

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE
Mid-Pacific Region
Sacramento, CaliforniaRevised
November 1980

FACT SHEET

TRINITY RIVER DIVISIONCENTRAL VALLEY PROJECTPURPOSE

The Trinity River Division is a major part of the Central Valley Project. It provides water for irrigation, power, recreation, and fish and wild-life conservation. Water from the Trinity River Basin is stored, regulated, and diverted through a system of reservoirs, dams, powerplants, tunnels, and conduits into water-deficient areas of the Central Valley Basin.

LOCATION

The Trinity River Division features are located in Trinity and Shasta Counties of California. At Lewiston Dam, the Trinity River is about 1,400 feet (430 meters (m)) higher in elevation and 20 miles (32 kilometers (km)) west of the Sacramento River at Keswick Dam.

PLAN

Trinity River water is stored in the 2,448,000-acre-foot (3 020 000 000-cubic meter (m³)) Clair Engle Lake behind Trinity Dam. Releases from this reservoir are utilized by a 105,556-kilowatt powerplant and reregulated in Lewiston Lake about 7 miles (11 km) downstream. Lewiston Dam with the 350-kW Lewiston Powerplant regulates flows to meet the downstream requirements of the Trinity River Basin, including the Trinity River Fish Hatchery and downstream fishery. Water not released to the Trinity River Basin is diverted by Lewiston Dam through the Clear Creek Tunnel to the 141,444-kW Judge Francis Carr Powerhouse and then into the 241,000 acre-foot (297 300 000 m³) Whiskeytown Lake behind Whiskeytown Dam on Clear Creek, a tributary of the Sacramento River. From Whiskeytown Lake the Trinity River water, and any surplus from Clear Creek, is diverted into the Spring Creek power conduit to the 150,000-kW Spring Creek Powerplant and discharges into Keswick Reservoir on the Sacramento River. The imported Trinity water supplements the Sacramento River flows for irrigation, municipal, industrial, water quality, and navigation uses in the Central Valley Basin.

MAIN FEATURES

The main features of the Trinity River Division are Trinity Dam, Clair Engle Lake, Trinity Powerplant, Lewiston Dam and Lake, Lewiston Powerplant, Clear Creek Tunnel and Judge Francis Carr Powerhouse, Whiskeytown Dam and Lake, Spring Creek power conduit and Rock Creek Siphon, Spring Creek Powerplant, Spring Creek Debris Dam and Reservoir, Trinity River Fish Hatchery, Irrigation Development to Cow Creek and Clear Creek South Units and the Power Transmission System.

TRINITY DAM, CLAIR ENGLE LAKE, AND TRINITY POWERPLANT

Trinity Dam

The dam and powerplant are located about 9 miles (14 km) upstream from the town of Lewiston on the Trinity River.

| | |
|--|--|
| Type | Zoned earthfill |
| Structural height | 538 feet (164 m) |
| Lowest point in excavated foundation | El. 1,857 feet (566 m) |
| Height above streambed (at dam axis) | 465 feet (142 m) |
| Crest elevation | 2,395.0 feet (730 m) |
| Crest length | 2,450 feet (747 m) |
| Crest width | 40 feet (12 m) |
| Maximum base width | 2,665 feet (812 m) |
| Volume of embankment | 29,400,000 cubic yards (22 500 000 m ³) |
| Spillway, crest elevation | 2,370 feet (722 m) |
| Type--Morning glory, 54-foot (16.5 m) diameter with shaft leading to 20-foot (6.1-m) diameter tunnel | |
| Spillway capacity | 22,500 cubic feet per second (637 m ³) |
| Outlet works capacity | 7,200 cubic feet per second (204 m ³) |
| Auxiliary outlet works capacity | 2,500 cubic feet per second (71 m ³) |

Clair Engle Lake

| | |
|---|--------------------|
| Normal water surface elevation (gross storage capacity) | 2,370 feet (722 m) |
| Maximum water surface elevation | 2,387 feet (728 m) |

