would Minimize Adverse Transport Effects on Striped Bass, Delta Smelt, and Longfin Smelt (LTS) <p>Impact F-6: Change in Area of Optimal Salinity Habitat (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. <p>Impact F-7: Increase in Entrainment Loss of Juvenile Striped Bass and Delta Smelt (S)</p> <ul style="list-style-type: none"> • Mitigation Measure F-5: Operate the DW Project under Operations Objectives That Would Minimize Entrainment of Juvenile Striped Bass and Delta Smelt (LTS) <p>Impact F-8: Increase in Entrainment Loss of Juvenile American Shad and Other Species (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. 		<p>Impact F-12: Potential Increase in the Mortality of Chinook Salmon Resulting from the Indirect Effects of DW Project Diversions and Discharges on Flows (S)</p> <ul style="list-style-type: none"> • Mitigation Measure F-3: Operate the DW Project under Operations Objectives That Would Minimize Changes in Cross-Delta Flow Conditions during Peak Out-Migration of Mokelumne and San Joaquin River Chinook Salmon (LTS) <p>Impact F-13: Reduction in Downstream Transport and Increase in Entrainment Loss of Striped Bass Eggs and Larvae, Delta Smelt Larvae, and Longfin Smelt Larvae (S)</p> <ul style="list-style-type: none"> • Mitigation Measure F-4: Operate the DW Project under Operations Objectives That Would Minimize Adverse Transport Effects on Striped Bass, Delta Smelt, and Longfin Smelt (LTS) <p>Impact F-14: Change in Area of Optimal Salinity Habitat (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. <p>Impact F-15: Increase in Entrainment Loss of Juvenile Striped Bass and Delta Smelt (S)</p> <ul style="list-style-type: none"> • Mitigation Measure F-5: Operate the DW Project under Operations Objectives That Would Minimize Entrainment of Juvenile Striped Bass and Delta Smelt (LTS) <p>Impact F-16: Increase in Entrainment Loss of Juvenile American Shad and Other Species (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. 	

<p>Cumulative Impacts</p>			
<p>Impact F-17: Alteration of Habitat under Cumulative Conditions (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. <p>Impact F-18: Potential Increase in Accidental Spills of Fuel and Other Materials under Cumulative Conditions (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. 	<p>The cumulative impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.</p>	<p>The cumulative impacts and mitigation measures listed for Alternative 1 are the same for Alternative 3.</p>	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact F-19: Potential Increase in the Mortality of Chinook Salmon Resulting from the Indirect Effects of DW Project Diversions and Discharges on Flows under Cumulative Conditions (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure F-3: Operate the DW Project under Operations Objectives That Would Minimize Changes in Cross-Delta Flow Conditions during Peak Out-Migration of Mokelumne and San Joaquin River Chinook Salmon (LTS) 			
<p>Impact F-20: Reduction in Downstream Transport and Increase in Entrainment Loss of Striped Bass Eggs and Larvae, Delta Smelt Larvae, and Longfin Smelt Larvae under Cumulative Conditions (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure F-4: Operate the DW Project under Operations Objectives That Would Minimize Adverse Transport Effects on Striped Bass, Delta Smelt, and Longfin Smelt (LTS) 			
<p>Impact F-21: Change in Area of Optimal Salinity Habitat under Cumulative Conditions (LTS)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Impact F-22: Increase in Entrainment Loss of Juvenile Striped Bass and Delta Smelt under Cumulative Conditions (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure F-5: Operate the DW Project under Operations Objectives That Would Minimize Entrainment of Juvenile Striped Bass and Delta Smelt (LTS) 			
<p>Impact F-23: Increase in Entrainment Loss of Juvenile American Shad and Other Species under Cumulative Conditions (LTS)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
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CHAPTER 3G. VEGETATION AND WETLANDS

Impact G-1: Increase in Freshwater Marsh and Exotic Marsh Habitats (B)

- No mitigation is required.

Impact G-2: Loss of Riparian and Permanent Pond Habitats (LTS)

- Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required.

Impact G-3: Loss of Upland and Agricultural Habitats (LTS)

- Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required.

Impact G-4: Loss of Special-Status Plants (S)

- **Mitigation Measure G-1: Site Project Facilities to Avoid Special-Status Plant Populations**
- **Mitigation Measure G-2: Protect Special-Status Plant Populations from Construction and Recreational Activities**
- **Mitigation Measure G-3: Develop and Implement a Special-Status Plant Species Mitigation Plan (LTS)**

The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.

Impact G-5: Loss of Jurisdictional Wetlands on Reservoir Islands (S)

- **Mitigation Measure G-4: Develop and Implement an Offsite Mitigation Plan (LTS)**

Impact G-6: Loss of Special-Status Plants (S)

- **Mitigation Measure G-1: Site Project Facilities to Avoid Special-Status Plant Populations**
- **Mitigation Measure G-2: Protect Special-Status Plant Populations from Construction and Recreational Activities**
- **Mitigation Measure G-3: Develop and Implement a Special-Status Plant Species Mitigation Plan (LTS)**

Loss of Special-Status Plants

- **Protect Special-Status Plant Populations from Levee Maintenance Activities**
- **Develop and Implement a Special-Status Plant Species Mitigation Plan**

Cumulative Impacts

Impact G-7: Increase in Wetland and Riparian Habitats in the Delta (B)

- No mitigation is required.

