Appendix 3B
Environmental Commitments

As part of the planning and environmental assessment process, the BDCP proponents will incorporate the following environmental commitments and best management practices (BMPs) into the BDCP alternatives to avoid or minimize potential adverse effects (a NEPA term) and potential significant impacts (a CEQA term). In cases where permits from outside agencies are necessary, the BDCP proponents commit to the implementation of the environmental commitments as minimum measures as part of the BDCP construction activities. In other words, these commitments will be satisfied even if not separately imposed by the permitting agencies. If permitting agencies require additional measures, those will be adhered to as part of the permit(s). The BDCP proponents will also coordinate planning, engineering, design and construction, operation, and maintenance phases of the alternative with the appropriate agencies.

The BDCP proponents will identify a liaison to carry out this coordination and will ensure that these environmental commitments are implemented consistent with local agency policies and that any potential conflicts with other activities are limited. As CEQA Lead Agency, DWR will also include these commitments in the Mitigation Monitoring and Reporting Plan for the BDCP to ensure implementation of the commitments during project construction and operation.

The following environmental commitments have been incorporated into the action alternatives and apply to the water conveyance facilities (Conservation Measure [CM] 1) as well as the other conservation components (CM2–CM22), as applicable. As such, they will not be restated in the impact analysis for each resource chapter but instead will be incorporated by reference. The BDCP proponents will see to it that these measures will be implemented as appropriate, depending on the location of construction and surrounding land uses. Table 3B-1 identifies the resource area impacts for which there is an associated environmental commitment(s).

Table 3B-1. Summary of Environmental Commitments

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Develop and Implement Stormwater Pollution Prevention Plans	Ch. 8 Water Quality Ch. 10 Soils Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation Ch. 20 Public Services Ch. 24 Hazards and Hazardous Material Ch. 25 Public Health Ch. 28 Environmental Justice (Impact HAZ-2)	1A–9	Impact WQ-31 Impact SOILS-1 Impact SOILS-6 Impact UT-4 Impact HAZ-6 Impact HAZ-7 Impact AQUA-1 Impact AQUA-2 Impact AQUA-3 Impact AQUA-11 Impact AQUA-12 Impact AQUA-13 Impact AQUA-21 Impact AQUA-22 Impact AQUA-23 Impact AQUA-34 Impact AQUA-35 Impact AQUA-36 Impact AQUA-43 Impact AQUA-44	Impact AQUA-45 Impact AQUA-52 Impact AQUA-53 Impact AQUA-54 Impact AQUA-61 Impact AQUA-62 Impact AQUA-63 Impact AQUA-70 Impact AQUA-71 Impact AQUA-72 Impact AQUA-79 Impact AQUA-80 Impact AQUA-81 Impact AQUA-88 Impact AQUA-89 Impact AQUA-90 Impact REC-4 Impact HAZ-1 Impact HAZ-2 Impact PH-3
Develop and Implement Erosion and Sediment Control Plans	Ch. 8 Water Quality Ch. 10 Soils Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation Ch. 16 Socioeconomics Ch. 25 Public Health	1A–9	Impact WQ-31 Impact SOILS-1 Impact SOILS-6 Impact AQUA-1 Impact AQUA-2 Impact AQUA-3 Impact AQUA-11 Impact AQUA-12 Impact AQUA-13 Impact AQUA-21 Impact AQUA-22 Impact AQUA-23 Impact AQUA-34 Impact AQUA-35 Impact AQUA-36 Impact AQUA-43 Impact AQUA-44 Impact AQUA-45	Impact AQUA-52 Impact AQUA-53 Impact AQUA-54 Impact AQUA-61 Impact AQUA-62 Impact AQUA-63 Impact AQUA-70 Impact AQUA-71 Impact AQUA-72 Impact AQUA-79 Impact AQUA-80 Impact AQUA-81 Impact AQUA-88 Impact AQUA-89 Impact AQUA-90 Impact REC-4 Impact ECON-3 Impact ECON-15 Impact PH-3
Conform with Applicable Design Standards and Building Codes	Ch. 9 Geology Ch. 10 Soils	1A–9 (except where noted)	Impact GEO-1 Impact GEO-2 Impact GEO-3 Impact GEO-4 Impact GEO-5	Impact GEO-11 (1B, 1C, 2B, 2C, 6B, 6C only) Impact GEO-12 Impact GEO-13 Impact GEO-14

Environmental Commitments	Chapter/Resource	Alternative	Impact	
			Impact GEO-6	Impact GEO-15
			Impact GEO-7	Impact SOILS-3
			Impact GEO-8	Impact SOILS-4
			Impact GEO-9	Impact SOILS-8
			Impact GEO-10	Impact SOILS-9
Perform Geotechnical Studies	Ch. 9 Geology Ch. 10 Soils	1A–9 (except where noted)	Impact GEO-2	Impact GEO-12
			Impact GEO-4	Impact GEO-13
			Impact GEO-5	Impact GEO-14
			Impact GEO-6	Impact GEO-15
			Impact GEO-7	Impact SOILS-3
			Impact GEO-8	Impact SOILS-4
			Impact GEO-9	Impact SOILS-8
			Impact GEO-10	Impact SOILS-9
			Impact GEO-11 (1B, 1C, 2B, 2C, 6B, 6C only)	
Develop and Implement a Barge Operations Plan • Sensitive Resources • Responsibilities • Avoidance Measures • Performance Measures • Contingency Measures	Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation Ch. 24 Hazards and Hazardous Material	1A–9	Impact AQUA-1	Impact AQUA-61
			Impact AQUA-11	Impact AQUA-70
			Impact AQUA-21	Impact AQUA-88
			Impact AQUA-34	Impact REC-4
			Impact AQUA-43	Impact HAZ-1
			Impact AQUA-52	
Develop and Implement Fish Rescue and Salvage Plans	Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation	1A–9	Impact AQUA-1	Impact AQUA-52
			Impact AQUA-11	Impact AQUA-61
			Impact AQUA-21	Impact AQUA-70
			Impact AQUA-34	Impact AQUA-79
			Impact AQUA-43	Impact AQUA-88
				Impact REC-4
Conduct Environmental Training	Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation	1A–9	Impact AQUA-1	Impact AQUA-52
			Impact AQUA-2	Impact AQUA-53
			Impact AQUA-3	Impact AQUA-54
			Impact AQUA-11	Impact AQUA-61
			Impact AQUA-12	Impact AQUA-62
			Impact AQUA-13	Impact AQUA-63
			Impact AQUA-21	Impact AQUA-70
			Impact AQUA-22	Impact AQUA-71
			Impact AQUA-23	Impact AQUA-72
			Impact AQUA-34	Impact AQUA-79
			Impact AQUA-35	Impact AQUA-80
			Impact AQUA-36	Impact AQUA-81
			Impact AQUA-43	Impact AQUA-88
			Impact AQUA-44	Impact AQUA-89
			Impact AQUA-45	Impact AQUA-90
				Impact REC-4

Environmental Commitments	Chapter/Resource	Alternative	Impact	
Develop and Implement Hazardous Materials Management Plans	Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation Ch. 16 Socioeconomics Ch. 20 Public Services Ch. 24 Hazards and Hazardous Material Ch. 28 Environmental Justice (Impact HAZ-2)	1A–9	Impact AQUA-1 Impact AQUA-2 Impact AQUA-3 Impact AQUA-11 Impact AQUA-12 Impact AQUA-13 Impact AQUA-21 Impact AQUA-22 Impact AQUA-23 Impact AQUA-34 Impact AQUA-35 Impact AQUA-36 Impact AQUA-43 Impact AQUA-44 Impact AQUA-45 Impact AQUA-52 Impact AQUA-53 Impact AQUA-54 Impact AQUA-61 Impact AQUA-62	Impact AQUA-63 Impact AQUA-70 Impact AQUA-71 Impact AQUA-72 Impact AQUA-79 Impact AQUA-80 Impact AQUA-81 Impact AQUA-88 Impact AQUA-89 Impact AQUA-90 Impact REC-4 Impact ECON-3 Impact ECON-15 Impact UT-1 Impact UT-8 Impact HAZ-1 Impact HAZ-2 Impact HAZ-6 Impact HAZ-7
Provide Notification of Maintenance Activities in Waterways	Ch. 15 Recreation Ch. 16 Socioeconomics	1A–9	Impact REC-3 Impact REC-7	Impact ECON-3 Impact ECON-9 Impact ECON-15
Develop and Implement Noise Abatement Plan • Construction and Maintenance Noise • Operation Noise	Ch. 15 Recreation Ch. 16 Socioeconomics Ch. 23 Noise Ch. 28 Environmental Justice (Impact ECON-3)	1A–9	Impact REC-2 Impact ECON-3 Impact ECON-5 Impact ECON-9	Impact ECON-15 Impact NOI-1 Impact NOI-2 Impact NOI-4
Develop and Implement a Fire Prevention and Control Plan	Ch. 16 Socioeconomics Ch. 20 Public Services Ch. 24 Hazards and Hazardous Material	1A–9	Impact ECON-3 Impact ECON-15 Impact UT-1	Impact UT-8 Impact HAZ-5 Impact HAZ-7
Develop and Implement Mosquito Management Plans	Ch. 16 Socioeconomics Ch. 25 Public Health	1A–9	Impact ECON-3 Impact ECON-9 Impact ECON-15 Impact PH-5	
Provide Construction Site Security	Ch. 20 Public Services	1A–9	Impact UT-1 Impact UT-8	
Develop and Implement Spill Prevention, Containment, and Countermeasure Plans	Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation Ch. 20 Public Services Ch. 24 Hazards and Hazardous Material Ch. 28 Environmental Justice (Impact HAZ-2)	1A–9	Impact AQUA-1 Impact AQUA-2 Impact AQUA-3 Impact AQUA-11 Impact AQUA-12 Impact AQUA-13 Impact AQUA-21 Impact AQUA-22	Impact AQUA-62 Impact AQUA-63 Impact AQUA-70 Impact AQUA-71 Impact AQUA-72 Impact AQUA-79 Impact AQUA-80 Impact AQUA-81

Environmental Commitments	Chapter/Resource	Alternative	Impact	
			Impact AQUA-23	Impact AQUA-88
			Impact AQUA-34	Impact AQUA-89
			Impact AQUA-35	Impact AQUA-90
			Impact AQUA-36	Impact REC-4
			Impact AQUA-43	Impact UT-1
			Impact AQUA-44	Impact UT-8
			Impact AQUA-45	Impact HAZ-1
			Impact AQUA-52	Impact HAZ-2
			Impact AQUA-53	Impact HAZ-6
			Impact AQUA-54	Impact HAZ-7
			Impact AQUA-61	
Fugitive dust control • Basic Fugitive Dust Control Measures • Enhanced Fugitive Dust Control Measures for Land Disturbance • Measures for Entrained Road Dust • Measures for Concrete Batching	Ch. 17 Aesthetics and Visual Resources Ch. 22 Air Quality and Greenhouse Gas (GHG) Emissions Ch. 28 Environmental Justice (Impact AES-1)	1A–9 (except where noted)	Impact AES-1 Impact AQ-1 (1C, 2C, 6C only) Impact AQ-2 Impact AQ-3 Impact AQ-4 Impact AQ-9 Impact AQ-10 Impact AQ-14	
Construction Equipment Exhaust Reduction Plan	Ch. 22 Air Quality and GHG Emissions Ch. 28 Environmental Justice (Impact AQ-10)	1A–9 (except where noted)	Impact AQ-1 (1C, 2C, 6C only) Impact AQ-2 Impact AQ-3 Impact AQ-4 Impact AQ-9 Impact AQ-10 Impact AQ-12 Impact AQ-14 Impact AQ-15	
DWR Construction Best Management Practices to Reduce GHG Emissions • Preconstruction and Final Design BMPs • Construction BMPs	Ch. 22 Air Quality and GHG Emissions	1A–9	Impact AQ-12 Impact AQ-15	
Dispose of spoils, reusable tunnel material, and dredged material in accordance with applicable regulations • Material Storage Site Determination • Disposal Site Preparation • Draining, Chemical Characterization and Treatment	Ch. 8 Water Quality Ch. 11 Fish and Aquatic Resources Ch. 15 Recreation Ch. 24 Hazards and Hazardous Material	1A–9	Impact WQ-31 Impact AQUA-1 Impact AQUA-2 Impact AQUA-3 Impact AQUA-11 Impact AQUA-12 Impact AQUA-13 Impact AQUA-21 Impact AQUA-22 Impact AQUA-23 Impact AQUA-34	Impact AQUA-53 Impact AQUA-54 Impact AQUA-61 Impact AQUA-62 Impact AQUA-63 Impact AQUA-70 Impact AQUA-71 Impact AQUA-72 Impact AQUA-79 Impact AQUA-80 Impact AQUA-81

Environmental Commitments	Chapter/Resource	Alternative	Impact	
• Material Reuse Plans • Potential Environmental Effects			Impact AQUA-35 Impact AQUA-36 Impact AQUA-43 Impact AQUA-44 Impact AQUA-45 Impact AQUA-52	Impact AQUA-88 Impact AQUA-89 Impact AQUA-90 Impact REC-4 Impact HAZ-1 Impact HAZ-7
Conform with Transmission Line Design and Alignment Guidelines	Ch. 25 Public Health	1A–8	Impact PH-4	
Transmission Line Pole Placement				

3B.1 Environmental Commitments

3B.1.1 Perform Geotechnical Studies

Detailed subsurface investigations will be performed at the locations of the water conveyance alignment and facility locations and at material borrow areas. The main geotechnical issues in the Delta include stability of canal embankments and levees, liquefaction of Delta soils (particularly loose, saturated sands), seepage through coarse-grained soils, settlement of embankments and structures, subsidence, and soil bearing capacity. The investigations will explore a wide variety of soil types in the Delta that include peat, sands, silts and clays. The work to be performed will include a subsurface investigation program to provide the information required to support the design and construction of the BDCP water conveyance facilities. Appropriate geotechnical investigations will be conducted to identify the types of soil avoidance or soil stabilization measures that should be implemented to ensure that the facilities are constructed to withstand subsidence and settlement and to conform to applicable state and federal standards. These investigations will build on the geotechnical data reports (California Department of Water Resources 2010a, 2010b, 2011) and the conceptual engineering reports (California Department of Water Resources 2009a, 2009b, 2010c, 2010d, 2010e, 2010f, 2010g). Such standards include the American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures, California Building Code (CBC), and USACE Design and Construction of Levees. The geotechnical investigation will also include a small scale environmental screening to assess the presence or absence of dissolved gases that will help guide the tunnel ventilation design and disposal considerations for excavated materials and tunnel cuttings. This commitment is related to AMM28, Geotechnical Studies, described in BDCP Appendix 3.C.

