

CSLAP 2011 Lake Water Quality Summary: Silver Lake

General Lake Information

Location	Town of Perry
County	Wyoming
Basin	Genesee River
Size	328.9 hectares (812.4 acres)
Lake Origins	Natural
Watershed Area	5,230 hectares (12,918 acres)
Retention Time	1.2 years
Mean Depth	7.2 meters
Sounding Depth	11.6 meters
Public Access?	cartop launch
Major Tributaries	Silver Lake Inlet
Lake Tributary To...	Silver Lake outlet to Genesee River to Lake Ontario
WQ Classification	A (potable water)
Lake Outlet Latitude	42.716
Lake Outlet Longitude	-78.020
Sampling Years	1986-1991, 1995-1997, 2006-2011
2011 Samplers	William Soules
Main Contact	William Soules

Lake Map



Background

Silver Lake is an 810 acre, class A lake found in the Town of Castile in Wyoming County, just west of the Finger Lakes Region of New York State. It has been sampled as part of CSLAP periodically since 1986.

It is one of two CSLAP lakes among the more than 15 lakes found in Wyoming County, and one of three CSLAP lakes among the more than 35 lakes and ponds in the Genesee River drainage basin.

Lake Uses

Silver Lake is a Class A lake; this means that the best intended use for the lake is for potable water intake—drinking—as well as contact recreation—swimming and bathing, non-contact recreation—boating and fishing, aquatic life, and aesthetics. The lake is used by lake residents and visitors for power boating and swimming, through residential shoreline access to the lake and a state launch on the east side of the lake.

Silver Lake has been regularly stocked by New York state. About 4.2 million ½ inch walleye are stocked annually. Fish species found in the lake include black crappie, bluegill, brown bullhead, largemouth bass, northern pike, pumpkinseed sunfish, rock bass, walleye and yellow perch.

General statewide fishing regulations are applicable in Silver Lake. In addition, the open season for trout is April 1st to October 15th, with no minimum size of 12 inches, and a daily take limit of five, with no more than two trout to be greater than 12 inches.

There are no lake-specific fish consumption advisories on Silver Lake.

Historical Water Quality Data

CSLAP sampling was conducted on Silver Lake from 1986 to 1991, 1995 to 1997, and 2006 to 2011. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at <http://nysfola.mylaketown.com>. The 2009 and 2010 CSLAP reports for Silver Lake can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77828.html>.

The lake was sampled as part of the state Lake Biomonitoring pilot project (as part of the state Lake Classification and Inventory study, or LCI) conducted by the NYSDEC in 2008. Most of these readings are comparable between the programs—conductivity readings were much higher in the LCI (but similar to those at other times of the year). The depth profiles show oxygen depletion below 7-8 meters, as expected given the highly elevated deepwater phosphorus readings. Chloride readings are high enough to indicate some runoff from road salting operations, but are well below the state water quality standards. The biological samples collected as part of this program have not yet been analyzed, and these results will be summarized in a separate report.

Silver Lake was sampled by New York State as part of the Biological Survey of the Genesee River basin conducted by the Conservation Department (the predecessor to the NYSDEC) on August 26, 1926. The majority of the water quality indicators evaluated as part of CSLAP were not included in this survey. pH readings in 1926 were slightly higher than the typical Silver Lake readings, but were within the range measured through CSLAP. Water clarity readings in 1926 were about 4.9 meters, higher than in all but a single CSLAP sampling session in 1989 (and

much higher than in recent years in late summer). The lake was thermally stratified, with the transition from warm water to cold water occurring at a depth of about 20-25 feet. Deepwater oxygen levels were depressed near the lake bottom (readings about 1.7 ppm, versus about 8.4 ppm at the lake surface). The field notes from this survey indicated the following:

“Silver Lake is a typical, shallow, brown water lake characterized by a fair amount of muddy shoreline, an abundance of vegetation and a rich bottom of mud.... The lake apparently falls in the class of typical, brown water, non-bass (small mouthed) lakes.”

“Silver Lake, in Wyoming County, lies in a shallow valley with very gradual slopes. The surrounding hills rise only a few hundred feet above the lake, which is 1,356 feet above sea level. The lake is about three miles long and about three-quarters of a mile wide in its widest place. Its shores are mostly stony or gravelly, except that at the north and south ends, where swamps occur, the shore and bottom are muddy. The lake is fed by springs. A small inlet and the outlet of Silver Lake both occur at the north end.

The lake is shallow and the flat bottom is mostly about 25-35 feet deep. The deepest bottom found in the lake was 37 feet. The transparency of the water in Silver Lake is low as compared to Conesus Lake and may be termed "brown water". A white disc 10cm. in diameter lowered into the water at noon, August 26, 1926, disappeared from view 16 feet from the surface. On account of its shallowness and the low transparency of the water, Silver Lake shows no stratification in its plankton life. Rooted plants occur only in the shallow water near the shore and at the ends of the lake; none were observed below the 15-foot depth”.

The lake was surveyed in 1976 and 1979 as part of a DEC statewide water quality study. These data indicate conditions similar to those measured in the mid-1980s through CSLAP. Water quality monitoring has been conducted as part of state fisheries stocking activities; the results indicate slightly higher water clarity in the fisheries dataset, but the other data appeared to be comparable.

The lake has also been studied in the past by the Community College of the Finger Lakes (Dr. Bruce Gilman), SUNY Geneseo (Dr. Herman Forest) and others.

Neither the Silver Lake inlet nor outlet has been monitored through the NYSDEC Rotating Intensive Basins (RIBS) program. The outlet was sampled downstream of Perry (about 6 km downstream from the lake) through the state stream macroinvertebrate monitoring program in 1995 and 1999. The summary of this sampling was as follows:

“Based on macroinvertebrate sampling downstream of Perry in 1999, water quality was assessed as moderately impacted. The sample was dominated by filtering caddisfly larvae. The impact was likely a combination of impoundment effect and enrichment from the Perry sewage treatment facility. The stream was previously sampled in 1995, and was also determined to be slightly impacted”.

