



IN REPLY
REFER TO:

United States Department of the Interior



BUREAU OF RECLAMATION

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FACT SHEET

TRACY PUMPING PLANT CENTRAL VALLEY PROJECT, CALIFORNIA

PURPOSE

The Tracy Pumping Plant, a major initial feature of the Central Valley Project, is the facility by which "project" waters are lifted into the Delta-Mendota Canal for transfer to the water-deficient San Joaquin Valley.

The major portion of the water supplied to the Tracy pumps is derived from Central Valley Project sources in northern California. This supply is routed across the Sacramento-San Joaquin Delta from the Sacramento River to Old River via the Delta Cross Channel and natural channels of the Delta. About 9 miles (14.5 kilometers) northwest of the city of Tracy, the supply is diverted from Old River to the Inlet Channel and is conveyed 2 1/2 miles (4.0 kilometers) to the pumping plant. The water is then pumped to the headworks of the Delta-Mendota Canal which is located 196 feet (59.7 meters) above and about 1 mile (1.6 kilometers) distant from the pumping plant.

LOCATION

Northeast corner of Alameda County, about 9 miles (14.5 kilometers) northwest of Tracy, California.

WATER SOURCE

Controlled releases are from Shasta Lake on Sacramento River and Folsom Lake on American River. Also utilized are portions of the uncontrolled surplus runoff from the Central Valley Basin and return flows from irrigation and other uses.

By way of the Trinity River Diversion of the Central Valley Project in northern California, water is also available from the Trinity and Whiskeytown Reservoirs.

POWER SOURCES

Generated power is available from Central Valley Project powerplants at Shasta, Trinity, Judge Francis Carr (Clear Creek), Spring Creek, Keswick, Folsom, and Nimbus.

DESCRIPTION

The Tracy Pumping Plant consists of four main components:

- Inlet Channel
- Pumping Plant Building
- Pumping Plant Equipment
- Discharge Pipelines

Inlet Channel

Length 2 1/2 miles (4.0 kilometers)
Capacity 4,900 cubic feet per second (130.3 cubic meters per second)
Bottom width 100 feet (30.5 meters) at Old River;
56 feet (20.1 meters) at Pumping Plant
Depth 14.27 feet (4.3 meters) at Old River;
16.81 feet (5.1 meters) at Pumping Plant
Side Slopes 3 to 1
Bottom elevation 17.75 feet (5.4 meters) below sea level
Mean water surface elevation
in channel 0.62 feet (0.2 meters) above mean sea level
Excavation required 4,265,800 cubic yards (3,261,800 cubic meters)

Pumping Plant Building

Type of construction Reinforced concrete
Steel required 2,695 tons (2,445 metric tons)
Concrete required 29,410 cubic yards (22,488 cubic meters)
Size of building 59 feet (18.0 meters) wide, 99 feet (30.2 meters) overall, 362 feet (110.3 meters) long, height 50 feet (15.2 meters), 82 feet (25.0 meters) overall from foundation to roof slab.
Excavation The excavation for the canal at the pumping plant site is 80 feet (24.4 meters) deep, and the plant is located in a similar deep cut with its roof projecting slightly above the original ground level, 450,600 cubic yards (344,550 cubic meters)
Foundation 2,953 timber piles averaging 40 feet (12.2 meters) in length

Equipment - Pumps

Number Six
Type Centrifugal, 84-inch, (213.4 centimeters) vertical-shaft, single impeller, single-suction, volute type
Weight of pump shaft 6 tons (5.4 metric tons)

Weight of casing 61 tons (55.3 metric tons)
 Weight of impeller 19 tons (17.2 metric tons)
 Capacity each pump 810 to 950 cubic feet per second (21.7 cubic meters per second); about 340,000 gallons per min. (1,300 cubic meters per minute)
 Capacity six pumps 4,900 cubic feet per second 130.3 cubic meters per second); 2 million gallons per min. (7,800 cubic meters per minute)
 Total lift 197 feet (60 meters)
 Location Embedded in concrete with bottom of inlet 17.75 feet (5.4 meters) below sea level and the centerline of the impeller at sea level
 Operating speed 180 revolutions per minute
 Hookup Wye connected, in pairs, to three discharge pipes, to be operated individually or in pairs
 Size of wye transition Double 10-foot-diameter (4.6-meter-diameter) steel pipe
 Check valve 108-inch (274.3-centimeter), hydraulically operated butterfly valve between pump casing and discharge pipe