The cumulative impact listed for Alternative 1 is the same for Alternative 2.

Impact G-8: Cumulative Loss of Section 404 Jurisdictional Emergent Wetland and Riparian Habitats (LTS)

- No mitigation is required.

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
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CHAPTER 3H. WILDLIFE

Impact H-1: Loss of Upland Habitats (LTS)

- Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required.

Impact H-2: Increase in Suitable Wetland Habitats for Nongame Water and Wading Birds (B)

- No mitigation is required.

Impact H-3: Loss of Foraging Habitats for Wintering Waterfowl (LTS)

- Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required.

Impact H-4: Increase in Suitable Breeding Habitats for Waterfowl (B)

- No mitigation is required.

Impact H-5: Loss of Habitats for Upland Game Species (LTS)

- Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required.

Impact H-6: Increase in Suitable Foraging Habitat for Greater Sandhill Crane (B)

- No mitigation is required.

Impact H-7: Increase in Suitable Roosting Habitat for Greater Sandhill Crane (B)

- No mitigation is required.

The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.

Impact H-23: Loss of Upland Habitats (S)

- **Mitigation Measure H-4: Develop and Implement an Offsite Wildlife Habitat Mitigation Plan (LTS)**

Impact H-24: Loss of Foraging Habitats for Wintering Waterfowl (S)

- **Mitigation Measure H-4: Develop and Implement an Offsite Wildlife Habitat Mitigation Plan (LTS)**

Impact H-25: Increase in Suitable Breeding Habitats for Waterfowl (B)

- No mitigation is required.

Impact H-26: Loss of Habitats for Upland Game Species (S)

- **Mitigation Measure H-4: Develop and Implement an Offsite Wildlife Habitat Management Plan (LTS)**

Impact H-27: Loss of Foraging Habitat for Greater Sandhill Crane (S)

- **Mitigation Measure H-4: Develop and Implement an Offsite Wildlife Habitat Management Plan (LTS)**

Impact H-28: Loss of Foraging Habitat for Swainson's Hawk (S)

- **Mitigation Measure H-4: Develop and Implement an Offsite Wildlife Habitat Mitigation Plan (LTS)**

Impact H-29: Loss of Foraging Habitat for Aleutian Canada Goose (LTS)

- No mitigation is required.

