

12200850. Samish Lake near Bellingham

Location

Whatcom County, 8.5 miles southeast of Bellingham (fig. 1).

Origin

Glaciated valley dammed by slide deposits from north.

Basin geology

Consolidated sedimentary rock with thin mantle of glacial drift (Hunting and others, 1961).

Soils

Rough mountainous soil normally shallow and stony. Intricate patterns of silt loam, stony silt loam, and loam occupy the lower area of south slope (Poulson, 1953).

Land use and cover

Moderately heavy forest, with residential and commercial clearings. Nearshore area supports a mixture of deciduous and coniferous trees. Nearly 2 miles of interstate highway parallel within a quarter mile of the northeast shore.

Population

Lakeshore development moderately dense with 221 lakeshore homes (50 homes on west arm and 171 homes on east arm), a large trailer court, and a church camp in September 1971, compared to 142 lakeshore dwellings (34 on west arm and 108 on east arm) in 1954 (estimated from U.S. Geological Survey topographic map). Residential development occupies approximately 62 and 91 percent of the lakeshore for the west and east arms, respectively.

Physical characteristics of lake

A bathymetric map of the lake is shown in figure 52. The map was surveyed on July 16, 1956, using an arbitrary datum. Samish Lake was considered as two bodies of water, the small deep bay being the west arm, and the larger shallow bay being the east arm.

Some morphometric parameters of the west arm, based on the bathymetric map, are listed below.

Drainage area	3.7 sq mi
Altitude (from topographic map)	273 ft
Surface area	130 acres
Lake volume	9,100 acre-ft
Mean depth	71 ft
Maximum depth	145 ft
Length of shoreline	9,500 ft
Length of lake	3,800 ft
Mean breadth of lake	1,500 ft
Shoreline configuration	1.14
Development of volume	0.49
Mean slope	16 percent

Some morphometric parameters of the east arm, based on the bathymetric map, are listed below.

Drainage area	9.2 sq mi
Altitude (from topographic map)	273 ft
Surface area	680 acres
Lake volume	23,800 acre-ft
Mean depth	31 ft
Maximum depth	75 ft
Length of shoreline	33,100 ft
Length of lake	3,780 ft
Mean breadth of lake	7,800 ft
Shoreline configuration	1.71
Development of volume	0.42
Mean slope	5.1 percent

Hydrologic characteristics

Lake stages

Miscellaneous gage-height observations in 1971 are shown in figure 53. The altitude of the gage is 273 ft (from topographic map); the datum of the gage is arbitrary. The observed gage height from March 3 to December 16, 1971 varied 2.40 ft.

Surface-water inflow and outflow

In addition to the main inflow, Lake Creek, at least seven ephemeral or intermittent inflow streams drain from the surrounding mountainous terrain. The outflow, which is controlled by natural conditions, is via Friday Creek. Miscellaneous measurements of the main inflow, total inflow from seasonal streams, and outflow are given below.

Date (1971)	Inflow via Lake Creek (cfs)	Inflow, Total Miscellaneous (cfs)	Outflow via Friday Creek (cfs)
Mar 3	9.01	*9	79.8
May 24	.81	*2	7.98
Jul 14	1.23	*5	19.8
Sep 23	* .1	* .4	0

*Estimated

Water-quality characteristics

Seasonal Secchi-disc visibility depths and profiles of DO concentration and water temperature at the two sites are shown in figures 54 and 55.

Biological characteristics (west arm)

Submergent rooted aquatic-plant growth was light and emergent plant growth was sparse. On September 23, 1971, less than 0.01 percent of the lake surface and 1 percent of the lake bottom were occupied by macrophytes. The dominant submergent plants were pondweed (*Potamogeton robbinsii*) and watercelery (*Vallisneria* sp.). Also present were *Potamogeton richardsonii* and waterweed (*Elodea* sp.).

Biological characteristics (east arm)

Rooted aquatic-plant growth was light. On September 23, 1971, approximately 0.5 and 2.9 percent of the lake surface and lake bottom, respectively, were occupied by macrophytes. The dominant emergent plant was watershield (*Brasenia* sp.), followed by smaller patches of waterlily (*Nuphar* sp. and *Nymphaea* sp.) and sedge (*Cyperaceae*). The dominant submergent plants were pondweed (*Potamogeton robbinsii*) and watercelery (*Vallisneria* sp.) followed by waterweed (*Elodea* sp.) and three other varieties of pondweed.

