

**Water Quality Status Report No. 14**

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**WATER QUALITY SURVEY**

**Summary Report**

**PAYETTE LAKE**

**Summer 1973**

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Water quality studies were conducted on Payette Lake and its tributaries in July and August of 1973. Similar studies have been conducted by the Department on the lake in 1964, 1967-1969, 1971-1972. These studies were initiated to monitor the effects of sewage and industrial waste disposal practices on the water quality of the lake as well as to determine the state of eutrophication of the lake.

Payette Lake is classified as A<sub>1</sub> water except for the 100 feet of water surface adjacent to the shoreline which is class A<sub>2</sub> water. Class A waters are "primary contact recreational waters," which "are further divided into sub-classes A<sub>1</sub> and A<sub>2</sub>. Class A<sub>1</sub> is restricted to lakes and impoundments in which exceptionally high water quality exists." "Class A<sub>2</sub> includes the remainder of the primary contact recreational waters." The fecal coliform bacteria density (indicators of fecal contamination) in Class A<sub>1</sub> water shall not exceed "a geometric mean of 10/100 ml, nor shall more than 10 percent of total samples during any 30-day period exceed 20/100 ml; or greater than 50/100 ml for any single sample," according to DECS water quality standards. In Class A<sub>2</sub> waters fecal coliform concentration shall not exceed "a geometric mean of 50/100 ml, nor shall more than 10 percent of total samples during any 30-day period exceed 200/100 ml; or greater than 500/100 ml for any single sample."

On July 10 and August 8, 1973, water samples for bacteriological analysis were collected by boat from 40 of the 79 previously established stations located near public beaches and docks, private dwellings, commercially developed areas and from major tributaries. Samples for chemical

analysis were collected from five of those stations on July 11, 1973. On July 10 fecal coliform concentrations at all but two stations sampled were less than 10 per 100 ml. Two of the stations--Dead Horse Creek and Sylvan Creek--contained 10 fecal coliform bacteria per 100 ml. Eighty-four percent of the water samples collected on August 8 contained less than four fecal coliform per 100 ml. The highest concentration found was 12/100 ml near the city domestic water intake. These results compare favorably with those obtained in earlier studies. Bacteriological studies in past years indicate an increase in coliform bacteria density in the immediate vicinity of the log-storage area, but these have been determined to be primarily non-fecal in origin.

Results from chemical analysis of Payette Lake water indicate it to be of high quality. Total dissolved solids, organic matter, and nutrients are all quite low in concentration. The lake water was saturated with dissolved oxygen at all stations sampled.

A considerable amount of bark and wood debris was found on the bottom of the lake within a 250-yard radius of the log-storage area. This material may cause an increase in total volatile solids, as well as increasing the oxygen demand in the immediate area.

Payette Lake is a high quality oligotrophic (low nutrient) lake. Except for a few localized areas, bacteriological quality is high. Every effort should be made to maintain the high water quality.