Loss of Riparian and Wetland Habitats

- **Develop and Implement an Offsite Wildlife Habitat Mitigation Plan**

Loss of Northern Harrier Nesting Habitat

- **Develop and Implement an Offsite Wildlife Habitat Mitigation Plan**

Loss of Potential Swainson's Hawk Foraging Habitat

- **Develop and Implement an Offsite Wildlife Habitat Mitigation Plan**

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Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact H-8: Increase in Suitable Foraging Habitat for Swainson's Hawk (B)</p>		<p>Impact H-30: Loss of Nesting Habitat for Northern Harrier (S)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> Mitigation Measure H-4: Develop and Implement an Offsite Wildlife Habitat Mitigation Plan (LTS) 	
<p>Impact H-9: Increase in Suitable Nesting Habitat for Swainson's Hawk (B)</p>		<p>Impact H-31: Loss of Wintering Habitat for Tricolored Blackbird (LTS)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact H-10: Loss of Foraging Habitat for Aleutian Canada Goose (LTS)</p>		<p>Impact H-32: Temporary Construction Impacts on State-Listed Species (S)</p>	
<ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. 		<ul style="list-style-type: none"> Mitigation Measure H-1: Develop and Implement a Construction Mitigation Plan for the Reservoir Islands (LTS) 	
<p>Impact H-11: Increase in Suitable Nesting Habitat for Northern Harrier (B)</p>		<p>Impact H-33: Potential for Increased Incidence of Waterfowl Diseases (S)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> Mitigation Measure H-3: Monitor Waterfowl Populations for Incidence of Disease and Implement Actions to Reduce Waterfowl Mortality (LTS) 	
<p>Impact H-12: Loss of Wintering Habitat for Tricolored Blackbird (LTS)</p>		<p>Impact H-34: Potential Disruption of Waterfowl Use as a Result of Increased Hunting (LTS)</p>	
<ul style="list-style-type: none"> Measures that would minimize effects of this impact have been incorporated by the project applicant into this alternative's project description. No additional mitigation is required. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact H-13: Increase in Suitable Nesting Habitat for Tricolored Blackbird (B)</p>		<p>Impact H-35: Increase in Waterfowl Harvest Mortality (LTS)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact H-14: Increase in Suitable Habitats for Special-Status Wildlife Species (B)</p>		<p>Impact H-36: Potential Changes in Local and Regional Waterfowl Use Patterns (LTS)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact H-15: Temporary Construction Impacts on State-Listed Species (S)</p>		<p>Impact H-37: Potential Effects on Wildlife and Wildlife Habitats Resulting from Delta Outflow Changes (LTS)</p>	
<ul style="list-style-type: none"> Mitigation Measure H-1: Develop and Implement a Construction Mitigation Plan for the Reservoir Islands (LTS) 		<ul style="list-style-type: none"> No mitigation is required. 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact H-16: Disturbance to Greater Sandhill Cranes and Wintering Waterfowl from Aircraft Operation (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure H-2: Monitor Effects of Aircraft Flights on Greater Sandhill Cranes and Wintering Waterfowl and Implement Actions to Reduce Aircraft Disturbances of Wildlife (LTS) 			
<p>Impact H-17: Potential for Increased Incidence of Waterfowl Diseases (S)</p>			
<ul style="list-style-type: none"> • Mitigation Measure H-3: Monitor Waterfowl Populations for Incidence of Disease and Implement Actions to Reduce Waterfowl Mortality (LTS) 			
<p>Impact H-18: Potential Disruption of Waterfowl Use as a Result of Increased Hunting (LTS)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Impact H-19: Potential Disruption of Greater Sandhill Crane Use of the Habitat Islands as a Result of Increased Hunting (LTS)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Impact H-20: Increase in Waterfowl Harvest Mortality (LTS)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Impact H-21: Potential Changes in Local and Regional Waterfowl Use Patterns (LTS)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Impact H-22: Potential Effects on Wildlife and Wildlife Habitats Resulting from Delta Outflow Changes (LTS)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Cumulative Impacts</p>			
<p>Impact H-38: Cumulative Increase in Foraging Habitat for Wintering Waterfowl in the Delta (B)</p>	<p>The cumulative impacts listed for Alternative 1 are the same for Alternative 2.</p>	<p>Impact H-41: Cumulative Loss of Foraging Habitat for Wintering Waterfowl in the Delta (LTS)</p>	
<ul style="list-style-type: none"> • No mitigation is required. 		<ul style="list-style-type: none"> • No mitigation is required. 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact H-39: Cumulative Loss of Herbaceous Habitats in the Delta (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact H-42: Cumulative Loss of Herbaceous Habitats in the Delta (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact H-40: Cumulative Temporary Loss of Riparian Habitat in the Delta (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact H-43: Cumulative Loss of Wetland and Riparian Habitats in the Delta (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	

CHAPTER 3I. LAND USE AND AGRICULTURE

<p>Impact I-1: Displacement of Residences and Structures on Reservoir Islands (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	<p>The impacts listed for Alternative 1 are the same for Alternative 2.</p>	<p>Impact I-5: Displacement of Residences and Structures on Reservoir Islands (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	<p>Increase in Cultivated Acreage and Agricultural Production on the DW Project Islands</p>
<p>Impact I-2: Displacement of Property Owners on Habitat Islands (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact I-6: Inconsistency with Contra Costa County General Plan Agricultural Principles (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 	
<p>Impact I-3: Inconsistency with Contra Costa County General Plan Agricultural Principles (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 		<p>Impact I-7: Direct Conversion of Agricultural Land (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 	
<p>Impact I-4: Direct Conversion of Agricultural Land (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 			
Cumulative Impacts			
<p>Impact I-8: Cumulative Conversion of Agricultural Land (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 	<p>The cumulative impact listed for Alternative 1 is the same for Alternative 2.</p>	<p>The cumulative impact listed for Alternative 1 is the same for Alternative 3.</p>	

