

ELEPHANT BUTTE RESERVOIR
Elephant Butte
Sierra County
New Mexico

HAER NM-20
HAER NM-20

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

HISTORIC AMERICAN ENGINEERING RECORD

ELEPHANT BUTTE RESERVOIR

HAER No. NM-20

- Location:** Elephant Butte, Sierra County, New Mexico
- Dates of Construction:** 1910-1916
- Engineers:** Arthur P. Davis, Chief Engineer of the U.S. Reclamation Service
Louis C. Hill, Engineer, superintendent of designs
E.H. Baldwin, Resident Engineer, in charge of construction
- Original Owner, Use:** U.S. Reclamation Service, irrigation, power, flood control
- Current Owner, Use:** U.S. Bureau of Reclamation, irrigation of the middle Rio Grande Valley
- Significance:** With a capacity of over 2 million acre-feet, the Elephant Butte Reservoir is one of the largest water storage structures in the Southwest and is capable of holding the torrential flood waters that occur at regular intervals on the middle Rio Grande.
- Description:** The reservoir is on the Rio Grande east of Truth or Consequences, New Mexico, and is formed by the Elephant Butte Dam. The masonry, gravity dam measures 1,200' long and 300' high. It is built of cyclopean concrete and stone embedded in concrete.
- History:** The need for a large storage reservoir on the Rio Grande in the El Paso area was realized in the late 1800s due to floods in the spring and insufficient flow for irrigation during the summer. A large reservoir would provide flood control and a dependable supply of water for parts of Texas, New Mexico, and Mexico. A site just above El Paso was first considered, but studies showed that a larger and deeper site was needed. A canyon about 100 miles above El Paso was selected as the location that became known as Elephant Butte Reservoir because of the large volcanic formation nearby resembling an elephant.
- Design work began in 1902, the year of the passage of the Reclamation Act. The gravity dam was built of cyclopean concrete made on site with about 25 percent of the volume being large stones quarried nearby. It was one of the most massive engineering structures completed in the early

1900s, with a total of 600,000 cubic yards. The concrete was poured from three cableways spanning the 1,400' canyon, each having a diameter of 2- $\frac{1}{4}$ " and an 8-ton capacity. A flume with a 16,000 cubic feet/second capacity diverted the Rio Grande during construction of the dam. It was completed in 1916 at a cost of about \$5 million.

Sources:

Boughton, V.T. "International Waters Allocated under Treaty with Mexico." *Engineering News-Record*, CXXXIV, no. 3 (January 25, 1945): 93-104.

Clayton, Frank B. "United States—Mexican Water Treaty; Jurisdiction of the International Boundary and Water Commission and its National Section." *The Department of State Bulletin* XII, no. 291 (January 21, 1945): 71-79.

Davis, Arthur Powell. *Irrigation Works Constructed by the United States Government*. New York: John Wiley & Sons, Inc., 1917.

"Elephant Butte Dam: The Greatest Irrigation Enterprise in America." *Scientific American* CXI (1914): 73-74.

"The Elephant Butte Dam. The Greatest Irrigation Storage Enterprise in the World." *Scientific American Supplement* LXXXII, no. 2115 (July 15, 1916): 33, 37.

Forest, Newton. "The Rio Grande Irrigation Project. The Largest Reservoir in the World." *Scientific American Supplement* LXX, no. 1806 (August 13, 1910): 97, 104.

Hall, B.M. "Rio Grande Project." In *Proceedings of Second Conference of Engineers of the Reclamation Service*. U.S. Geological Survey, Water-Supply Paper No. 146. Washington, DC: Government Printing Office, 1905.

"Irrigation on a Big Scale." *Independent* LXXXIV, no. 3492 (November 8, 1915): 230.

Lee, Willis T. "Water Resources of the Rio Grande Valley and Their Development." U.S. Geological Survey, Water-Supply Paper No. 188. Washington, DC: Government Printing Office, 1907.

"A New Proposal for a Dam Across the Rio Grande, Near El Paso, Texas." *Engineering News* LII, no. 26 (December 29, 1904): 596-597.

Stevens, J.C. "Future of Lake Mead and Elephant Butte Reservoir." *Transactions of the American Society of Civil Engineers* CXI (1946): 1231-1254.

Wegmann, Edward. *The Design and Construction of Dams*. 8th ed. New York: John Wiley & Sons, Inc., 1927.

Historians: Steve Rae and T. Lindsay Baker, September 22, 1971 and January 10, 1972

Project Information: The Elephant Butte Reservoir was inventoried for the Historic American Engineering Record as part of the Southwest Water Resources Project, a joint project with the Texas Tech Water Resources Center. The survey was subsequently published as *Water for the Southwest: Historical Survey and Guide to Historic Sites* by the American Society of Civil Engineers in September 1973.