

WASHINGTON LAKE



Introduction

Washington Lake is just west of Trial Lake in the Mirror Lake area of the High Uintas. It is an intermediate size natural lake that was enlarged with an earth-fill dam, a commonly practice to store spring snowmelt for use in summer irrigation. The original dam was completed in 1914, although plans were developed in 1910 for construction. The Union Reservoir Company manages

the release of water from the lake to shareholders of the Timpanogos Canal Company or Provo City. The original construction of these primitive rock and dirt dams required a lot of manual labor. It has been reported that as many as 600 men with 300 teams of horses were required to construct more than a dozen of these facilities over a period of twenty-plus years. Most of the work occurred between June 10 and Labor Day each year. As primitive as these dams may have been only once did one of the

Characteristics and Morphometry

Lake elevation (meters / feet)	3,049 / 10,000
Surface area (hectares / acres)	38.1 / 94
Watershed area (hectares / acres)	577 / 1,426
Volume (m ³ / acre-feet)	
capacity	5,180,000 / 4,195
conservation pool	0
Annual inflow (m ³ / acre-feet)	
Retention time (years)	
Drawdown (m ³ / acre-feet)	
Depth (meters / feet)	
maximum	16.2 / 53
mean	6.1 / 20
Length (meters / feet)	110 / 3,600
Width (meters / feet)	427 / 1,400
Shoreline (km / miles)	2.56 / 1.59

Location

County	Summit
Longitude / Latitude	110 58 01 / 40 40 32
USGS Map	Mirror Lake, UT 1967
DeLorme's Utah Atlas & Gazetteer™	Page 54, B-3
Cataloging Unit	Provo (16020203)

barriers fail. In 1986 Trial Lake dam broke, but has since been reconstructed too. As the impounded water is drawdown for irrigation needs a barren lake bed between the undrainable original lake and the dam's high water line develops.

The shoreline is owned by the Wasatch-Cache

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National Forest, and public access is unrestricted. Water

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use is primarily for irrigation, but can be used as supplementary culinary water. As part of the CUP, Washington Lake was stabilized in the fall of 1994 with the reconstruction of the dam. This lake will continue to act as a reservoir to provide downstream irrigation water. Other stabilized lakes will include Trial Lake and Lost Lake. Other lakes in the area, will be stabilized as lakes to improve the scenic and recreational value, but eliminating the lakes' ability to function as a reservoir.

Recreation

Washington Lake is in the Trial Lake area located on U-150 about four miles east of Mirror Lake or 32 miles east of Kamas. Turn left at the Trial Lake turnoff and turn left again after about 0.25 miles, follow the road for about 0.5 miles. The lake is northwest of the junction near Washington Lake. It is possible to drive a vehicle to the lake, but unless the road has been improved, high clearance vehicles are recommended.

Fishing, camping, picnicking, scenic beauty and hiking are all popular. Even though the watershed is fairly small, there are a number of upstream natural lakes. Air and water temperatures are too cold for most swimmers. The backdrop of high, barren peaks are reflected in the still water of the lake.

The area receives moderate recreational use throughout the summer. U-150 is closed during the winter and much of the spring, but groomed for cross country skiers, snowmobilers and hikers. The low water level from early summer to the following spring leaves large areas of mud exposed.

Although primitive camping is allowed in the area of Washington Lake, Trial Lake Campground is on the east shore of Trial Lake, with 60 campsites, picnic areas, and primitive toilets. There are several other USFS campgrounds along U-150 throughout the area. Call the Kamas Ranger District for complete backcountry camping information and regulations.

Watershed Description

Washington Lake is in an area of numerous lakes and meadows interspersed with high, alpine peaks. In this area of the Uintas, most of the high peaks have been scoured away, leaving isolated peaks, rather than the ridgelines characteristic of the central part of the range.

Defining the west edge of the watershed are Haystack Mountain and Mount Watson. Mount Watson is



watershed high point, is 3,512 m (11,521 ft) above sea level, thereby developing a complex slope of 18.9% to the lake. There are two small streams entering the lake, the average gradient being 2.5% (130 feet per mile). The inflows drain small natural lakes in the watershed, including Azure Lake, Shadow Lake, Tail Lake, and Crystal Lake.

The watershed is made up of high mountains, lakes, and rocky outcroppings. The soil associations that compose the watershed are listed in Appendix III.

The vegetation communities consist of marshes, pine, spruce-fir, aspen, and alpine. The watershed receives 76 - 102 cm (30 - 40 inches) of precipitation annually. The frost-free season around the reservoir is 0 - 20 days per year.