CHAPTER 3J. RECREATION AND VISUAL RESOURCES

<p>Impact J-1: Increase in Recreation Use-Days for Hunting in the Delta (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	<p>The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.</p>	<p>Impact J-12: Increase in Recreation Use-Days for Hunting in the Delta (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	<p>Increase in Recreation Use-Days for Hunting in the Delta</p>
<p>Impact J-2: Change in Regional Hunter Success outside the Project Area (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact J-13: Increase in Recreation Use-Days for Boating in the Delta (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact J-3: Increase in Recreation Use-Days for Boating in the Delta (B)</p>		<p>Impact J-14: Change in the Quality of the Recreational Boating Experience in Delta Channels (SU)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> No mitigation is available. 	
<p>Impact J-4: Change in the Quality of the Recreational Boating Experience in Delta Channels (SU)</p>		<p>Impact J-15: Increase in Recreation Use-Days for Other Recreational Uses in the Delta (B)</p>	
<ul style="list-style-type: none"> No mitigation is available. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact J-5: Increase in Recreation Use-Days for Other Recreational Uses in the Delta (B)</p>		<p>Impact J-16: Reduction in the Quality of Views of Bacon Island and Webb Tract Interiors from Island Levees (LTS)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact J-6: Reduction in the Quality of Views of the Reservoir Island Interiors from Island Levees (LTS)</p>		<p>Impact J-17: Potential Conflict with the Scenic Designation for Bacon Island Road (LTS)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact J-7: Potential Conflict with the Scenic Designation for Bacon Island Road (LTS)</p>		<p>Impact J-18: Reduction in the Quality of Views of Bacon Island and Webb Tract from Adjacent Waterways and from the Santa Fe Railways Amtrak Line (SU)</p>	
<ul style="list-style-type: none"> No mitigation is required. 		<ul style="list-style-type: none"> Mitigation Measure J-1: Partially Screen Proposed Recreation Facilities and Pump and Siphon Stations from Important Viewing Areas 	
<p>Impact J-8: Reduction in the Quality of Views of the Reservoir Islands from Adjacent Waterways and from the Santa Fe Railways Amtrak Line (SU)</p>		<ul style="list-style-type: none"> Mitigation Measure J-2: Design Levee Improvements, Siphon and Pump Stations, and Recreation Facilities and Boat Docks to Be Consistent with the Surrounding Landscape (SU) 	
<ul style="list-style-type: none"> Mitigation Measure J-1: Partially Screen Proposed Recreation Facilities and Pump and Siphon Stations from Important Viewing Areas 			
<ul style="list-style-type: none"> Mitigation Measure J-2: Design Levee Improvements, Siphon and Pump Stations, and Recreation Facilities and Boat Docks to Be Consistent with the Surrounding Landscape (SU) No mitigation is required. 		<p>Impact J-19: Change in Views Southward from SR 12 (LTS)</p>	
<p>Impact J-9: Enhanced Views of Bouldin Island from SR 12 (B)</p>		<ul style="list-style-type: none"> No mitigation is required. 	
<ul style="list-style-type: none"> No mitigation is required. 		<p>Impact J-20: Reduction in the Quality of Views of Holland Tract from the Island Levee (LTS)</p>	
		<ul style="list-style-type: none"> No mitigation is required. 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact J-10: Reduction in the Quality of Views of the Habitat Islands from Adjacent Waterways (S)</p>		<p>Impact J-21: Reduction in the Quality of Views of Bouldin Island and Holland Tract from Adjacent Waterways (SU)</p>	
<ul style="list-style-type: none"> • Mitigation Measure J-1: Partially Screen Proposed Recreation Facilities and Pump and Siphon Stations from Important Viewing Areas • Mitigation Measure J-2: Design Levee Improvements, Siphon and Pump Stations, and Recreation Facilities and Boat Docks to Be Consistent with the Surrounding Landscape (LTS) 		<ul style="list-style-type: none"> • Mitigation Measure J-1: Partially Screen Proposed Recreation Facilities and Pump and Siphon Stations from Important Viewing Areas • Mitigation Measure J-2: Design Levee Improvements, Siphon and Pump Stations, and Recreation Facilities and Boat Docks to Be Consistent with the Surrounding Landscape (SU) 	
<p>Impact J-11: Increase in Viewing Opportunities and the Quality of Views of Island Interiors and the DW Project Vicinity for Recreation Facility Members (B)</p>		<p>Impact J-22: Increase in Opportunities for Recreation Facility Members to View Reservoir Island Interiors and Other Areas in the DW Project Vicinity (B)</p>	
<ul style="list-style-type: none"> • No mitigation is required. 		<ul style="list-style-type: none"> • No mitigation is required. 	
Cumulative Impacts			
<p>Impact J-23: Increase in Recreation Opportunities in the Delta (B)</p>	<p>The cumulative impacts listed for Alternative 1 are the same for Alternative 2.</p>	<p>The cumulative impacts listed for Alternative 1 are the same for Alternative 3.</p>	
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Impact J-24: Enhancement of Waterfowl Populations and Increased Hunter Success in the Delta (B)</p>			
<ul style="list-style-type: none"> • No mitigation is required. 			

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CHAPTER 3K. ECONOMIC CONDITIONS AND EFFECTS

Because economic effects are not considered environmental impacts under CEQA and NEPA, no conclusions are made regarding the significance of economic effects.

CHAPTER 3L. TRAFFIC

<p>Impact L-1: Increase in Traffic on Delta Roadways during Project Construction (LTS)</p>	<p>The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.</p>	<p>Impact L-11: Increase in Traffic on Delta Roadways during Project Construction (LTS)</p>	<p>Increase in Traffic on Delta Roadways</p>
<ul style="list-style-type: none"> • No mitigation is required. 		<ul style="list-style-type: none"> • No mitigation is required. 	<p>Creation of Safety Conflicts on Delta Roadways</p>
			<ul style="list-style-type: none"> • Clearly Mark Intersections with Poor Visibility in the Vicinity of Agricultural Operations
			<p>Decrease in Circulation on Delta Roadways</p>
			<ul style="list-style-type: none"> • Restrict Agricultural Vehicle Operators from Using Delta Highways during Peak Hours

