

Owyhee Lake Malheur County Owyhee Basin

Loc	ation			
Area	13,900 acres (5,625.3 hect))	Elevation	2,670 ft (813.8 m)
Type	reservoir	Use	irrigation, recreation	
Location	21 miles southwest of Nyss	sa		
Access	27 miles on paved road from	n Ore	Hwy 201 south of N	yssa
USGS Quad	Ow yhee Dam (24K), Vale (100K)		
Coordinates	43° 38' 31" N, 117° 14' 29" N	Ν		
USPLSS	tow nship 22S, range 45E,	sectio	on 20	

Lake Owyhee is the largest reservoir in Oregon. It covers an area of 13,900 acres and winds its way along 52 miles of the spectacular Owyhee River canyon in the southeast corner of the state. Owyhee Dam is a 417-foot high concrete arch structure, constructed from 1928 to 1932 by the U.S. Bureau of Reclamation. Owyhee Dam and Lake Owyhee are the core of the Owyhee Project, which furnishes irrigation water for 105,249 acres of land lying along the west side of the Snake River in eastern Oregon and southwestern Idaho. The project consolidated several ditch companies and irrigation districts that formerly obtained water from the Owyhee River, Succor Creek, and the Snake River. Approximately 72 percent of the project's acreage is in Oregon and 28 percent in Idaho. The project also includes 172 miles of canals, 543 miles of laterals, 9 pumping plants, and 227 miles of drains. Water is released from the lake through a 3.5-mile tunnel to Tunnel Canyon where it is run into North and South Canals. The North Canal distributes water to the Mitchell Butte and Dead Ox Flat Divisions near the towns of Nyssa and Ontario. The South Canal distributes water south to the Succor Creek Division near Homedale, Idaho. Originally, the irrigation works were designed to supply water to the entire project by gravity from Lake Owyhee. Because of the irregular flow of the Owyhee River, water users found it advisable to store a two-year supply. This storage is made possible by utilizing water pumped from the Snake River to irrigate 35,000 acres of lower lying land.

The "Owyhee Country" had been visited by scouts, traders, and trappers in the early part of the nineteenth century, and the name "Owyhee" is derived from the old way of spelling "Hawaii". A number of natives from the Hawaiian Islands were brought to the Pacific Northwest to work as laborers for the Hudson's Bay Company and the Northwest Company. They were also used as boatmen to transport fur traders into the Snake River country. Peter Skene Ogden was the first to make note of this fact in the report on his second Snake River expedition in 1826. He noted that two islanders had been killed near the river in 1819 by Snake Indians, and the river was named for these Hawaiians. The river drains a large area in Oregon and western Idaho, and there are several other geographic features bearing the name, derived from the name of the river.

The drainage basin of the river is generally coincident with the physiographic province called the Owyhee Uplands. It is a semiarid region characterized by a moderately to highly dissected upland surface with few perennial streams. The Owyhee River rises in Nevada and also flows through Idaho and Oregon to its junction with the Snake River near Nyssa. Several tributaries join it along its course, although only three (the Little Owyhee River, Jordan Creek, and Rattlesnake Creek) are perennial. The drainage pattern is well developed and there is little interior drainage in the region. Elevations range from over 6000 feet above sea level in the Mahogany Mountains to 2670 at the lake surface. Most of the precipitation occurs during the winter and at higher elevations. On an average annual basis, low precipitation produces relatively low runoff although large variations can be expected on both an annual and seasonal basis. Natural flows, except for those resulting in snowmelt in the spring, are usually quite low. Average discharge of the Owyhee River above the reservoir is 670,000 acre-feet per year, with nearly 70 percent of this coming in March, April, and May.

Lake Owyhee has about 150 miles of shoreline twisting through a canyon of rugged and spectacular beauty. Although the area is remote and the lake has only two points of access, it has developed an excellent warm-water fishery and experiences heavy recreational use. It has become noted for its largemouth bass and crappie angling. Some rainbow trout are also taken. The lake also provides excellent waterfowl hunting, and the surrounding hills and canyons offer many opportunities for the pursuit of upland gamebirds. There is also extensive use for pleasure boating and water-skiing. An excellent state park was established in 1958 adjacent to the lower end of the lake. It includes picnic grounds, a campground, and boat launching ramps. The upper end of the lake also marks the terminus of whitewater raft trips down a spectacular stretch of the Owyhee River.

The major influence on water quality in this reservoir is from the inflowing Owyhee River. The drainage basin has a surface water runoff problem, which results in very high phosphorus and major ion concentrations in the reservoir. Although on 9/7/82 total phosphorus concentration of 0.045~mg/l was measured, a more extensive survey performed by EPA (1978) reported most values near 0.100~mg/l. Conductivity was 160~umhos/cm on Source: US Bureau of Reclamation, no date.