Equipment - Motors

Number and type Six vertical-shaft, 13,600-volt, 3-phase, 60-cycle, alternating current, synchronous type
 Horsepower Each motor 22,500 (22,815 metric hp)
 Speed 180 revolutions per minute. (A point on outside edge of rotor travels at a rate of 90 miles per hour) (144.8 kilometers per hour)
 Rotation Counterclockwise
 Weight of rotating parts 67.4 tons (61.1 metric tons)
 Total weight of all rotating parts (pump and motor) 105 tons (95.3 metric tons) plus hydraulic thrust of 22 1/2 tons (20.4 metric tons)

Equipment - Cranes

One 100-ton (90.7-metric-ton) gantry crane on roof of building.
 One 21-ton (19.0-metric-ton) gantry crane with 40-ton (36.3-metric-ton) jacking frame in the pump gallery.
 One 25-ton (22.7-metric-ton) overhead traveling crane in the machine shop.

(These cranes are required to install, remove, service, and repair motors, pumps, and related equipment.)

Discharge Pipelines

Number Three
 Total length 4,822 feet (1,470 meters)
 Size 15-foot (4.6 meter) inside diameter

Excavation required112,000 cubic yards (85,640 cubic meters)
Volume of each discharge line 19 1/2 acre-feet or 6,369,420 gallons
(24,100 cubic meters)
Type of construction Combination of steel-reinforced concrete
precast and monolithic pipe

Precast pipe:

Length and rise 2,923 feet (890.9 meters) each line, rising
from elevation 10 feet (3.0 meters) to
elevation 96 feet (29.3 meters)

Number of sections 244
Size of each section Approximately 12 feet (3.7 meters) long
(length varies on curves) and 15 feet (4.6
meters) inside diameter

Wall thickness 15 inches (38.1 centimeters)
Weight 60 to 63 tons (54.4 to 57.2 metric tons)
per section (including concrete, steel
liner and reinforcing steel) depending on
amount of reinforcing used and variance in
length of section

Monolithic pipe:

Length and rise 1,899 feet (578.8 meters) each line of
continuous, solid concrete placement rising
from 96 feet (29.3 meters) to 196 feet
(59.7 meters) above sea level

Wall thickness 15 to 18 inches (38.1 to 45.7 centimeters)
Size 15 feet (4.6 meters) inside diameter
Total concrete required ... 18,900 cubic yards (14,452 cubic meters)
Total steel required 2,600 tons (2,359 metric tons)

