

GUNNISON BEND RESERVOIR



Introduction

Gunnison Bend Reservoir is a moderate sized reservoir in the eastern Sevier Desert immediately downstream from Delta, Utah. The reservoir is an impoundment of a large horseshoe bend in the river

impoundment of the Sevier River. Much of the water has been removed by upstream users, and all of the remaining water is removed for irrigation at Gunnison Bend. The last time water flowed into the river below the reservoir was during the 1983 flood, which also washed out the dam. It was rebuilt in 1984.

Characteristics and Morphometry	
Lake elevation (meters / feet)	1,408 / 4,619
Surface area (hectares / acres)	285 / 706
Watershed area (km ² / miles ²)	13,913 / 5,372
Volume (m ³ / acre-feet)	
capacity	6,170,000 / 5,000
conservation pool	None
Annual inflow (m ³ / acre-feet)	unknown
Retention time	weekly (in summer)
Drawdown (m ³ / acre-feet)	3 / 9
Depth (meters / feet)	
maximum	7 / 24
mean	3 / 9
Length (km / miles)	3.1 / 1.9
Width (km / miles)	0.76 / 0.47
Shoreline (km / miles)	10.3 / 6.4

Location	
County	Millard
Longitude / Latitude	112 37 07 / 39 21 03
USGS Map	Delta 1986, Hinckley 1986
DeLorme's Utah Atlas & Gazetteer™	Page 36, A-2
Cataloging Unit	Lower Sevier (16030005)

Gunnison Bend Reservoir was created in 1895 by the construction of an earth-fill dam. The reservoir shoreline is almost entirely privately owned, with BLM land on the western tip of the peninsula and in the northeast corner of the lake. The shore is about 89% privately owned. Public access is restricted to public lands.

valley. It is the last

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Visitors are encouraged to be sensitive to the desires of private landowners.

Recreation

Gunnison Bend Reservoir is west of Delta on US-6. The simplest access is directly west of Delta—cross the railroad tracks on the viaduct, and continue straight ahead (due west) to the reservoir (this requires a right turn, continuing on a county road as US-6 bends south, then a left turn to continue on a smaller road as the county road bends north).

Other access is from the south, on US-6 just west of the Sevier River bridge. This road leads to the peninsula and up the west side of the reservoir to the county park. There is a golf course south of the reservoir.

The lake is used for fishing, swimming, boating, waterskiing and picnicking. Usage is fairly heavy. The county park on the west side of the lake has a sanded beach, a boat ramp, and picnic areas. There are several RV Parks in Delta (see info box).

Watershed Description

Gunnison Bend Reservoir is an impoundment of the Sevier River Valley, a serpentine channel cut through alluvial deposits on the desert floor. The valley is about 1/2 mile wide and 80' deep. The reservoir impounds a segment of the valley about 2.5 miles long, but due to meandering the distance from the top of the reservoir to the dam is only about 1.5 miles.

The watershed covers the entire Sevier River Drainage, from The Paunsaugunt and Markagunt Plateaus in the south, the west face of the Escalante Mountains, the Awapa Plateau, the Sevier Plateau, the east slopes of the Tushars and Pavant Ranges, the San Pitch Mountains, and the east face of the Wasatch Plateau. Everything from Bryce Canyon N.P. to Nephi drains into Gunnison Bend.

The watershed high point, Delano Peak in the Tushar Mountains, is 3,709 m (12,167 ft) above sea level, thereby developing a complex slope of 2.0% to the reservoir. The inflow is the Sevier River. There are several outlets from the reservoir: Abraham Canal, Hinckley High Ditch, Lowline Canal, and occasionally, the Sevier River channel. The average stream gradient above the reservoir is 0.02% (8 feet per mile).

The watershed contains substantial amounts of all the major soil types found in the state. See Appendix III for soil composition data.

The vegetation communities consist of pine, spruce-fir, aspen, oak-maple, pinyon-juniper, sagebrush-grass, bitterbrush, shadscale, and greasewood. The watershed receives 20 - 102 cm (8 - 40 inches) of precipitation annually. The frost-free season around the reservoir is 140 - 160 days per year.

The largest use of land in the watershed is multiple

use land (69.6%). These lands are administered by the BLM, USFS, and the State of Utah. Grazing, recreation, and limited logging occur on many areas of these lands. Native grazing (mostly cattle and sheep) comprise 18.5% of the watershed. Irrigated cropland (7.2%), pasture and hayfields (4.1%), wildlife (3.5%), urban (0.7%), and recreation (0.05%) make up the remainder of the watershed. The majority of the watershed is used for livestock grazing.

Limnological Assessment

Before the Sevier River was dammed, the river emptied into Sevier Lake, about 30 miles southwest of Delta, where the water subsequently evaporated. Because of the high evaporative potential of the river flowing across the desert, many constituents in the water become increasingly concentrated. This is not as apparent in the upper reaches of the river, but when water reaches Delta, it is very hard and nutrient-rich. Total dissolved solids are very high. Gunnison Bend Reservoir is only slightly upstream from Sevier Lake, and typically it loses much water to evaporation.

Gunnison Bend Reservoir is used as a storage reservoir for the Delta area. During the growing season, water is released from the Sevier Bridge Reservoir and stored in Gunnison Bend or the DMAD. During the irrigation season, the retention time is only 2-3 days, mitigating the problem of high evaporation rates. The water level can go up and down several times during the summer.

The water quality of Gunnison Bend Reservoir is good. It is considered to be very hard with a hardness concentration range in excess of 400 mg/L (CaCO₃).