The locations of borings and other test locations will be based on a review of available geologic data to identify data gaps in the conveyance alignment and on the locations of critical facilities such as hydraulic structures and tunnels. The spacing of the borings and test locations likely will average about 1,000 feet along proposed canal and tunnel alignments and approximately 100 to 200 feet at intakes, pumping plants, forebays, siphons, and other hydraulic structures.

Site-specific geotechnical studies are expected to include the following, as appropriate.

- Assessing liquid limit (i.e., the moisture content at which a soil passes from a solid to a liquid state) and organic material on soil samples collected during site-specific field investigations to determine site-specific geotechnical properties.
- Drilling and sampling of soil borings, cone penetration, and other in-situ tests, slug tests, aquifer/pumping tests, and test pits to evaluate the subsurface conditions.
- Installing wells and monitoring groundwater elevations for use in liquefaction evaluation and dewatering requirements.
- Performing geotechnical laboratory testing on selected soil samples to evaluate engineering properties of the soils encountered in the borings.
- Preparing geotechnical data reports to document the results of the subsurface investigations, geotechnical baseline reports to describe expected construction conditions, and geotechnical interpretive reports to specify design and construction recommendations. Recommendations will be made based on the conclusions of these reports.

Localized settlement could occur during construction of BDCP water conveyance facilities. In particular, settlement above tunnels could occur in response to removal of earth materials at the tunnel face, convergence of voids created around the tunnel excavation, and stress redistribution around the excavated tunnel. The magnitude and extent of ground settlement depends on the excavated diameter of the tunnel, the amount of ground cover above the tunnel, excavation methods, workmanship, details of tunnel construction, and the geotechnical properties of the ground. With the advancement of pressurized face tunnel boring machines (TBMs), it is possible to minimize ground loss through careful TBM control and monitoring during tunneling.

Based on the preliminary data regarding Delta ground conditions, it is assumed that an earth pressure balancing TBM will be used for all tunneling. These machines rely on the excavated soil, under confinement of a cutterhead chamber, to balance earth and hydrostatic pressures. The pressure is maintained by a screw conveyer in which a soil plug provides the seal and excavated soil is removed through the screw onto the conveyor.

Additionally, should geotechnical reports indicate that settlement is likely in certain areas, pre-excavation grouting will be performed ahead of the TBM to fill voids and stabilize ground prior to mining. Utilization of an Earth Pressure Balanced TBM with advanced features and a comprehensive grouting program, as required, will control and avoid ground settlement due to tunnel construction. Further protection methods and associated monitoring programs would be evaluated during design and implemented during construction if required. A settlement monitoring program will be implemented on sensitive features—including levees, structures, facilities, pipelines, and utilities—as required, to ensure that tunneling-induced settlement is controlled within acceptable limits.

3B.1.2 Conform with Applicable Design Standards and Building Codes

The BDCP proponents will ensure that the standards, guidelines, and codes listed below (or the most current applicable version at the time of implementation), which establish minimum design criteria and construction requirements for tunnels, canals, levees, pipelines, excavations and shoring, pumping stations, grading, and foundations, bridges, access roads, structures, and other facilities, will be followed by the BDCP engineers in the design of these facilities and will be included in the

construction specifications. This commitment is related to AMM29, Design Standards and Building Codes, described in BDCP Appendix 3.C. The BDCP engineers will also follow any other standards, guidelines, and code requirements, not listed below, that are promulgated during the detailed design and construction phases and during operation of the conveyance facilities. Additionally, during construction, the California Occupational Safety and Health Act of 1973, as administered by California Occupational Safety and Health Administration (Cal/OSHA), will be followed to protect workers. The BDCP proponents will also ensure that the design specifications are properly executed during construction. The minimum design and construction requirements act as performance standards for engineers and construction contractors. Because the design and construction parameters of these codes and standards are intended to reduce the potential for structural damage or risks to human health due to the geologic and seismic conditions that exist within the Plan Area and the surrounding region, as well as climate change, an uncontrolled release of water, a flood event, and accidents during construction, their use is considered an environmental commitment of the agencies implementing the BDCP.

- American Association of State Highway and Transportation Officials (AASHTO) Guide Specifications for LRFD (load and resistance factor) Seismic Bridge Design, 1st Edition, 2009.
- American Railway Engineering and Maintenance-of-Way Association Manual for Railway Engineering, Volume 2, Chapter 9, Seismic Design for Railway Structures, 2008
- American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures, ASCE-7-05, 2005.
- California Building Code, 2010 (Title 24 California Code of Regulations).
- California Department of Transportation (Caltrans) Seismic Design Criteria, Version 1.6, Nov 2010.
- California Code of Regulations, Title 8.
- DWR Division of Safety of Dams Guidelines for Use of the Consequence-Hazard Matrix and Selection of Ground Motion Parameters, 2002.
- DWR Division of Flood Management FloodSAFE Urban Levee Design Criteria, May 2012.
- DWR Division of Engineering State Water Project – Seismic Loading Criteria Report, Sept 2012.
- DWR Delta Seismic Design, June 2012.
- Federal Highway Administration Seismic Retrofitting Manual for Highways Structures, Parts 1 and 2, 2006.
- State of California Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), Sea-Level Rise Interim Guidance Document, 2010
- U.S. Army Corps of Engineers (USACE) (Corps, CESPK-ED-G), Geotechnical Levee Practice, SOP EDG-03, 2004.
- USACE Design and Construction of Levees, EM 1110-2-1913, 2000.
- USACE Engineering and Design, Earthquake Design and Evaluation for Civil Works Projects, ER 1110-2-1806, 1995.
- USACE Engineering and Design – Earthquake Design and Evaluation of Concrete Hydraulic Structures, EM 1110-2-6053, 2007.

- USACE Engineering and Design – General Design and Construction Considerations for Earth and Rock-Fill Dams, EM 1110-2-2300, 2004.
- USACE Engineering and Design – Response Spectra and Seismic Analysis for Concrete Hydraulic Structures, EM 1110-2-6050, 1999.
- USACE Engineering and Design – Stability Analysis of Concrete Structures, EM 1110-2-2100, 2005.
- USACE Engineering and Design – Structural Design and Evaluation of Outlet Works, EM 1110-2-2400, 2003.
- USACE Engineering and Design – Time-History Dynamic Analysis of Concrete Hydraulic Structure, EM 1110-2-6051, 2003.
- USACE Slope Stability, EM 1110-2-1902, 2003.
- USACE Engineering and Design - Settlement Analysis, EM 1110-1-1904, 1990.
- USACE Engineering and Design - Design of Pile Foundations, EM 1110-2-2906, 1991
- U.S. Department of the Interior and U.S. Geological Survey (USGS) Climate Change and Water Resources Management: A Federal Perspective, Circular 1331

3B.1.3 Transmission Line Design and Alignment Guidelines

This commitment is related to AMM30, Transmission Line Design and Alignment Guidelines, described in BDCP Appendix 3.C. The location and design of the proposed new transmission lines will be conducted in accordance with electric and magnetic field (EMF) guidance adopted by the California Public Utilities Commission, *EMF Design Guidelines for Electrical Facilities* (2006). The guidelines describe the routine magnetic field reduction measures that all regulated California electric utilities will consider for new and upgraded transmission line and transmission substation construction and include the following magnetic field reduction methods for new and upgraded electrical facilities.

- Increasing the distance from electrical facilities by:
    - Increasing structure height of trench depth.
    - Locating power lines closer to the centerline of the corridor.
- Reducing conductor (phase) spacing.
- Phasing circuits to reduce magnetic fields.

3B.1.4 Transmission Line Pole Placement

This commitment is related to AMM30, Transmission Line Design and Alignment Guidelines, described in BDCP Appendix 3.C. The alignment of proposed transmission lines will be designed to avoid sensitive terrestrial and aquatic habitats when siting poles and towers to the maximum extent feasible. The alignment will also be designed to avoid agricultural lands where feasible. In cases where this is not feasible, the BDCP proponents will ensure that impacts are minimized to the greatest degree feasible and disturbed areas will be returned, as near as reasonably and practically feasible, to preconstruction conditions, by re-establishing surface conditions by carefully grading,

reconstructing features such as irrigation and drainage facilities, and replanting crops and/or compensating farmers for crops losses.

Further, tower and pole placement will avoid existing structures to the extent feasible. Where habitat or agricultural areas cannot be avoided in the construction of poles or towers, the following BMPs will be implemented, as applicable and feasible.

- Delay pole or tower construction until after harvest, to the extent feasible, to minimize crop damage.
- Use single-pole structures instead of H-frame or other multiple-pole structures to reduce the potential for interference with farm machinery, reduce land impacts, and minimize weed encroachment issues.
- Locate the line along fence lines, field lines, or adjacent to roads to minimize land use impacts, to the extent feasible.
- Use transmission structures with longer spans to clear fields or sensitive areas.
- Orient the structures with the existing plowing pattern.
- To the extent feasible, minimize the use of guy wires, and keep the guy wires out of crop and hay lands, and place highly visible shield guards on the guy wires.
- Minimize pole heights and install markers on the shield wires above the conductors in areas where aerial spraying and seeding are common.
- Locate new transmission lines along existing transmission line corridors to the extent feasible.
- Use special transmission designs to span existing irrigation systems or, if necessary, reconfigure the irrigation system, if feasible.

3B.1.5 Develop and Implement Stormwater Pollution Prevention Plans

The BDCP proponents will be responsible for ensuring coverage under the Construction General Permit for Construction and Land Disturbance Activities (Construction General Permit [CGP]) (Order 2010-0014-DWQ or any more recent version) issued from the State Water Resources Control Board (SWRCB). The CGP requires the development and implementation of a stormwater pollution prevention plan (SWPPP). This commitment is related to AMM3, Stormwater Pollution Prevention Plan, described in BDCP Appendix 3.C. For the BDCP, a series of separate but related SWPPPs will be prepared by a Qualified SWPPP Developer (QSD) and will be implemented under the supervision of a Qualified SWPPP Practitioner (QSP). As part of the procedure to gain coverage under the CGP, the QSD will determine the "Risk Level" (Levels 1, 2, or 3, or Types 1, 2, or 3 for linear underground/overhead projects) of the construction activities covered by a given SWPPP, which involves an evaluation of the site's "Sediment Risk" and "Receiving Water Risk." The risk is calculated separately for sediment and receiving water, with two risk categories for receiving water (low and high) and three risk categories for sediment risk (low, medium, and high). The overall project risk levels (1, 2, or 3) are then determined through a matrix, where Risk Level 1 applies to projects with low receiving water and sediment risks, Risk Level 3 for projects with high receiving water and sediment risks, and Risk Level 2 for all other combinations of sediment and receiving water risks. These project risk levels determine the level of protection (i.e., BMPs) and monitoring that is required for the project.

Table 3B-2 shows how varying sediment risk and receiving water risk combine to result in a given Risk Level for a given construction site.

Table 3B-2. Combined Risk Level Matrix

		Sediment Risk		
		Low	Medium	High
Receiving Water Risk	Low	Level 1	Level 2	
	High	Level 2		Level 3

The objectives of the SWPPPs will be to (1) identify pollutant sources associated with construction activities and operations that may affect the quality of stormwater and (2) identify, construct, and implement stormwater pollution prevention measures to reduce pollutants in stormwater discharges during and after construction. The SWPPP will be kept onsite during construction activity and operations and will be made available upon request to representatives of the San Francisco Bay and Central Valley Regional Water Quality Control Boards.

In accordance with the CGP, the SWPPP will describe site topographic, soil, and hydrologic characteristics; construction activities and schedule; construction materials to be used, including sources of imported fill material, and other potential sources of pollutants at the construction site; potential non-stormwater discharges (e.g., trench dewatering); erosion and sediment control measures; "housekeeping" BMPs to be implemented; a BMP implementation schedule; a site and BMP inspection schedule; and ongoing personnel training requirements. These provisions are intended to prevent water quality degradation related to pollutant discharge to receiving waters and to prevent or constrain changes to the pH of receiving waters. Performance standards specified in the CGP will be met by implementing stormwater pollution prevention BMPs that are tailored to specific site conditions, including the Risk Level of individual construction sites. These environmental commitments mirror the requirements to gain and maintain coverage under CGP. The BDCP proponents will ensure consultation with the appropriate Regional Water Quality Control Board or SWRCB to determine the appropriate aggregation of specific construction activities, or groups of activities, to be authorized under the CGP.