Clair Engle Lake (continued)

| | |
|--|--|
| Gross storage capacity at El. 2,370 | 2,448,000 acre-feet (3 019 600 000 m ³) |
| Active storage capacity | 2,135,000 acre-feet (2 633 500 000 m ³) |
| Inactive and dead storage capacity | 312,600 acre-feet (385 600 000 m ³) |
| Area at gross storage capacity | 16,500 acres (6 680 hectares (ha)) |
| Shoresline | 145 miles (233 km) |
| Storage started | November 1960 |

Trinity Powerplant

| | |
|--|---|
| Number of units | 2; normal operating release 3,440 ft ³ /s (85 m ³ /s); maximum release 3,600 ft ³ /s (102 m ³ /s) |
| Each unit provided with inter- changeable high-head and low-head runners | |
| Generator rating, each at .95 P.F. | 52 778 kilowatts (kW) |
| Turbine ratings, each at 426-foot head (130 m) | 85,000 horsepower (63 400 kW) |
| At 334-foot head (102 m) | 70,000 horsepower (52 200 kW) |

Lewiston Dam, Lake, and Powerplant

Lewiston Lake provides afterbay storages for reregulation of releases from Trinity Powerplant. It also serves to divert Trinity River waters into Clear Creek Tunnel for transmountain diversion and to control downstream releases for fish and other requirements.

Lewiston Dam

| | |
|---|--------------------------|
| Type | Zoned earthfill |
| Structural height | 91 feet (28 m) |
| Lowest point in excavated foundation | El. 1,819.0 feet (554 m) |
| Height above streambed (at dam axis) | 81 feet (25 m) |

Lewiston Dam (continued)

| | |
|---|--|
| Crest elevation | 1,910.0 feet (582 m) |
| Crest length | 720 feet (219 m) |
| Crest width | 25 feet (7.6 m) |
| Maximum base width | 370 feet (113 m) |
| Volume of embankment | 265,000 cubic yard (203 000 m ³) |
| Spillway, crest elevation | 1,874 feet (571 m) |
| Type--Gated chute with two 30 x 27.5-foot (9.1 x 8.4-m radial gates) | |
| Spillway capacity | 30,000 cubic feet per second (850 m ³ /s) |
| Outlet works capacity | 320 cubic feet per at water surface elevation 1,902 feet (580 m) second (9 m ³ /s) |

Lewiston Lake

| | |
|--|--|
| Normal water surface elevation | 1,902 feet (580 m) |
| Maximum water surface elevation | 1,902 feet (580 m) |
| Gross storage capacity at El. 1,902 (580 m) | 14,660 acre-feet (18 100 000 m ³ /s) |
| Active storage capacity | 2,890 acre-feet (3 560 000 m ³ /s) |
| Inactive storage capacity | 11,700 acre-feet (14 500 000 m ³ /s) |
| Area at gross storage capacity | 750 acres (304 ha) |
| Shoreline | 15 miles (24 km) |

Lewiston Powerplant

| | |
|---|-------------------------|
| Number of units | 1 |
| Generator rating at .8 P.F. | 350 kilowatts |
| Turbine rating at 60-foot head (18.3 m) | 525 horsepower (390 kW) |

CLEAR CREEK TUNNEL AND JUDGE FRANCIS CARR POWERHOUSE

The intake structure to the Clear Creek Tunnel is located near the dam in Lewiston Lake on the Trinity River in Trinity County. The tunnel extends about 11 miles (18 km) southeasterly to the Judge Francis Carr Powerhouse and Whiskeytown Lake on Clear Creek in Shasta County.