Gunnison Bend Reservoir is in compliance with all parameters except total Phosphorous. The State Pollution Indicator level is 0.025 mg/l, and the reservoir averages 0.063 mg/l. This has a negative effect on aquatic life, but does not impair water use for irrigation or industrial cooling.

The reservoir never stratifies as indicated in the September 8, 1992 profile due to insufficient depth and is a nitrogen limited system. TSI values are consistently over 60 and indicate that the system is hypereutrophic. Productivity appears to be reduced which may result from higher turbidity and alkalinity. Macrophytes do not appear to be a problem but they are present in the littoral areas of the reservoir.

Because of the vast size of the watershed, it is unlikely that any specific measures can be done to reduce phosphorous inputs. Upstream reservoirs are also plagued with eutrophism. Water quality improvement projects in various portions of the watershed will help, but given the concentrated nature of chemicals in the lower

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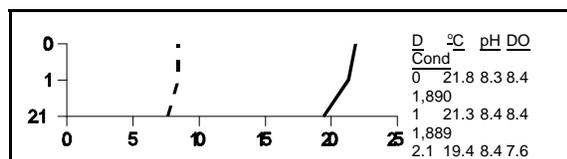
Limnological Data			
Data averaged from STORET sites: 494123, 494124, 494125			
Surface Data	1979	1990	1992
Trophic Status	H	H	H
Chlorophyll TSI	-	45.20	44.55
Secchi Depth TSI	69.99	79.57	80.81
Phosphorous TSI	71.16	67.46	56.65
Average TSI	70.58	64.08	60.68
Chlorophyll <i>a</i> (ug/L)	-	4.8	4.8
Transparency (m)	0.5	0.3	0.2
Total Phosphorous (ug/L)	20	80	42
pH	8.4	8.4	8.3
Total Susp. Solids (mg/L)	-	39	44
Total Volatile Solids (mg/L)	-	-	8
Total Residual Solids (mg/L)	-	-	36
Temperature (°C / °f)	17/63	20/68	20/68
Conductivity (umhos.cm)	1700	1735	1693
Water Column Data			
Ammonia (mg/L)	0.05	0.04	0.05
Nitrate/Nitrite (mg/L)	0.18	-	0.16
Hardness (mg/L)	417	491	425
Alkalinity (mg/L)	226	281	240
Silica (mg/L)	-	-	20.8
Total Phosphorous (ug/L)	55	78	46
Miscellaneous Data			
Limiting Nutrient	N	N	N
DO (Mg/l) at 75% depth	6	7.0	7.0
Stratification (m)	NO	NO	NO
Depth at Deepest Site (m)	3	2.4	2.1

river, it is unlikely the reservoir will come into compliance in the near future.

Gunnison Bend Reservoir is stocked with 20,000 Channel Catfish (*Ictalurus punctatus*) every third year by the DWR. The reservoir is known to contain walleye (*Stizostedion vitreum*), bluegill (*Lepomis macrochirus*), yellow perch (*Perca flavescens*), carp (*Cyprinus carpio*), white bass (*Morone chrysops*) white crappie (*Pomoxis annularis*) and largemouth bass (*Micropterus salmoides*). The reservoir has not been chemically treated to control rough fish competition.

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

Species Cell Volume% Density



	(mm ³ /liter)	By Volume
<i>Sphaerocystis schroeteri</i>	10.564	64.07
Pennate diatoms	2.246	13.62
<i>Gomphospheria aponina</i>	1.237	7.50
<i>Cosmarium sp.</i>	0.623	3.78
<i>Coelastrum sp.</i>	0.556	3.37
<i>Scenedesmus quadricauda</i>		
var. <i>quadrispina</i>	0.489	2.97
Centric diatoms	0.160	0.97
<i>Chlamydomonas sp.</i>	0.158	0.96
<i>Oocystis sp.</i>	0.102	0.62
Unknown Spherical		
green alga	0.089	0.54
<i>Dinobryon divergens</i>	0.086	0.52
<i>Ankistrodesmus falcatus</i>	0.079	0.48
<i>Closteriopsis longissima</i>		
var. <i>tropica</i>	0.067	0.40
<i>Scenedesmus bijuga</i>	0.033	0.20
Total	16.487	
Shannon-Weaver [H']	1.33	
Species Evenness	0.50	
Species Richness	0.55	

The phytoplankton community is dominated by green algae and diatoms but there is one species of blue-green algae with some significance. This composition is supportive of fairly good water quality. It should be noted that the high alkalinity and hardness concentrations that productivity may limiting the productivity.

Pollution Assessment

All common sources of nonpoint pollution found in the state are present, including logging, grazing, agricultural operations (feedlots, dairies, and agricultural runoff), urban areas, recreation, mining, and transportation runoff. The effects of most of these are mitigated by long river distances and upstream reservoirs.

The area around the reservoir is comprised of residential and agricultural areas. These land uses impact the reservoir through increased sedimentation, irrigation runoff, dairy operations, feedlot operations, urban runoff, and possibly septic tanks.

The only point source of pollution in the near watershed is the Ash Grove Cement Plant near Leamington which discharges into the Fillmore Canal.

Beneficial Use Classification

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

Information**Management Agencies**

Bureau of Land Management	539-4001
House Range Resource Area (Fillmore)	743-6811
Six County Commissioners Association	896-9222
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146

Recreation

Panoramaland Travel Region (Richfield)	896-9222
Delta Chamber of Commerce	864-4316
Millard County Parks and Recreation	
West Delta RV Park	864-2212
B Kitten Clean Trailer Park	864-2614

Reservoir Administrators

D.M.A.D. Company	864-2494
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