It is anticipated that multiple SWPPPs will be prepared for BDCP construction activities, with a given SWPPP prepared to cover a particular water conveyance component (e.g., intermediate forebay), groups of components (e.g., intakes), or construction activities associated with conservation components. The risk level will be identified for each action covered by a specific SWPPP.

The following list of BMPs are requirements common to all Risk Level sites; however, some detail is provided in "Inspection and Monitoring" on various Risk Level requirements.

- Erosion Control Measures.
    - Implement effective wind erosion BMPs, such as watering, application of soil binders/tackifiers, and covering stockpiles.
    - Provide effective soil cover for inactive areas and all finished slopes and utility backfill areas, such as seeding with a native seed mix, application of hydraulic mulch and bonded fiber matrices, and installation of erosion control blankets and rock slope protection.
- Sediment Control Measures.

- Prevent transport of sediment at the construction site perimeter, toe of erodible slopes, soil stockpiles, and into storm drains.
- Capture sediment via sedimentation and stormwater detention facilities
- Reduce runoff velocity on exposed slopes.
- Reduce off-site sediment tracking.

- Management Measures for Construction Materials.
  - Cover and berm loose stockpiled construction materials.
  - Store chemicals in watertight containers.
  - Minimize exposure of construction materials to stormwater.
  - Designate refueling and equipment inspection/maintenance locations.
  - Control of drift and runoff from areas treated with herbicides, pesticides, and other chemicals that may be harmful to aquatic habitats.
- Waste Management Measures.
  - Prevent off-site disposal or runoff of any rinse or wash waters.
  - Implement concrete and truck washout facilities and appropriately sized storage, treatment, and disposal practices.
  - Ensure the containment of sanitation facilities (e.g., portable toilets).
  - Clean or replace sanitation facilities (as necessary) and inspect regularly for leaks/spills.
  - Cover waste disposal containers during rain events and at end of every day.
  - Protect stockpiled waste material from wind and rain.
- Construction Site Dewatering and Pipeline Testing Measures.
  - Reclaim site dewatering discharges to the extent practicable, or use for other construction purposes (e.g., land application for dust control).
  - Implement appropriate treatment and disposal of construction site dewatering from excavations to prevent discharges to surface waters.
  - Dechlorinate pipeline test waters before discharging to surface waters.
- Accidental Spill Prevention and Response Measures.
  - Provide equipment and materials necessary for cleanup of accidental spills onsite.
  - Clean up accidental spills and leaks immediately and dispose of properly.
  - Ensure that there are trained spill response personnel available.
- Non-stormwater Management Measures.
  - Control all non-stormwater discharges during construction.
  - Wash vehicles in such a manner as to prevent non-stormwater discharges to surface waters.
  - Clean streets in such a manner as to prevent non-stormwater discharges from reaching surface water.

- Discontinue the application of any erodible landscape material during rain, or within 2 days before a forecasted rain event.

- Inspection and Monitoring Common to all Risk Levels:
  - Ensure that all inspection, maintenance repair, and sampling activities at the construction site will be performed or supervised by a QSP representing the discharger.
  - Develop and implement a written site-specific Construction Site Monitoring Program (CSMP).
- Inspection, Monitoring, and Maintenance Activities Based on the Risk Level of the Construction Site (as defined in the SWRCB CGP).
  - Risk Level 1 Sites:
    - Perform weekly inspections of BMPs, and at least once each 24-hour period during extended storm events.
    - At least two business days (48 hours) prior to each qualifying rain event (a rain event producing 0.5 inch or more of precipitation), visually inspect: (a) stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources; (b) all BMPs to identify whether they have been properly implemented in accordance with the SWPPP; and (c) stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.
    - Visually observe stormwater discharges at all discharge locations within two business days (48 hours) after each qualifying rain event and identify additional BMPs as necessary, and revise the SWPPP accordingly.
    - Conduct minimum quarterly visual inspections of each drainage area for the presence of (or indications of prior) unauthorized and authorized non-stormwater discharges and their sources.
    - Collect one or more samples of construction site effluent during any breach, malfunction, leakage, or spill observed within the construction site during a visual inspection which could result in the discharge of pollutants to surface waters that will not be visually detectable in stormwater.
  - Risk Level 2 Sites:
    - Risk Level 2 dischargers will perform all of the same visual inspection, monitoring, and maintenance measure specified for Risk Level 1 dischargers.
    - At a minimum, Risk Level 2 dischargers will collect and analyze a minimum of three samples per day for pH and turbidity during qualifying rain events. The CGP also requires the discharger to revise the SWPPP and to immediately modify existing BMPs and/or implement new BMPs such that subsequent discharges are below the relevant Numeric Action Levels (NALs). It may be a violation of the CGP if the discharger fails to take corrective action to reduce the discharge below the NALs specified by the CGP.
    - Dischargers who deploy an Active Treatment Systems (ATS) on their site, or a portion on their site, will collect ATS effluent samples and measurements from the discharge pipe or another location representative of the nature of the discharge.

- In the event that any effluent sample exceeds an applicable NAL, Risk Level 2 dischargers shall submit all storm event sampling results to the State Water Board no later than 10 days after the conclusion of the storm event. The Regional Boards have the authority to require the submittal of an NAL Exceedance Report, which includes a description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions taken.

- Risk Level 3 Sites:

  - Risk Level 3 dischargers will perform all of the same visual inspection, monitoring, and maintenance measure specified for Risk Level 1 and Risk Level 2 dischargers.

  - In the event that a Risk Level 3 discharger exceeds a numeric effluent limitation (NEL) of the CGP (i.e., pH and turbidity), and has a direct discharge into receiving waters, the discharger will subsequently sample receiving waters for all parameter(s) monitored in the discharge. An exceedance of an NEL is considered a violation of the CGP, and the discharger must electronically submit all storm event sampling results to the State and Regional Water Boards via Stormwater Multiple Application and Report Tracking System (SMARTS) no later than 5 days after the conclusion of the storm event.

  - If disturbing 30 acres or more of the landscape and discharging directly into receiving waters, conduct a benthic macroinvertebrate bioassessment of receiving waters prior to and after commencement of construction activities to determine if significant degradation to the receiving water's biota has occurred. However, if commencement of construction is outside of an index period (i.e., the period of time during which bioassessment samples must be collected to produce results suitable for assessing the biological integrity of streams and rivers) for the site location, the discharger will participate in the State of California's Surface Water Ambient Monitoring Program (SWAMP).

The SWPPP will also specify the forms and records that must be uploaded to SWRCB online SMARTS, such as quarterly non-stormwater inspection and annual compliance reports.

If the QSP determines the site is Risk Level 2 or 3, water sampling for pH and turbidity will be required and the SWPPP will specify sampling locations and schedule, sample collection and analysis procedures, and recordkeeping and reporting protocols. In accordance with the CGP numeric action level requirements, the BDCP contractor's QSD will revise the SWPPP and modify existing BMPs or implement new BMPs when effluent monitoring indicates that daily average runoff pH is outside the range of 6.5 to 8.5 and that the daily average turbidity is greater than 250 nephelometric turbidity units (NTUs). Such BMPs may include those that are more costly to construct and maintain, such as construction of sediment traps and sediment basins, use of Baker tanks, installation of rock slope protection, covering of stockpiles with water-repellant geotextiles, dewatering basins, and use of Active Treatment Systems. The ability of other areas to withstand excessive erosion and sedimentation may be increased by applying additional mulching, bonded fiber matrices, and erosion control blankets; reseeding with a native seed mix; and installation of additional fiber rolls, silt fences, and gravel bag berms. The QSD may also specify changes in the manner and frequency of BMP inspection and maintenance activities. The determination of which BMP should be applied in a given situation is very site-specific. QSDs typically refer to the California Stormwater Quality Association's *Stormwater Best Management Practice Handbook Portal: Construction* or the similar Caltrans manual for selecting BMPs for particular site conditions.

Additionally, if a given construction component is Risk Level 3, for that component BDCP proponents will report to the SWRCB when effluent monitoring indicates that daily average runoff pH is outside the range of 6.0 to 9.0 or the daily average turbidity is greater than 500 NTUs. In the event that the turbidity NEL is exceeded, the BDCP proponents may also be required to sample and report to the SWRCB pH, turbidity, and suspended sediment concentration of receiving waters for the duration of construction.

The contractor will also conduct sampling of runoff effluent when a leak, spill, or other discharge of non-visible pollutants is detected.

The CGP has specific monitoring and action level requirements for the Risk Levels, which are summarized in Table 3B-3.

Table 3B-3. SWPPP Monitoring and Action Requirements

	Risk Level/Type		
SWPPP Requirements	1	2	3
Minimum Stormwater and Non-stormwater BMPs	✓	✓	✓
Numeric Action Levels (NAL) NAL for pH: 6.5–8.5 pH units NAL for turbidity: 250 NTU		✓	✓
Numeric Effluent Limitations (NEL) NEL for pH: 6–9 pH units NEL for turbidity: 500 NTU			✓
Visual Monitoring (weekly; before, during, after rain events; non-stormwater)	✓	✓	✓
Runoff Monitoring		✓	✓
Receiving Water Monitoring			✓

BMP = best management practices
pH = potential hydrogen
NTU = nephelometric turbidity unit
Note: The SWRCB has suspended the applicability of NELs for pH and turbidity at Risk Level 3/LUP Type 3 construction sites. In addition, because receiving water monitoring is required only if the NELs are triggered, all receiving water monitoring requirements are also suspended. The Level 3/Type 3 NEL are presented here assuming that such NELs will be reinstated when project construction commences.

The QSD preparing a SWPPP may include in the SWPPP BMPs such as preservation of existing vegetation, perimeter control, seeding, mulching, fiber roll and silt fence barriers, erosion control blankets, protection of stockpiles, watering to control dust entrainment, rock slope protection, tracking control, equipment refueling and maintenance, concrete and solid waste management, and other measures to ensure compliance with the pH and turbidity level requirements defined by the CGP. Partly because the potential adverse effect on receiving waters depends on location of a work area relative to a waterway, the BMPs will be site-specific. For example, BMPs applied to level island-interior sites will be different than BMPs applied to water-side levee conditions. The QSP will be responsible for day-to-day implementation of the SWPPP, including BMP inspections, maintenance, water quality sampling, and reporting to SWRCB. If the water quality sampling results indicate an exceedance of NALs and NELs for pH and turbidity, as described above, the QSD will modify the type and/or location of the BMPs by amending the SWPPP in order to reduce pH,

turbidity, and other contaminants to acceptable levels, consistent with CGP NALs and NELs and with the water quality objectives and beneficial uses set forth in the Basin Plan.

3B.1.6 Develop and Implement Erosion and Sediment Control Plans

The BDCP proponents commit to implementing measures as described below as part of the construction activities and in advance of any necessary permit. In accordance with these environmental commitments, the BDCP proponents will ensure the preparation and implementation of erosion and sediment control plans to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities following construction. This commitment is related to AMM4, Erosion and Sediment Control Plan, described in BDCP Appendix 3.C. It is anticipated that multiple erosion and sediment control plans will be prepared for BDCP construction activities, each taking into account site-specific conditions such as proximity to surface water, erosion potential, drainage, etc. The plans will include all the necessary state requirements regarding erosion control and will implement BMPs for erosion and sediment control that will be in place for the duration of construction activities. These BMPs will be incorporated into the SWPPPs (see *Develop and Implement Stormwater Pollution Prevention Plans*).

Erosion control measures will include the following:

- Install physical erosion control stabilization features (hydroseeding with native seed mix, mulch, silt fencing, fiber rolls, sand bags, and erosion control blankets) to capture sediment and control both wind and water erosion. Erosion control may not utilize plastic monofilament netting or similar materials.
- Keep emergency erosion-control supplies onsite at all times during construction, and have the contractor(s) use these emergency stockpiles as needed. The BDCP proponents and/or the contractors will ensure that supplies used from the emergency stockpiles are replaced within 48 hours. BDCP proponents will also ensure that materials used in construction of erosion control methods will be removed from the work site when no longer needed and will become the property of the contractor.
- Design grading to be compatible with adjacent areas and result in minimal disturbance of the terrain and natural land features and minimize erosion in disturbed areas to the extent feasible.
- Divert runoff away from steep, denuded slopes, or other critical areas with barriers, berms, ditches, or other facilities.
- Retain native trees and vegetation to the extent feasible to stabilize hillsides, retain moisture, and reduce erosion.
- Limit construction, clearing of native vegetation, and disturbance of soils to areas of proven stability.
- Implement construction management and scheduling measures to avoid exposure to rainfall events, runoff, or flooding at construction sites to the extent feasible.
- Conduct frequent site inspections (before and after significant storm events) to ensure that control measures are intact and working properly and to correct problems as needed.
- Install drainage control features (e.g., berms and swales, slope drains) as necessary to avoid and minimize erosion.

- Implement wind erosion control measures (e.g., application of hydraulic mulch or bonded fiber matrix).