Clear Creek Tunnel

Length 10.8 miles (17.4 km)
Diameter 17.5 feet (5.3 m)
Maximum flow 3,700 cubic feet per
second (105 m³/s)

Judge Francis Carr Powerhouse

Number of units 2; maximum release
3,300 ft³/s (90 m³/s)
Generator rating, each at .95 P.F. 70 722 kilowatts
Turbine ratings each at 535-foot head 93,500 horsepower
(69 700 kW)

WHISKEYTOWN DAM AND LAKE

Whiskeytown Dam is located on Clear Creek, tributary of the Sacramento River, approximately 7 miles (11 km) west of the city of Redding, California. The dam provides regulation for Trinity River flows discharged from the Judge Francis Carr Powerhouse and storage of water for the Clear Creek South unit of the Central Valley Project.

Whiskeytown Dam

Type Zoned earthfill
Structural height 281.5 feet (85.8 m)
Lowest point in excavated
foundation El. 946.5 feet (288.5 m)
Heights above streambed
(at dam axis) 270 feet (82 m)
Crest elevation 1,228 feet (374 m)
Crest length main dam 2,250 feet (686 m)
Crest length saddle dams (2) 1,760 feet (537 m)
Crest width 30 feet (9 m)
Maximum base width 1,492 feet (455 m)
Volume of embankment (including
saddle dams) 4,535,000 cubic yards
(3 467 000 m³)
Spillway, crest elevation 1,210 feet (369 m)
Type--Morning glory, 92-foot (28-m)
diameter with shaft leading to
21-foot (6.4-m) diameter tunnel
Spillway capacity 28,780 cubic feet per
second (815 m³/s)

Whiskeytown Lake

| | |
|--|---|
| Normal water surface elevation | 1,210 feet (369 m) |
| Maximum water surface elevation | 1,220.5 feet (372 m) |
| Gross storage capacity at El. 1,210 feet (369 m) | 241,000 acre-feet ₃ (297 300 000 m ³) |
| Active storage capacity | 213,600 acre-feet ₃ (263 500 000 m ³) |
| Inactive storage capacity at El. 1,100 feet (335 m) | 27,500 acre-feet ₃ (33 900 000 m ³) |
| Area at gross storage capacity | 3,220 acres (1,300 ha) |
| Shoreline | 36 miles (58 km) |
| Storage started | May 1963 |

SPRING CREEK POWER CONDUIT AND POWERPLANT

The Spring Creek Power Conduit intake and gate structures are located on the east side of the Whiskeytown Lake. The conduit runs easterly 1.6 miles (2.5 km) into the Rock Creek Siphon for 0.6 miles (1.0 km), then into a second part of the conduit 0.8 mile (1.3 km) to the Spring Creek Powerplant. The powerplant is located on the Spring Creek arm of Keswick Reservoir.

Spring Creek Power Conduit

| | |
|------------------------------|--|
| Length (two parts) | 2.4 miles (3.9 km) |
| Diameter | 18.5 feet (5.6 m) and 17.0 feet (5.2 m) |

Rock Creek Siphon

| | |
|------------------------|--|
| Length | 0.6 mile (1.0 km) |
| Diameter | 17.0 feet (5.2 m) |
| Maximum flow | 4,500 cubic feet per second (127 m ³ /s) |

Spring Creek Powerplant

| | |
|---|---|
| Number of units | 2; maximum release 4,500 ft ³ /s (127 m ³ /s) |
| Generator rating, each at .9 P.F. | 100 000 kilowatts |
| Turbine ratings, each at 544-foot head (166 m) | 105,000 horsepower (78 300 kW) |

SPRING CREEK DEBRIS DAM AND RESERVOIR

Spring Creek Debris Dam

The Spring Creek Debris Dam, an earthfill structure 196 feet (60 m) high, is located on Spring Creek upstream from the Spring Creek powerplant tailrace channel. It retains debris which would otherwise enter the powerplant tailrace and decrease the available power head. The dam also has important fishery benefits by controlling contaminated runoff from old mine tailings along Spring Creek. It will accumulate about 40 acre-feet (50 000 m³) of sediment a year.