Lake Association and Management History

Silver Lake is served by the Silver Lake Association. The lake association is involved in a number of lake improvement and social activities.

The lake association maintains a web site at <http://www.silverlakeassociation.org/>

Summary of 2011 CSLAP Sampling Results

Evaluation of 2011 Annual and Monthly Results Relative to 2006-2010

The Lake Condition Summary Table below and Appendix B compare annual and monthly results from 2011 to those measured in previous CSLAP sampling seasons. The pertinent deviations from normal conditions are discussed below.

Evaluation of Eutrophication Indicators

Water clarity readings were higher than normal in 2011, but total phosphorus and chlorophyll *a* readings were close to normal. None of these indicators has exhibited any clear long-term trends, although the lake continues to be more productive as the summer progresses. The lake can be characterized as *mesoeutrophic*, or moderately to highly productive, based on water clarity (typical of *mesotrophic* lakes), total phosphorus and chlorophyll *a* readings (both typical of *eutrophic* lakes). The trophic state indices (TSI) evaluation suggests that water clarity readings are higher than expected given the phosphorus and chlorophyll *a* readings in the lake. This may be due to zebra mussels. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels are frequently high enough to render the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, although it is not known if this results in any actual impacts to drinking water. Deepwater phosphorus, ammonia, iron, manganese, and arsenic readings are higher than those measured at the lake surface, and these manganese levels exceed the state water quality standards, so deepwater intakes may not support potable water use. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Limnological Indicators

NO_x, total nitrogen and color readings were higher than normal, and color readings have increased slightly since CSLAP sampling began in 1986. pH readings were lower than normal in 2011, but these readings have not exhibited any clear long-term trends. Conductivity readings were close to normal in 2011, although conductivity has decreased slightly since the mid 1980s. Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

Limited macrophyte surveys have been conducted through CSLAP at Silver Lake. At least 5 aquatic plant species have been found, including at least one exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil). The biological survey of the lake conducted by the Conservation Department in 1926 found at least 27 aquatic plant species, including at least one other exotic plant species (*Potamogeton crispus*, curly-leafed pondweed) and at least one protected plant species (*Megalodonta beckii*, water marigold). The modified floristic quality index (FQI) for the lake based on CSLAP data indicates that the quality of the aquatic plant community is “poor,” while the FQI based on the 1926 data indicates that the quality of the aquatic plant community is “fair.”

The 2008 macroinvertebrate survey of the lake found few macroinvertebrates, probably due to an incomplete collection of organisms rather than the lack of macroinvertebrates in the lake. The limited data indicate taxa mostly sensitive to water quality changes (typical of high water quality lakes) but no organisms associated with good water quality. Additional work will be required to fully evaluate these apparently contradictory results.

The composition of the fish community is comprised of at least five warmwater fish species, and at least four coolwater fish species. This suggests that the lake can most likely be characterized as a coolwater fishery.

Phytoplankton and zooplankton have not been evaluated through CSLAP in Silver Lake.

Biological conditions in the lake are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Lake Perception

Water quality assessments were more favorable than normal in 2011, consistent with higher than normal water clarity readings. However, recreational assessments were close to normal, consistent with aquatic plant coverage that was also close to normal. None of these indicators has exhibited a clear long-term trend, although recreational assessments have improved slightly since the early 1990s. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Water temperature readings in the summer index period were higher than normal in 2010 and 2011, but neither air nor water temperature readings has exhibited any long-term trends. It is not known if this is an indication of the lack of local climate change or if these changes cannot be well evaluated through CSLAP.

Evaluation of Algal Toxins

Algal toxin levels can vary significantly within blooms and from shoreline to lake, and the absence of toxins in a sample does not indicate safe swimming conditions. Phycocyanin readings are frequently above the levels indicating susceptibility for harmful algal blooms (HABs). An analysis of algae samples in 2009 indicated microcystin levels below the levels needed to support safe swimming in the open water, but highly elevated readings in some shoreline blooms.

Lake Condition Summary

Category	Indicator	Min	86-11 Avg	Max	2011 Avg	Classification	2011 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	0.38	2.28	6.00	3.09	Mesotrophic	Higher than Normal	No Change
	Chlorophyll <i>a</i>	0.10	21.82	160.4	15.44	Eutrophic	Within Normal Range	No Change
	Total Phosphorus	0.014	0.041	0.140	0.034	Eutrophic	Within Normal Range	No Change
Potable Water Indicators	Hypolimnetic NH4	0.01	0.59	2.35	0.59	Highly Elevated Deepwater NH4	Within Normal Range	Not known
	Hypolimnetic As	1.00	2.15	3.20	1.50	Elevated Deepwater As	Lower Than Normal	Not known
	Hypolimnetic Iron	0.01	0.38	1.24	0.35	Elevated Deepwater Fe	Within Normal Range	Not known
	Hypolimnetic Mn	1.02	1.80	2.99	1.73	Highly Elevated Deepwater Mn	Within Normal Range	Not known
Limnological Indicators	Hypolimnetic TP	0.020	0.261	0.807	0.186	Elevated Deepwater TP	Lower Than Normal	Not known
	Nitrate + Nitrite	0.00	0.10	0.86	0.30	Low NOx	Higher than Normal	No Change
	Ammonia	0.00	0.04	0.10	0.04	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.45	0.78	1.20	0.91	Intermediate Total Nitrogen	Higher than Normal	No Change
	pH	6.48	8.02	8.75	7.60	Alkaline	Lower Than Normal	No Change
	Specific Conductance	77	284	364	278	Hardwater	Within Normal Range	Decreasing Slightly
	True Color	3	17	82	35	Intermediate Color	Higher than Normal	Increasing Slightly
	Calcium	16.2	35.8	50.5	44.1	Highly Susceptible to Zebra Mussels	Within Normal Range	No Change
Lake Perception	WQ Assessment	1	2.6	5	2.3	Definite Algal Greenness	More Favorable Than Normal	No Change
	Plant Coverage	1	2.6	4	2.8	Surface Plant Growth	Within Normal Range	No Change
	Rec. Assessment	1	2.6	4	2.9	Slightly Impaired	Within Normal Range	No Change
Biological Condition	Phytoplankton					Not measured through CSLAP	Not known	Not known
	Macrophytes					Poor quality of the aquatic plant community	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Contradictory results	Not known	Not known
	Fish					Coolwater fishery	Not known	Not known
	Invasive Species					Zebra mussels, Eurasian watermilfoil, curly-leaved pondweed?	Not known	Not known
Local Climate Change	Air Temperature	10	21.4	37	23.4		Within Normal Range	No Change
	Water Temperature	10	20.7	27	22.8		Higher Than Normal	No Change
Harmful Algal Blooms	Open Water Phycocyanin	12	258	700	111	Many readings indicate high risk of BGA	Not known	Not known
	Open Water Microcystis	0.2	0.6	2.6	1.0	Open water toxins at times above drinking water criteria but always below swimming criteria	Not known	Not known
	Shoreline Phycocyanin					Some shoreline BGA blooms likely	Not known	Not known
	Shoreline Microcystis	1.4	80.4	158.5	80.4	Shoreline bloom toxins frequently above drinking water and swimming criteria	Not known	Not known
	Other Toxins					Elevated anatoxin-a but low cylindrospermopsin	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

