

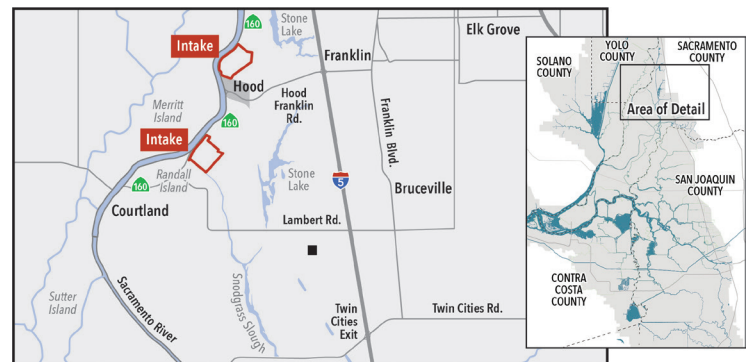
**DCA**

# A CLOSER LOOK: DELTA CONVEYANCE INTAKES

Constructing new intakes in the northern Sacramento-San Joaquin Delta is foundational to modernizing the State Water Project via the Delta Conveyance Project. The Delta Conveyance Design and Construction Authority (DCA), working at the direction of the Department of Water Resources (DWR), has carefully designed intakes to both draw water and protect fish by applying state-of-the-art technology.

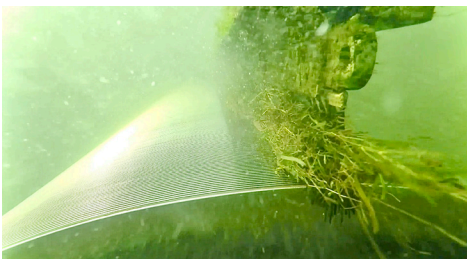
## Intake Locations: Fish and Engineering Design Considerations

DCA and DWR, after carefully reviewing the Sacramento River for 26 miles, chose two sites north and south of the community of Hood, taking into consideration existing land uses, cultural and historic resources, river depth and geometry, and suitable geotechnical conditions. This allows for water flows that facilitate better fish passage and appropriate diversion operations. Temporary levees behind the existing levee at both intake locations will maintain flood protection during the construction period.



## Screen Technology: State of the Art

DCA and DWR chose an intake design to include a series of cylindrical screens to be placed below the river surface as opposed to more common vertical screens along the bank. With openings to draw water roughly the thickness of a quarter, each intake location will have 30 cylindrical screens with a combined maximum diversion capacity of 3,000 cubic feet per second. Each screen is about 29 feet long and eight feet in diameter. This design significantly reduces the riverside footprint as compared to the more common vertical screen, reducing the amount of concrete production and construction equipment needed for installation.



## Noise Abatement: Strategies Above and Below Ground

**Underwater Screen Cleaning:** Common vertical screens along a riverbank require frequent cleaning with metal brushes driven from above the water surface, creating noise issues for neighbors. The proposed design would use cylindrical screens that operate below the water surface and are cleaned by brushes that remove material as the screens rotate, creating no noise above the surface.

**Pile Driving Minimization:** The number and depth of piles to be installed by impact driving methods was significantly reduced by opting for a coffer-dam design for construction of the intakes that maintains structural integrity using a reinforced soil-cement wall on the levee side rather than through heavy piles. The coffer dam will facilitate temporary dewatering of the intake sites for screen installation and intake construction. Noise reduction strategies such as shrouds will be implemented during the limited pile driving.

## River Diversion Velocities: Protecting Fish

Proposed operations call for using the new northern intakes mostly at higher flows in the Sacramento River. Diversions are limited to maintain specified bypass flows in the Sacramento River and adjusted by opening and closing valves on each intake screen. Additionally, pulse protections will limit diversions when a pulse of fish may be near the intake. Fish near the intakes will be further protected by regulatory agency requirements for “approach” velocity through the screen and “sweeping” velocity past the screen, which would protect even small, relatively slow-swimming fish like delta smelt.

## Barges: Minimal Use

Unlike previous designs, DCA and DWR opted to eliminate any new barge landings for all construction activities. Barge traffic is limited strictly to placing riprap and log boom piles around the two intakes during their respective last summer of construction.

