SETTLEMENT CANYON RESERVOIR

Introduction

Settlement Canyon Reservoir is an small reservoir at the base of the Oquirrh Mountains. It is at the foot of Settlement Canyon, a narrow, steep canyon immediately south of Tooele. Settlement Canyon Reservoir was created in 1966 by the construction of an earth-fill dam. The reservoir shoreline is privately owned, but public access is unrestricted. Water use of reservoir water is primarily for irrigation in addition to the recreational values.

Characteristics and Morphometry

Lake elevation (meters / feet)	1,627 / 5,340
Surface area (hectares / acres)	12.75 / 315
Watershed area (hectares / acres)	3,626 / 8,960
Volume (m^3 / acre-feet)	
capacity	1,440,989 / 1,168
conservation pool	0
Annual inflow (m^3 / acre-feet)	4,934,000 / 4,000
Retention time (years)	0.3
Drawdown (m^3 / acre-feet)	1,356,850 / 1,100
Depth (meters / feet)	
maximum	20 / 65.6
mean	7.6 / 25
Length (meters / feet)	357 / 1,172
Width (meters / feet)	191 / 625
Shoreline (meters / feet)	1,261 / 4,140

Location

County	Sanpete
Longitude / Latitude	112 17 33 / 40 30 37
USGS Maps	Sterling, UT 1966
DeLorme's Utah Atlas & Gazetteer™	Page 37 A-6
Cataloging Unit	San Pitch (16030004)

Water is released into canals for agricultural purposes, and into Tooele City's municipal irrigation system for pressurized use in residential areas. Some springs above the reservoir are piped and the water is bought by Tooele City for culinary purposes. It is anticipated that unless water conservation measures are implemented, population growth will force the city to purchase increasing quantities of water from the reservoir.

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Recreation

Settlement Canyon Reservoir is accessible from U-36 just south of Tooele. From downtown, go south on Main Street. At the south end of town the road meets the Oquirrh Mountains and bends towards the west, the residential area ends, and there is a white, windowless Masonic Lodge on the left. Turn left at the lodge, and go up the canyon for about 1/2 mile to the reservoir. The reservoir is close enough to the city that Howard Clegg, former president of the Settlement Canyon Irrigation Company, said "any kid in town could go up there and fish if he had a little ambition"

Fishing is the only recreational use permitted on the reservoir. The reservoir and surrounding area are privately owned, and public use is a privilege. Remember you are a guest.

The county constructed some toilet facilities near the reservoir, but they have been heavily vandalized. Legion Park Campground is located one mile up the canyon from the reservoir. There are no other private or public campgrounds in the area.

Watershed Description

Settlement Canyon Reservoir an impoundment of Settlement Creek in the Oquirrh Mountains. The canyon is steep and narrow, resulting in a small, deep reservoir. The entire watershed is homogenous, consisting of deeply dissected mountains. Slopes are very steep (>40%) throughout the watershed. There is some evidence of glaciation at the head of Settlement Canyon.

The watershed high point, a peak on the ridge at the headwaters of Settlement Creek, is 3,162 m (10,373 ft) above sea level, thereby developing a complex slope of 16.7% to the reservoir. The average stream gradient above the reservoir is 9.7% (514 feet per mile). The inflow is Settlement Canyon Creek, which is fed by snowmelt from the high Oquirrh Mountains and several springs immediately upstream from the reservoir (some of these are piped). The outlet is Settlement Canyon Creek.

The soil associations that compose the watershed are listed in Appendix III.

The vegetation communities consist of sagebrush-grass and pinyon-juniper. Spruce-fir and alpine vegetation commuties are probably found at higher elevations. The watershed receives 41 - 102 cm (16 - 40 inches) of precipitation annually. The frost-free season around the reservoir is 140 -160 days per year.

According to the 1982 Clean Lakes Inventory, land use is entirely native grazing of mostly cattle and possibly sheep with some recreational use.