Sediment control measures will include:

- Use sediment ponds, silt traps, wattles, straw bale barriers or similar measures to retain sediment transported by onsite runoff.
- Collect and direct surface runoff at non-erosive velocities to the common drainage courses.
- When ground disturbing activities are required adjacent surface water, wetlands, or aquatic habitat, the use of sediment and turbidity barriers, soil stabilization and revegetation of disturbed surfaces.
- Prevent mud from being tracked onto public roadways by installing gravel on primary construction ingress/egress points, and/or truck tire washing.
- Deposit or store excavated materials away from drainage courses and cover if left in place for more than 5 days or storm events are forecast within 48 hours.

After construction is complete, site-specific restoration efforts will include grading, erosion control, and revegetation. Self-sustaining, local native plants that require little or no maintenance and do not create an extreme fire hazard will be used. All disturbed areas will be recontoured and seeded with a native seed mix to the extent feasible following BDCP restoration guidelines. Additional replacement or upgrades to drainage facilities will be implemented if necessary to avoid and minimize erosion. Paved areas damaged from use over and above ordinary wear-and-tear from lawful use by construction equipment will be repaired to avoid erosion that may occur due to pavement damage.

3B.1.7 Develop and Implement Fish Rescue and Salvage Plans

Fish rescue operations will occur at any in-water construction site where dewatering and resulting isolation of fish may occur (e.g., when dewatering creates isolated pools within the stream channel). Fish Rescue and Salvage Plans will be developed by the DWR in coordination with fish agencies and will include detailed procedures for fish rescue and salvage to minimize the number of Chinook salmon, steelhead, green sturgeon, and other fish stranded during placement and removal of cofferdams at the intake construction sites. This commitment is related to AMM8, Fish Rescue and Salvage Plan, described in BDCP Appendix 3.C. The plans will identify the appropriate procedures for removing fish from the construction zone, and preventing fish from re-entering the construction zone during construction, or prior to dewatering. These plans will include detailed fish collection, holding, handling, and release procedures. These plans will be submitted to the appropriate resource agencies (CDFW, U.S. Fish and Wildlife Service [USFWS], and the National Marine Fisheries Service [NMFS]) for their review and acceptance, and will be revised accordingly.

The appropriate fish collection method will be determined by a qualified fish biologist for all species of interest, in consultation with the designated resource agency biologist, and based on site-specific conditions prior to dewatering the cofferdam. Contact information provided by NMFS and USFWS will be supplied to the biologist on-site. Prior to construction site dewatering, fish will be captured and relocated to avoid direct mortality and to minimize take. Capture, release, and relocation measures will be consistent with the general guidelines and procedures those set forth in Chapter 9

of the most recent edition of the DFG *California Salmonid Stream Habitat Restoration Manual* (California Department of Fish and Game 2010) to minimize impacts to aquatic habitat and species. Collection methods may include use of seines (nets) and/or dip nets to collect and remove fish, and electrofishing techniques may also be permitted.

All fish rescue and salvage operations will be conducted under the guidance of a qualified fish biologist. These activities will occur during approved in-water construction work windows (typically between June 1 and October 31).

Unless otherwise required by these permits, the contractor undertaking construction at the construction sites will provide the following.

- A minimum 7-day notice to the appropriate fish regulatory agencies, prior to an anticipated activity that could result in isolating fish, such as installation of a cofferdam.
- A minimum 48-hour notice to the appropriate fish regulatory agencies of dewatering activities that are expected to require fish rescue.
- Unrestricted access for the appropriate fish regulatory agency personnel to the construction site for the duration of implementation of the fish rescue plan.
- Temporary cessation of dewatering if fish rescue workers determine that water levels may drop too quickly to allow successful rescue of fish.
- A work site that is accessible and safe for fish-rescue workers.

Additional detail regarding qualifications of the fish rescue team, seining and dipnetting, electrofishing, and dewatering are provided in BDCP Appendix 3.C, under the description of AMM8, Fish Rescue and Salvage Plan.

In some cases it may not be possible to conduct a fish rescue because of inaccessibility for electrofishing or seining to be conducted effectively, or where safety of field crews is compromised. In these situations, the onsite fish biologist, in consultation with the designated resource agency biologist, may determine that it is necessary to begin the dewatering process. Dewatering may occur until the onsite fish biologist determines that conditions are made appropriate to conduct fish rescue operations. During the dewatering process, a qualified biologist or fish rescue team will be onsite with the aim of ensuring that an undue number of fish are not trapped in isolated areas or impinged on pump screen(s) or isolation nets, based on the professional judgment of the onsite fish biologist and the terms and conditions of the incidental take permit. In the event that the proposed methods are found to be insufficient to avoid the loss of an undue number of fish, the qualified biologist will revise the methods to minimize further losses and to offset those losses beyond the acceptable number.

If fish rescue cannot be attempted (e.g., because of safety), a visual survey from the bank will be undertaken to document fish presence and the likely extent of effects. Binoculars will be used to identify fish; however, this method may not be feasible, if water clarity is low.

The fish rescue team will notify the contractor when the fish rescue has been completed and that construction can recommence. The results of the fish rescue and salvage operations (including date, time, location, comments, method of capture, fish species, number of fish, approximate age, condition, release location, and release time) will be reported to the appropriate resource agencies, as specified in the pertinent permits.

3B.1.8 Develop and Implement a Barge Operations Plan

To address the following potential impacts on aquatic habitat and species from barge and tugboat operations associated with CM1 construction, the BDCP proponents will ensure that a barge operations plan is developed and implemented for each project that requires the use of a barge. This commitment is related to AMM7, Barge Operations Plan, described in BDCP Appendix 3.C. This plan will be developed and submitted by the construction contractors per standard DWR contract specifications as part of the traffic plans required by those specifications (see Section 01570 of standard DWR construction contracts). The barge operations plan will be part of a comprehensive traffic control plan coordinated with the Coast Guard for large channels. The comprehensive traffic control plan will address traffic routes and machines used to deliver materials to and from the barges, to include the following.

- Bottom scour from propeller wash.
- Bank erosion or loss of submerged or emergent vegetation from propeller wash and\or excessive wake.
- Accidental material spillage.
- Sediment and benthic (bottom-dwelling) community disturbance from accidental or intentional barge grounding or deployment of barge spuds (extendable shafts for temporarily maintaining barge position).
- Hazardous materials spills (e.g., fuel, oil, hydraulic fluids).
- Introduction of aquatic invasive species

The plan will serve as a guide to barge operations and to a Biological Monitor who will evaluate barge operations on a daily basis during construction with respect to stated performance measures.

BDCP proponents will ensure that this plan, when approved by DWR and other resource agencies, will be read by barge operators and kept aboard all vessels operating at the BDCP construction sites and barge landings.

3B.1.8.1 Sensitive Resources

This plan is intended to protect aquatic species and habitat in the vicinity of barge operations. The plan will be developed to avoid barge-related effects on aquatic species; if and when avoidance is not feasible, the plan will include provisions to minimize effects on aquatic species. The sensitive resources potentially affected by barge maneuvering and anchoring in affected areas are listed below.

- Sediments that could cause turbidity or changes in bathymetry, if disturbed.
- Bottom-dwelling (benthic) invertebrates that provide the prey base for a number of aquatic species.
- Riparian vegetation that provides shade, cover, habitat structure, and organic nutrients to the aquatic environment.
- Submerged aquatic vegetation that provides habitat structure and primary (plant) production.
- Transport and introduction of invasive aquatic species (plants, fish and animals)

3B.1.8.2 Responsibilities

Construction contractors operating barges in the process of constructing the BDCP water conveyance facilities will be responsible for the following.

- Operating vessels safely and following this plan and other reasonable measures to prevent adverse effects on aquatic resources of the Delta.
- Reading, understanding, and following the barge operations plan.
- Reporting to the Project Biological Monitor any vessel grounding or other deviations from this plan that could have resulted in the disturbance of bottom sediments, damage to river banks, or loss of submerged, emergent, or riparian vegetation.
- Immediate reporting of material fuel or oil spills to the CDFW Office of Spill Prevention and Response (OSPR), the Project Biological Monitor, and DWR.
- Following all other relevant plans, including the Hazardous Materials Management Plans; SWPPPs; and the Spill Prevention, Containment, and Countermeasures Plans.

The Biological Monitor, likely from DWR staff, will be responsible for the following.

- Observing a sample of barge operation activities including loading and unloading at least one barge at each of the barge loading and unloading facilities.
- Same-day reporting to DWR of any observed problems with barge operations.
- Monitoring during construction will include observation of barge landing, loading or unloading, and departure of one or more barges at each active barge landing site and the condition of both river banks at each landing site, pile driving, and other in-water construction activity as directed by DWR, and visual inspection for invasive aquatic species on in-water equipment such as barges and small work boats. Annual reporting to DWR a summary of monitoring observations over the course of each construction year, including an evaluation of the plan performance measures. The annual report will also include a description of and representative photographs and/or videos of conditions of river banks and vegetation.
- The success of this plan in protecting aquatic resources will be assessed by a qualified biologist. The Biological Monitor will visit each intake and barge landing site to determine the extent of emergent and riparian vegetation, bank conditions, and general site conditions during the growing season prior to initiation of construction and then annually during and after construction.

3B.1.8.3 Avoidance Measures

The following avoidance measures will be implemented to ensure that the goal of avoiding impacts to aquatic resources from tugboat and barge operations will be achieved. Impacts will be avoided through the following measures: training of tugboat operators, limiting vessel speed to minimize the effects of wake impinging on unarmored or vegetated banks and the potential for vessel wake to strand small fish, limiting the direction and\or velocity of propeller wash to prevent bottom scour and loss of aquatic vegetation, and prevention of spillage of materials and fluids from vessels.

If deviations from these procedures are required to maintain the safety of vessels and crew, the Biological Monitor will be informed of the circumstances and if there appeared to be any impacts on

water quality, habitats, fish, or wildlife. Any such impacts will be brought to the attention of the applicable resource agency in order to ascertain and implement appropriate remedial measures.

3B.1.8.3.1 Environmental Training

BDCP proponents will ensure that tugboat pilots will be required to read and follow this plan and to keep a copy aboard and accessible while working at these sites. BDCP proponents will ensure that all tugboat crew members responsible for piloting a vessel at either the intake or barge landing sites will read and agree to comply fully with this plan.

3B.1.8.3.2 Dock Approach and Departure Protocol

BDCP proponents will develop and implement a protocol for dock approach and departure to ensure the following.

- Vessel operators will obey all federal and state navigation regulations that apply to the Sacramento delta.
- All vessels will approach and depart from the intake and barge landing sites at dead slow in order to reduce vessel wake and propeller wash at the sites frequented by tug and barge traffic.
- In order to minimize bottom disturbance, anchors and barge spuds will be used to secure vessels only when it is not possible to tie up.
- Barge anchoring will be pre-planned. Anchors will be lowered into place and not be allowed to drag across the channel bed.
- Vessel operators will limit vessel speed as necessary to maintain wake of less than 2 feet (66 cm) at shore.
- Vessel operators will avoid pushing stationary vessels up against the cofferdam, dock or other structures for extended periods since this could result in excessive directed propeller wash impinging on a single location. Barges will be tied up whenever possible to avoid the necessity of maintaining stationary position by tugboat or by the use of barge spuds.
- Barges will not be anchored where they will ground during low tides.
- All tugboats will obey U.S. Coast Guard regulations related to the prevention, notification, and cleanup of hazardous materials spills.
- All vessels will keep an oil spill containment kit and spill prevention and response plan on-board.
- In the event of a fuel spill, report immediately to the CDFW Office of Spills Prevention and Response: 800-852-7550 or 800-OILS-911 (800-645-7911).
- When transporting loose materials (e.g., sand, aggregate), barges will use deck walls or other features to prevent loose materials from blowing or washing off of the deck.

3B.1.8.4 Performance Measures

Performance or effectiveness of the measures implemented under the barge operations plan will be assessed based on the results of the biological monitoring reports. The assessment will evaluate observations for the following indicators of impacts.

- **Emergent vegetation loss.** The extent of emergent vegetation and the dominant species in such vegetation will be determined and mapped by GPS at and across the channel from each of the intake and barge landing sites during the growing seasons prior to, during, and after construction. Extent will be mapped as linear coverage along the landing and opposite banks. In the event that the linear extent of emergent vegetation is found to have decreased by 20% or more following construction (or as otherwise conditioned by applicable Department of Fish and Wildlife streambed alteration agreements), the position and nature of the change will be evaluated for the probability that the loss was due to barge grounding, propeller wash, or other effects related to barge operations. Adequate performance will be achieved if the linear extent of riparian and emergent vegetation following construction is at least 80% of the preconstruction extent (or as otherwise conditioned by applicable Department of Fish and Wildlife streambed alteration agreements).
- **Bank erosion and riparian vegetation loss.** The linear extent of bank erosion will be mapped by GPS at each of the intake and barge landing sites prior to, during, and after construction. Photos and written descriptions will be recorded for each area of eroded bank to describe the extent of the erosion. In the event that the linear extent of eroded bank is found to have increased by 20% or more following construction, the position and nature of the change will be evaluated for the probability (low, moderate, or high) that the erosion was due to barge grounding, propeller wash, or other effects related to barge operations, and pre- and postconstruction photographs will be compared to determine if riparian vegetation was also lost as a result of the erosion.
- **Cargo containment.** The biological monitor will note the use of deck walls or other appropriate containment during loading and unloading of sand, aggregate or other materials from a barge at each landing site. Adequate performance will be achieved if appropriate measures are in use during each observed loading and unloading. In the unlikely event that an accidental spill occurs in spite of appropriate containment, the barge crew will describe the type, amount, and location of the spill to the biological monitor. The biological monitor will make observations at the site of the material spill and evaluate the potential impacts of the spill on biological resources for evaluation of whether mitigation is required, and for inclusion in the annual monitoring report. Any such impacts will be brought to the attention of the applicable resource agency in order to ascertain and implement appropriate remedial measures.
- **Fuels spill prevention.** Vessels operating in accordance with the Spill Prevention, Containment, and Countermeasures Plan (a component of the Hazardous Materials Management Plan), and all applicable federal, State, and local safety and environmental laws and policies governing commercial tugboat and barge operations, will be considered to be performing adequately with regard to fuel spill prevention.
- **Barge grounding.** Barges are not to be grounded or anchored where falling tides are reasonably expected to cause grounding during a low tide. Barge grounding has the potential to disturb bottom sediments and benthic organisms, as well as creating a temporary obstacle to fish passage. Performance will be considered adequate if no cases of vessel grounding occur.