Silver Lake is presently among the lakes listed on the Genesee River Basin Priority Waterbody List (2002). Water supply is identified as *impaired*, and public bathing, recreation, and aesthetics are listed as *stressed*. The PWL listing for Silver Lake is listed in Appendix C.

Potable Water (Drinking Water)

The CSLAP dataset at Silver Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water. The moderate to high algae levels indicate that potable water use from the surface waters of the lake may be *impaired*, and elevated deepwater manganese readings may *impair* potable water use of the lake through deep intakes.

Contact Recreation (Swimming)

The CSLAP dataset at Silver Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation may be *impaired* by excessive algae and poor water clarity, although lake productivity was lower in 2010 and 2011. Additional information about bacterial levels is needed to evaluate the safety of the water for swimming.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Silver Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation should be supported, although this use may be *threatened* by excessive weeds, particularly Eurasian watermilfoil.

Aquatic Life

The CSLAP dataset on Silver Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *stressed* by hypolimnetic hypoxia (depressed deepwater oxygen readings) and the presence of invasive species, and aquatic life may be *threatened* by slightly elevated pH, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics

The CSLAP dataset on Silver Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *threatened* by excessive algae, particularly the presence of blue green algae blooms.

Fish Consumption

There are no fish consumption advisories posted for Silver Lake.

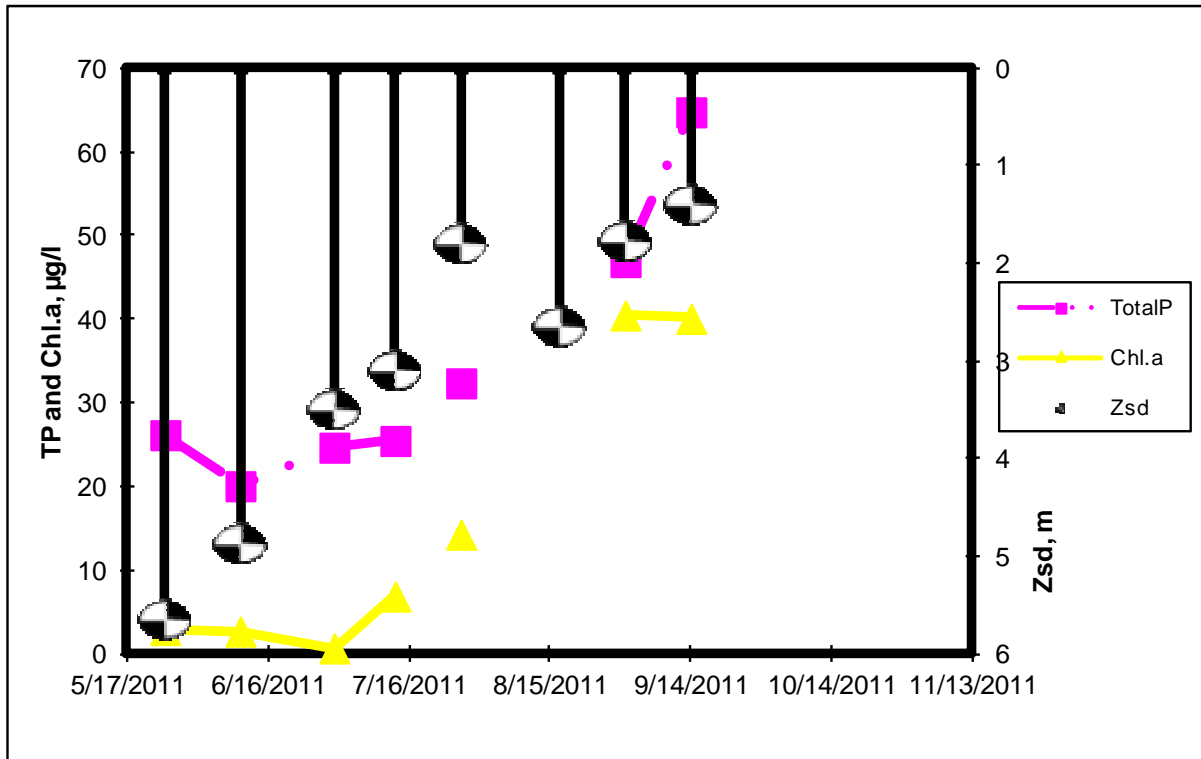
Additional Comments and Recommendations

Additional aquatic plant survey data may help to determine if the aquatic plant community is dominated by exotic plants, or if the occasional management of the nuisance weed problems in the lake has resulted in a shift to dominance by native plant species.