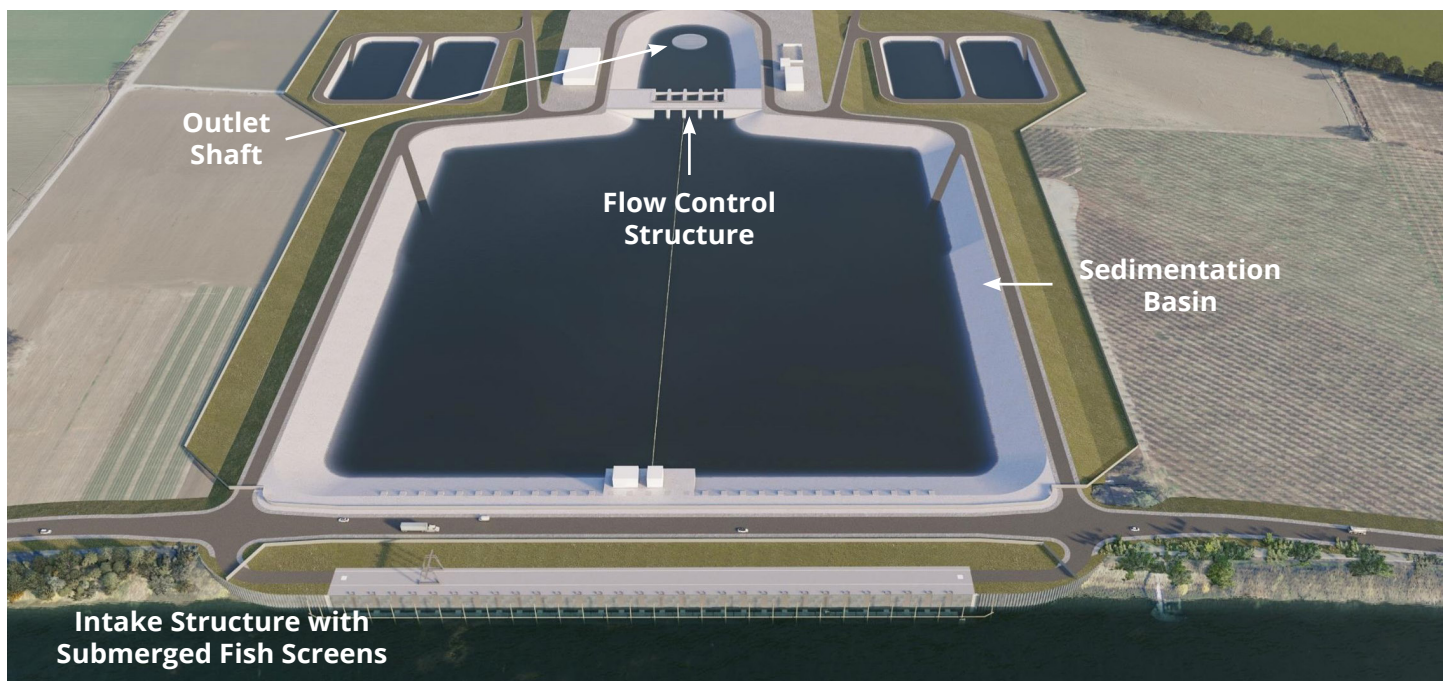
## From River to Tunnel: Key Facilities

For the Proposed Delta Conveyance Project, DCA will construct a series of structures, including sedimentation basins, on the land side of each intake for the water to safely flow into a tunnel for the water’s 45-mile journey to the south Delta by gravity flow. A new pump station in the south Delta will lift the water into the existing Bethany Reservoir at the beginning of the California Aqueduct. This pump station will operate in synchrony with the intakes.

**Sedimentation Basin:** River water can contain considerable sediment. Allowing diverted water to slowly flow through the 20-acre basins will remove sediment so that the tunnel system maintains its designed carrying capacity.

**Flow Control Structure:** At the back of the sedimentation basin, a flow control structure will ensure that the water elevation in the sedimentation basin tracks that of the river. The structure maintains this equilibrium through a series of radial gates that are 30 feet wide and 40 feet long. The gate openings are adjusted based on the river elevation and diversion rate.

**Outlet Shaft:** Once water passes through the flow control structure, it drops approximately 150 feet into the tunnel through a single outlet shaft to begin its journey south.



## Engineering a Reliable Water Supply for California

The DCA’s mission is to plan, permit, design and, if the proposed project is approved by DWR, build a modernized state-of-the-art sustainable, resilient, environmentally responsive, and cost-effective Delta Conveyance Project that resolves the long-standing need to assure affordable State Water Project reliability serving future generations of Californians in a way that respects the uniqueness of the Delta as a place and its communities.

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