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact L-2: Increase in Traffic on Delta Roadways during Project Operation (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 		<p>Impact L-12: Increase in Traffic on Delta Roadways during Project Operation (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 	
<p>Impact L-3: Creation of Safety Conflicts on Delta Roadways during Project Construction (S)</p> <ul style="list-style-type: none"> Mitigation Measure L-1: Clearly Mark Intersections with Poor Visibility in the DW Project Vicinity (LTS) 		<p>Impact L-13: Creation of Safety Conflicts on Delta Roadways during Project Construction (S)</p> <ul style="list-style-type: none"> Mitigation Measure L-1: Clearly Mark Intersections with Poor Visibility in the DW Project Vicinity (LTS) 	
<p>Impact L-4: Reduction in Safety Conflicts on Delta Roadways during Project Operation (B)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact L-14: Reduction in Safety Conflicts on Delta Roadways during Project Operation (B)</p> <ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact L-5: Decrease in Circulation on or Access to Delta Roadways during DW Project Construction (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact L-15: Decrease in Circulation on or Access to Delta Roadways during DW Project Construction (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact L-6: Change in Circulation on Delta Roadways during DW Project Operation (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact L-16: Change in Circulation on Delta Roadways during DW Project Operation (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact L-7: Increase in Boat Traffic and Congestion on Delta Waterways during DW Project Operation (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 		<p>Impact L-17: Increase in Boat Traffic and Congestion on Delta Waterways during DW Project Operation (SU)</p> <ul style="list-style-type: none"> No mitigation is available. 	
<p>Impact L-8: Change in Navigation Conditions on Delta Waterways Surrounding the DW Project Islands during Project Operation (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 		<p>Impact L-18: Change in Navigation Conditions on Delta Waterways Surrounding the DW Project Islands during Project Operation (LTS)</p> <ul style="list-style-type: none"> No mitigation is required. 	
<p>Impact L-9: Creation of Safety Conflicts on Delta Waterways during DW Project Construction (S)</p> <ul style="list-style-type: none"> Mitigation Measure L-2: Clearly Mark the Barge and Notify the U.S. Coast Guard of Construction Activities (LTS) 		<p>Impact L-19: Creation of Safety Conflicts on Delta Waterways during DW Project Construction (S)</p> <ul style="list-style-type: none"> Mitigation Measure L-2: Clearly Mark the Barge and Notify the U.S. Coast Guard of Construction Activities (LTS) 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact L-10: Increase in the Potential for Safety Problems on Waterways Surrounding the DW Project Islands (S)</p>		<p>Impact L-20: Increase in the Potential for Safety Problems on Waterways Surrounding the DW Project Islands (S)</p>	
<ul style="list-style-type: none"> • Mitigation Measure L-3: Clearly Post Waterway Intersections, Speed Zones, and Potential Hazards in the DW Project Vicinity (LTS) 		<ul style="list-style-type: none"> • Mitigation Measure L-3: Clearly Post Waterway Intersections, Speed Zones, and Potential Hazards in the DW Project Vicinity (LTS) 	
Cumulative Impacts			
<p>Impact L-21: Increase in Traffic on Delta Roadways during Operation of Future Projects, Including the DW Project (SU)</p>	<p>The cumulative impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.</p>	<p>The cumulative impacts and mitigation measures listed for Alternative 1 are the same for Alternative 3.</p>	<p>Increase in Traffic on Delta Roadways during Operation of Future Projects, Including the No-Project Alternative</p>
<ul style="list-style-type: none"> • Mitigation Measure L-4: Implement Caltrans' Route Concepts for SR 4 and SR 12 (SU) 			<ul style="list-style-type: none"> • Implement Caltrans' Route Concepts for SR 4 and SR 12
<p>Implementation of Mitigation Measure L-4 could reduce this impact to a less-than-significant level. However, there is no funding for implementation of this mitigation measure; therefore, this impact is considered significant and unavoidable</p>			<p>Creation of Safety Conflicts on Delta Roadways during Operation of Future Projects, Including the No-Project Alternative</p>
<p>Impact L-22: Reduction in Safety Conflicts on Delta Roadways during Operation of Future Projects, Including the DW Project (B)</p>			<ul style="list-style-type: none"> • Clearly Mark Intersections with Poor Visibility in the Vicinity of Agricultural Operations
<ul style="list-style-type: none"> • No mitigation is required. 			
<p>Impact L-23: Cumulative Increase in Safety Problems on Delta Waterways (SU)</p>			
<ul style="list-style-type: none"> • Mitigation Measure L-5: Develop and Enforce a Boater Safety Program for DW Private Boat Users (SU) 			

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
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CHAPTER 3M. CULTURAL RESOURCES

Impact M-1: Disturbance of Buried Resources (If Present) in the Archaeologically Sensitive Piper Sands on Webb Tract (S)

- **Mitigation Measure M-1:** Prepare an HPMP to Provide for the Long-Term Monitoring and Treatment of Archaeologically Sensitive Areas on Webb Tract (LTS)

Impact M-2: Disturbance of Intact Burials at CA-CCo-593 (If Present) on Holland Tract (S)

- **Mitigation Measure M-2:** Design Habitat Management and Enhancement Activities to Prevent Disturbance of CA-CCo-593 on Holland Tract (LTS)

Impact M-3: Disturbance of Intact Burials in CA-CCo-593 (If Present) Resulting from Vandalism on Holland Tract (S)

- **Mitigation Measure M-3:** Prepare an HPMP to Address Disturbance of Human Remains at CA-CCo-593 on Holland Tract (LTS)

Impact M-4: Disturbance of Buried Resources (If Present) in the Archaeologically Sensitive Piper Sands on Holland Tract (S)

- **Mitigation Measure M-4:** Prepare an HPMP to Provide for the Long-Term Monitoring and Treatment of Archaeologically Sensitive Areas on Holland Tract (LTS)

Impact M-5: Demolition of the NRHP-Eligible Historic District on Bacon Island (SU)

- **Mitigation Measure M-5:** Prepare an HPMP and a Data Recovery Plan for Archaeological Deposits on Bacon Island
- **Mitigation Measure M-6:** Prepare a Videotape of Public Broadcasting System Quality of the NRHP-Eligible Historic District on Bacon Island
- **Mitigation Measure M-7:** Prepare a Popular Publication on Bacon Island Resources for Use by Museums, Cultural Centers, and Schools

The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.

