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# United States Department of the Interior



## BUREAU OF RECLAMATION

Mid-Pacific Region

Tracy Office (CVP)

Route 1 Box 35

Byron, California 94514-9614

### FACT SHEET

#### DELTA-MENDOTA CANAL CENTRAL VALLEY PROJECT, CALIFORNIA

Second largest of the Central Valley Project waterways, the Delta-Mendota Canal extends from the edge of the Sacramento-San Joaquin Delta 2 1/2 miles (4.0 kilometers) to Tracy Pumping Plant, thence to the Mendota Pool on the San Joaquin River 117 miles (188.3 kilometers) to the south. It provides an irrigation supply for agricultural lands en route and replaces San Joaquin River flows which are stored by Friant Dam and released through Madera and Friant-Kern Canals. The Delta-Mendota Canal also transports the annual water requirements of the San Luis Unit of the Central Valley Project from the Sacramento-San Joaquin Delta to O'Neill Forebay. The San Luis Unit has a maximum capability of diverting 4,200 ft<sup>3</sup>/s from the Delta-Mendota Canal. This is used for irrigation, municipal, and industrial water requirements in the western portions of Merced, Fresno, and Kings Counties, and the San Felipe service area in Santa Clara, San Benito, Monterey, and Santa Cruz Counties.

#### LOCATION

The canal follows the Coastal Range foothills on the west side of the San Joaquin River. It begins at the outlet of the Tracy Pumping Plant discharge conduits 9 miles (14.5 kilometers) northwest of Tracy in the northeast corner of Alameda County and terminates at Mendota Pool about 40 miles (64.4 kilometers) downstream from Friant Dam on the San Joaquin River. The O'Neill Intake Channel is located 70 miles downstream (or south) of Tracy Pumping Plant.

#### SOURCE OF WATER AND PUMPING POWER

Controlled released of water from Shasta Reservoir are transported down the Sacramento River to Walnut Grove and transferred by gravity flow through the Delta Cross Channel, various natural channels, and Old River, to Tracy Pumping Plant, then lifted 200 feet (61.0 meters) to the gravity point of the canal. Power produced at Shasta, Keswick, Folsom, and Nimbus powerplants is delivered to Tracy Switchyard over three 230,000-volt Shasta - Tracy transmission lines and provides power for operation of the Tracy Pumping Plant.

DESCRIPTION

Delta-Mendota Canal incorporates the following major features:

- 2.5 miles (4.0 kilometers) of unlined intake channel (Old River to Tracy Pumping Plant)
- 0.97 mile (1.6 kilometers) of discharge conduits
- 95 miles (152.9 kilometers) of concrete-lined construction
- 18 miles (29.0 kilometers) of earth-lined construction
- The Mountain House Road Siphon
- The Westley, Newman, Volta, and Firebaugh Wasteways.

At present there are over 250 irrigation turnouts and a check structure equipped with radial gates on an average of every 5 miles (8.1 kilometers) throughout its length. It is crossed by numerous pipelines, 12 highway bridges, 57 county bridges, 40 farm bridges and 11 timber operating bridges. The canal contains a dozen siphons to carry it beneath creeks, railroads, highways, and canals that it must cross.

Concrete-lined construction

Location .....	Extends 98 miles (152.9 kilometers) from Tracy Pumping Plant discharge conduits to a point about 7 miles (11.3 kilometers south of Dos Palos.
Size .....	About 106 feet (32.3 meters) wide at top, 48 feet (14.6 meters) wide at bottom. Checks No. 1 through 13 operates at an average depth of 18 feet at present. Checks No. 13 through 21 operates at an average depth of 14.5 feet. In 1965 and 1966 the concrete lining was extended 1.5 feet to Check No. 13. This is responsible for change in operating depth and width of canal
Initial capacity .....	4,600 feet <sup>3</sup> /s (130.3 m <sup>3</sup> /s) (2 million gallons per minute) (126,180 liters per second)
Initial velocity of flow .....	3.81 feet per second (1.2 meters per second)
Drop in elevation .....	About 3 inches (4.7 cm per kilometer) per mile
Concrete lining .....	4 inches (10.2 centimeters) thick, unreinforced except at strategic points
Total volume of excavation .....	28,624,300 cubic yards (216,884,852 cubic meters) (exclusive of wasteways)
Volume of concrete lining .....	676,141 cubic yards (516,947 cubic meters) (exclusive of concrete in wasteways lining)

Earth-lined construction

Location ..... Southerly 18 miles (29.0 kilometers) of canal

Size ..... The canal varies in size from a typical section 139 feet (42.4 meters) wide at the top, 62 feet (18.9 meters) wide at the bottom, and 13.9 feet (4.3 meters) water depth

