



Summer Lake

Lake County

Goose/Summer Basin

Location		
Area	25,000 acres (10,117.5 hect)	Elevation 4,146 ft (1,263.7 m)
Type	natural lake	Use wildlife habitat
Location	7 miles northw est of Paisley	
Access	from state w ildlife management are at N end of lake off Ore Hw y 31	
USGS Quad	South of Ana River (24K), Lake Abert (100K)	
Coordinates	42° 45' 05" N, 120° 43' 55" W	
USPLSS	tow nship 33S, range 17E, section 05	

Summer Lake is a large, shallow lake lying in an enclosed fault-block basin in south-central Oregon. Its major source of supply is the spring-fed Ana River and small snow-fed streams that rise on adjacent Winter Ridge. Summer Lake has no outlet and serves as an evaporation sump. The lake was discovered by Captain John C. Fremont in December, 1843. As he looked down from the ridge, which his party had climbed from the west, he saw the sun shining on the grass bordered lake. The contrast was so great that he named the mountain Winter Ridge and the lake Summer Lake. Winter Ridge is covered with timber, but the rest of the Summer Lake drainage basin is an arid landscape and supports only desert-type vegetation.

Summer Lake is very broad and shallow. At high stages (elevation 4149-4151 feet) it is about 15 miles long, about five miles wide, and covers an area of about 38,000 acres; yet its maximum depth is only five to seven feet. However, that level has rarely been attained in recent years. The flow of Ana Springs has decreased due to impoundment of the river and submergence of the spring orifices in 1923. There has also been increased use of water for irrigation. Therefore, inflow to the lake is less, and the average water level is now lower. There is considerable fluctuation between wet and dry years, and the lakebed has been almost entirely dry in the summers of many years since 1923. In 1981, for example, the lake was reduced to a stream channel surrounded by marshy areas. In all years, macrophytes are extremely abundant and serve as ideal waterfowl habitat. The marshy area at the northern end of the lake is managed as the 18,000-acre Summer Lake Wildlife Area.

The water quality in Summer Lake is influenced by both the shallow, marshy character and the extensive evaporation typical of this arid region. The total phosphorus concentration was 6.4 mg/l when sampled on 8/9/82, by far the highest of any lake in this survey. Chlorophyll was also very high (53.1 ug/l), although macrophytes and attached algae may have contributed more to this chlorophyll concentration than did phytoplankton. Zooplankton were observed to be abundant. High evaporation rates result in "alkali" conditions, with a very high conductivity (7000 umhos/cm) and high concentrations of major ions. All major ions are abundant except calcium and magnesium, which probably precipitate out of the water column. Only nearby Abert Lake has a higher conductivity. The water quality characteristics are distinctly hypereutrophic according to lake classification schemes. However, Summer Lake should be viewed and managed more as a marsh than a lake.



Source: OR Dept. Transportation, no date. View looking north.

Drainage Basin Characteristics							
Area	376.0 sq mi (973.8 sq km)		Relief	moderate		Precip	10-25 in (25-64 cm)
Land Use %	Forest	Range	Water	Agriculture Irrig	Non Irrig	Urban	Other
	7.0	50.0	13.0	4.0	1.0	-	25.0
Notes -							
Lake Morphometry				Maximum		Average	
Area	25,000.0 acres (10,117.5 hect)		Depth	2 ft (0.6 m)		1ft (0.3 M)	
Ave/Max Depth Ratio		0.500	Volume	25,000 acre ft (30.88 cu hm)			
Shoal area	100%	Volume factor	1.50	Shape factor	1.57		
Length of Shoreline		35. mi (56.3 km)		Retention time	3.5 yr		
Notes -							
Water Quality							
Trophic status	hypereutrophic, marshy, alkali lak						
Sample date	08/09/82		Temp	-		Diss. Oxygen (mg/l)	-
Transparency	0.3 ft (0.1 m)		Phosp (mg/l)	6.400		Cholorophyl a (mg/l)	53.1
Alkalinity	2649		Conductivity (umhos/cm)	7000		pH	9.7
Major Ions	Na	K	Ca	Mg	Cl	SO4	
	1947.0	106.0	3.6	2.0	5747.0	239.0	
Notes -							

