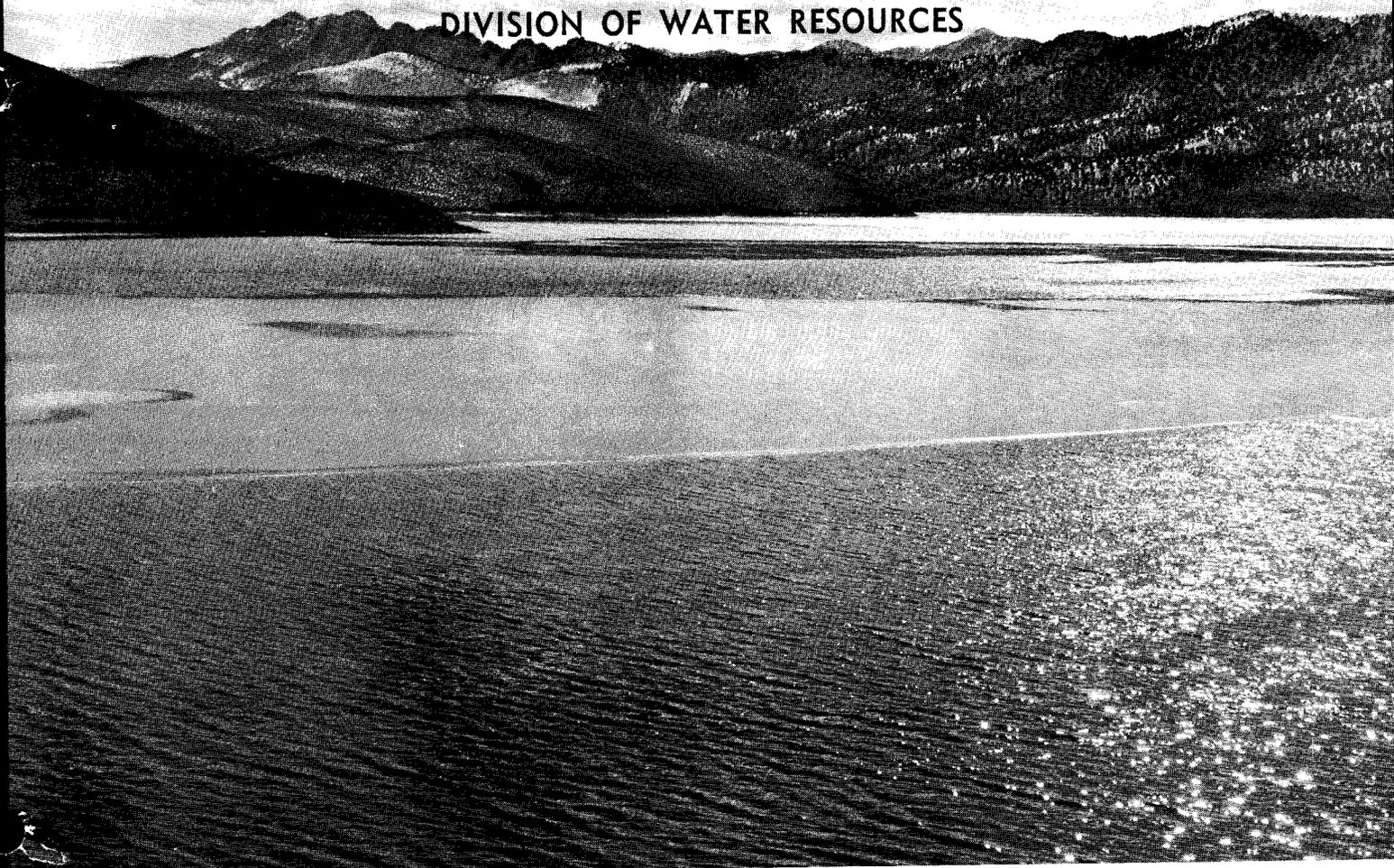


STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES



View of Topaz Lake.