Impact M-7: Disturbance of Buried Resources (If Present) in the Archaeologically Sensitive Piper Sands on Webb Tract (S)

- **Mitigation Measure M-1:** Prepare an HPMP to Provide for the Long-Term Monitoring and Treatment of Archaeologically Sensitive Areas on Webb Tract (LTS)

Impact M-8: Damage or Destruction of Known Archaeological Sites Resulting from Inundation, Wave Action and Erosion, or Vandalism on Holland Tract (SU)

- **Mitigation Measure M-10:** Prepare an HPMP and Conduct Data Recovery Excavations (Only Appropriate for CA-CCo-147) for Archaeological Materials on Holland Tract

- **Mitigation Measure M-11:** Cap Archaeological Sites on Holland Tract

- **Mitigation Measure M-12:** Construct Fencing or Other Barriers to Prevent Site Access on Holland Tract

- **Mitigation Measure M-13:** Construct Levees or Beach Slopes around Archaeological Sites to Decrease Wave Action and Erosion on Holland Tract (SU)

- **Mitigation Measure M-14:** Prepare an HPMP to Provide for the Long-Term Monitoring of Known Archaeological Sites on Holland Tract (SU)

Impact M-9: Disturbance of Buried Resources (If Present) in the Archaeologically Sensitive Piper Sands on Holland Tract (S)

- **Mitigation Measure M-4:** Prepare an HPMP to Provide for the Long-Term Monitoring and Treatment of Archaeologically Sensitive Areas on Holland Tract (LTS)

Impact M-10: Disturbance of Unknown Resources on Unsurveyed Portions of Holland Tract (S)

- **Mitigation Measure M-15:** Survey Unsurveyed Portions of Holland Tract and Determine Eligibility for NRHP Listing and Appropriate Treatment (LTS)

Disturbance of Buried Resources (If Present) in the Archaeologically Sensitive Piper Sands on Webb Tract as a Result of Agricultural Activities

- Prepare an HPMP to Provide for the Long-Term Monitoring and Treatment of Archaeologically Sensitive Areas on Webb Tract

Damage to Known and Unknown Prehistoric Sites Resulting from Agricultural Activities on Holland Tract

- Prepare an HPMP to Provide for the Long-Term Monitoring of Known and Unknown Archaeological Sites on Holland Tract

Damage to Historic Structures Resulting from Agricultural Practices on Bacon Island

- Prepare an HPMP to Provide for the Long-Term Maintenance and Protection of Historic Properties on Bacon Island

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<ul style="list-style-type: none"> • Mitigation Measure M-8: Complete Historic American Building Survey/Historic American Engineering Record Forms, Including Photographic Documentation, That Preserve Information about the NRHP-Eligible District on Bacon Island (SU) 	<p>Impact M-6: Disturbance of Archaeological Site CA-SJo-208H on Bouldin Island (S)</p>	<p>Impact M-11: Demolition of the NRHP-Eligible Historic District on Bacon Island (SU)</p>	<ul style="list-style-type: none"> • Mitigation Measure M-5: Prepare an HPMP and a Data Recovery Plan for Archaeological Deposits on Bacon Island
<ul style="list-style-type: none"> • Mitigation Measure M-9: Prepare an HPMP and a Data Recovery Plan for Archaeological Deposits on Bouldin Island (LTS) 	<ul style="list-style-type: none"> • Mitigation Measure M-6: Prepare a Videotape of Public Broadcasting System Quality of the NRHP-Eligible Historic District on Bacon Island 	<ul style="list-style-type: none"> • Mitigation Measure M-7: Prepare a Popular Publication on Bacon Island Resources for Use by Museums, Cultural Centers, and Schools 	<ul style="list-style-type: none"> • Mitigation Measure M-8: Complete Historic American Building Survey/Historic American Engineering Record Forms, Including Photographic Documentation, That Preserve Information about the NRHP-Eligible District on Bacon Island (SU)
Cumulative Impact	<p>The cumulative impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2</p>	<p>Impact M-15: Destruction of or Damage to Prehistoric Archaeological Sites in the Delta (SU)</p>	<p>Destruction of or Damage to Prehistoric Archaeological Sites and Historic Resources in the Delta</p>
<p>Impact M-13: Destruction of or Damage to Pre-historic Archaeological Sites in the Delta (LTS)</p>	<ul style="list-style-type: none"> • No mitigation is required. 	<ul style="list-style-type: none"> • Mitigation Measure M-4: Prepare an HPMP to Provide for the Long-Term Monitoring and Treatment of Archaeologically Sensitive Areas on Holland Tract 	<ul style="list-style-type: none"> • Prepare an HPMP to Provide for the Long-Term Monitoring and Treatment of Archaeologically Sensitive Areas on Webb Tract
<p>Impact M-14: Destruction of or Damage to the NRHP-Eligible Historic Districts Representing Agricultural Labor Camp Systems in the Delta (SU)</p>	<ul style="list-style-type: none"> • Mitigation Measure M-5: Prepare an HPMP and a Data Recovery Plan for Archaeological Deposits on Bacon Island 	<ul style="list-style-type: none"> • Mitigation Measure M-11: Cap Archaeological Sites on Holland Tract 	<ul style="list-style-type: none"> • Prepare an HPMP to Provide for the Long-Term Monitoring of Known and Unknown Archaeological Sites on Holland Tract
<ul style="list-style-type: none"> • Mitigation Measure M-6: Prepare a Videotape of Public Broadcasting System Quality of the NRHP-Eligible Historic District on Bacon Island 	<ul style="list-style-type: none"> • Mitigation Measure M-12: Construct Fencing or Other Barriers to Prevent Site Access on Holland Tract 	<ul style="list-style-type: none"> • Mitigation Measure M-13: Construct Levees or Beach Slopes around Archaeological Sites to Decrease Wave Action and Erosion on Holland Tract 	<ul style="list-style-type: none"> • Prepare an HPMP to Provide for the Long-Term Maintenance and Protection of Historic Properties on Bacon Island