Limnological Assessment

The water quality of Settlement Canyon Reservoir is very good. It is considered to be hard with a hardness concentration value of approximately 192 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 or on occasion at a specific depth in the water column. These parameters include phosphorus and dissolved oxygen. Neither of these exceedences appears to be effecting the defined beneficial uses established for the reservoir and have little effect on the overall water quality of the reservoir.

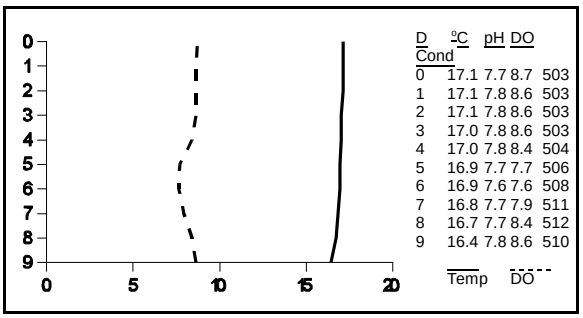
Current data suggest that the reservoir is currently a phosphorus limited system. TSI values indicate the reservoir is oligotrophic to mesotrophic system in a state of low productivity. Although the profile shown of August 24, 1992 does not show it, stratification has been evident during other years.

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*) and brown trout (*Salmo trutta*). The lake has not been treated for rough fish

Limnological Data

Data sampled from STORET site: 596020

Surface Data	1981	1990	1992
Trophic Status	M	O	M
Chlorophyll TSI	-	48.81	49.62
Secchi Depth TSI	40.02	52.78	43.93
Phosphorous TSI	43.2	17.35	50.26
Average TSI	41.61	39.65	47.94
Chlorophyll a (ug/L)	-	6.4	6.9
Transparency (m)	4.1	1.7	3.1
Total Phosphorous (ug/L)	10	3	25
pH	8.3	8.2	7.9
Total Susp. Solids (mg/L)	<5	4.8	2.8
Total Volatile Solids (mg/L)	-	-	2
Total Residual Solids (mg/L)	-	-	2
Temperature (°C / °f)	16/61	20/68	16/61
Conductivity (umhos.cm)	360	678	487
Water Column Data			
Ammonia (mg/L)	0.08	0.04	0.03
Nitrate/Nitrite (mg/L)	0.08	0.36	0.32
Hardness (mg/L)	188	203	185
Alkalinity (mg/L)	181	188	197
Silica (mg/L)	-	-	9.0
Total Phosphorous (ug/L)	10	2	15
Miscellaneous Data			
Limiting Nutrient	P	P	P
DO (Mg/l) at 75% depth	11.2	5.2	7.9
Stratification (m)	4-6	NO	NO
Depth at Deepest Site (m)	20	12.7	9.0



competition, so populations of native fishes may still be present in the lake. Current stocking reports indicate that DWR stocks the lake in excess of 15,000 catchable rainbow trout annually.

Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm^3/liter)	% Density By Volume
Sphaerocystis schroeteri	7.923	57.82
Dinobryon divergens	4.208	30.71
Ceratium hirundinella	0.936	6.83
Gloeocystis sp.	0.334	2.43
Pennate diatoms	0.189	1.38
Oocystis sp.	0.044	0.32
Ankistrodesmus falcatus	0.035	0.25
Centric diatoms	0.018	0.13
Unknown spherical green alga	0.017	0.12
Total	13.700	
Shannon-Weaver [H']	1.06	
Species Evenness	0.48	
Species Richness [d]	0.34	

The phytoplankton community is dominated by the presence of green algae and flagellates indicative of fairly good water quality.

Pollution Assessment

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

Point pollution sources include the following:

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	
Wasatch Front Regional Council	292-4469
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Recreation	
Great Salt Lake Country Travel Region (SLC)	596-9222
Tooele Chamber of Commerce	882-0690
Reservoir Administrators	
Settlement Canyon Irrigation Company	882-0257