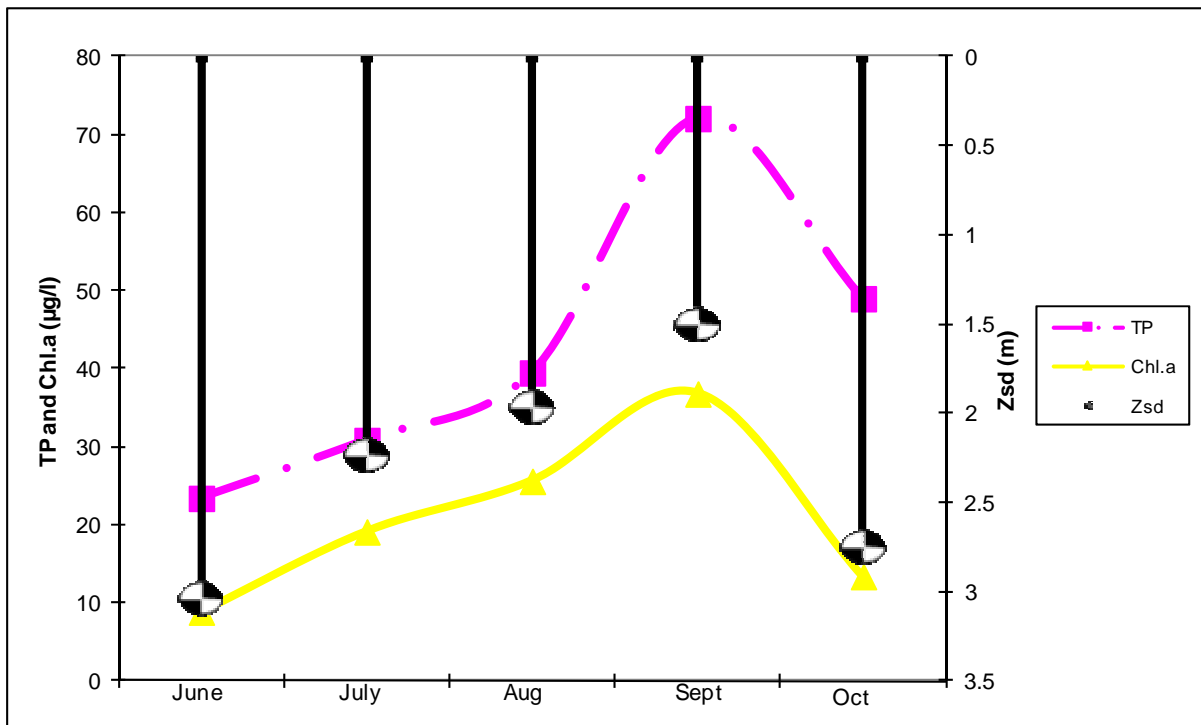
Aquatic Plant IDs-2011

None submitted for identification.