3B.1.8.5 Contingency Measures

In the event that the Performance Measures are not met, DWR will coordinate with NMFS, USFWS, DFG, and California Regional Water Quality Control Board (RWQCB) to determine appropriate rectification or compensation for impacts to aquatic resources as set forth above.

3B.1.9 Construction Equipment Exhaust Reduction Plan

Prior to construction, BDCP proponents will develop a construction equipment exhaust reduction plan to reduce criteria air pollutants and GHG emissions from construction equipment. The reduction plan will require, at a minimum, that equipment used to construct BDCP facilities meet the following specifications:

- Electrification of 5% of equipment in the following general categories:
  - Air compressors
  - Cranes
  - Excavators
  - Pumps
  - Other construction equipment
  - Loaders
  - Dozers
- Electrification of all materials-handling equipment and welders.
- Electrification of 75% of general industrial equipment.
- Electrification of 10% of light duty on-road vehicles.
- Use of diesel particulate filters on 100% of all non-electrified off-road, marine, and locomotive equipment.
- Use of compressed natural gas (CNG) in 10% of heavy-duty trucks and 50% of forklifts.
- Use of Tier 4 engines in diesel locomotives.

In addition to the above equipment specifications, the following best management practices will be incorporated into the reduction plan.

- Minimize idling time either by shutting equipment off when not in use or limiting the time of idling to 3 minutes (5 minutes required by 13 CCR 2449[d][3], 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
- Ensure that emissions from all off-road diesel-powered equipment used on the project site do not exceed 40% opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40% opacity (or Ringelmann 2.0[1]) will be repaired immediately. Non-compliant equipment will be documented and a summary provided annually to the lead agency and air district. A visual survey of all in-operation equipment will be made at least weekly by the proponent agency(s), and a periodic summary of the visual survey results will be submitted throughout the duration of the proposed project, except that the summary will not be required for any 30-day period in which no construction activity occurs. The summary will include the quantity and type of

[1] Based on the Ringelmann scale, which measures the density of smoke in the air.

vehicles surveyed, as well as the dates of each survey. The air districts or other officials may conduct periodic site inspections to determine compliance. Nothing in this measure will supersede other air district or state rules or regulations.

The reduction plan will be provided to the appropriate Plan Area air districts for approval prior to construction. Control technology that achieves equivalent or greater reductions than those identified above may be specified as new emissions reduction technologies become available and cost-effective.

3B.1.10 DWR Construction Best Management Practices to Reduce GHG Emissions

BDCP proponents will implement the following applicable GHG reduction measures, which are outlined in DWR's draft CAP.

3B.1.10.1 Preconstruction and Final Design BMPs

Preconstruction and Final Design BMPs are designed to ensure that individual projects are evaluated and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the project.

BMP 1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.

BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.

BMP 3. Ensure that all economically feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, consider use of alternative fuels, such as propane or solar, to power generators to the maximum extent feasible, as specified in construction contracts.

BMP 4. Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.

BMP 5. Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.

3B.1.10.2 Construction BMPs

Construction BMPs apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All projects are expected to implement all Construction BMPs unless a variance is granted by the Division of Engineering Chief, Division of Operation and Maintenance Chief, or Division of Flood Management Chief, as applicable and the variance is approved by the DWR CEQA Climate Change Committee. Variances will be granted when specific project conditions

or characteristics make implementation of the BMP infeasible and where omitting the BMP will not be detrimental to the project's consistency with the Greenhouse Gas Reduction Plan.

BMP 6. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

BMP 7. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition.

BMP 8. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives onsite and every two weeks for equipment that remains onsite. Check vehicles used for hauling materials offsite weekly for correct tire inflation.

BMP 9. Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.

BMP 10. Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.

BMP 11. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay[26] certified truck will be used to the maximum extent feasible.

BMP 12. Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.

BMP 13. Develop a project specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.

3B.1.11 Develop and Implement Noise Abatement Plan

DWR and contractors hired to construct any conveyance components of the project will implement a noise abatement plan to avoid or reduce potential construction-, maintenance-, and operation-related noise impacts. This commitment is related to AMM31, Noise Abatement, and AMM9, Underwater Sound Control and Abatement Plan, described in BDCP Appendix 3.C. As applicable, the following components will be included in the plan.

3B.1.11.1 Construction and Maintenance Noise

- To the extent feasible, the contractor will employ best practices to reduce construction noise during daytime and evening hours (7:00 a.m. to 10:00 p.m.) such that construction noise levels do not exceed 60 dBA L_{eq} (1 hour) at the nearest residential land uses.
- Limit construction during nighttime hours (10:00 p.m. to 7:00 a.m.) such that construction noise levels do not exceed 50 dBA L_{max} at the nearest residential land uses.

- Limit pile driving to daytime hours (7 a.m. to 6 p.m.).
- In the event of complaints by nearby residents due to construction noise generated during nighttime hours, the contractor will monitor noise levels intermittently between (10:00 p.m. to 7:00 a.m.) at the property line of the nearest residential use. In the event that construction noise during nighttime hours exceeds 50 dBA L_{max}, the construction contractor will cease nighttime construction activity in the area until sound-attenuating mitigation measures, such as temporary sound walls, are implemented, such that nighttime construction noise at the nearest residential use is reduced to a level of 50 dBA L_{max} or lower.
- Locate, store, and maintain portable and stationary equipment as far as possible from nearby residents.
- Employ preventive maintenance including practicable methods and devices to control, prevent, and minimize noise.
- Route truck traffic in order to reduce construction noise impacts and traffic noise levels at noise-sensitive land uses (i.e., places where people reside, schools, libraries, and places of worship.
- To the extent feasible, schedule construction activities so that the loudest noise events, such as blasting, occur during peak traffic commute hours.
- Limit off-site trucking activities (e.g., deliveries, export of materials) to the hours of 7:00 a.m. to 10:00 p.m. to minimize impacts on nearby residences.

3B.1.11.2 Operation Noise

Pump station facilities will be designed and constructed such that facility operation noise levels at nearby residential land uses do not exceed 50 L_{eq} during daytime hours (7:00 a.m. to 10:00 p.m.) and 45 dBA L_{eq} during nighttime hours (10 p.m. to 7 a.m.). Acoustical measures such as terrain shielding, pump enclosures, and acoustical building treatments will be incorporated into the facility design in order to meet this performance standard.

3B.1.12 Develop and Implement Hazardous Materials Management Plans

The BDCP proponents will ensure that each BDCP contractor responsible for construction of a BDCP facility or project will develop and implement a hazardous materials management plan (HMMP) before beginning construction. This commitment is related to AMM32, Hazardous Materials Management, described in BDCP Appendix 3.C. It is anticipated that multiple HMMPs will be prepared for the overall BDCP construction activities, each taking into account site-specific conditions such as hazardous materials present on site and known historic site contamination. A database on historic instances of contamination and results of any field inspections regarding the presence of hazardous chemicals will be maintained. The HMMPs will provide detailed information on the types of hazardous materials used or stored at all sites associated with the water conveyance facilities (e.g., intake pumping plants, maintenance facilities); phone numbers of applicable city, county, state, and federal emergency response agencies; primary, secondary, and final cleanup procedures; emergency-response procedures in case of a spill; and other applicable information. The plan will include appropriate practices to reduce the likelihood of a spill of toxic chemicals and other hazardous materials during construction and facilities operation and maintenance. A specific

protocol for the proper handling and disposal of hazardous materials will be established before construction activities begin and will be enforced by the BDCP proponents.

The HMMP will include, but not be limited to, the following measures or practices:

- Fuel, oil, and other petroleum products will be stored only at designated sites.
- Hazardous materials containment containers will be clearly labeled with the identity of the hazardous materials contained therein, handling and safety instructions, and emergency contact.
- Storage, use, or transfer of hazardous materials in or near wet or dry streams will be consistent with the Fish and Game Code (Section 5650) and/or with the permission of California Department of Fish and Game (DFG).
- Material Safety Data Sheets (MSDS) will be made readily available to the contractor's employees and other personnel at the work site.
- The accumulation and temporary storage of hazardous wastes will not exceed 90 days.
- Soils contaminated by spills or cleaning wastes will be contained and removed to an approved disposal site.
- Hazardous waste generated at work sites, such as contaminated soil, will be segregated from other construction spoils and properly handled, hauled, and disposed of at an approved disposal facility by a licensed hazardous waste hauler in accordance with state and local regulations. The contractor will obtain permits required for such disposal.
- Emergency spill containment and cleanup kits will be located at the facility site. The contents of the kit will be appropriate to the type and quantities of chemical or goods stored at the facility.

3B.1.13 Develop and Implement Spill Prevention, Containment, and Countermeasure Plans

It is anticipated that multiple Spill Prevention, Containment, and Countermeasure Plans (SPCCPs) will be prepared for BDCP construction activities, each taking into account site-specific conditions. This commitment is related to AMM5, Spill Prevention, Containment, and Countermeasure Plan, described in BDCP Appendix 3.C. The SPCCPs will be developed in accordance with the regulatory requirements of Title 40 of the Code of Federal Regulations, Part 112 (40 CFR Part 112). 40 CFR Part 112, or the Spill Prevention, Control, and Countermeasure Rule, includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCCPs. The SPCCPs will be developed and implemented to minimize effects from spills of oil or oil-containing products during BDCP construction and operation. The SPCC Plans will include the following measures and practices:

- Personnel will be trained in emergency response and spill containment techniques, and will also be made aware of the pollution control laws, rules, and regulations applicable to their work.
- Petroleum products will be stored in nonleaking containers at impervious storage sites from which an accidental spill cannot escape.
- Absorbent pads, pillows, socks, booms, and other spill containment materials will be stored and maintained at the hazardous materials storage sites for use in the event of an accidental spill.

- Contaminated absorbent pads, pillows, socks, booms, and other spill containment materials will be placed in nonleaking sealed containers until transport to an appropriate disposal facility.
- When transferring oil or other hazardous materials from trucks to storage containers, absorbent pads, pillows, socks, booms or other spill containment material will be placed under the transfer area.
- Refueling of construction equipment will occur only in designated areas that will be a minimum of 150 feet from surface waters and other sensitive habitats, such as wetlands.
- Equipment used in direct contact with water will be inspected daily for oil, grease, and other petroleum products. All equipment must be cleaned of external petroleum products prior to beginning work where contact with water may occur to prevent the release of such products to surface waters.
- Oil-absorbent booms will be used when equipment is used in or immediately adjacent to waters.
- All reserve fuel supplies will be stored only within the confines of a designated staging area, to be located a minimum of 150 feet from surface waters and other sensitive habitats, such as wetlands.
- Fuel transfers will take place a minimum of 150 feet from surface waters and other sensitive habitats, such as wetlands, and absorbent pads will be placed under the fuel transfer operation.
- Staging areas will be designed to contain contaminants such as oil, grease, fuel, and other petroleum products so that should an accidental spill occur, they do not drain toward receiving waters or storm drain inlets.
- All stationary equipment will be staged in appropriate staging areas and positioned over drip pans.
- In the event of an accidental spill, personnel will identify and secure the source of the discharge and contain the discharge with sorbents, sandbags, or other material from spill kits and will contact appropriate regulatory authorities (e.g., National Response Center will be contacted if the spill threatens navigable waters of the United States or adjoining shorelines, as well as other appropriate response personnel).

Methods of cleanup may include the following.

- Physical—Physical methods for the cleanup of dry chemicals include the use of brooms, shovels, sweepers, or plows.
- Mechanical—Mechanical methods could include the use of vacuum cleaning systems and pumps.
- Chemical—Cleanups of material can be achieved with the use of appropriate chemical agents such as sorbents, gels, and foams.

3B.1.14 Develop and Implement a Fire Prevention and Control Plan

The BDCP proponents will develop and implement a fire prevention and control plan in consultation with the appropriate city, county, and state fire suppression agencies to verify that the necessary fire prevention and response methods are included in the plan. The plan will include fire prevention and suppression measures, considering the policies and standards in the affected jurisdictions.

At minimum, the following components, as applicable, will be included in the plan. If a component is not applicable, DWR or its contractor will explain in the plan why that component or a portion thereof is not included in the plan.

