

KENS LAKE



Introduction

Kens Lake is an off stream reservoir at the foot of the west slopes of the La Sal Mountains in eastern Utah. It is a intermediate-sized reservoir, built on the floor of Spanish Valley near Moab. It is also called Mill Creek Reservoir.

The reservoir shoreline is publicly owned by the BLM

and the State of Utah. Public access is unrestricted. The earthen embankment is horseshoe-shaped to create the impoundment, which is on a relatively flat area of the valley floor. The basin was sealed with clay to prevent water from seeping into the porous valley floor. Construction was completed in 1981, but it has been drained and rebuilt several times because of water seepage through the clay. Water is diverted from Mill Creek via a tunnel. It was originally intended as a warm water fishery, but was found to be more suitable for cold water fishes.

Characteristics and Morphometry

Lake elevation (meters / feet)	1,537/5,048
Surface area (hectares / acres)	35/86
Watershed area (hectares / acres)	777.4 / 1920
Volume (m ³ / acre-feet)	
capacity	3.48 x 10 ⁶ /62,820
conservation pool	none
Annual inflow (m ³ / acre-feet)	5.2 x 10 ⁶ /4,200
Retention time (years)	0.7
Drawdown (m ³ / acre-feet)	varies
Depth (meters / feet)	
maximum	21/70
mean	10/33
Length (meters / feet)	820/2,690
Width (meters / feet)	440/1,440
Shoreline (meters / feet)	2,140/7,000

Location

County	San Juan
Longitude/Latitude	109 27 46 / 38 29 00
USGS Map	Kane Springs, Utah 1987
DeLorme's Utah Atlas & Gazetteer	Page 30, A-3-32, A4
Cataloging Unit	Upper Colorado (14030005)

* Not on map. Southwest of airstrip on seam of atlas.

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At present and in the foreseeable future, water is consumed for agricultural purposes, and also used for recreation and cold water aquatic habitat while stored in the reservoir.

Recreation

Kens Lake is 13 miles southeast of Moab. From mile post 118 on US-191 (about eight miles south of Moab) turn east on Old Airport Road and follow the sign to Kens Lake, La Sal Mountain Loop, and Redrock Speedway. After one mile, turn right where Old Airport Road terminates. Go south for 1.5 miles to Flat Pass Road, an unmarked, unpaved road on the left. At this point, the dam should be visible about a mile to the east. Flat Pass Road reaches Kens Lake in about two miles.

The lake offers fishing, swimming and picnicking. Portable privies are provided year-round, and the BLM is considering installing permanent toilet facilities. It is possible to launch a boat on the lake, but boating is restricted to trolling and nonmotorized craft. Motorized vehicles are restricted to designated roads. The lake is close from 11:00 PM to 5:00 AM, but camping is permitted in designated areas. The lake has no riparian habitats or other common lakeside scenery, but the 1,000 feet of slickrock bluffs bordering the Spanish Valley are impressive.

The area immediately around the lake is popular for primitive camping. There are several USFS campgrounds in the La Sal Mountains to the east, and many private campgrounds in Moab.

Watershed Description

The lake is near Moab in Spanish Valley. The valley is a long graben, where the underlying rocks have dropped below the surrounding terrain. It is an arid redrock desert. Water is brought into the lake via the Shelky Diversion Tunnel from Mill Creek, which drains the western face of the La Sal Mountains, the second highest range in Utah. These mountains develop heavy snowpacks in the winter due to their high elevation, and the runoff is stored in Kens Lake for use throughout the summer.

Oowah Lake is tiny upstream impoundment. It was included in the 1982 Clean Lakes Inventory, but has not been included in this document.

The watershed high point, Manns Peak, is 3,741 m (12,272 ft) above sea level, thereby developing a complex slope of 12.2% to the reservoir. The sole inflow is the canal from Mill Creek. Outflow is to Pack Creek in Spanish Valley. The average stream gradient from the headwaters to the diversion (7 km) is 8.3% (437 feet per mile), and the gradient from the diversion to the reservoir (1.5 km) is 3.2% (169 feet per mile).

The watershed is composed of high mountains, canyons, and low deserts. Soil associations have not been determined by the Division of Water Quality.

The vegetation communities are comprised of slickrock, sage-grass, oak, maple, aspen-fir, and alpine. The watershed receives 25-36 cm (6-30 inches) of precipitation annually with a frost-free season of 120 - 160 days at the reservoir.

Land use is 100% multiple use and recreation. The major use of the watershed is livestock grazing and recreation.