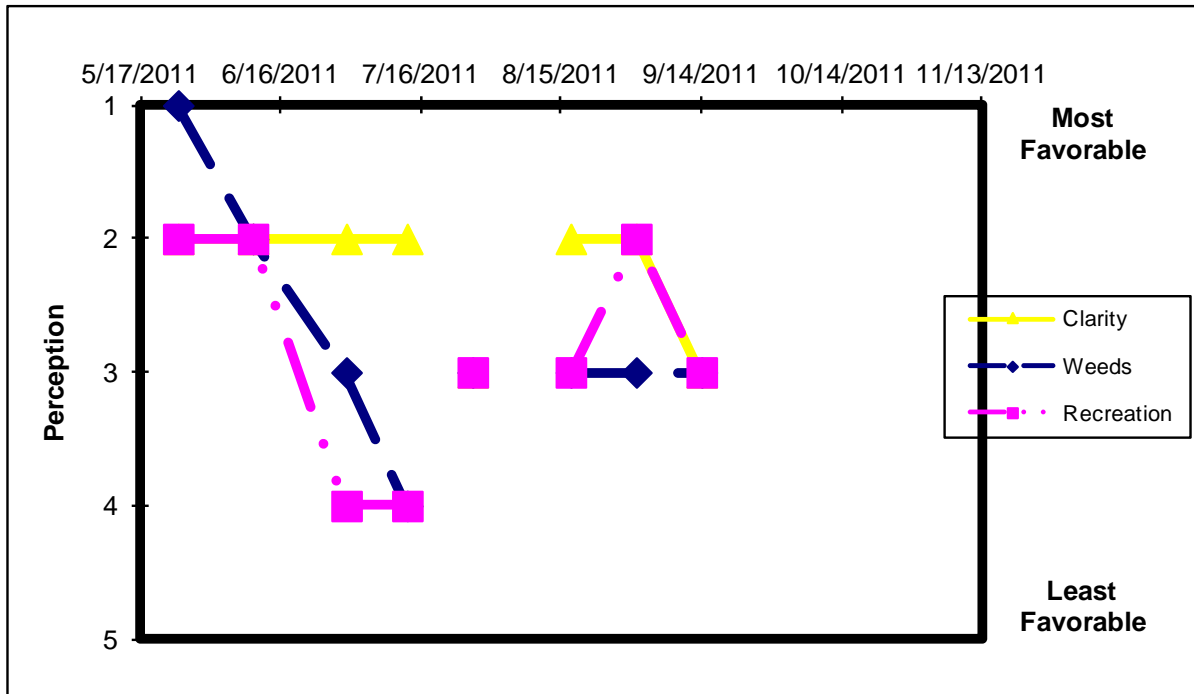
Time Series: Trophic Indicators, 2011



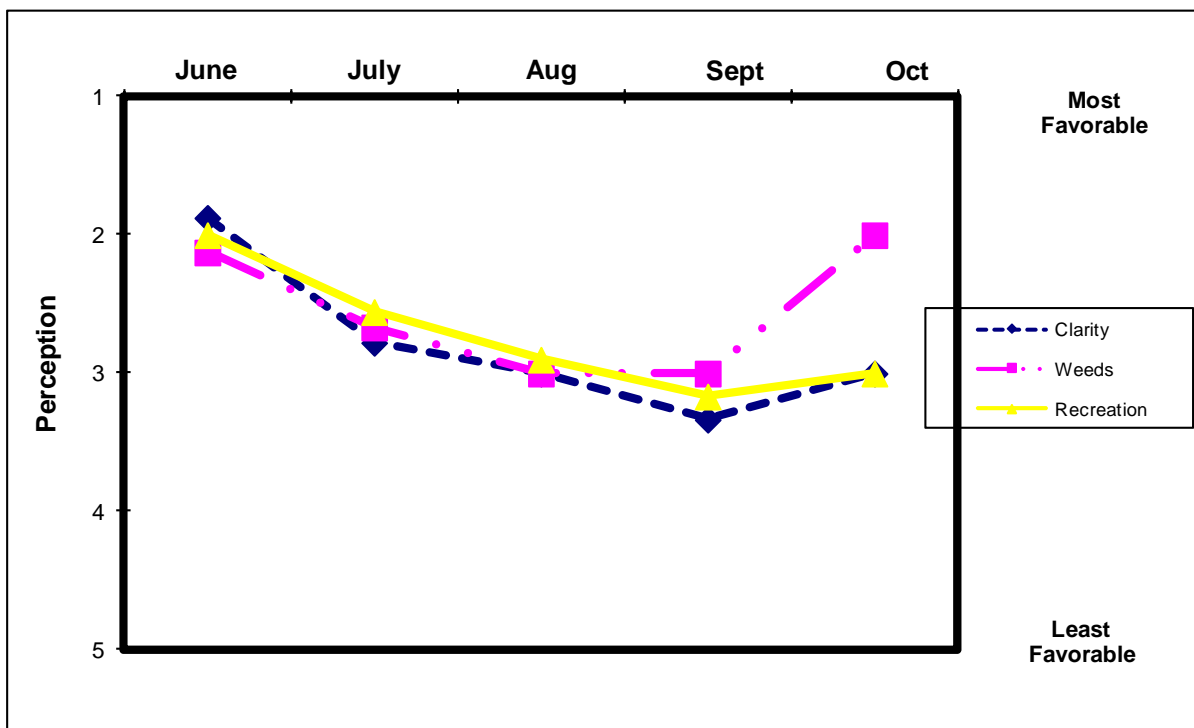
Time Series: Trophic Indicators, Typical Year (1986-2011)



Time Series: Lake Perception Indicators, 2011



Time Series: Lake Perception Indicators, Typical Year (1986-2011)