- If a fire should start, the appropriate fire protection agencies responsible will be contacted immediately.
- Procedures and policies for controlling any fires that are on the work site, and other related fire prevention and control procedures developed in consultation with resource agencies and fire protection agencies.
- Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials.
- A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard.
- No fires will be allowed at work sites. Smoking will be allowed only in areas designated for smoking, and these areas will be cleared of vegetation, or in enclosed vehicles. Cigarette butts are to be disposed of in car ashtrays or other approved disposal containers and dumped daily in a proper receptacle off the work site.
- The contractor will be responsible for maintaining appropriate fire suppression equipment at the work site including an all-wheel drive water truck or fire truck with a water tank of at least 3,000 gallon capacity. Fire extinguishers, shovels and other firefighting equipment will be available at work sites and on construction equipment. The contractor will be required to ensure that each construction vehicle on the right-of-way (ROW) will be equipped with a minimum 20 pound (or two 10 pound) fire extinguisher(s) and a minimum of 5 gallons of water in a fire fighting apparatus (e.g., bladder bag).
- At the work site, a sealed fire toolbox will be located at a point accessible in the event of fire. This fire toolbox will contain: one back-pack pump-type extinguisher filled with water, two axes, two McLeod fire tools, and shovels so that employees at the work site can be equipped to fight fire.
- Gasoline-powered construction equipment with catalytic converters will be equipped with shielding or other acceptable fire prevention features. Internal combustion engines will be equipped with spark arrestors.
- Welding sites will include fire prevention provisions.
- The contractor will maintain contact with local firefighting agencies throughout the fire season for updates on fire conditions, and such fire conditions will be communicated to the contractor's employees daily.

In addition to the plan, fire protection will conform to the National Fire Protection Association and local Fire Marshal requirements, and will be in full compliance with Cal/OSHA standards for fire safety and prevention. All road designs will be developed in consultation with the local Fire Marshal. Any fire hydrants will be located as deemed acceptable by the local Fire Marshal and are to meet local government standards. Fire protection using water will be provided by a potable water system either from the nearest municipal clean water conveyance system or from a self-contained filtration and treatment system that takes water from an adjacent waterway or a site well or tank.

3B.1.15 Prepare and Implement Mosquito Management Plans

To aid in mosquito management and control during construction of the intakes, the BDCP proponents will consult with appropriate Mosquito and Vector Control Districts (MVCDs). Consultation will occur with the following MVCDs: San Joaquin County Mosquito and Vector Control District and Sacramento-Yolo Mosquito and Vector Control District. This commitment is related to AMM33, Mosquito Management, described in BDCP Appendix 3.C. Consultation will occur before the sedimentation basins, solids lagoons and the intermediate forebay inundation area become operational. Once these components are operational, the BDCP proponents will consult again with the MVCDs to determine if mosquitoes are present in the sedimentation basins, solids lagoons, and intermediate forebay inundation areas. If mosquitoes are present, the BDCP proponents will then use mosquito control techniques as applicable. Activities will be the responsibility of the BDCP proponents, in coordination with applicable MVCDs, and will include, but not be limited to:

- Testing for mosquito larvae during the high mosquito season (June through September).
- Introducing biological controls, such as mosquito fish, to sedimentation basins, solids lagoons and the intermediate forebay inundation area, if mosquitoes are present.
- Introducing physical controls (e.g., discharging dewatered water more frequently or increasing circulation) to sedimentation basins, solids lagoons and the intermediate forebay inundation area if mosquitoes are present.

To aid in vector management and control, the construction contractors, with BDCP proponents' approval, will be required to develop an integrated pest management plan (IMM Plan) and consult with appropriate MVCDs with respect to restoration and conservation activities within the Restoration Opportunity Areas (ROAs). Consultation will occur with the following MVCDs: Alameda County Vector Control Services District, Contra Costa Mosquito and Vector Control District, Sacramento-Yolo Mosquito and Vector Control District, San Joaquin County Mosquito and Vector Control District, and Solano County Mosquito Abatement District. Consultation will include, but not be limited to: review of the IMM Plan and BMPs to be implemented at the restoration sites and review of proposed mosquito monitoring efforts at restoration sites and assistance with monitoring efforts where feasible. In addition, the BDCP proponents will consult with the applicable MVCD during all phases of restoration and conservation, including design, implementation, and operations. The Central Valley Joint Venture's Technical guide to *Best Management Practices for Mosquito Control in Managed Wetlands* (Kwasny et al. 2004) and other guidelines will be used to help design appropriate restoration and conservation features to the extent feasible consistent with the biological goals and objectives of the BDCP. The IMM Plan will address wetland design considerations, water management practices, vegetation management, biological controls, and wetland maintenance. BMPs included in the IMM Plan will include (as applicable), but not be limited to:

- Delayed or phased fall flooding—phased flooding involves flooding habitat throughout the fall and winter in proportion to wildlife need and takes into consideration other wetland habitat that may be available in surrounding areas.
- Rapid fall flooding.
- Maintain stable water levels.

- Circulate water.
- Use deep initial flooding.
- Subsurface irrigate.
- Utilize water sources with mosquito predators for flooding.
- Drain irrigation water into ditches or other water bodies with abundant mosquito predators.
- Employ vegetation management practices to reduce mosquito production in managed wetlands (e.g., mowing, burning, discing of vegetation that serves as mosquito breeding substrate).
- Design wetlands and operations to be inhospitable to mosquitoes.
- Implement monitoring and sampling programs to detect early signs of mosquito population problems.
- Use biological agents such as mosquito fish to limit larval mosquito populations.
- Use larvicides and adulticides, as necessary. If larvicides and adulticides are used, the effects of these chemicals would need to be evaluated and a monitoring program established to evaluate effects, if any, application would have on macroinvertebrates and associated covered fish and wildlife species.

Implementation of these BMPs will reduce the likelihood that BDCP operations will require an increase in abatement activities by the local MVCDs.

3B.1.16 Conduct Environmental Training

Prior to construction, the BDCP proponents will inform field management and construction personnel of the need to avoid and protect sensitive resources. Training will be conducted during preconstruction meetings so that construction personnel are aware of their responsibilities and the importance of compliance. This commitment is related to AMM1, Worker Awareness Training, described in BDCP Appendix 3.C. This training will be provided by qualified resource specialists (e.g., certified biologists, cultural resource specialists, etc.) as specified by individual management plans and/or mitigation plans.

Construction personnel will be educated on the types of sensitive resources located in the Plan Area and the measures required to avoid impacts on these resources. Materials covered in the training program will include environmental rules and regulations for the BDCP construction activities and requirements for limiting activities to approved work areas, timing restrictions, and avoidance of sensitive resource areas.

Training seminars will be held to educate construction supervisors and managers on the following.

- The need for resource avoidance and protection.
- Important timing windows for covered species (i.e. timing of covered fish migration/spawning/rearing, wildlife mating/nesting/fledging, plant flowering periods).
- Provide specific training related to the relevant AMMs that will be implemented during construction for the protection of covered fish, wildlife and plant species, depending upon work to be performed and location of the work (i.e., in-water, upland, wetland).
- Brief discussions of covered species and natural communities of concern.

- Boundaries of the work area.
- Exclusion and construction fencing methods.
- Roles and responsibilities.
- What to do when covered fish, wildlife or plants are encountered (dead, injured, stressed, or entrapped) in work areas.
- Staking methods to protect resources.
- Environmental commitments.
- Emergency procedures.
- Consequences of violations of the laws and regulations protecting resources.

A fact sheet or other supporting materials containing this information will be prepared and will be distributed along with a list of contacts (names, numbers, and affiliations) prior to initiating construction activities. A representative will be appointed by the project proponent to be the primary point of contact for any employee or contractor who might inadvertently take a covered species, or a representative will be identified during the employee education program and the representative's name and telephone number provided to the agencies.

If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training and sign a sheet indicating their attendance and completion of the environmental training before starting work. The training sheets for new construction personnel will be provided to the agencies, if requested.

3B.1.17 Provide Construction Site Security

To ensure adequate construction site security, the BDCP proponents will arrange to provide for 24-hour onsite security personnel. Security personnel will monitor and patrol construction sites, including staging and equipment storage areas. Security personnel will serve as the first line of defense against criminal activities and nuisances at construction sites. Private patrol security operators hired to provide site security will have the appropriate licenses from the California Bureau of Security and Investigative Services. Individual security personnel will have a minimum security guard registration license that meets the California Bureau of Security and Investigative Services requirements for training and continuation training as required for that license. All security personnel will also receive environmental training similar to that of onsite construction workers so that they understand the environmental conditions and issues associated with the various areas for which they are responsible at a given time. This commitment is related to AMM34, Construction Site Security, described in BDCP Appendix 3.C.

Security operations and field personnel will be given the emergency contact phone numbers of environmental response personnel for rapid response to environmental issues resulting from vandalism or incidents that occur when construction personnel are not onsite. Security operations will also maintain a contact list of backup support from city police, county sheriffs, California Highway Patrol, water patrols (such as the Contra Costa County Marine Patrol), helicopter response, and emergency response (including fire departments, ambulances/emergency medical technicians]). The appropriate local and regional contact list will be made available to security personal by BDCP proponents, as will the means to make that contact via land line phones, cell phones, or radios. When on patrol security personnel will always have the ability to contact backup

by having cell phones or two way radios. Security personnel who are on patrol will have the appropriate geographic contact list for their location and the ability to summon appropriate backup or response via the security patrol local dispatch site or outside authorities.

3B.1.18 Fugitive Dust Control

BDCP proponents will implement basic and enhanced control measures at all construction and staging areas to reduce construction-related fugitive dust. This commitment is related to AMM35, Fugitive Dust Control, described in BDCP Appendix 3.C. Although the following measures are outlined in the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) CEQA guidelines, they are required for the entirety of the construction area, including areas within the Bay Area Air Quality Management District (BAAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD), and Yolo Solano Air Quality Management District (YSAQMD), and are sufficient to address BAAQMD, SJVAPCD, and YSAQMD fugitive dust control requirements. BDCP proponents will ensure the project commitments are appropriately implemented before and during construction, and that proper documentation procedure is followed.

3B.1.18.1 Basic Fugitive Dust Control Measures

BDCP proponents will take steps to ensure that the following measures will be implemented to the extent feasible to control dust during general construction activities.

- Water will be applied to all exposed surfaces as reasonably necessary to prevent visible dust from leaving work areas. Frequency will be increased during especially dry or windy periods or in areas with a lot of construction activity. Exposed surfaces include (but are not limited to) soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least 2 feet of freeboard space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that will be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour.
- All roadway, driveway, sidewalk, and parking lot paving should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders, or other reasonable mitigation measures are used.

3B.1.18.2 Enhanced Fugitive Dust Control Measures for Land Disturbance

BDCP proponents will take steps to ensure that the following measures will be implemented to the extent feasible to control dust during soil disturbance activities:

- Water exposed soil with adequate frequency for continued moist soil. However, do not overwater to the extent that sediment flows off the site.
- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.
- Install wind breaks (e.g., plant trees, solid fencing) on windward side(s) of construction areas.

- Plant vegetative ground cover (fast-germinating native grass seed) in disturbed areas as soon as possible after construction is completed. Water appropriately until vegetation is established.

3B.1.18.3 Measures for Entrained Road Dust

BDCP proponents will take steps to ensure that the following measures will be implemented to the extent feasible to control entrained road dust from unpaved roads.

- Install wheel washers for all exiting trucks, or wash off all existing trucks and equipment leaving the site.
- Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the District will also be visible to ensure compliance.

3B.1.18.4 Measures for Concrete Batching

BDCP proponents will take steps to ensure that the following measures will be implemented to the extent feasible to control dust during concrete batching activities.

- Implementation of fugitive dust control measures to achieve a 70% reduction in dust from concrete batching.
- Implementation of fugitive dust control measures to achieve a 80% reduction in dust from aggregate and sand pile erosion at the concrete batch plants.
- Use of a hood system vented to a fabric filter/baghouse during cement delivery and hopper and central mix loading.

3B.1.19 Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material

In the course of constructing or operating project facilities, substantial quantities of material are likely to be removed from their existing locations based upon their properties or the need for excavation of particular features. Spoils refer to excavated native soils and are associated with construction of pumping plant facilities and other water conveyance features. Reusable tunnel material (RTM) refers to the mixture of saturated soils and biodegradable soil conditioners or additives that will be generated by tunneling operations and are appropriate for reuse based upon chemical characterization and physical properties. Dredged material refers to sediment removed from the bottom of a body of water for the purposes of in-water construction, or water conveyance, operation (e.g. sediment collected at intake sites), or storage requirements. The quantities of these materials generated by construction or operation of BDCP facilities would vary depending on the alternative selected for implementation. See further discussion in Chapter 3, *Description of Alternatives*, Section 3.6.1. These materials will require handling, storage, and disposal, as well as chemical characterization, prior to any reuse. Temporary storage areas will be designated for these materials. However, to reduce the long-term effects on land use and potentially support implementation of other BDCP elements, the BDCP proponents will develop site-specific plans for

the beneficial reuse of these materials, to the greatest extent feasible. This commitment is related to AMM6; Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material; and AMM10; Restoration of Temporarily Affected Natural Communities; described in BDCP Appendix 3.C. A flowchart outlining the process for disposal and reuse of these materials is shown in Figure 3B-1.