| | |
|--|--|
| Type | Zoned earthfill |
| Structural height | 196 feet (60 m) |
| Lowest point in excavated foundation | El. 620 feet (189 m) |
| Height above streambed (at dam axis) | 190 feet (58 m) |
| Crest elevation | 816 feet (249 m) |
| Crest length | 1,140 feet (347 m) |
| Crest width | 30 feet (9 m) |
| Maximum base width | 1,065 feet (324.6 m) |
| Volume of embankment | 1,860,000 cubic yards (1 422 000 m ³) |
| Spillway, crest elevation | 795 feet (242 m) |
| Type-Ungated chute | |
| Spillway capacity | 5,150 cubic feet per second (146 m ³ /s) |
| Outlet works capacity at water surface El. 795.0 feet (242 m) | 680 cubic feet (19 m ³) per second |

Spring Creek Reservoir

| | |
|---|--|
| Normal water surface elevation | 795 feet (242 m) |
| Maximum water surface elevation | 809.5 feet (246.7 m) |
| Cross storage capacity at El. 795 feet (242 m) | 5,870 acre-feet (7 240 000 m ³) |
| Active storage capacity | 5,810 acre-feet (7 170 000 m ³) |
| Inactive and dead storage capacity at El. 659.6 feet (201 m) | 60 acre-feet (74 000 m ³) |
| Area at gross storage capacity | 92 acres (37 ha) |
| Shoreline | 2.5 miles (4 km) |