Appendix A- CSLAP Water Quality Sampling Results for Silver Lake

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
25	Silver L (W)	6/13/1986	10.0		1.5	0.023	0.47				5	7.94	304		11.80
25	Silver L (W)	6/19/1986		2.50	1.5	0.018	0.43				5	7.94	311		4.74
25	Silver L (W)	6/25/1986		2.13	1.5	0.025	0.36				5	8.14	311		3.92
25	Silver L (W)	7/3/1986	10.0	2.50	1.5	0.027	0.34				10	8.13	310		3.18
25	Silver L (W)	7/9/1986	10.0	2.50	1.5	0.027	0.24				8	8.39	307		4.34
25	Silver L (W)	7/16/1986	10.0	2.50	1.5	0.035	0.21				8	8.30	307		5.25
25	Silver L (W)	7/23/1986	10.5	2.00	1.5	0.037	0.03					8.67	300		18.40
25	Silver L (W)	7/31/1986	10.5	1.25	1.5	0.043	0.03				8	8.50	275		14.80
25	Silver L (W)	8/4/1986	10.0	1.50	1.5	0.050	0.03				6	8.52	283		19.20
25	Silver L (W)	8/11/1986	11.0	1.00	1.5	0.067	0.03				25	8.55	273		22.20
25	Silver L (W)	8/20/1986	11.0	1.00	1.5	0.077	0.03				16	8.11	287		30.30
25	Silver L (W)	8/29/1986	11.0	1.00	1.5	0.100	0.03				8	7.76	300		23.70
25	Silver L (W)	9/3/1986	11.0	1.00	1.5	0.110	0.03				15	8.23	294		16.30
25	Silver L (W)	9/9/1986	10.0	1.50	1.5	0.100	0.03				10	8.25	295		12.30
25	Silver L (W)	9/17/1986	10.0	1.38	1.5	0.094	0.03				10	7.67	299		15.30
25	Silver L (W)	6/10/1987	10.0	2.50	1.5	0.022	0.11				15	8.23	257		12.50
25	Silver L (W)	6/15/1987	9.7	3.50	1.5	0.024	0.11				8	8.48	308		6.20
25	Silver L (W)	6/23/1987	9.8	2.00	1.5	0.029	0.01				10	8.46	300		16.30
25	Silver L (W)	6/29/1987	10.0	1.50	1.5	0.036	0.05				10	8.12	303		22.90
25	Silver L (W)	7/7/1987	10.0	1.33	1.5	0.039	0.01				14	7.98	304		54.80
25	Silver L (W)	7/15/1987	10.0	1.50	1.5	0.035	0.01				11	7.96	291		35.50
25	Silver L (W)	7/22/1987	10.0	1.38	1.5	0.040	0.01				10	8.05	287		45.10
25	Silver L (W)	7/29/1987	9.5	0.75	1.5	0.045	0.02				13	7.69	266		72.50
25	Silver L (W)	8/1/1987	10.0	0.88	1.5	0.056	0.01				11	7.44	278		151.00
25	Silver L (W)	8/10/1987	10.0	1.00	1.5	0.055	0.01				14	7.58	279		123.00
25	Silver L (W)	8/17/1987	9.5	2.63	1.5	0.036	0.01				15	7.90	284		17.00
25	Silver L (W)	8/25/1987	10.0	1.25	1.5	0.071	0.01				9	7.74	275		
25	Silver L (W)	9/4/1987	10.0	1.13	1.5	0.120	0.01				3	7.76	281		66.00
25	Silver L (W)	9/10/1987	9.5	0.38	1.5	0.140	0.01				12	7.64	294		125.00
25	Silver L (W)	6/21/1988	9.5	2.25	1.5	0.021	0.01				6	8.36	302		19.20
25	Silver L (W)	6/28/1988	10.0	2.00	1.5	0.024	0.01				10	8.46	323		17.20
25	Silver L (W)	7/5/1988	9.8	1.50	1.5	0.027	0.01				11	8.53	347		10.10
25	Silver L (W)	7/13/1988	9.5	2.00	1.5	0.039	0.01				10	8.45	312		16.80
25	Silver L (W)	7/19/1988	10.0	1.75	1.5	0.033	0.01				5	8.28	310		40.00
25	Silver L (W)	7/29/1988	10.0	1.50	1.5	0.030	0.01				8	7.15	320		16.50
25	Silver L (W)	8/5/1988	10.0	1.75	1.5	0.029	0.01				11	7.66	299		17.50
25	Silver L (W)	8/12/1988	9.8	1.00	1.5	0.030	0.01				6	8.50	279		35.50
25	Silver L (W)	8/16/1988	7.5	1.00	1.5	0.021	0.01				6	8.62	262		45.90
25	Silver L (W)	8/23/1988	10.0	0.75	1.5	0.052	0.01				6	8.56	238		50.30
25	Silver L (W)	8/30/1988	9.0	1.25	1.5	0.053	0.01				3	7.62	310		20.00
25	Silver L (W)	9/8/1988	10.0	1.50	1.5	0.067	0.01				6	8.08	302		19.20
25	Silver L (W)	9/16/1988	10.0	1.00	1.5	0.090	0.01				8	7.93	309		51.80
25	Silver L (W)	9/21/1988	9.0	1.25	1.5	0.064	0.01					7.77	305		25.20
25	Silver L (W)	9/28/1988	10.0	1.38	1.5	0.085	0.02				6	8.31	278		33.30
25	Silver L (W)	6/23/1989	10.1	3.50	1.5	0.022	0.49				10	7.74	339		6.03
25	Silver L (W)	7/5/1989	10.0	4.63	1.5	0.018	0.39				15	8.30	332		2.85
25	Silver L (W)	7/18/1989	10.0	2.50	1.5	0.015	0.27				9	8.55	329		9.02
25	Silver L (W)	7/28/1989	10.0	2.50	1.5	0.053	0.16					8.49	320		6.90
25	Silver L (W)	8/4/1989	10.0	2.50	1.5	0.058	0.17				5	6.77	320		6.14
25	Silver L (W)	8/11/1989	9.1	4.00	1.5	0.038					12	8.36	324		3.92
25	Silver L (W)	8/15/1989	9.5	4.50	1.5	0.014	0.10				6	6.48	321		3.92
25	Silver L (W)	8/22/1989	10.0	6.00	1.5	0.019	0.08				5	8.35	320		3.77
25	Silver L (W)	8/30/1989	10.0	4.00	1.5	0.016					8	8.42	317		7.74
25	Silver L (W)	9/6/1989	10.0	2.00	1.5	0.030					10	8.22	322		12.70
25	Silver L (W)	9/13/1989	10.0	2.00	1.5	0.022					6	8.41	318		25.30
25	Silver L (W)	9/20/1989	10.0	1.50	1.5	0.080	0.01				9	7.89	334		45.30
25	Silver L (W)	7/5/1990	9.8	2.10	1.5	0.019	0.10				8	8.31	330		16.80
25	Silver L (W)	7/18/1990	10.0	2.25	1.5	0.021	0.01				3	8.10	323		19.80
25	Silver L (W)	8/4/1990	10.0	2.00	1.5	0.030	0.01				3	8.35	308		15.60
25	Silver L (W)	8/16/1990	10.0	2.15	1.5	0.029	0.01				5	8.12	309		13.00
25	Silver L (W)	8/28/1990	9.7	2.00	1.5	0.047	0.01				11	7.94	314		11.60
25	Silver L (W)	9/12/1990	9.5	1.25	1.5	0.067	0.01				13	8.45	316		29.00
25	Silver L (W)	10/8/1990	9.5	1.50	1.5	0.053	0.01					8.38	289		15.20