Capacity ..... 3,310 ft<sup>3</sup>/s (93.7 m<sup>3</sup>/s) from beginning of each section to 3,211 ft<sup>3</sup>/s (90.9 m<sup>3</sup>/s) at Mendota Pool

Velocity of flow ..... 2.41 feet per second (0.7 meter per second)

Volume of excavation ..... 6,688,000 cubic yards (5,113,344 cubic meters)

Volume of earth lining ..... Compacted earth 2 feet (0.6 meter) thick along bottom of canal, 3 feet (0.9 meter) thick (measured on a normal to the slope) along side walls. The decision to use this type of lining was made on the merits of engineering feasibility since earth lining is highly resistant to damage by the expansive clay materials which characterize the area and which would fracture and heave concrete lining

Mountain House Road Siphon

Location ..... 1 mile (1.6 kilometers) from the beginning of the gravity canal

Purpose ..... To carry canal beneath Mountain House Road, which at this point lies in a rather deep draw

Length ..... 1,200 feet (365.8 meters) overall; 1,010 feet (307.9 meters) between headwalls

Maximum head ..... 87 feet (26.5 meters) (75 feet to centerline barrel) (22.9 meters)

Capacity ..... 4,600 ft<sup>3</sup>/s (13.3 m<sup>3</sup>/s)

Size ..... Circular, 24 feet 3 inches (7.4 meters) inside diameter

Head loss ..... 1.45 feet (0.4 meter)

Velocity of water ..... Approximately 10 feet per second (3.1 meters per second) at maximum capacity

Type of construction ..... Reinforced concrete averaging 285 pounds steel per cubic yard (169.1 kg per cubic meter), barrel thickness 24 inches (61.0 cm) minimum. Transitions at each end are similar, involving change from canal prism to an open transition, then to a closed transition section 24 feet 3 inches (7.4 meters) square and into a circular barrel 24 feet 3 inches (7.4 meters) in diameter

Total concrete placed ..... 8,379 cubic yards (6,406 cubic meters)

Reinforced steel used ..... 1,194 tons (1,083 metric tons)

### Typical Check Structure

The purpose of the check structure is to control the depth of water at all points along the canal so that in operation the canal may be used not only to convey water into Mendota Pool but also to control water elevation for irrigation operations along the canal's route. The check structures also serve to shut off the flow to isolate any desired section of the canal in the event of possible damage without having to empty its entire length.

Total .....	21 check structures
Locations .....	Approximately ever 5 miles (8.1 kilometers)
Gates .....	13-20 feet (6.1 meters) wide by 17 feet (5.2 meters) high, radial type
	7-18 feet (5.5 meters) wide by 15 feet (4.6 meters) high, radial type
	1-18 feet (5.5 meters wide by 18 feet (5.5 meters high radical type
	(typical dimensions)
Gate hoists .....	Power operated

### Wasteways

Wasteways are the "safety valves: or spillways which will serve in the event of an emergency to empty the canal safely and without damage in the event of an emergency. They are also a useful adjunct in operating the canal. They lead from the canal at convenient points into the San Joaquin River (except San Luis Wasteway) throughout most of its length.

### Westley Wasteway

Location .....	30.8 miles (49.6 kilometers) from beginning of gravity canal
Capacity .....	4,400 ft <sup>3</sup> /s (124.6 m <sup>3</sup> /s)
Type of construction .....	3.8 miles (6.1 kilometers) concrete chute section; 2 miles (3.2 kilometers) of earth channel
Length .....	4 miles (6.4 kilometers)

### Newman Wasteway

Location .....	50.9 miles (81.9 kilometers) from beginning of gravity canal
Capacity .....	4,300 ft <sup>3</sup> /s (121.8 m <sup>3</sup> /s)
Type of construction .....	1.4 miles (2.3 kilometers) concrete chute section; 6.8 miles (10.9 kilometers) earth section with five concrete drops
Length .....	8.2 miles (13.2 kilometers)

Volta Wasteways (formerly San Luis Wasteway)

Location ..... 66.5 miles (107.0 kilometers) from  
beginning of gravity canal  
Capacity ..... 5,000 ft<sup>3</sup>/s (141.6 m<sup>3</sup>/s)  
Length ..... 12 miles (19.3 kilometers)  
Volta Holding  
Reservoir ..... 5,000 acre-feet (6,167,500 cubic meters)  
capacity. This reservoir will impound  
releases from the canal, entering at a high  
rate of flow and discharge them at a  
greatly reduced rate of flow in Los Banos  
Creek, a tributary of the San Joaquin  
River. The reservoir is formed by 4.6  
miles (7.4 kilometers) of compacted earth  
dike

Firebaugh Wasteway

Location ..... 107.7 miles (173.3 kilometers) from  
beginning of gravity canal  
Capacity ..... 3,300 ft<sup>3</sup>/s (93.4 m<sup>3</sup>/s)  
Length ..... 1.1 miles (1.8 kilometers)