3B.2.22 Comply with Caltrans' Division of Aeronautics on Location of Conveyance Facilities Within 2 Miles of Airport Boundary

If the proposed sites of project conveyance facilities are within 2 miles, measured by air line, of that point on an airport runway, or runway proposed by an airport master plan, which is nearest the site, DWR shall, before acquiring title to property for construction of the facilities or for an addition to a present site, notify the Caltrans' Division of Aeronautics prior to initiating construction of the project conveyance facilities, in writing, of the proposed acquisition. DWR shall investigate the proposed site and, within 30 working days after receipt of the notice, shall submit to DWR a written Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) of the investigation and its recommendations concerning acquisition of the site. DWR would comply with Caltrans' recommendations based on its investigations and compliance with the recommendations of the OE/AAA.

Explanation of effectiveness: High-profile construction equipment, such as tall cranes for installation of pipelines, placement of concrete fill in intake piles, and removal of cofferdam sheet piles, for example, and pile drivers, such as would be used during the construction of the intakes, have the potential to result in safety hazards to aircraft during takeoff and landing if the equipment is operated too close to runways. Tower cranes, for example, may be required, and a typical tower crane can have a total height greater than 200 feet—a height that could be considered an obstruction or hazard to navigable air space if located near an airport. Similarly, tall structures, such as the surge towers at the pumping plants for Intakes 1 and 2, could also pose a risk to air safety.

Coordination with Caltrans' Division of Aeronautics prior to initiating construction and compliance with its recommendations based on its investigations, which could include limitations necessary to minimize potential problems, such as the use of temporary construction equipment, supplemental notice requirements, and marking and lighting high-profile structures would reduce the potential for impacts on air safety.

3B.2.23 Use of Slurry Cutoff Walls to Protect Groundwater during Dewatering Operations

Groundwater conditions are generally within 5 to 10 feet of the ground surface near the intake locations, the Intermediate Forebay, tunnel shafts, and Clifton Court/Byron Tract Forebay. The bottom elevation (or invert) of the intake structures, tunnel shafts, and forebays will be below the groundwater elevation prior to construction. Depending on the construction methods to be used, the groundwater will need to be removed from the construction area prior to or after excavation. DWR shall use methods to remove the groundwater in a manner that would protect groundwater elevations and quality in adjacent properties. These methods will include use of slurry cutoff walls at the construction sites, as summarized below.

- Intakes: Deep slurry cutoff walls at the intakes will be installed to reduce or avoid levee under-seepage in accordance with USACE requirements and to reduce the groundwater inflow into deep excavations within the intake construction sites. The deep slurry cutoff walls will be installed around the structures to minimize the need for dewatering and the related effects on groundwater conditions near the construction locations. The structures at the intake locations to be constructed below the ground surface will be constructed using impermeable structural

material (e.g., concrete). Along the Sacramento River, cutoff walls will be extended into the levees in accordance with USACE requirements and a sheet pile cofferdam will be constructed prior to dewatering and excavation of the site.

- Tunnel Shafts: Slurry diaphragm walls will be installed prior to construction of the tunnel shafts to minimize the need for dewatering. The tunnel shafts and the bottom of the tunnel shafts will be constructed of impermeable material to prevent groundwater from entering the tunnel shafts.
- Forebays: Deep slurry cutoff walls at the forebays will be installed to reduce or avoid levee under-seepage in accordance with Division of Safety of Dams requirements for water storage facilities. The deep slurry cutoff walls around the forebays will minimize the need to for dewatering and the related effects on groundwater conditions near the construction locations. At Clifton Court Forebay, new embankments around the construction site will include installation of a sheet pile cofferdam prior to dewatering and excavation of the site.

Construction of slurry cutoff walls along the water bodies at the intake locations and the forebays will extend to the levees where the slurry cutoff wall will connect to a diaphragm wall installed along the levee. The diaphragm wall will serve as a structural wall for the intake. The slurry cutoff wall also will be constructed along the backside of the intake structure sites. This slurry cutoff wall will be tied into the proposed slurry cutoff wall that parallels the river or sloughs. In this arrangement, the entire construction area within the slurry cutoff wall perimeter can be dewatered without impacting surrounding groundwater levels.

The slurry cutoff wall will extend to a depth below the invert elevation of the excavation to allow for removal of groundwater below the excavation and formation of a structurally-sound foundation for the intake, levee, or other structures. The depths of the slurry cutoff wall will be dependent upon the local geology and could change even at the same intake location or along the forebay levee. The design objective will be to extend the slurry cutoff wall to a clay layer that would be allow the wall to form a relatively good seal that would force the groundwater to move around or under the slurry cutoff walls.

During design geotechnical borings will be completed to develop specific design parameters for slurry cutoff walls and seepage control methods at each location. It is anticipated that the design parameters will not only be different for each site, but will change along the extent of the slurry cutoff wall at each site. The geotechnical information will be used to identify groundwater flow and recharge rates, groundwater dewatering rates, horizontal extents of the zone of influence, and depths of potential groundwater elevation changes that could occur if the slurry cutoff walls were not installed.

Explanation of effectiveness: The construction of conveyance features could result in an adverse effect on groundwater levels and associated well yields. Construction of the conveyance facilities would require dewatering operations. Dewatering would temporarily lower groundwater levels in the vicinity of the dewatering sites. Groundwater would return to pre-pumping levels over the course of several months. Simulation results suggest that 2 months after pumping ceases, water levels would recover to within 5 feet of pre-pumping water levels. The sustainable yield of some wells might temporarily be affected by the lowering of water levels such that they are not able to support existing land uses.

Installation of slurry cutoff walls at the intake locations, tunnel shafts and forebays would reduce dewatering effects on surrounding wells during construction.