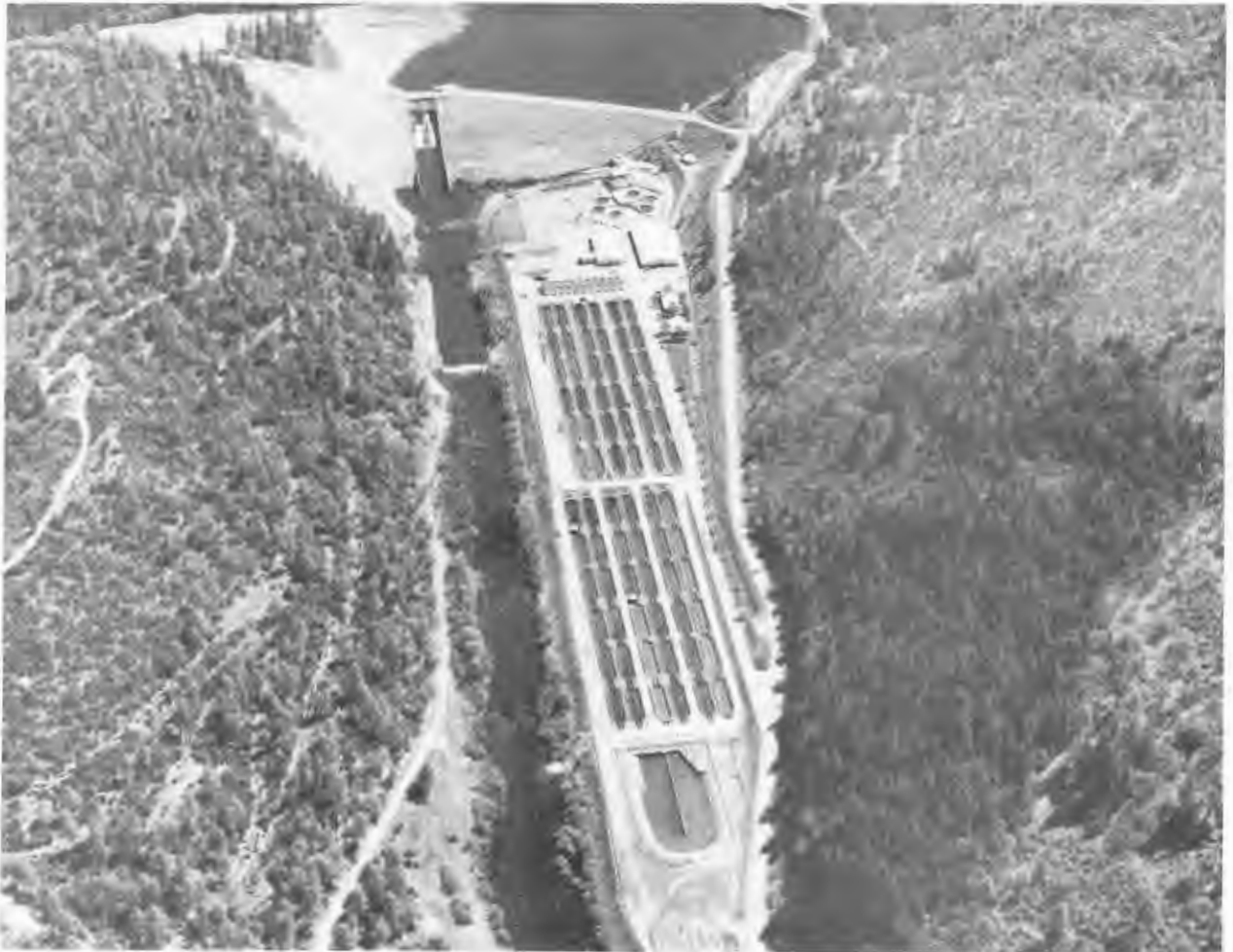
TRINITY RIVER FISH HATCHERY

The Trinity River Fish Hatchery was built to mitigate for upstream spawning areas rendered inaccessible by construction of Trinity and Lewiston Dams. The hatchery is located immediately downstream from Lewiston dam and has a capacity of about 40,000,000 eggs.