No algal blooms were observed, but a high algal density was recorded for both arms on July 14, 1971.

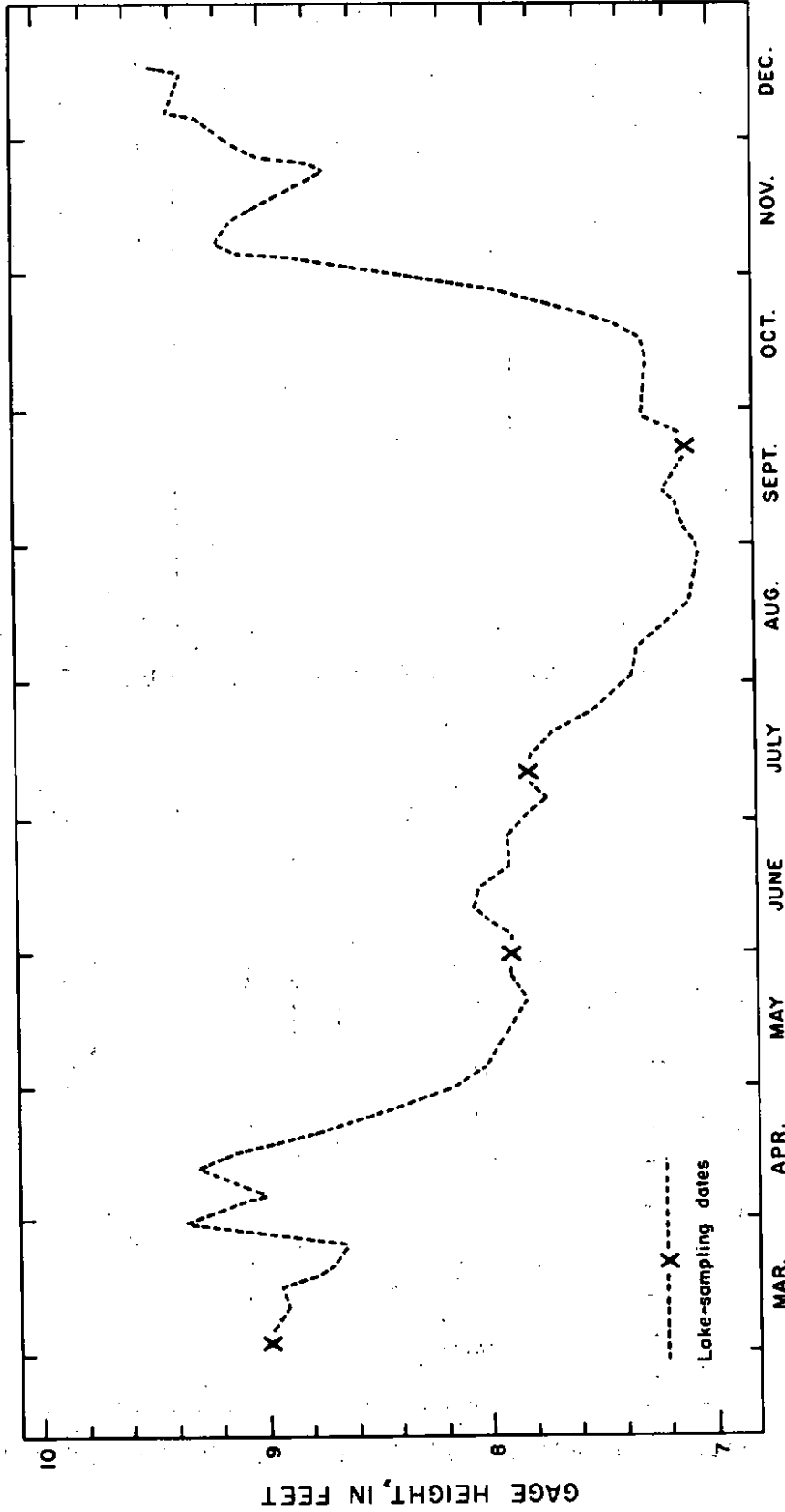


FIGURE 53.—Observed gage heights in 1971, Samish Lake near Bellingham.