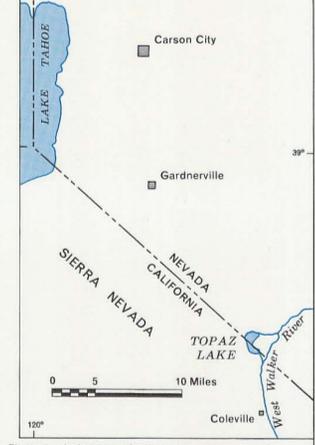
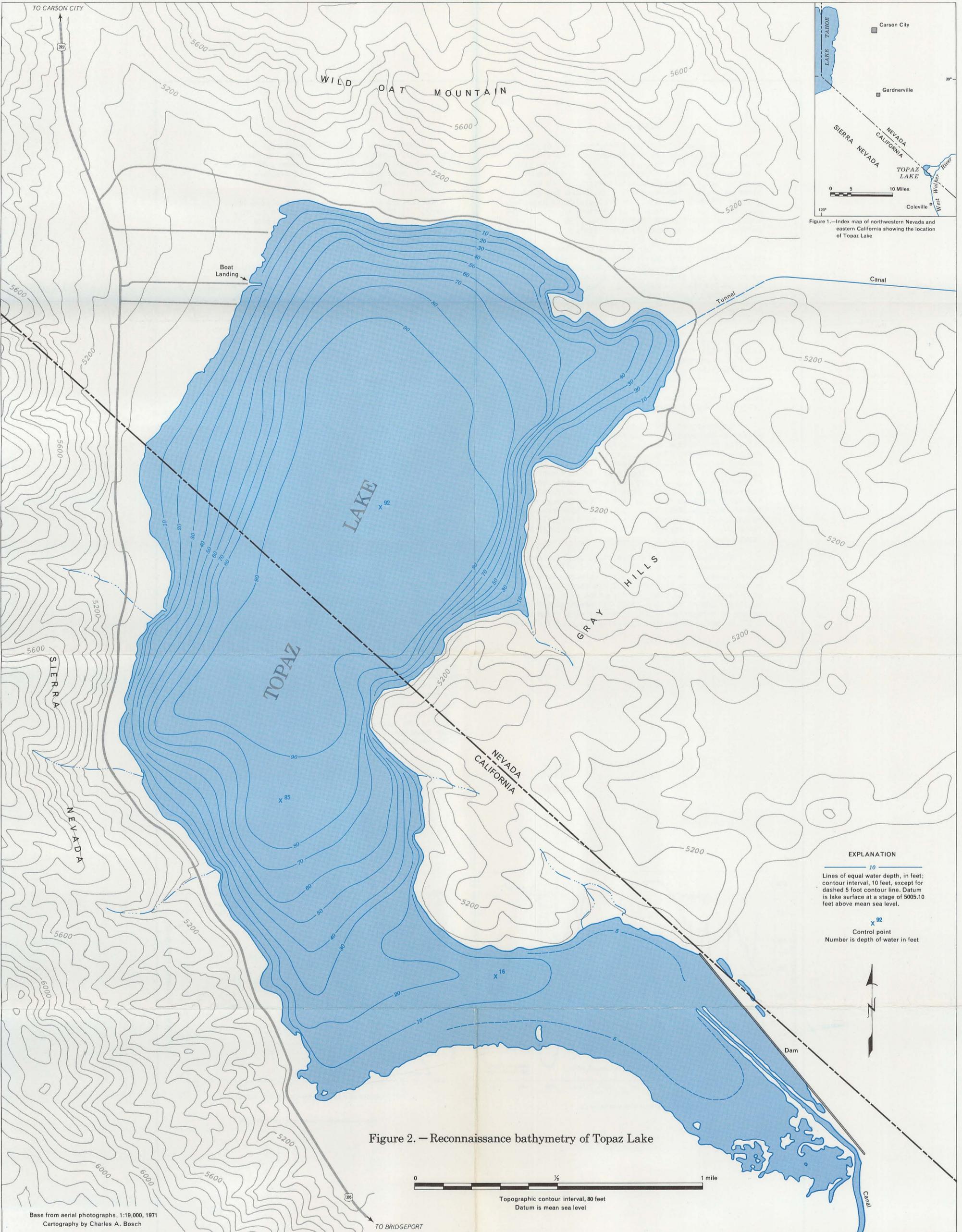
WATER RESOURCES—INFORMATION SERIES
REPORT 12

**BATHYMETRIC RECONNAISSANCE OF TOPAZ LAKE,
NEVADA AND CALIFORNIA**

By
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and
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Prepared cooperatively by the Geological Survey
U.S. Department of the Interior

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INTRODUCTION

Topaz Lake is 36 miles south-southwest of Carson City, Nevada, on the California-Nevada State line, as shown in figure 1. The valley in which the lake lies is a topographically closed basin, having an area of about 14 square miles. Mountains surround the valley floor on all but the southeast side, where the topographic divide is lowest. Here the divide is a narrow, but flat alluvial surface at an altitude of about 5,000 feet. The lowest point on the valley floor, the lake bottom, is at an altitude of 4,913 feet.

The mountains on the west are the timber-covered Sierra Nevada that locally reach an altitude of nearly 9,000 feet. The sagebrush- and piñon pine-covered mountain on the north and the sagebrush-covered mountains on the east have altitudes generally less than 6,000 feet.

Under native conditions, a small lake named Alkali Lake occupied the central part of the valley floor. This lake was sustained at a generally low stage by runoff from within the basin. It is physically possible that the West Walker River, south of the basin, could have changed course from time to time and flowed into Topaz Lake basin, across the alluvial part of the divide, described above. Inflow would have stopped when the lake began to spill southeastward out of the basin across the area now occupied by the low dam (fig. 2). Whether this actually happened is not known.

Beginning in 1921, water from the West Walker River was conveyed in a feeder canal across the low alluvial part of the divide to the basin, forming a storage reservoir. The enlarged body of water, which covered most of the valley floor, was renamed Topaz Lake. Stored water is released at the northeast end of the lake through a 1,200-foot long tunnel and a canal which conveys water back to the West Walker River. All water released from the lake passes through the tunnel, because there is no spillway. Downstream, the released water is used principally for irrigation by the Walker River Irrigation District, the developer of Topaz Lake.

