

FISH MANAGEMENT PLAN
FOR
CLEAR LAKE

I. Adopted Policies and Objectives

635-500-700 Clear Lake (Lane County) shall be managed for hatchery and natural production consistent with the Wild Fish Policy under the Basic Yield alternative of Oregon Trout Plan. Adopted 10-10-90; ef. 10-15-90.

II. Introduction

The Fish Management Policy of the Oregon Department of Fish and Wildlife (ODFW) directs that fish management plans be prepared for all waters of the state. The Oregon Trout Plan, which was prepared as a secondary level of planning under the Fish Management Policy, gives the direction for preparing basin and subbasin plans as well as plans for individual rivers and standing water bodies.

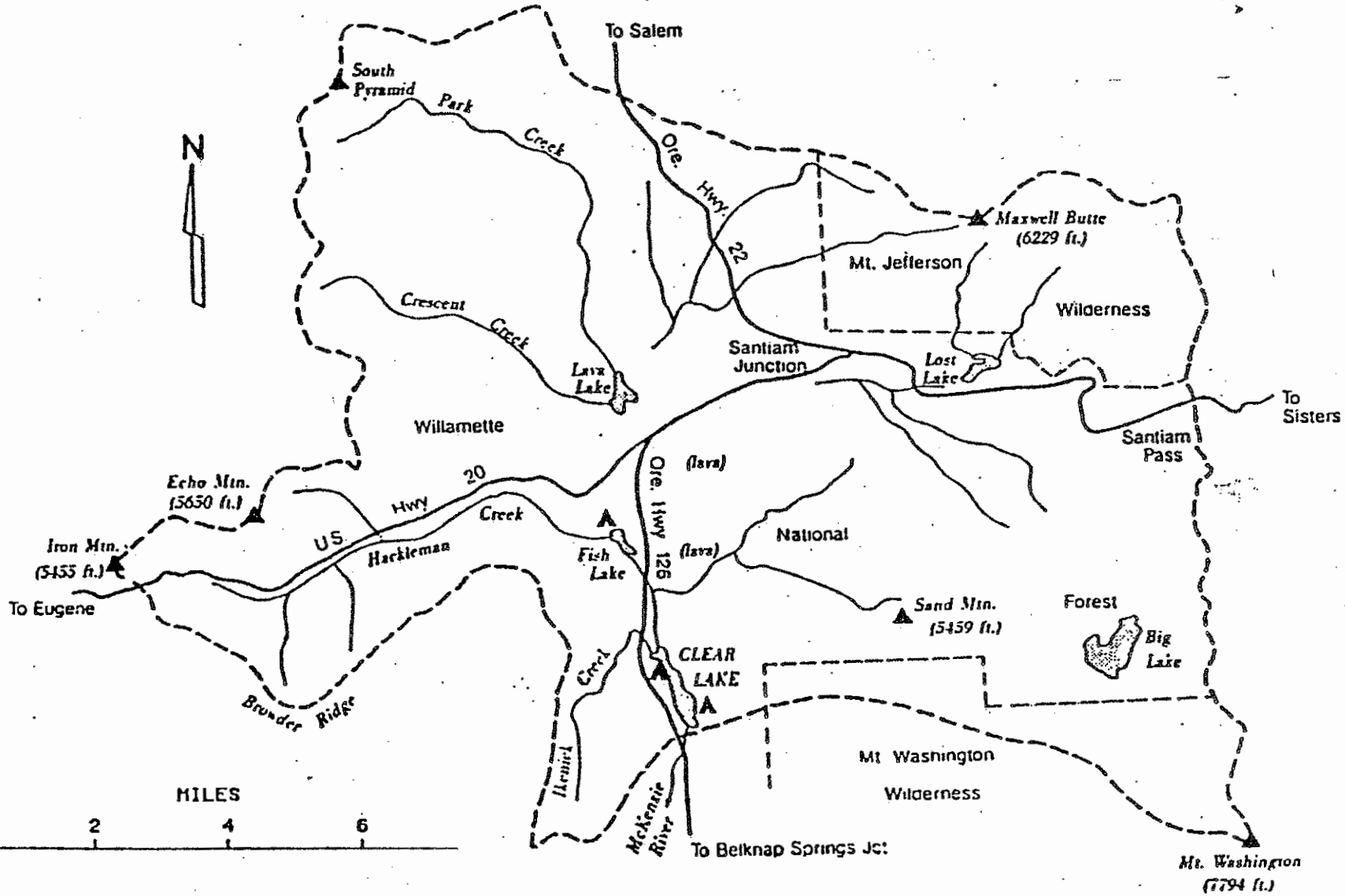
The following document is an operational plan for Clear Lake.