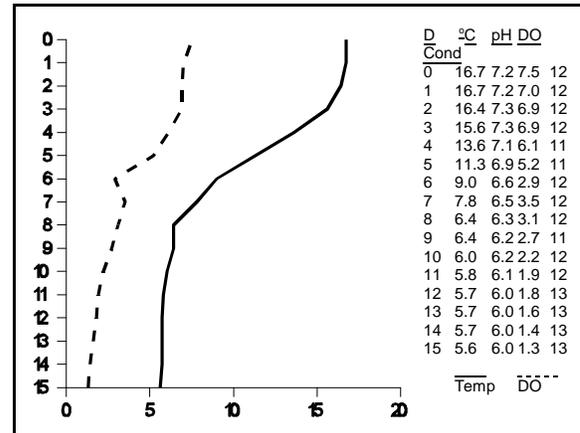
What use of watershed land takes place is 100% recreation. The pristine nature of the area is a result of its unsuitability to other forms of exploitation by humans.

Limnological Assessment

The water quality of Washington Lake is very good. It is considered to be very soft with a hardness concentration value of approximately 8.1 mg/L (CaCO₃). Although there are no overall water column concentrations that exceed State water quality standards there are reported violations of parameters near the bottom of the lake. These parameters include phosphorus, dissolved oxygen and pH. At various times of the year in the hypolimnion of the lake oxygen deficiencies develop. As is apparent in the August 4, 1992 profile dissolved oxygen quickly diminishes below the thermocline. Below the 5 meter depth dissolved oxygen is well below the concentration needed to support a viable fishery. In addition these oxygen deficiencies allow for the introduction back into the water column of phosphorus bound up in the sediments. This is evident that the only values to exceed the state pollution indicator of 25 ug/L was obtained near the bottom of the reservoir at 40 ug/L. In addition pH values tend to decline downward in the

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Limnological Data	
Data sampled from STORET site: 591626	
Surface Data	1992
Trophic Status	M
Chlorophyll TSI	35.81
Secchi Depth TSI	48.97
Phosphorous TSI	39.97
Average TSI	41.59
Chlorophyll <i>a</i> (ug/L)	1.7
Transparency (m)	2.2
Total Phosphorous (ug/L)	12
pH	6.5
Total Susp. Solids (mg/L)	<3
Total Volatile Solids (mg/L)	-
Total Residual Solids (mg/L)	3
Temperature (°C / °f)	14/57
Conductivity (umhos.cm)	14
Water Column Data	
Ammonia (mg/L)	0.04
Nitrate/Nitrite (mg/L)	0.01
Hardness (mg/L)	8.1
Alkalinity (mg/L)	5
Silica (mg/L)	1.4
Total Phosphorous (ug/L)	20
Miscellaneous Data	
Limiting Nutrient	N
DO (Mg/l) at 75% depth	1.9
Stratification (m)	3-8
Depth at Deepest Site (m)	15.0



following taxa (in order of dominance)

Species	Cell Volume% Density (mm ³ /liter)	By Volume
<i>Botrydiopsis</i> sp.	0.093	30.62
<i>Haematococcus</i> sp.	0.089	29.16
<i>Pediastrum tetras</i>	0.030	9.84
<i>Scenedesmus bijuga</i>	0.022	7.29
<i>Gloeocystis vesiculosa</i>	0.017	5.47
<i>Gomphosphaeria lacustris</i>	0.014	4.56
Pennate diatoms	0.012	3.83
<i>Chroococcus</i> sp.	0.011	3.64
<i>Ankistrodesmus falcatus</i>	0.009	2.86
<i>Oocystis</i> sp.	0.008	2.73
Total	0.808	
Shannon-Weaver [H']	1.89	
Species Evenness	0.82	
Species Richness	0.46	

water column. It is apparent that some impairments do occur due to the low dissolved oxygen concentration in the water column. The extent of impairment cannot be completely ascertained without conducting additional winter monitoring when dissolved oxygen levels can be more extensive and become more critical.

Current data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is mesotrophic in a state of moderate productivity. The lake does stratify as indicated in the included profile.

According to DWR no fish kills have been reported in recent years. The reservoir supports a population of brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarki*), redbreast sunfish (*Lepomis gibbosus*), and Utah chub (*Gila atraria*). The lake was treated in 1970 for rough fish competition, so populations of native fishes may not be present in the lake.

The DWR stocks the lake annually with 5,000 catchable rainbow trout and in 1992, 8,000 fingerling brook trout were introduced.

Phytoplankton in the euphotic zone include the

The phytoplankton community is dominated by the presence of green algae.

Pollution Assessment

Nonpoint pollution sources include the following: sedimentation and nutrient loading from grazing, and litter or wastes from recreation.

Grazing takes place around the reservoir and throughout the watershed.

There are no point sources of pollution in the watershed.

Beneficial Use Classification

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).

Information**Management Agencies**

Mountainland Association of Governments	377-2262
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Wasatch-Cache National Forest	524-5030
Kamas Ranger District	783-4338

Recreation

Mountainland Travel Region (Provo)	377-2262
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Reservoir Administrator

Timpanogos Canal Company	654-1346
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