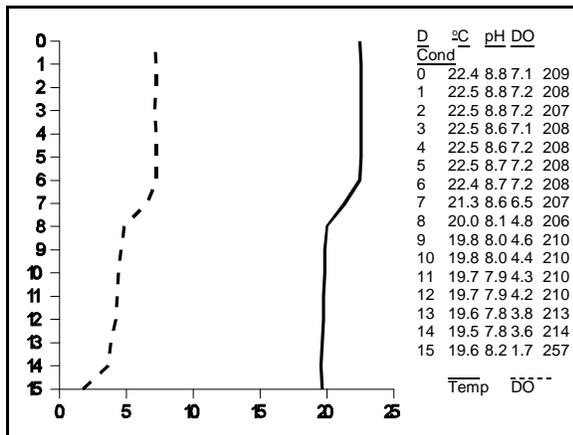
Limnological Assessment

The water quality of Kens Lake is considered very good. It is considered to be moderately hard with a hardness concentration range of 101-109 mg/L (CaCO3). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus. The average

Limnological Data			
Data sampled from STORET site: 595850			
Surface Data	1989	1990*	1991**
Trophic Status	H	E	M
Chlorophyll TSI	58.57	44.91	37.88
Secchi Depth TSI	65.14	60.59	54.16
Phosphorous TSI	59.97	51.68	39.98
Average TSI	61.23	52.39	44.01
Chlorophyll <i>a</i> (ug/L)	17.3	4.3	2.1
Transparency (m)	0.7	1.0	1.5
Total Phosphorous (ug/L)	48.0	27.0	12.0
pH	8.3	8.6	8.8
Total Susp. Solids (mg/L)	18	-	4
Total Volatile Solids (mg/L)	-	6	2
Total Residual Solids (mg/L)	-	25	2
Temperature (°C / °f)	20/68	16/60	22/72
Conductivity (umhos.cm)	240	212	209
Water Column Data			
Ammonia (mg/L)	0.04	0.03	0.03
Nitrate/Nitrite (mg/L)	-	0.06	0.04
Hardness (mg/L)	109	107	99
Alkalinity (mg/L)	91	87	87
Silica (mg/L)	-	7.2	5.6
Total Phosphorus (ug/L)	41.4	27.8	31.0
Miscellaneous Data			
Limiting Nutrient	N	-	N
DO (Mg/l) at 75% depth	5.6	-	4.3
Stratification (m)	NO	-	6-8
Depth at Deepest Site (m)	5	-	15
* Data from period 1 only			
**Data from period 2 only			

LAKE REPORTS

concentration of total phosphorus in the water column has continually exceeded the State's pollution indicator (25 ug/L). Although in 1989 the reported average was 41.4 ug/L, in 1990 and 1991 the average concentrations were reduced significantly to 27.8 and 31.0 ug/L. It appears that the reservoir may be decreasing in productivity as the newly created reservoir is aging. Additional monitoring will allow a determination to be made regarding the stability of the reservoir. A review of the profile obtained on August 6, 1991 showed dissolved oxygen concentrations near 7.2 mg/L above the thermocline (6-7 meters) with a declining trend to 1.7 mg/L at the bottom (15 meters). It appears that there is sufficient oxygen demand in the hypolimnion which is beginning to impact the fishery. The lake is defined as a nitrogen limited system with TSI values indicating the lake has shifted from a hypereutrophic to a mesotrophic lake with an overall TSI index shift of 17.22 units from 61.23 to 44.01. Although the lake is managed as a cold water fishery, it is marginal during the summer due to the elevated water temperatures and the low concentrations of dissolved oxygen in the hypolimnion. There have been no reported fish kills in the lake.



The DWR stocks the reservoir twice annually with catchable rainbow trout (*Oncorhynchus mykiss*); 4,000 in the spring and 7,000 in the summer. Some brown trout (*Salmo trutta*) from Mill Creek have migrated down to the reservoir. The reservoir was chemically treated by the DWR to control rough fish competition in 1984 and 1988.

Phytoplankton in the euphotic zone in August, 1991 included the following taxa (in order of dominance)

Species	Cell Volume (mm ³ /liter)	% Density By Volume
<i>Chrysocapsa planktonica</i>	326.1	50.94

<i>Ceratium hirundinella</i>	10.299	3.00
<i>Sphaerocystis Schroeteri</i>	5.282	1.54
<i>Peridinium sp.</i>	1.091	0.32
<i>Asterionella formosa</i>	0.397	0.12
<i>Microcystis incerta</i>	0.334	0.10
<i>Oocystis sp.</i>	0.025	0.01
<i>Chroococcus dispersus</i>	0.013	0.00
Centric diatoms	0.009	0.00
<i>Ankistrodesmus falcatus</i>	0.009	0.00
Pennate diatoms	0.007	0.00
<i>Wislouchiella planktonica</i>	0.004	0.00
Total	343.620	
Shannon-Weaver Index	0.125	
Species Evenness	0.10	
Species Richness	0.41	

The flora is dominated by golden algae with Dinoflagellates and green algae also present in significant quantities. Algal biomass is very high and could lead to water quality problems. However the low elevation of this lake probably results in a short freeze-over period, mitigating this problem. No macrophytes have been observed.

Information

Management Agencies

Bureau of Land Management	539-4001
Grand Resource Area (Moab)	259-8193
Southeastern Utah Association of Government	637-5444
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146

Recreation

Canyonlands Travel Region (Moab)	259-8825
Moab Chamber of Commerce	259-7531

Reservoir Administrators

Grand County Water Conservation District	259-8121
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Pollution Assessment

Nonpoint pollution sources are: sedimentation and nutrient loading from grazing, and human wastes, litter and toxins from recreation. Cattle graze in the watershed and around the reservoir.

There are no point pollution sources 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).