III. Overview

Clear Lake, the origin of the McKenzie River, is located about 80 miles east of Eugene in Linn County, Oregon (Figure 1). The 148 acre lake is within the Willamette National Forest at an elevation of 3,012 feet. Access from Highway 126 is via two short spur roads on the north and south ends of the lake. Since 1925, the Santiam Fish and Game Association has operated, under lease agreement with the Forest Service, a small resort with cabins and a boat ramp near the north end of the lake. Coldwater Cove, a Forest Service campground with a pole slide for boats, lies along the lake's southeastern shoreline. The Oregon Marine Board prohibits use of motorboats.

Clear Lake was formed about 3,000 years ago by a lava flow pouring into the upper McKenzie Valley, damming the river and ponding its water (Benson, 1965). The quickly-formed lake inundated a Douglas fir forest; dozens of fir snags remain standing on the lake floor, preserved by the cold waters. This "underwater forest" can be seen through the remarkable, clear water and is a popular destination for boaters and scuba divers.

Figur 1. Clear Lake drainage basin.



Potential hydroelectric and domestic water supply development of Clear Lake led the U.S. Geological Survey to make a complete morphological and geological study of the area in 1913 (Stearns 1928). With discovery of many sink holes in the lava dam at the lake's outlet, interest waned in the proposed Clear Lake Municipal Water and Power project.

Clear Lake has long been an attractive recreation spot. A Forest Service report in 1922 (Hall 1922) indicated that 200-300 anglers visited the lake annually. At that time anglers hiked into the lake from nearby Fish Lake on the Santiam Wagon Road. The first road access to Clear Lake was completed by the Civilian Conservation Corps in 1934; an improved year-round road was finished in 1962. Because of easy road access and a scenic mountain setting, Clear Lake has long been a favorite of high lake anglers. Records are not available on total numbers of Clear Lake anglers, but moorage records indicate that a minimum of 15,000-20,000 anglers utilized the lake annually in the mid-1970's.

IV. Fish Resources and Habitats

Surface area of the lake is 148 acres, and maximum depth 175 feet (Figure 2). The east, south and north shores of the lake consist primarily of lava flows; the banks are rugged and only sparsely timbered with an understory of vine maple and other shrubs. The west shore is of considerably older geologic origin and supports a mature Douglas fir forest.

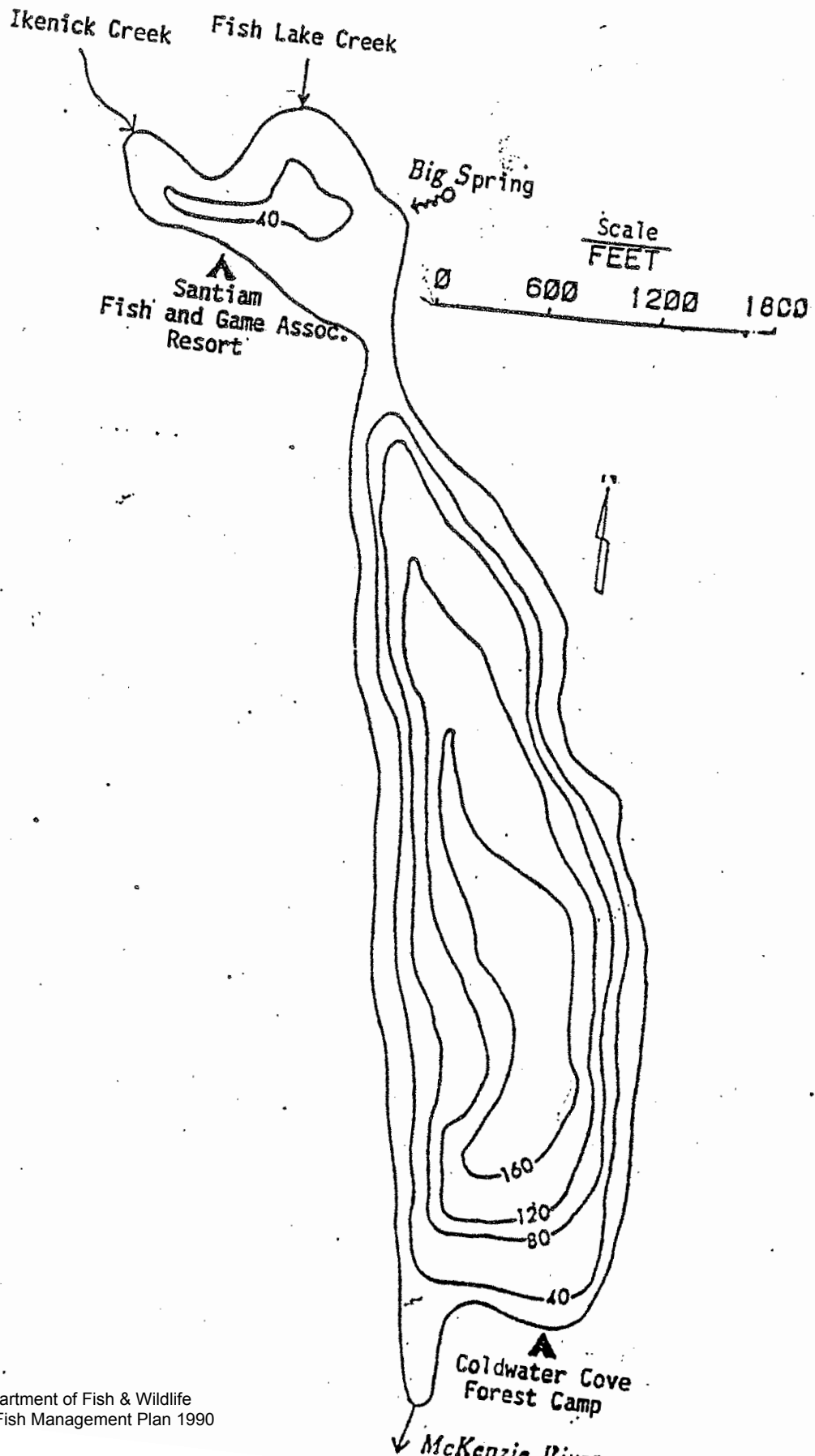
Clear Lake is fed mainly by large springs along the north and east shore. The largest of these is Big Spring, which gushes dramatically into the lake with a flow of cold (38 F) water. Fish Lake and Ikenick creeks enter the lake at the north end. Fish Lake Creek, the outlet of nearby Fish Lake, flows only during the winter and spring months, becoming dry after midsummer. Ikenick Creek is smaller but perennial.