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<ul style="list-style-type: none"> • Mitigation Measure M-7: Prepare a Popular Publication on Bacon Island Resources for Use by Museums, Cultural Centers, and Schools • Mitigation Measure M-8: Complete Historic American Building Survey/Historic American Engineering Record Forms, Including Photographic Documentation, That Preserve Information about the NRHP-Eligible District on Bacon Island (SU) 		<ul style="list-style-type: none"> • Mitigation Measure M-14: Prepare an HPMP to Provide for the Long-Term Monitoring of Known Archaeological Sites on Holland Tract • Mitigation Measure M-15: Survey Unsurveyed Portions of Holland Tract and Determine Eligibility for NRHP Listing and Appropriate Treatment (SU) <p>Impact M-16: Destruction of or Damage to the NRHP-Eligible Historic Districts Representing Agricultural Labor Camp Systems in the Delta (SU)</p> <ul style="list-style-type: none"> • Mitigation Measure M-5: Prepare an HPMP and a Data Recovery Plan for Archaeological Deposits on Bacon Island • Mitigation Measure M-6: Prepare a Videotape of Public Broadcasting System Quality of the NRHP-Eligible Historic District on Bacon Island • Mitigation Measure M-7: Prepare a Popular Publication on Bacon Island Resources for Use by Museums, Cultural Centers, and Schools • Mitigation Measure M-8: Complete Historic American Building Survey/Historic American Engineering Record Forms, Including Photographic Documentation, That Preserve Information about the NRHP-Eligible District on Bacon Island (SU) 	

CHAPTER 3N. MOSQUITOS AND PUBLIC HEALTH

<p>Impact N-1: Reduction or Elimination of Mosquito Abatement Activities during Full-Storage Periods on the Reservoir Islands (B)</p> <ul style="list-style-type: none"> • No mitigation is required. 	<p>The impacts and mitigation measure listed for Alternative 1 are the same for Alternative 2.</p>	<p>Impact N-4: Reduction or Elimination of Mosquito Abatement Activities during Full-Storage Periods on the Reservoir Islands (B)</p> <ul style="list-style-type: none"> • No mitigation is required. 	<p>Reduction in Mosquito Abatement Activities on the DW Project Islands</p>
<p>Impact N-2: Increase in Abatement Levels on the Habitat Islands and during Partial-Storage, Shallow-Storage, or Shallow-Water Wetland Periods on the Reservoir Islands (S)</p> <ul style="list-style-type: none"> • Mitigation Measure N-1: Coordinate Project Activities with SJCMAD and CCMAD (LTS) 		<p>Impact N-5: Increase in Abatement Levels during Partial-Storage, Shallow-Storage, or Shallow-Water Wetland Periods on the Reservoir Islands and in the NBHA (S)</p> <ul style="list-style-type: none"> • Mitigation Measure N-1: Coordinate Project Activities with SJCMAD and CCMAD (LTS) 	<p>Increase in Mosquito Production Levels as a Result of Increased Corn Production</p> <ul style="list-style-type: none"> • Coordinate Project Activities with SJCMAD and CCMAD
<p>Impact N-3: Increase in Potential Exposure of People to Wildlife Species That Transmit Diseases (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. 			

