

Flaming Gorge

Flaming Gorge was named in 1869 by the John Wesley Powell expedition as they traveled down the Green River. It was named for the brilliant red and orange colored sandstones that form its walls.

Some of the sandstone is now hidden by the waters of the flaming Gorge Reservoir. The Bureau of reclamation completed the Flaming Gorge Dam in 1964, after eight years of planning and construction. The reservoir and dam were created as part of the Colorado River Storage Project (CRSP). The dam is a source of hydroelectric power, and the reservoir is used as a water supply for farming, industries, and cities. When the reservoir is full, the dam holds back nearly 4 million acre-feet of water, creating a lake 91 miles long.

Flaming Gorge Dam is a thin-arch concrete dam, which means that water pressure from the reservoir is transferred to the rock on the bottom and sides of the canyon. In normal operation, water released from the dam flows through large pipes called penstocks into the powerplant where it turns turbines that generate electricity. (Fig. 1)

The powerplant has three generators which generate a total average of 533,000 megawatt-hours of electricity annually. The total installed capacity of the three generating units is approximately 152,000 kilowatts.

This reservoir is one of four water storage facilities included in the CRSP. The CRSP has a total storage capacity of 34 million acre-feet of water that can be released during periods of low stream flow to fulfill water obligations to Lee's Ferry Arizona. In addition to the Flaming Gorge Dam and Powerplant, there are five other dams and four additional powerplants in the CRSP system..

Water stored by the project provides a portion for direct use in the Upper Basin. Sediment and flooding are better controlled and recreational development provides for a significant amount

of electrical energy to be produced.

Revenues from power generation are used for two purposes. First, they provide for repayment of project costs. Secondly, they create the Upper Basin

Fund, which provides for significant payment of irrigation features in projects known as participating projects. In those cases~ power revenues pay for projects' costs above the computed ability of the farmers to pay.

There is no question that the dam has had a significant effect on the River. The cold clear water that emerges from the base of the dam bears little resemblance to the warm muddy river that enters the gorge. As a result, sport fish thrive as evidenced by state record trout taken from its waters. However, some fish species, such as the Colorado Squawfish, that were native to the Green River, and had adapted over millions of years to the warm, silt-laden environment, are now listed as endangered species.

The dam has affected the down stream environment as well. Spring floods once scoured the banks and sand bars, removing brush and depositing sandy beaches. Today, brush crowds the banks, and the beaches have eroded away. Finally, recreation in and around the gorge has changed as a result of the dam. The lake attracts boaters, water skiers, and sport fishermen while white-water rafters lament the loss of rapids and beaches.

The Bureau of Reclamation, operator of the dam, has worked to rectify these conflicting interests to the extent possible. Originally, the dam was to be used as a peaking plant. Thus, when the demand for electricity was high, substantially more water was released from the dam to generate more electricity. When demand was low, the dam minimized the amount of water leaving the reservoir. Today, the dam is operated in a manner that reduces these dramatic daily fluctuations.

References:

U.S. Department of the Interior, Bureau of Reclamation, "Flaming Gorge Dam and Reservoir." Map, 1991.

"Flaming Gorge," Wyoming General Information

U.S. Department of the Interior, Bureau of Reclamation, "Colorado River Storage Project." Flaming Gorge Dam and Powerplant, Oct 1992.

U.S. Department of Interior, Bureau of Reclamation, "Flaming Gorge Dam and Power Plant," Self-guided Tour, 1993.