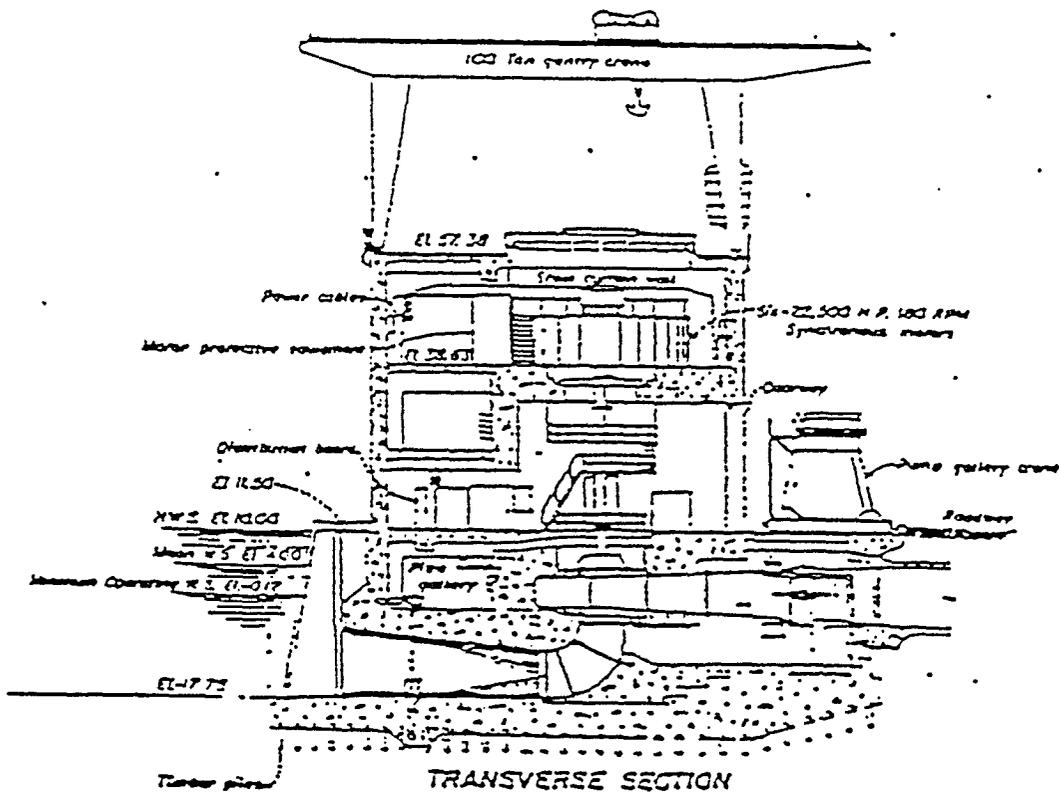
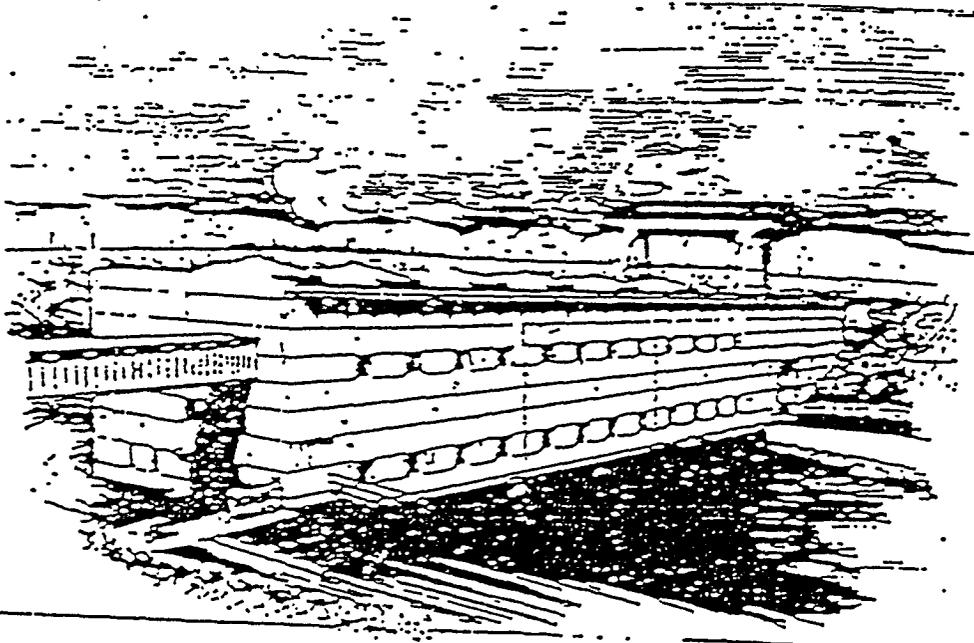
Outlet Works

At the point where the three discharge pipes reach the Delta-Mendota Canal, a reinforced concrete siphon-breaker structure is built monolithic with the pipe. It serves as a check valve to prevent return flow from the canal when the pumps are shut down.

Cost

Inlet Canal	\$1,931,474
(Note including cost of fish protection facilities)	
Tracy Pumping Plant and appurtenant works	<u>\$14,238,363</u>
Total	\$16,169,837

NOTE: All elevations are based on 1957 USBR datum which relates to mean sea level 1929 datum as follows: 3.38 USBR = 0.00 mean seal level.



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