3B.1.19.1 Material Storage Site Determination

Spoils, RTM, and dredged material will be temporarily stored in designated storage areas (sediment collected at intake sites would be stored at solids lagoons adjacent to sedimentation basins). Selection of designated storage areas will be based upon, but not limited to, the following criteria:

- Material may be placed in project-designated borrow areas.
- Areas for material storage will be located within 10 miles of the construction feature.
- Areas for material storage will not be located within 100 feet of existing residential or commercial buildings.
- Areas for material storage will not be located within 100 feet of a military facility.
- Areas for material storage will not be located within 100 feet of existing roads, rail lines, or infrastructure.
- Placement of material in sensitive natural communities and habitat areas, such as surface waters, wetlands, vernal pool complex, alkali seasonal wetland complex or grassland, native grasslands, riparian areas, or crane roost sites, will be avoided or minimized to the extent feasible, consistent with the biological goals and objectives of the BDCP. If placement of material in vernal pool complex or alkali seasonal wetland complex cannot be avoided, material will not be placed within 250 feet of vernal pools or alkali seasonal wetlands (i.e., wetted acres will be avoided by at least 250 feet).
- Landowner concerns and preferences will be considered in designating sites for material storage. DWR will consult directly with landowners to refine the storage area footprint to further minimize impacts to surrounding land uses, including agricultural operations.
- Where feasible, dredged material will be stored on higher elevation land that is set back from surface water bodies a minimum of 150 feet. Upland disposal will help ensure that the material will not be in contact with surface water prior to its draining, characterization, and potential treatment.

Additional considerations have been made for the storage of RTM. For example, the proposed locations of the storage areas for reusable tunnel material have been designed to be close where the material will be brought to the surface, as well as close to where reuse is expected to occur. In some cases, storage areas are located adjacent to barge landings to facilitate movement to other reuse locations in the Delta.

The area required for material storage is flexible and will depend on several factors.

- The speed with which material is brought to the surface, stored, dried, tested, and moved to reuse locations will be important in determining the final size of storage areas. If material can be dried faster and moved offsite more quickly, less area will be needed at each location.
- The depth to which the material is stacked. Material that is stored in deeper piles will require less area but may dry more slowly, extending the time that is needed. Under

Alternative 4, it was assumed that RTM would be placed in piles with a depth of six feet. For other alternatives, it was assumed that RTM would be placed in piles with a depth of ten feet, which equates to a smaller storage area but would likely require additional time for drying.

- The proportion of material at one storage area or another. There will be flexibility during construction to prioritize material storage in some areas as opposed to other areas, based on feasibility of reuse or minimization of impacts.

To preserve this flexibility during construction, the analysis assumes a range of storage area footprints that could be needed across different alternatives (based on different assumptions for the depth of material storage). It is anticipated that less or substantially less of the maximum storage area footprint would actually be required during the construction period. The assumptions used for Alternative 4 represent the maximum storage area that would be needed, which was also evaluated for the BDCP Effects Analysis. To illustrate the potential for smaller RTM storage areas under this alternative, a range of acreages is provided in relevant impact discussions, accounting for the factors listed above.

3B.1.19.2 Material Storage Site Preparation

A portion of the temporary sites selected for storage of spoils, RTM, and dredged material will be set aside for topsoil storage. The topsoil will be saved for reapplication to disturbed areas post construction. Vegetative material from work site clearing will be chipped, stockpiled, and spread over the topsoil after earthwork is completed, when feasible and appropriate to do so and where such material does not contain seeds of nonnative species. Cleared areas will be grubbed as necessary to prepare the areas for grading or other construction activities. Rocks and other inorganic grubbed materials will be used to backfill borrow areas. The contractor will remove from the work site all debris, rubbish, and other materials not directed to be salvaged and dispose of them in an approved disposal site after obtaining all permits required.

3B.1.19.3 Draining, Chemical Characterization, and Treatment

RTM and associated decant liquid will undergo chemical characterization by the contractor(s) prior to reuse or discharge, respectively, to determine whether it will meet National Pollutant Discharge Elimination System (NPDES) and the Central Valley Regional Water Quality Control Board requirements. Should RTM decant liquid constituents exceed discharge limits, these tunneling byproducts will be treated to comply with NPDES permit requirements. Discharges from RTM draining operations will be conducted in such a way as to not cause erosion at the discharge point. If RTM liquid requires chemical treatment, chemical treatment will ensure that after treatment RTM liquid will be nontoxic to aquatic organisms.

While additives used to facilitate tunneling will be nontoxic and biodegradable, it is possible that some quantity of RTM will be deemed unsuitable for reuse. In such instances, (anticipated to apply to less than 1% each of excavated spoils, RTM [or, 270,000 cubic yards], and dredged material), the material will be disposed of at a site approved for disposal of such material.

Hazardous materials excavated during construction will be segregated from other construction spoils and properly handled in accordance with applicable federal, state and local regulations. Riverine or in-Delta sediment dredging and dredge material disposal activities may involve potential contaminant discharges not addressed through typical NPDES or SWRCB CGP processes.

Construction of Dredge Material Disposal (DMD) sites will likely be subject to the SWRCB CGP (Order No. 2009-0009-DWQ). The following list of best management practices (BMPs) is based on information from the various regulatory programs that exist to manage dredging operations, and will be implemented during handling and disposal of any potentially hazardous dredged material:

- The BDCP proponents will ensure the preparation and implementation of a pre-dredge sampling and analysis plan (SAP) to be developed and submitted by the contractors as part of the water plan required per standard DWR contract specifications Section 01570. Prior to initiating any dredging activity, the SAP will evaluate the presence of contaminants that may impact water quality from the following discharge routes.
    - In-stream discharges during dredging.
    - Direct exposure to contaminants in the material through ingestion, inhalation or dermal exposure.
    - Effluent (return flow) discharge from an upland disposal site.
    - Leachate from upland dredge material disposal that may affect groundwater or surface water.
- Conduct dredging within the allowable in-water "work windows" established by USFWS, NMFS, and CDFW.
- Conduct dredging activities in a manner that will not cause turbidity in the receiving water, as measured in surface waters 300 feet down-current from the construction site, to exceed the Basin Plan objectives beyond an approved averaging period by the Regional Water Quality Control Board (RWQCB) and CDFW. Existing threshold limits in the Basin Plan for turbidity generation are as follows.
    - Where natural turbidity is between 0 and 5 NTUs, increases shall not exceed 1 NTU.
    - Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20%.
    - Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
    - Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10%.
- If turbidity generated during dredging exceeds implementation requirements for compliance with the Basin Plan objectives, silt curtains will be utilized to control turbidity. Exceptions to turbidity limits set forth in the Basin Plan may be allowed for dredging operations; in this case, an allowable zone of dilution within which turbidity exceeds the limits will be defined and prescribed in a discharge permit.
- The DMD sites will be designed to contain all of the dredged material and all systems and equipment associated with necessary return flows from the DMD site to the receiving water will be operated to maximize treatment of return water and optimize the quality of the discharge.
- The dredged material disposal site will be designed by a registered professional engineer.
- The dredged material disposal site will be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
- Two feet of freeboard above the 100-year flood event elevation will be maintained in all dredge material disposal site settling pond(s) at all times when they may be subject to washout from a 100-year flood event.

- Dredging equipment will be kept out of riparian areas and dredge spoil will be disposed of outside of riparian corridors.

DMD sites will be constructed using appropriate BMPs (such as erosion and sediment control measures [see *Develop and Implement Stormwater Pollution Prevention Plans* for examples]) to prevent discharges of contaminated stormwater to surface waters or groundwater. Some of these BMPs may not be applicable to dredging activities that would occur as part of operation and maintenance of the sedimentation basins and solids lagoons at intake sites.

3B.1.19.4 Material Reuse Plans

Prior to construction, draining, and chemical characterization of spoil, RTM, and dredged material, the BDCP proponents shall identify sites for reusing such materials to the greatest extent feasible, in connection with BDCP construction activities, habitat restoration and protection activities, as well as potential beneficial uses associated with flood protection and management of groundwater levels within the Plan Area. The BDCP proponents will undertake a thorough investigation to identify sites for the appropriate reuse of material, and, based on the properties of the material and in consultation with the BDCP Implementation Office and other interested parties, the BDCP proponents will identify the specific site for that material. Potential methods of reuse may include, but not be limited to, the following:

- fill material for construction of embankments or building pads;
- fill material for levee maintenance;
- fill material for habitat restoration projects;
- fill material for roadway projects;
- localized subsidence reversal;
- material for flood response;
- material to fill BDCP-related borrow areas; or
- other beneficial means of reuse.

Material applied to reduce the localized effects of subsidence will be placed on lower elevation lands and lands adjacent to levees, in order to minimize effects on agricultural practices and improve levee stability. The material may be left in place and used as stockpile to assist in flood response. The feasibility of these approaches to reuse will depend upon the suitability of the material for each purpose based on testing of relevant properties. Site-specific factors such as local demand for materials and the ability to transport the materials would also be important considerations in assessing options for reuse. To the extent that the reuse of the materials for these purposes may lead to adverse environmental effects, such effects shall be addressed through site-specific environmental documents prepared under NEPA and CEQA, possibly including environmental documents for proposed habitat restoration projects where the materials can be used within such projects.

The BDCP proponents will consult relevant parties, such as landowners, reclamation districts, flood protection agencies, federal and state agencies with jurisdiction in the Delta, and counties, in developing such site-specific spoil, RTM, and dredged material reuse plans. Where BDCP proponents determine that it is appropriate that materials be used to prepare land at elevations suitable for BDCP-related restoration or protection of habitat, the BDCP proponents will coordinate with the

BDCP Implementation Office in developing site-specific plans for transporting and applying the materials to restoration work sites.

Following removal of spoils, RTM, and dredged material from temporary storage sites, stockpiled topsoil at these areas will be reapplied, and disturbed areas will be returned, to the extent feasible, to preconstruction conditions, by carefully grading to re-establish surface conditions and elevations and reconstructing features such as irrigation and drainage facilities. Restoration of the RTM draining sites will be designed to prevent surface erosion and subsequent siltation of adjacent water bodies. Following these activities, the land will be suitable for returning to agricultural production, under the discretion of the landowner. Such areas may also be appropriate for the implementation of habitat restoration or protection in consideration of BDCP biological goals and objectives.

In some instances, it may be infeasible to transport and reuse spoil, RTM, or dredged materials for another use due to factors such as the distances and costs involved and/or any environmental effects associated with transport (e.g., unacceptable traffic concerns or levels of diesel emissions). In such instances, sites will be evaluated for the potential to reapply topsoil over the spoils, RTM, or dredged material and to continue or recommence agricultural activities. If, in consultation with landowners and any other interested parties, BDCP proponents determine that continued use of the land for agricultural or habitat purposes will be infeasible, the potential for other productive uses of the land will be examined, including stockpile and staging areas for flood response or the potential for the site to host solar or wind power generation facilities. Such instances may require the acquisition of interests in the land and/or coordination with utilities or other entities; specific arrangements will be made on a case-by-case basis.

3B.1.19.5 Potential Environmental Effects

It is anticipated that one or more of these disposal and reuse methods could be implemented on any individual spoil, RTM, or dredged material site. Depending on which combination of these approaches is selected, implementation of material reuse plans could create environmental impacts requiring site-specific analysis under CEQA and/or NEPA. Many of these activities would require trucks or barges to gather and haul materials from one section of the Plan Area to another. For instance, reuse of material in the implementation of tidal habitat associated with CM4 could require material to be transported to locations in the West Delta ROA (including Sherman and Twitchell Islands) or the Cosumnes/Mokelumne ROA (including Glannvale Tract and McCormack-Williamson Tract), among other areas. Locations for reuse in support of levee stability could include areas protected by nonproject levees or where levee problems have been reported in the past, including Staten Island, Bouldin Island, Empire Tract, Webb Tract, Bacon Island, or other places in the Delta. While reuse locations near to the spoil or RTM areas would be preferred, such activity would require use of local roadways, which could lead to short-term effects on traffic, noise levels, and air quality. Similarly, earthwork and grading activities to restore sites to preconstruction conditions and to apply the materials consistent with their reuse could create noise and effects on air quality during the implementation of reuse plans.

If materials are applied for the purposes of flood protection, flood response, habitat restoration or subsidence reversal, it is possible that existing topsoil could be overcovered and that Important Farmland or farmland with habitat value for one or more covered species could be disturbed temporarily or converted from active agricultural uses. Additionally, materials placed near levees could affect drainage and/or irrigation infrastructure. If material is used for habitat restoration that would have otherwise been implemented as part of the BDCP, reuse of materials could offset the

need for fill materials from other sources. Such effects would be described in further detail by individual site-specific environmental review for habitat restoration activities under BDCP.

Depending on the selected reuse strategies, however, implementation of spoil, RTM, and dredged material reuse plans could also result in beneficial effects associated with flood protection and response, habitat creation, and depth to groundwater in areas where the ground level is raised.

3B.1.20 Provide Notification of Maintenance Activities in Waterways

Before maintenance activities begin in waterways, BDCP proponents will ensure the posting of information regarding the construction or maintenance of any in-water BDCP facilities (e.g., intakes for the water conveyance facility) at nearby affected Delta marinas and public launch ramps. This information will include maintenance site location(s), maintenance schedules, speed limits, and identification of no-wake zone and/or detours, where applicable. Information on detours would include site-specific details regarding any temporary partial channel closures, including contacting the U.S. Coast Guard, boating organizations, marina operators, city or county parks departments, and DPR, where applicable. This commitment is related to AMM36, Notification of Activities in Waterways, described in BDCP Appendix 3.C.

3B.1.21 Selenium Management

The activities described in this environmental commitment require a series of actions to identify and evaluate potentially feasible actions to minimize conditions that promote bioaccumulation of selenium in restored areas. This commitment is related to AMM27, Selenium Management, described in BDCP Appendix 3.C.