Clear Lake is biologically unusual. Although the underwater trees are not petrified, decomposition has been very slow because of the low level of biological activity in the water. Biological activity is confined mainly to benthic algae in the northern end of the lake and to planktonic diatoms (primarily *Asterionella* and *Fragilaria*) in the southern portion (Howell 1970).

Correspondingly, the bottom sediments are almost exclusively diatom ooze, with approximately 20 feet accumulating in some areas of the lake since 1913. The shrimp genera *Hyalrella* and *Gammarus* are found distributed throughout the lake (Ziesenhenné 1938).

Temperature data indicate that the lake never stratifies and warming is essentially a surface phenomenon. Clear Lake does not completely freeze over. As the lake's name implies, the water is very transparent; Secchi disk readings exceed 100 feet. There is

Figure 2. Clear Lake depths in feet.



little growth of plankton or rooted macrophytes. The low productivity is probably related to the inflow of cold spring water. Chlorophyll and transparency data indicate that the lake is ultraoligotrophic (Johnson et al, 1985).

Cutthroat trout is apparently the only indigenous salmonid species in Clear Lake. A 1922 Forest Service report (Hall, 1922) describes Fish Lake and Hackleman Creek as being the most important spawning and juvenile rearing habitat for Clear Lake trout. Hackleman Creek was closed to angling at or before that time to provide a spawning sanctuary. The report also mentions that "hundreds of thousands" of fish were planted in Clear Lake each year, but no species is listed. The earliest documented record of stocking was 26,000 cutthroat released in the lake in 1931.

In 1938 the Forest Service (Ziesenhenné 1938) reported that Montana black spotted cutthroat had been stocked in Clear Lake several times. Game Commission records then are incomplete, but these fish probably did not survive their pure form. Cutthroat examined in recent years from Clear Lake and tributaries appear similar to other Cascade Mountain cutthroat populations.

During this same period (1930s) Roaring River Hatchery personnel attempted to develop hatchery stock using Hackleman Creek cutthroat. These fish were deemed unsuitable for hatchery use when, after four years in the hatchery, the maximum size attained was fourteen inches. Most of these fish matured near six inches in length.

Rainbow trout first appear in Oregon State Game Commission stocking records for Clear Lake in 1933 when 10,850 fingerlings were planted. Rainbow are indigenous to the McKenzie River, but are probably not native to Clear Lake and upstream tributaries. Stream surveys of Hackleman and Ikenick creeks in 1980 and 1983, respectively, found abundant cutthroat but only one rainbow trout (in Hackleman Creek), which was probably a legal-size hatchery fish released into Clear Lake.

Catchable-sized (8"-12") hatchery rainbow have been released annually into Clear Lake since 1947. These fish are a fall spawning variety which probably do not spawn in Fish Lake Creek since it is dry most fall and early winters. There is no record of natural reproduction by rainbow in Clear Lake or its tributaries.

A creel survey was conducted on Clear Lake from 1952 to 1957. Results indicated that (1) legal rainbow stocked during the trout season were caught at a higher rate than fish stocked pre-season; (2) legal rainbow do survive over winter and, as expected, highest returns to anglers (63%) were during the season of release (only 10% were captured the second season); (3) wild cutthroat trout comprised less than 2% of the catch most years; (4) rainbow from fingerling releases tended to migrate from the

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