The lowest practical lake stage at which water can be released through the tunnel is 4,972.3 feet, which leaves 59 feet of lake depth as dead storage. Releasable storage prior to 1937 was about 45,000 acre-feet. In that year, construction of a dam at the southeast end of the lake (fig. 2) increased this volume to a reported 59,440 acre-feet at a stage of 5,005.0 feet, the maximum operating stage of the lake.

In addition to being used for storage of irrigation water, Topaz Lake is used to an increasing extent for boating and fishing. However, the general absence of sandy beaches probably is discouraging to many potential recreational users.

Variations in lake stage are summarized in figure 3. At the time of the bathymetric survey, the stage of the lake was 5,005.10 feet, or about at its maximum operating stage.

BATHYMETRY

A continuously recording, electronic fathometer was used to measure the depth of Topaz Lake, during 19 traverses. The results of the survey are summarized in figures 2 and 4. The dimensions of the lake at the time of the survey, for the extremes and average in stage for the period 1922-71, and of the unreleasable pool, are summarized in table 1.

In 1940, the U.S. Geological Survey determined the stage-volume relation. The 1971 bathymetric survey produced virtually identical results.

Table 1.--Dimensions of Topaz Lake at various stages

Time or condition	Dimension				
	Depth (feet)	Stage (feet)	Area (acres)	Volume (acre-feet)	Releasable storage (acre-feet)
Time of survey in June 1971	92	5,005.10	2,400	125,000	60,000
Maximum stage	92	5,005.35	2,410	126,000	61,000
Minimum stage	59	4,972.25	1,500	65,000	0
Average stage	76	4,988.90	1,800	92,000	27,000
Maximum stage of unreleasable pool	59	4,972.30	1,500	65,000	0

Other bathymetric surveys have been completed or are planned, as follows:

Lake or Reservoir	Publication
Pyramid Lake - - - - -	USGS HA-379
Walker Lake - - - - -	USGS HA-415
Lahontan Reservoir - - - - -	Nev. DWR Info. Ser. 9
Big and Little Washoe Lakes - - - - -	Nev. DWR Info. Ser. 10
Big and Little Soda Lakes - - - - -	Nev. DWR Info. Ser. 11
Topaz Lake - - - - -	Nev. DWR Info. Ser. 12
Rye Patch Reservoir and Upper and Lower Pitt-Taylor Reservoirs - - - - -	Nev. DWR Info. Ser. 13
Marlette and Spooner Lakes - - - - -	Nev. DWR Info. Ser. 14
Weber Reservoir - - - - -	Nev. DWR Info. Ser. 15
Wild Horse Reservoir - - - - -	Nev. DWR Info. Ser. 16

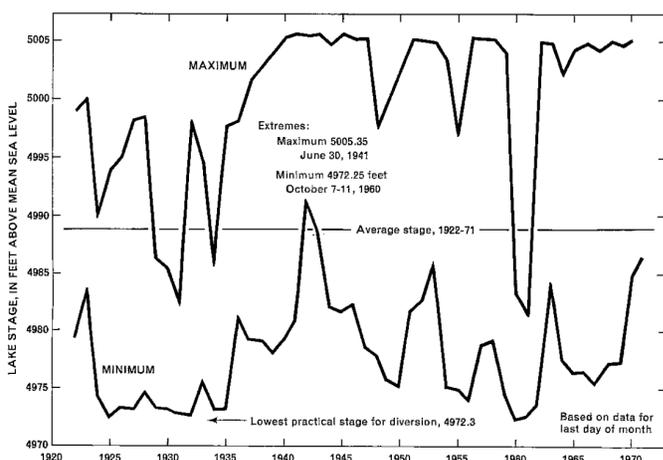


Figure 3.--Variations in stage of Topaz Lake

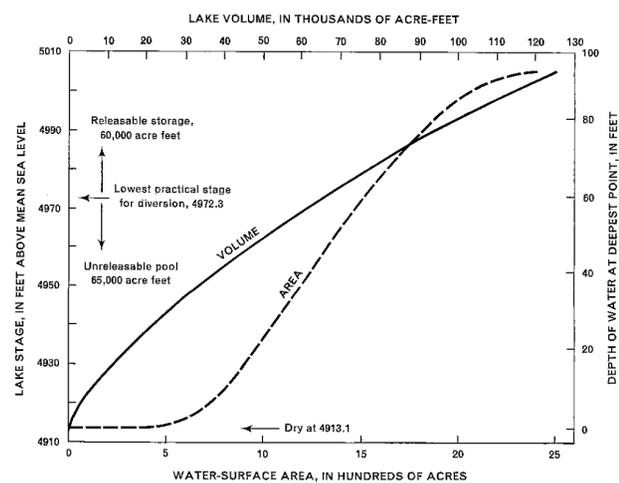


Figure 4.--Stage-area-volume relations for Topaz Lake