DATA ON SELECTED LAKES IN WASHINGTON

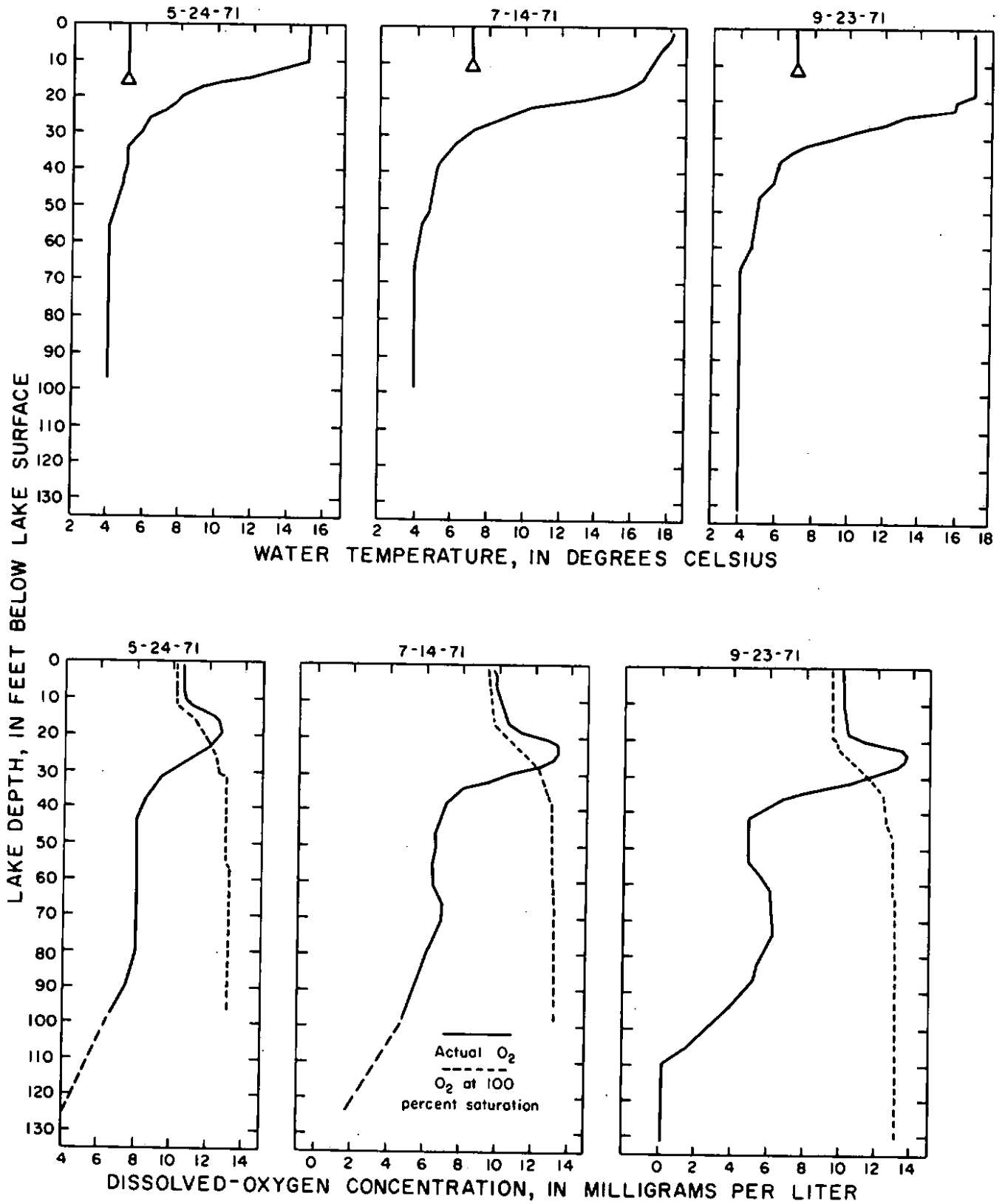


FIGURE 54.—Selected 1971 seasonal profiles of lake temperature and DO concentration in west arm of Samish Lake near Bellingham. Secchi-disc-visibility depths are indicated by bases of triangles on temperature profiles.