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Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
Cumulative Impacts			
<p>Impact N-6: Increase in Abatement Levels during Partial-Storage, Shallow-Storage, or Shallow-Water Wetland Periods on the Reservoir Islands under Cumulative Conditions (S)</p> <ul style="list-style-type: none"> • Mitigation Measure N-1: Coordinate Project Activities with SJCMAD and CCMAD (LTS) 	<p>The cumulative impacts and mitigation measure listed for Alternative 1 are the same for Alternative 2.</p>	<p>The cumulative impacts and mitigation measure listed for Alternative 1 are the same for Alternative 3.</p>	<p>Cumulative Increase in Mosquito Abatement Needs Resulting from Implementation of Future Projects, Including the No-Project Alternative</p>
<p>Impact N-7: Cumulative Increase in Mosquito Abatement Needs Resulting from Implementation of Future Projects, Including the DW Project (SU)</p> <ul style="list-style-type: none"> • No mitigation is available. 			

CHAPTER 30. AIR QUALITY

<p>Impact O-1: Increase in CO Emissions on the DW Project Islands during Construction (LTS)</p> <ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines (LTS) 	<p>The impacts and mitigation measures listed for Alternative 1 are the same for Alternative 2.</p>	<p>Impact O-9: Increase in CO Emissions on the DW Project Islands during Construction (LTS)</p> <ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines (LTS) 	<p>Increase in CO Emissions on the DW Project Islands</p> <p>Increase in ROG Emissions on the DW Project Islands.</p> <p>Increase in NOx Emissions on the DW Project Islands</p> <p>Increase in PM10 Emissions on the DW Project Islands</p>
<p>Impact O-2: Increase in CO Emissions on the DW Project Islands during Project Operation (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. 		<p>Impact O-10: Increase in CO Emissions on the DW Project Islands during Project Operation (LTS)</p> <ul style="list-style-type: none"> • No mitigation is required. 	
<p>Impact O-3: Increase in ROG Emissions on the DW Project Islands during Construction (SU)</p> <ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines (SU) 		<p>Impact O-11: Increase in ROG Emissions on the DW Project Islands during Construction (SU)</p> <ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines (SU) 	

Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
<p>Impact O-4: Increase in NOx Emissions on the DW Project Islands during Construction (SU)</p>		<p>Impact O-12: Increase in NOx Emissions on the DW Project Islands during Construction (SU)</p>	
<ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines (SU) 		<ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines (SU) 	
<p>Impact O-5: Increase in ROG Emissions on the DW Project Islands during Project Operation (SU)</p>		<p>Impact O-13: Increase in ROG Emissions on the DW Project Islands during Project Operation (SU)</p>	
<ul style="list-style-type: none"> • Mitigation Measure O-4: Coordinate with Local Air Districts to Reduce or Offset Emissions (SU) 		<ul style="list-style-type: none"> • Mitigation Measure O-4: Coordinate with Local Air Districts to Reduce or Offset Emissions (SU) 	
<p>Impact O-6: Increase in NOx Emissions on the DW Project Islands during Project Operation (SU)</p>		<p>Impact O-14: Increase in NOx Emissions on the DW Project Islands during Project Operation (SU)</p>	
<ul style="list-style-type: none"> • Mitigation Measure O-4: Coordinate with Local Air Districts to Reduce or Offset Emissions (SU) 		<ul style="list-style-type: none"> • Mitigation Measure O-4: Coordinate with Local Air Districts to Reduce or Offset Emissions (SU) 	
<p>Impact O-7: Increase in PM10 Emissions on the DW Project Islands during Construction (SU)</p>		<p>Impact O-15: Increase in PM10 Emissions on the DW Project Islands during Construction (SU)</p>	
<ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines • Mitigation Measure O-5: Implement Construction Practices That Reduce Generation of Particulate Matter (SU) 		<ul style="list-style-type: none"> • Mitigation Measure O-1: Perform Routine Maintenance of Construction Equipment • Mitigation Measure O-2: Choose Borrow Sites Close to Fill Locations • Mitigation Measure O-3: Prohibit Unnecessary Idling of Construction Equipment Engines • Mitigation Measure O-5: Implement Construction Practices That Reduce Generation of Particulate Matter (SU) 	
<p>Impact O-8: Decrease in PM10 Emissions on the DW Project Islands during Project Operation (B)</p>		<p>Impact O-16: Decrease in PM10 Emissions on the DW Project Islands during Project Operation (B)</p>	
<ul style="list-style-type: none"> • No mitigation is required. 		<ul style="list-style-type: none"> • No mitigation is required. 	

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Alternative 1	Alternative 2	Alternative 3	No-Project Alternative
Cumulative Impacts			
Impact O-17: Increase in Cumulative Production of Ozone Precursors and CO in the Delta (SU)	The cumulative impact and mitigation measure listed for Alternative 1 are the same for Alternative 2.	The cumulative impact and mitigation measure listed for Alternative 1 are the same for Alternative 3.	Increase in Cumulative Production of Ozone Precursors, CO, and PM10 in the Delta
<ul style="list-style-type: none"> • Mitigation Measure O-4: Coordinate with Local Air Districts to Reduce or Offset Emissions (SU) 			
Key:			
<p>LTS = Less than significant. S = Significant. SU = Significant and unavoidable. B = Beneficial.</p>			