This environmental commitment would include BDCP proponents performing the following actions.

- Before ground-breaking activities associated with site-specific restoration occurs, BDCP proponents will retain a qualified water quality specialist, wildlife, or fisheries biologist with expertise in selenium management to develop a comprehensive Selenium Monitoring and Management Plan (SMMP). The SMMP will evaluate site-specific restoration conditions and include design elements that minimize conditions that could be conducive to increases of bioavailabile selenium in restored areas. As part of the SMMP, the qualified specialist will assess whether, in light of site-specific conditions, the proposed restoration project could cause potentially significant increases in bioavailable selenium due to increased residence time for water-borne selenium within inundated portions of the restoration area. If any such potentially significant effects are identified, the SMMP shall include a Mitigation Plan that includes components that will reduce levels of bioavailable selenium such that the affected water body (or portion of a water body) would not be expected to cause measurably higher body burdens in aquatic organisms, thus reducing those effects to less-than-significant levels. The design elements would be integrated into site-specific restoration designs based on site conditions, community type (tidal marsh, nontidal marsh, floodplain), and potential organic forms of selenium in water. Specific approaches that are intended to avoid or minimize potential increases in selenium bioavailability at future restoration sites could include the following:

- Minimizing bioavailable selenium concentrations associated with anoxic or near-anoxic conditions by reducing the amount of organic material at a restoration site (however, where this measure could limit the benefit of restoration areas by limiting the amount of carbon they supply to the Delta as a whole, it would run directly counter to the goals and objectives of the BDCP, so it should not be implemented in such a way that it reduces the benefits to the Delta ecosystem provided by restoration areas), and
- Managing vegetation, water levels and residence time to reduce bioavailable selenium concentrations and bioaccumulation, as feasible.

- Define adaptive management strategies that can be implemented to monitor and minimize, as feasible, actual post-restoration bioavailable selenium concentrations in the water, and if necessary, bioaccumulation of selenium. The adaptive management strategies could be applied where site conditions indicate a high probability of selenium bioaccumulation and effects on covered species.
- For each restoration project under *CM4 Tidal Habitat Restoration*, a project-specific SMMP would be developed and would incorporate all of the management measures discussed below or include an explanation of why a particular measure cannot be incorporated. The plan would include the following components:
  - A brief review of predicted changes in water residence time at assessment locations in the Delta, expected changes in bioavailable selenium concentrations, and possible changes in bioaccumulation by fish and aquatic invertebrates.
  - A determination if sampling for characterization of selenium concentrations in biota and/or post-restoration monitoring is warranted.
  - A plan for conducting the sampling for selenium, if characterization sampling is recommended. To cover any sampling or monitoring, the project-specific SMMP would also include a quality assurance/quality control (QA/QC) program specifying sampling procedures, analytical methods, data review requirements, and data management and reporting procedures.
  - Statistical analyses of selenium water concentrations and fish tissue levels collected over time to evaluate trends in these parameters.

This environmental commitment provides specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. Consequently, this commitment would be implemented as part of the tidal habitat restoration design schedule.

3B.1.22 CEQA and NEPA Compliance for BDCP-related Conservation Projects

Prior to implementing BDCP-related habitat restoration conservation projects as described generally in the Restoration Opportunity Areas (ROAs[2]), BDCP proponents commit to undertaking additional analysis pursuant to the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). In determining the extent to which they may rely on

[2] For additional information on the ROAs please see Chapter 3 of the BDCP and Appendix 3G of Chapter 3 of the BDCP EIR/EIS.

programmatic analysis in the BDCP EIR/EIS in assessing project-specific impacts on terrestrial biological resources and the extent to which additional new site-specific information regarding potential impacts on such resources is needed, the BDCP proponents will compare the areas that will be directly and indirectly affected by proposed conservation projects with the theoretical footprints for conservation projects assumed in the programmatic analyses for effects on terrestrial biological resources found in the BDCP EIR/EIS. Such a comparison shall identify the extent, if any, to which the impacts of proposed conservation projects may extend onto lands that were not considered in the BDCP EIR/EIS because they were outside these theoretical impact areas. The proponents for BDCP-related conservation projects further commit to considering any potential impacts on any natural communities, special-status wildlife and plant species, and common species that may occur on the lands affected by such conservation projects but that were not discussed in the BDCP EIR/EIS. A checklist intended to guide the preparation of future CEQA and NEPA compliance documents for BDCP-related projects other than Conservation Measure 1 is described in detail in Appendix 31A, *BDCP Later CM Activity Environmental Checklist*.

3B.2 Other Commitments

The following commitments are identified separately from environmental commitments for the purpose of addressing some of the economic or other non-environmental consequences of implementing BDCP. As with environmental commitments, these other commitments are incorporated into the project and would be implemented in the same or similar manner as proposed mitigation measures. These additional commitments are actions that the BDCP proponents commit to implementing in some manner to reduce or partially reduce potential economic or other effects related to the environmental impacts disclosed in this EIR/EIS and caused by implementation of the project, even if the underlying environmental impact is not fully reduced or remains unchanged.

3B.2.1 Partner with Delta Municipal, Industrial, and Agricultural Water Purveyors in Developing Methods to Reduce Potential Water Quality Effects

The BDCP proponents commit to assisting in-Delta municipal, industrial, and agricultural water purveyors that will be subject to significant water quality effects from operation of Conservation Measure 1 (CM1) and effects on dissolved organic carbon (DOC) due to implementation of Conservation Measures 2-22 (CM2–22). This commitment shall apply specifically to those purveyors affected by significant increases in bromide, electrical conductivity, chloride, and DOC concentrations such that the purveyors will bear increased financial costs in order to continue to treat or otherwise supply water to acceptable standards. The assistance provided by the BDCP proponents is intended to fully offset any increased treatment or delivery costs attributable to CM1, or for DOC attributable to CM2–22 and may take the form of financial contributions, technical contributions, or partnerships. Assistance for construction and/or operation of facilities or the procurement of replacement sources shall be limited to reasonable, cost-effective solutions developed with input from the BDCP proponents. It is anticipated that such solutions would be devised by the affected purveyors in consultation with BDCP proponents after thorough investigation and the completion of environmental review. The methods used for this investigation and monitoring, along with the conclusions regarding the nature and extent of those effects on water

treatment or delivery, would be subject to agreement between the BDCP proponents and the affected water purveyors.

Assistance shall not extend to investments needed solely or substantially to address adverse water quality effects due to any of the following: sea level rise and/or changed precipitation patterns attributable to climate change; the regulatory actions of other agencies or programs within or upstream of the Delta that may affect water quality; or effects not otherwise associated with operations of CM1. This commitment would supplement, rather than supersede, the commitments set forth in Mitigation Measures WQ-5, WQ-7, WQ-11, and WQ-18 (presented in EIR/EIS Chapter 8, *Water Quality*). This commitment will arise only upon the approval of the BDCP. Potential alternative solutions for further consideration are described below.

3B.2.1.1 Chloride and Electrical Conductivity

The following are concepts that affected purveyors could consider to address adverse effects of increased chloride concentrations and electrical conductivity:

Provide Funding Assistance to Acquire Alternative in-Basin Water Supplies, Storage, Conjunctive Uses, or Develop Water Transfers (municipal uses). Additional water supply improvement projects or agreements could be developed to facilitate improved blending water quality to reduce chloride. This concept could be applied to potential Los Vaqueros Reservoir effects based on investigations recommend in Mitigation Measure WQ-7 (Chapter 8, *Water Quality*).

Develop Water Supply Connections to SWP Facilities or BDCP Intertie (municipal uses). Water supply supplement/replacement actions or agreements could be developed provide an alternative water supply during poor Delta water quality periods.

Develop demand management and/or conservation/recycling projects to extend available water supplies (municipal uses). Facilitation and development of additional demand management, water conservation, and wastewater recycling projects would help reduce use of Delta diversion facilities when water quality is poor allowing for more efficient use of other existing water supplies.

Assist with alternative crop or water management efficiency projects/facilities (agricultural uses). Assistance could be provided to develop additional irrigation efficiency projects or facilities to reduce in-Delta diversions and facilitate improved Delta drainage quality.

Provide alternative intake locations (agricultural uses). Assistance could be provided to identify and evaluate feasible projects to provide alternative agricultural intakes that may improve diverted water quality and/or reduce adverse effects to Delta water quality.

3B.2.1.2 Bromide

The following are concepts that could be considered to address adverse effects of increased bromide concentrations:

Provide Funding Assistance to Acquire Alternative in-Basin Water Supplies, Groundwater Banking, or Conjunctive Uses. Additional water supply improvement projects or agreements could be developed to facilitate reduced use of the North Bay Aqueduct (NBA) and improved water supply blending quality, to reduce potential DBP formation potential.

Develop DOC source control projects for Barker Slough/Cache Slough watersheds. Agricultural and/or other waste control projects could be developed to reduce effects of watershed runoff on DOC levels at the NBA intake pump station. DOC reduction would reduce DBP formation potential.

Develop demand management and/or conservation/recycling projects to extend available water supplies. Facilitation and development of additional demand management, water conservation, and wastewater recycling projects would help reduce use of NBA at critical dry periods when Barker Slough/Delta water quality is poor, allowing more efficient use of available water supplies.

Expand existing NBA intake capacity. The existing NBA pipeline conveyance capacity could be expanded to approximately 250 cfs (from existing 145 cfs) to facilitate increased diversion efficiency and quantity during favorable water quality periods. NBA expansion could be complementary to other conjunctive use or storage options.

Implement the North Bay Aqueduct Alternative Intake Project. The North Bay Aqueduct Alternative Intake Project could be implemented to establish an alternative surface water intake on the Sacramento River upstream of the Sacramento Regional Wastewater Treatment Plant discharge.

3B.2.1.3 Dissolved Organic Carbon

The following are concepts that could be considered to address adverse effects of increased DOC concentrations:

Provide funding to implement treatment for DOC and/or DBPs in water treatment facilities. This could include pre-treatment of DOC or modification of disinfection facilities to minimize DBP formation, or post-disinfection treatment for DBPs or modifications to distribution systems to limit DBP formation.

Develop DOC source control projects. Agricultural and/or other waste control projects could be developed to reduce effects of watershed runoff on DOC levels. DOC reduction would reduce DBP formation potential.

3B.2.2 Enhance Recreation Access in the Vicinity of the Proposed Intakes

Prior to construction activities in the area of the intakes, DWR would enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.

To further compensate for the loss of access as a result of constructing the river intakes, DWR will work with the California Department of Parks and Recreation (DPR) to help insure the elements of CM1 would not conflict with the elements proposed in DPR's Recreation Proposal for the Sacramento–San Joaquin Delta and Suisun Marsh (California Department of Parks and Recreation 2011) that would enhance bicycle and foot access to the Delta. This would include the helping to fund or construct elements of the American Discovery Trail and the potential conversion of the abandoned Southern Pacific Railroad rail line that formerly connected Sacramento to Walnut Grove. DWR will ensure that the constructed elements of CM1 would not result in physical barriers to implementing the Delta recreation access elements outlined in the DPR proposal. DWR will also

work with DPR to determine if some of the constructed elements of CM1 could incorporate elements of the DPR's proposal.

3B.2.3 Fund Efforts to Carry out the Recreation Recommendations Adopted in the Delta Plan

BDCP proponents would contribute funds for the construction of new recreation opportunities as well as for the protection of existing recreation opportunities as outlined in Recommendation DP R11 of the Delta Plan. BDCP proponents would also assist in funding the expansion of state recreation areas in the Delta as described in Recommendation DP R13 of the Delta Plan. BDCP proponents would consult with CDFW to expand wildlife viewing, angling, and hunting opportunities, as described in Recommendation DP R14 of the Delta Plan.

Potential areas for use of funds include, but are not limited to: the reopening of Brannan Island State Recreation Area; completion of Delta Meadows-Locke Boarding House; potential addition of new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, or in the south Delta; and enhance recreational opportunities in and around the Yolo Bypass Wildlife Area.

The funds will be transferred prior to, or concurrent with, commencement of construction and implementation of the BDCP conservation measures. This mitigation serves to compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users.

3B.2.4 Fund the California Department of Boating and Waterways' Programs for Aquatic Weed Control

Invasive aquatic vegetation can limit access to boats and reduce swimming areas. BDCP would contribute funds to further the DBW's aquatic weed control programs in the Delta. Enhanced ability to control these invasive vegetation would lead to increased recreation opportunities which would compensate for the loss of recreational opportunities within the project area by providing a recreational opportunity downstream/upstream in the same area for the same regional recreational users. The funds will be transferred prior to, or concurrent with, commencement of construction of the BDCP.

This commitment would supplement CM13 (*Invasive Aquatic Vegetation Control*) which also provides for the control of *egeria*, water hyacinth, and other IAV throughout the Plan Area. The BDCP Implementation Office would partner with existing programs operating in the Delta (including DBW, U.S. Department of Agriculture-Agriculture Research Service, University of California Cooperative Extension Weed Research and Information Center, California Department of Food and Agriculture, local Weed Management Areas, Resource Conservation Districts, and the California Invasive Plant Council) to perform risk assessment and subsequent prioritization of treatment areas to strategically and effectively reduce expansion of the multiple species of IAV in the Delta. This risk assessment would dictate where initial control efforts would occur to maximize the effectiveness of the conservation measure.

3B.3 References

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