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
25	Silver L (W)	6/3/1991	10.0	2.50											
25	Silver L (W)	6/15/1991	10.0	2.50											
25	Silver L (W)	7/11/1991	10.0	1.70											
25	Silver L (W)	8/12/1991	9.4	1.60											
25	Silver L (W)	9/13/1991	9.4	1.80											
25	Silver L (W)	8/14/1996		2.73	1.5	0.022	0.01				10	8.75	282		19.50
25	Silver L (W)	8/28/1996				0.017	0.01				10	8.35	279		7.30
25	Silver L (W)	9/18/1996				0.084	0.01				10	7.62	283		12.20
25	Silver L (W)	6/25/1997		4.50	1.8	0.025	0.39				25	8.19	336		5.08
25	Silver L (W)	7/9/1997		3.25	4.6	0.016	0.28				10	8.11	336		17.10
25	Silver L (W)	7/30/1997		4.00	3.0	0.014					6	7.07	331		6.25
25	Silver L (W)	10/8/1997		4.00	1.5	0.045	0.01				6	8.30	320		11.60
25	Silver L (W)	6/15/2006	11.3	4.60		0.018	0.30	0.02	0.98	54.23	20	7.91	279	16.2	0.55
25	Silver L (W)	6/30/2006		3.35	1.5	0.022	0.22	0.03	0.85	38.75	27	7.65	267		6.41
25	Silver L (W)	7/14/2006		3.75		0.026	0.11	0.03	0.83	32.31	33	8.38	253		5.80
25	Silver L (W)	7/28/2006	3.3	3.30	1.5	0.022	0.03	0.03	0.70	31.43	48	7.41	228		5.81
25	Silver L (W)	8/11/2006		2.20	1.5	0.021	0.03	0.02	0.90	43.33	39	7.70	283	36.5	8.02
25	Silver L (W)	8/25/2006		3.10	1.5	0.017	0.02	0.02	0.98	56.48	39	8.21	318		7.15
25	Silver L (W)	9/8/2006		2.30	1.5	0.049	0.01	0.01	0.64	13.03	19	7.09	211		23.26
25	Silver L (W)	9/21/2006		2.30	1.5	0.043	0.02	0.05	0.91	21.13	14	7.31	248		13.48
25	Silver L (W)	7/19/2007	11.3	1.55		0.028	0.16	0.05	0.75	59.94		8.04	271	39.3	
25	Silver L (W)	7/28/2007	11.0	1.00		0.031	0.01	0.03	0.80	57.47	32	8.07	247		20.72
25	Silver L (W)	8/8/2007				0.025	0.01	0.02	0.65	57.67	15	7.74	265		8.51
25	Silver L (W)	8/20/2007	10.9	2.50		0.030	0.19	0.04	0.98	72.91	20	7.78	193		8.77
25	Silver L (W)	9/1/2007	11.0	2.28		0.034	0.01	0.02	0.85	56.51	29	8.32	77	34.6	15.38
25	Silver L (W)	6/13/2008	11.0	2.35		0.042	0.11	0.07	0.95	50.47	9	7.49	233		0.74
25	Silver L (W)	6/24/2008	11.2	4.20	1.0	0.038	0.08	0.05	1.01	58.92	10	8.28	233	37.5	5.17
25	Silver L (W)	7/17/2008	11.4	4.60	1.0	0.033	0.04	0.00	0.48	32.14	8	7.61	183		9.38
25	Silver L (W)	7/24/2008		1.65	1.0	0.060	0.02	0.10	0.56	20.53	15	7.86	301		32.86
25	Silver L (W)	8/12/2008	11.2	1.93	1.0	0.043	0.01	0.04	0.51	26.27	30	8.24	330	33.8	4.75
25	Silver L (W)	8/28/2008	11.3	1.70	1.0	0.054	0.00	0.01	0.62	25.47	46	8.72	257		
25	Silver L (W)	9/12/2008	11.6	1.30	1.0	0.075	0.01	0.02	0.70	20.76	32	7.98	259		12.74
25	Silver L (W)	06/10/2009	11.4	3.40	1.0	0.022	0.26	0.06	0.79	77.98	49	7.94	210		6.20
25	Silver L (W)	06/22/2009	11.5	3.05	1.0	0.027	0.14	0.06	0.53	43.02	32	7.59	290		6.28
25	Silver L (W)	07/05/2009	10.9	2.65	1.0	0.023	0.08	0.03	0.48	46.24	49	7.70	183	36.2	8.16
25	Silver L (W)	07/20/2009	11.3	1.20	1.0	0.057	0.03	0.07	0.73	28.00	67	7.59	217		19.85
25	Silver L (W)	08/03/2009	11.4	0.95	1.0	0.063	0.02	0.04	0.45	15.73	38	7.96	217	36.7	22.00
25	Silver L (W)	08/16/2009	11.1	1.20	1.0	0.043	0.01	0.02	0.55	28.22	52	8.46	158		17.70
25	Silver L (W)	08/29/2009	11.5	1.75	1.0	0.039	0.01	0.03	0.53	30.26	41			29.7	26.50
25	Silver L (W)	09/10/2009	11.2	1.20	1.0	0.131	0.04	0.02	1.19	19.97	82	8.67	105	25.3	160.40
25	Silver L (W)	10/04/2009													
25	Silver L (W)	5/15/2010	11.7	4.25	1.0	0.016	0.37	0.04			13	7.80	290	49.6	4.00
25	Silver L (W)	5/30/2010	11.5	5.00	1.0	0.015	0.23	0.04	0.93	134.30	6	8.17	288		2.80
25	Silver L (W)	6/11/2010	11.5	5.75	1.0	0.024	0.26	0.07	0.76	69.58	10	8.33	364		0.10
25	Silver L (W)	6/26/2010	11.5	2.70	1.0	0.031	0.34	0.02			12	7.95	290		16.90
25	Silver L (W)	7/10/2010	11.4	2.00	1.0	0.033	0.01	0.09	0.65	44.13	15	7.94		37.9	16.90
25	Silver L (W)	8/6/2010	11.3	0.85	1.0	0.032	0.01	0.02	0.92	63.17	14	8.43	267		34.80
25	Silver L (W)	8/21/2010	11.2	1.25	1.0	0.030	0.02	0.04	0.78	57.70	10	8.11	305		33.00
25	Silver L (W)	9/2/2010	11.4	1.65	1.0	0.029	0.01	0.02	0.70	52.59	17	7.68	266		21.80
25	Silver L (W)	10/8/2010													
25	Silver L (W)	5/25/2011	11.6	5.65	1.0	0.026	0.86	0.08	1.20	100.34	53	7.43	302	50.5	2.90
25	Silver L (W)	6/10/2011	11.5	4.88	1.0	0.020	0.50	0.06	0.82	90.08	9	7.23	332		2.70
25	Silver L (W)	6/30/2011	11.3	3.50	1.0	0.025	0.39	0.04	0.96	85.51	65	7.55	225		0.70
25	Silver L (W)	7/13/2011	11.1	3.10	1.0	0.026	0.29	0.03	0.80	69.28	43	7.38	260		6.90
25	Silver L (W)	7/13/2011	grab	bloom											
25	Silver L (W)	7/27/2011	10.7	1.80	1.5	0.032	0.06	0.02	0.71	48.21	41	8.26	276	37.7	14.30
25	Silver L (W)	8/9/2011	grab	bloom											
25	Silver L (W)	8/17/2011	11.0	2.65	1.5										
25	Silver L (W)	8/31/2011	11.4	1.78	1.0	0.047	0.01	0.01	0.85	39.92	15	7.75	274		40.50
25	Silver L (W)	9/14/2011	10.9	1.40	1.0	0.065	0.01	0.03	1.00	33.88	16	7.59	278		40.10
25	Silver L (W)	9/14/2011	grab	bloom											
25	Silver L (W)	9/23/2011	grab	bloom											
25	Silver L (W)	10/22/2011	grab	bloom											
25	Silver L (W)	6/15/2006	11.3		9.5	0.045									
25	Silver L (W)	6/30/2006			9.5	0.020									
25	Silver L (W)	7/14/2006			9.5	0.273									