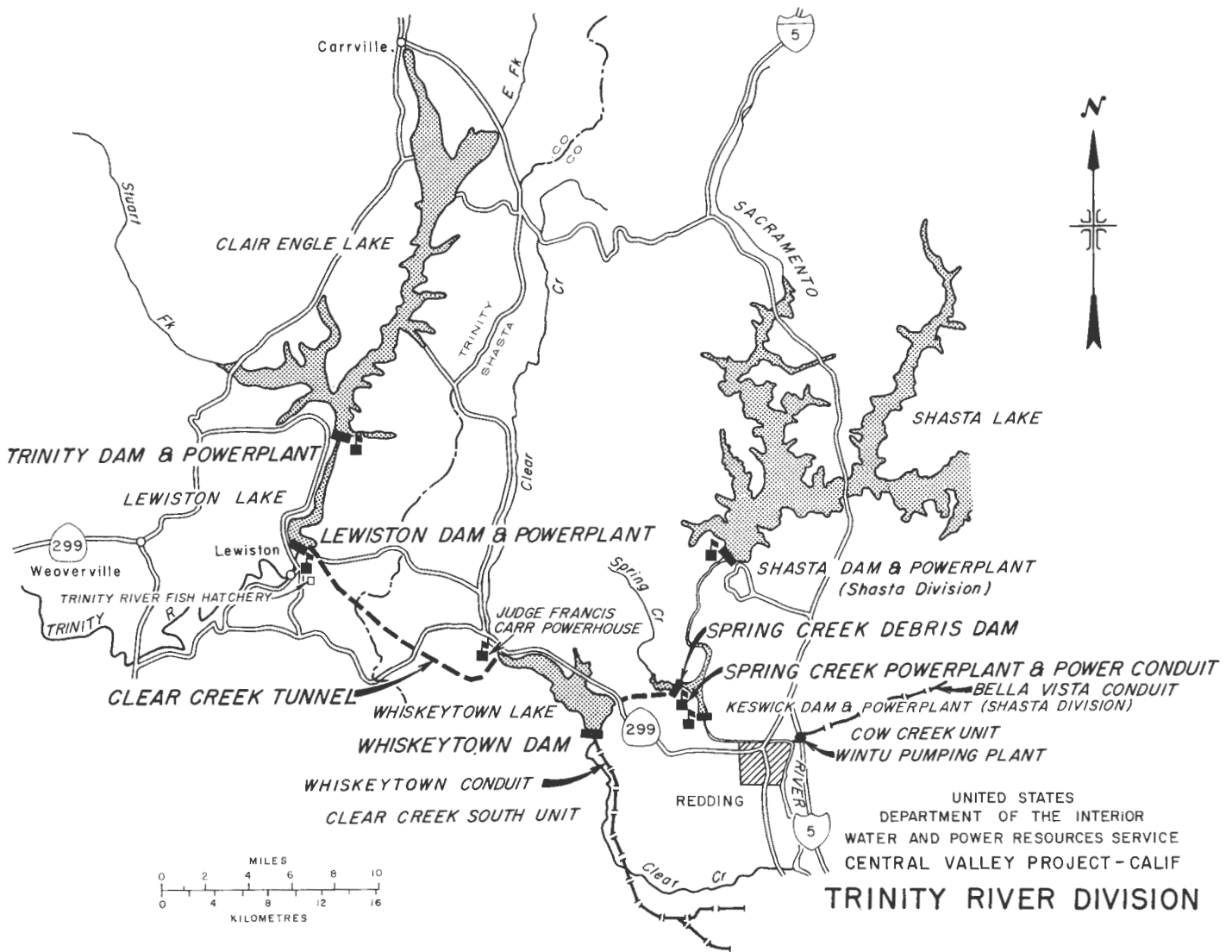
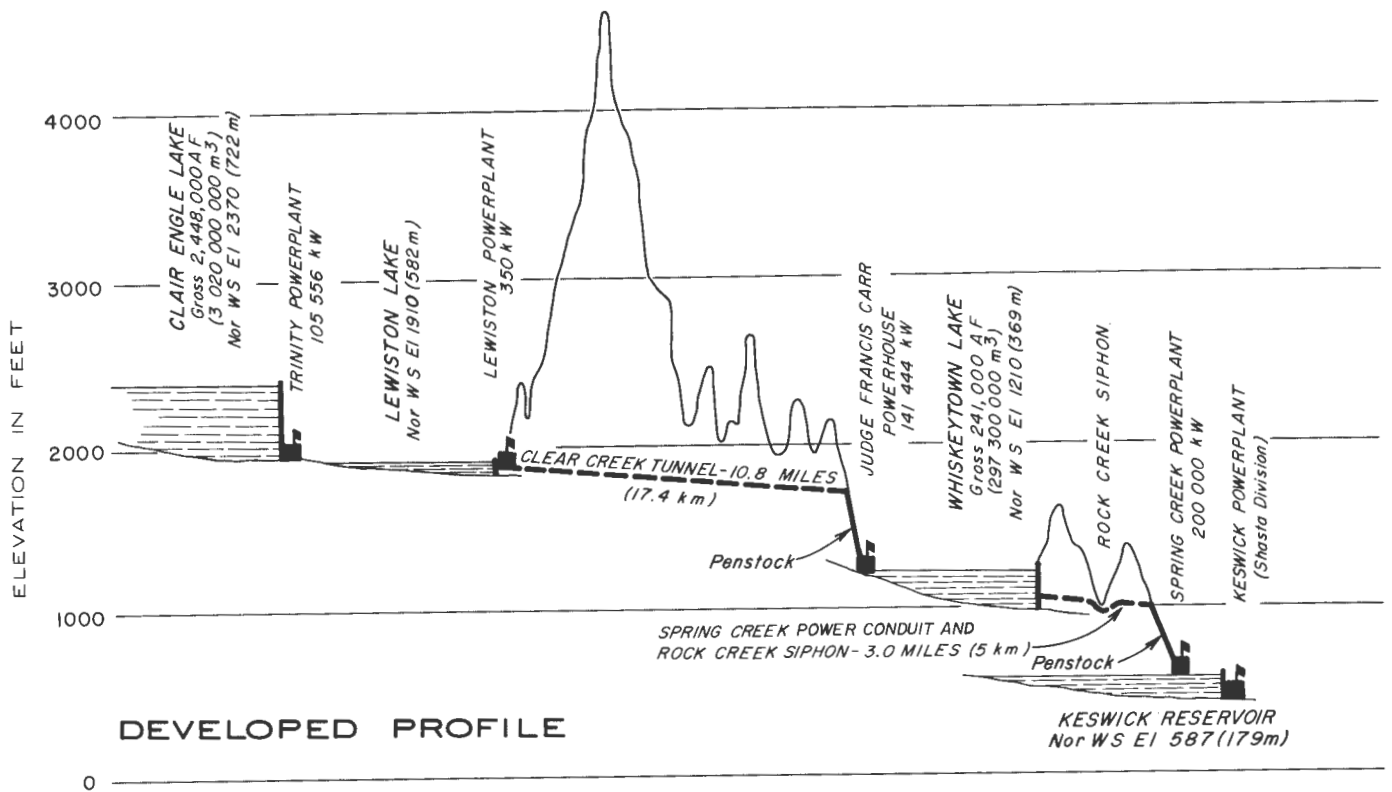
The maintenance of fisheries in the Trinity River below Lewiston Dam is provided for in the Trinity River Division Authorization Act which stipulates a minimum water release of 150 cubic feet per second (4 m^3) for this purpose. In accordance with this provision, the following water releases from Lewiston Lake are made to maintain salmon and steelhead fisheries downstream:

| | |
|-------------------------------------|---|
| December 1 - August 31. | 150 cubic feet per second (4 m^3) |
| September 1 - October 15. | 200 cubic feet per second (6 m^3) |
| October 15 - November 15. | 250 cubic feet per second (7 m^3) |
| November 15 - November 30 | 200 cubic feet per second (6 m^3) |

The higher releases in the fall facilitate natural spawning.



LEWISTON DAM AND TRINITY RIVER FISH HATCHERY



IRRIGATION DEVELOPMENT

Cow Creek Unit, located in Shasta County, serves about 6,800 acres (2,800 ha) of irrigable land east of Redding, California, with pumping diversion from the Sacramento River. The unit features consist of the Wintu Pumping Plant at 100 cubic feet (3 m³) per second and a main conveyance pressure pipeline (Bella Vista Conduit) with branching distribution lines.

Clear Creek South Unit, located in Shasta County, furnishes irrigation water to about 4,600 acres (1,900 ha) and will eventually supply domestic service to a projected 550 acres (223 ha) of residential land southeast of Redding and west of Anderson. The unit features consist of approximately 11.7 miles (18.8 km) of 70 cubic feet (2 m³) per second pressure conduit (Muletown Conduit) from a connection to the Whiskeytown Dam outlet pipe and with branching distribution lines to the service areas.

POWER TRANSMISSION SYSTEM

Trinity - Judge Francis Carr - 230-kV single circuit 13 miles (21 km)

Judge Francis Carr - Keswick - 230-kV double circuit 11.2 miles (18 km)

Spring Creek - Keswick - 230-kV single circuit 2.1 miles (3.4 km)

Keswick - Cottonwood - 230-kV double circuit 22.4 miles (36 km)

Cottonwood - Elverta - 230-kV double circuit 153.6 miles (247 km)

Elverta - Hurley - Tracy - 230-kV single circuit 73.0 miles (117 km)

Additions were made to the existing switchyards at Keswick, Elverta, and Tracy to accommodate the new transmission lines.



Aerial view upstream of Whiskeytown Dam and Lake. Note vehicular road traversing the earthfill dam across the lower central area of the photograph.



General view of the penstocks carrying water to the Judge Francis Carr Powerhouse from the Trinity River. The body of water in the foreground is part of Whiskeytown Lake.



Aerial view upstream of Trinity Dam and its reservoir, Clair Engle Lake, two of the main features of the Trinity River Division of the Central Valley Project, California



Aerial view of the Spring Creek Debris Dam (background) and the Spring Creek Penstocks and Powerplant in the foreground. Water from Whiskeytown Lake is diverted by the Spring Creek Tunnel and Powerplant to Keswick Reservoir.