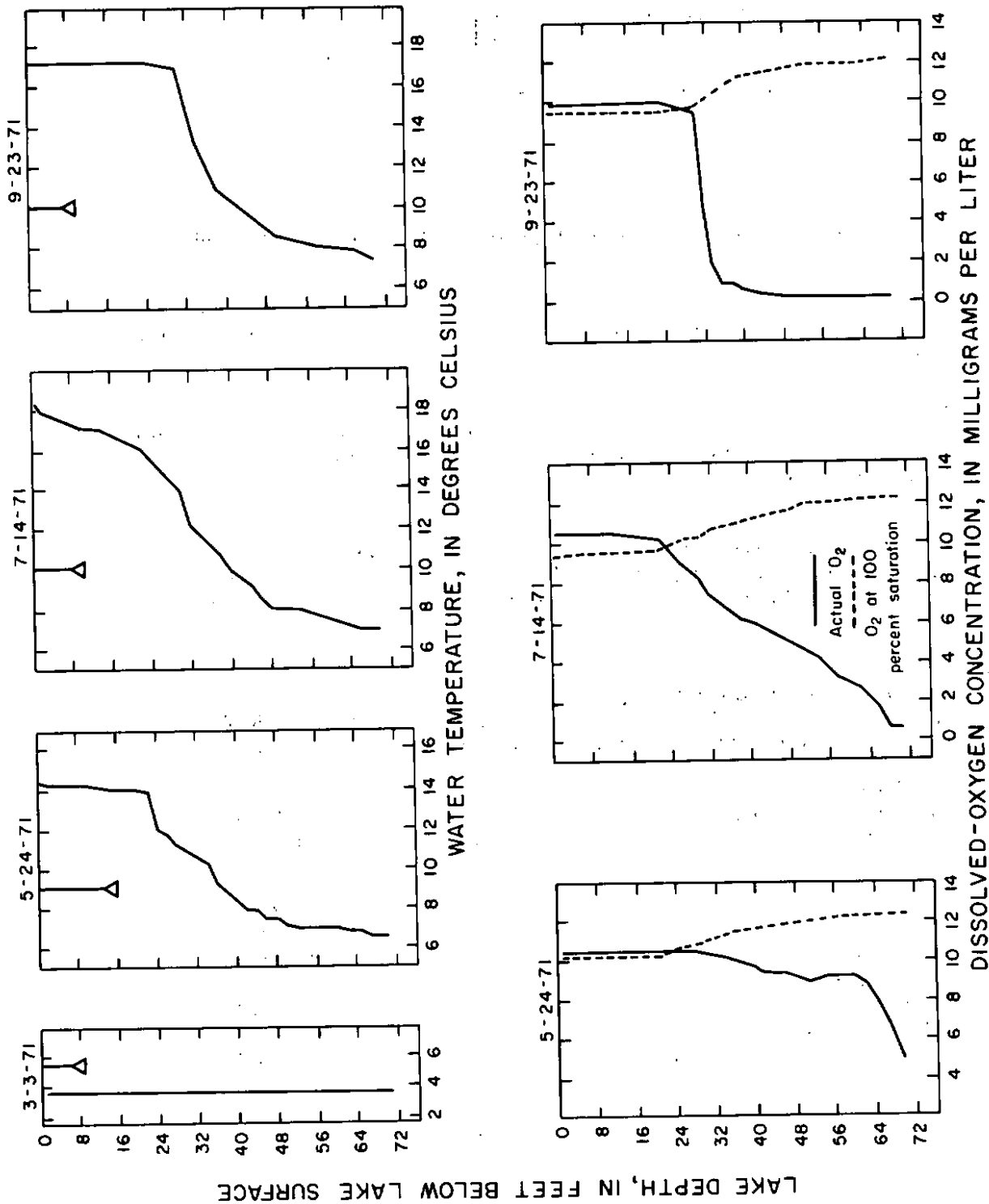


FIGURE 55.—Selected 1971 seasonal profiles of lake temperature and DO concentration in east arm of Samish Lake near Bellingham. Secchi-disc-visibility depths are indicated by bases of triangles on temperature profiles.