Source: US Bureau of Reclamation, no date.

Drainage Basin Characteristics									
Area 11,16	_				erate	Precip 10-	25 in (25	-64 cm)
71.04	0.0 00	, (20	,00 0 4	.,	Agricu		20 (20	0.0	,
Land	Fores	et F	Range	Water	Irrig		Urb	an	Other
Use %			93.2	0.4	0.3	-		uii	5.6
Notes O				0.4	0.0				0.0
Notes		Lavain	JW 5						
Lak	е Мо	rphom	etry		Maxi	m um	Aver	age	
Area 13,90	0.0 ac	res (5,	625.3 hect)	Dept	h 117 ft	(35.7 m)	81ft (2	4.6 M)	
Ave/Max	Depth	Ratio	0.690	Volum	e 1,122,0	00 acre ft (1	,386.00	cu hm)	
Shoal area	a 4%		Volum e fa	ctor -	Sh	ape factor	8.33		
Lenath o	f Sho	reline	125. mi (20)1.2 km)	R	etention tir	me 1.7	vr	
Length of Shoreline 125. mi (201.2 km) Retention time 1.7 yr Notes Data are from Envirronmental Protection Agency (1978)									
Wa	ter Q	uality							
Trophic st	atus	eutroph	nic, high pho	sophorous	levels deri	ved from inle	et		
Sam ple	date	09/07/8	32	Temp	73.4F (23.0	Diss.	Oxygen	(m g/l)	8.3
Transpare	ency	5.9 ft (1.8 m)	Phosp (r	ng/l) 0.04	45 Cholor	ophyl a	(m g/l)	1.4
Alkal	inity	62	Conduc	ctivity (um	hos/cm)	160		рН	8.4
Majo	r Ńa		K	Ca	Mg	CI	SO4		
lons	12.	7	3.0	12.6	3.7	3.9	11.7		
Notes									

9/7/82, reflecting high concentrations of major ions. According to McHugh (1972) there is no evidence of enrichment from human sources. Reservoirs located in arid or semiarid areas with unleached soils are usually well-provided with essential nutrients, so that productivity is high. Nutrients are obtained from the bottom mud and from inflowing streams.

The phytoplankton density is fairly high, but not as high as would be predicted from the phosphorus concentration. The phytoplankton are probably light limited to some extent as a result of the suspended sediment in the water, which is also derived from the inlet. Water transparency is low 5.9 feet (1.8 meters), and is influenced by the suspended sediment. On 97/82, a light bloom of Aphanizomenon flos-aquae was evident in the reservoir, but was not detected in the sample collected near the dam. However, on downwind shores the Aphanizomenon density was quite high, and piles of the blue-green alga were found along the shoreline. This alga is a problem in several embayments where the winds frequently concentrate it.

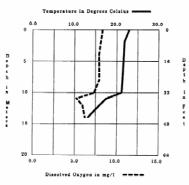
The reservoir stratifies in summer at about 36 feet (11 meters) deep. The surface water warms appreciably, and the entire epilimnion (surface to 30 feet; 10 meters) was warmer than 70 degrees Fahrenheit (21 degrees Celsius) on 9/7/82. The hypolimnion experiences partial dissolved oxygen depletion, but there are no records of the hypolimnion becoming totally anoxic. Due to a rocky bottom, steeply sloping littoral zones, and a limited water transparency, there are only occasional macrophytes. All indicators of trophic state place Owyhee Reservoir in the eutrophic category.

Phytoplankton Surveys:

9/7/82

Alga	#/m1	%
Stephanodiscus astrea minutula	161 95	47.8 28.2
Stephanodiscus sp. Rhodomonas minuta	48	14.2
Cryptomonas erosa others (3)	24 9	7.1 2.7
Total	337	100.0

TEMPERATURE AND OXYGEN





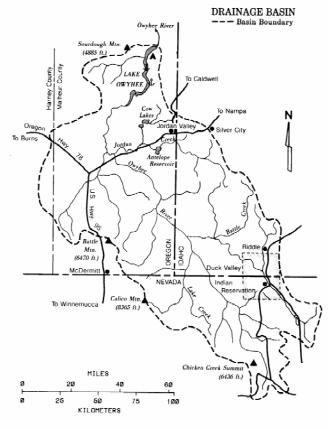


Photo Captions

- 2.
- Owhyee Lake Dam Owyhee River Lake Owyhee State Park 4.