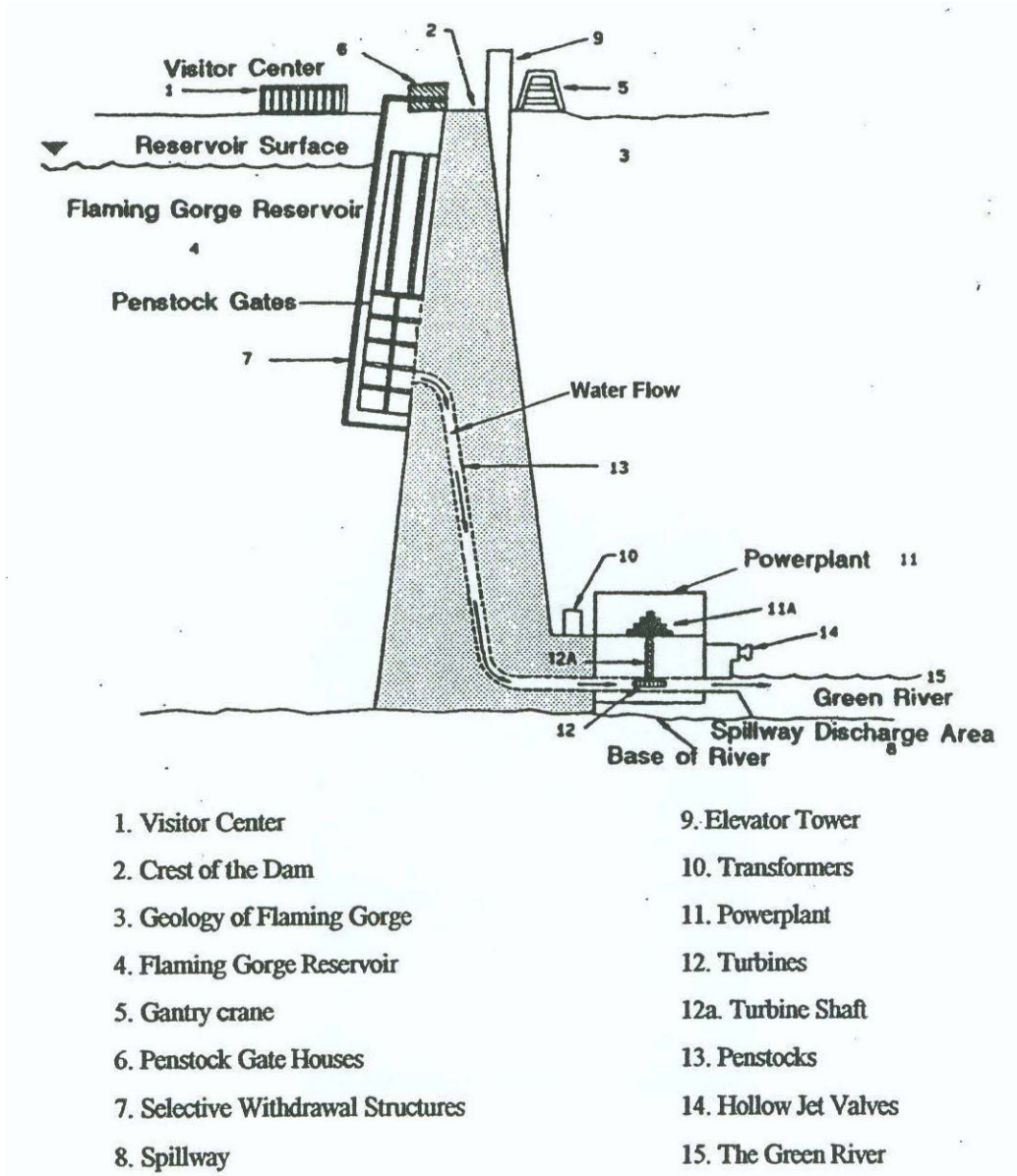


Figure 1
 Flaming Gorge Dam Cross-Section
 Adapted From: "Flaming Gorge Dam and Powerplant, Self-Guided Tour"

Flaming Gorge Dam

Type: Thin-arch concrete

Location: On the Green River, a tributary of the Colorado River

Construction Period: 1956-1964

Flaming Gorge Reservoir:

Total Capacity 3,788,700 acre-feet

Active Capacity= 3,749,000 acre-feet

Surface Area= 42,020 acres

Spillway:

The spillway releases water directly to the river through a tunnel which runs through the mountainside. A total of 28,000 cubic feet per second can be released.

Dam Dimensions:

Height above bedrock= 502 feet

Height above original river channel= 455 feet

Thickness at crest= 27 feet

Maximum base thickness= 131 feet

Crest Length= 1,285 feet

Crest elevation= 6,045 feet

Total volume= 986,644 cubic yards

Hollow Jet Valves:

Water can also be released directly to the river by two 5.5 feet diameter tubes near the base of the dam. A total of 4,000 cubic feet per second can be released. These are used to maintain flow in the river when water is not being released to generate power.

Visit the Flaming gorge Dam website at:

<http://www.usbr.gov/dataweb/darns/ut 10121.htm>