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
25	Silver L (W)	7/28/2006	3.3		9.5	0.379									
25	Silver L (W)	8/11/2006			9.5	0.261									
25	Silver L (W)	8/25/2006			9.5	0.622									
25	Silver L (W)	9/8/2006			9.0	0.335									
25	Silver L (W)	9/21/2006			9.5	0.044									
25	Silver L (W)	7/19/2007	11.3		11.0	0.407									
25	Silver L (W)	7/28/2007	11.0		10.4	0.131									
25	Silver L (W)	8/8/2007				0.442									
25	Silver L (W)	8/20/2007	10.9		10.7	0.730									
25	Silver L (W)	9/1/2007	11.0		11.0	0.590									
25	Silver L (W)	6/13/2008	11.0		11.0	0.093									
25	Silver L (W)	6/24/2008	11.2		11.0	0.042									
25	Silver L (W)	7/17/2008	11.4		11.4	0.280									
25	Silver L (W)	7/24/2008			10.0	0.245									
25	Silver L (W)	8/12/2008	11.2		10.0	0.404									
25	Silver L (W)	8/28/2008	11.3		10.0	0.505									
25	Silver L (W)	9/12/2008	11.6		10.0	0.216									
25	Silver L (W)	06/10/2009	11.0		11.0	0.114	0.30								
25	Silver L (W)	06/22/2009	10.5		10.5	0.057	0.28								
25	Silver L (W)	07/05/2009	10.0		10.0	0.083	0.31								
25	Silver L (W)	07/20/2009	10.0		10.0	0.269	0.68								
25	Silver L (W)	08/03/2009	10.0		10.0	0.269	0.60					0.26	1.65	2.30	
25	Silver L (W)	08/16/2009	10.0		10.0	0.531	0.81					0.56	2.06		
25	Silver L (W)	08/29/2009	10.5		10.5	0.703	1.67					1.08	2.16	3.20	
25	Silver L (W)	09/10/2009	10.0		10.0	0.807	0.01								
25	Silver L (W)	5/15/2010	11.7		11.0	0.036	0.03								
25	Silver L (W)	5/30/2010	11.5		10.5	0.033	0.08								
25	Silver L (W)	6/11/2010	11.5		10.5	0.097	0.19								
25	Silver L (W)	6/26/2010	11.5		10.5	0.067	0.29								
25	Silver L (W)	7/10/2010	11.4		10.0	0.104	0.41					0.03	1.06		
25	Silver L (W)	8/6/2010	11.3		10.5	0.164	0.70					0.31	1.63	1.90	
25	Silver L (W)	8/21/2010	11.2		10.0	0.415	2.35					0.27	2.00	2.50	
25	Silver L (W)	9/2/2010	11.4		10.5	0.177	0.86					0.26	2.36		
25	Silver L (W)	5/25/2011	11.6		10.5	0.045	0.19								
25	Silver L (W)	6/10/2011	11.5		10.5	0.082	0.40								
25	Silver L (W)	6/30/2011	11.3		10.5	0.255	0.56								
25	Silver L (W)	7/11/2011	10.7		10.0	0.045	0.37								
25	Silver L (W)	7/13/2011	11.1		10.0	0.049	0.41								
25	Silver L (W)	8/17/2011	11.0		10.0	0.727	1.72								
25	Silver L (W)	8/31/2011	11.4		10.0	0.154	0.56								
25	Silver L (W)	9/14/2011	10.9		10.0	0.135	0.50								

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
25	Silver L (W)	6/13/1986	epi													
25	Silver L (W)	6/19/1986	epi	20	18											
25	Silver L (W)	6/25/1986	epi	12	17											
25	Silver L (W)	7/3/1986	epi	17	20											
25	Silver L (W)	7/9/1986	epi	23	22											
25	Silver L (W)	7/16/1986	epi	19	21											
25	Silver L (W)	7/23/1986	epi	21	23											
25	Silver L (W)	7/31/1986	epi	18	22											
25	Silver L (W)	8/4/1986	epi	20	22											
25	Silver L (W)	8/11/1986	epi	15	19											
25	Silver L (W)	8/20/1986	epi	15	20											
25	Silver L (W)	8/29/1986	epi	13	17											
25	Silver L (W)	9/3/1986	epi	19	17											
25	Silver L (W)	9/9/1986	epi	17	16											
25	Silver L (W)	9/17/1986	epi	12	15											
25	Silver L (W)	6/10/1987	epi	13	15											
25	Silver L (W)	6/15/1987	epi	22	18											
25	Silver L (W)	6/23/1987	epi	22	20											
25	Silver L (W)	6/29/1987	epi	21	19											
25	Silver L (W)	7/7/1987	epi	23	21											

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxina	Cyclin
25	Silver L (W)	7/15/1987	epi	12	20												
25	Silver L (W)	7/22/1987	epi	21	22												
25	Silver L (W)	7/29/1987	epi	15	17												
25	Silver L (W)	8/1/1987	epi	22	21												
25	Silver L (W)	8/10/1987	epi	21	21												
25	Silver L (W)	8/17/1987	epi	24	26												
25	Silver L (W)	8/25/1987	epi	18	19												
25	Silver L (W)	9/4/1987	epi	17	17												
25	Silver L (W)	9/10/1987	epi	22	20												
25	Silver L (W)	6/21/1988	epi	28	22												
25	Silver L (W)	6/28/1988	epi	15	19												
25	Silver L (W)	7/5/1988	epi	29	22												
25	Silver L (W)	7/13/1988	epi	22	24												
25	Silver L (W)	7/19/1988	epi	22	23												
25	Silver L (W)	7/29/1988	epi	24	23												
25	Silver L (W)	8/5/1988	epi	23	24												
25	Silver L (W)	8/12/1988	epi	28	25												
25	Silver L (W)	8/16/1988	epi	25	25												
25	Silver L (W)	8/23/1988	epi	19	22												
25	Silver L (W)	8/30/1988	epi	19	19												
25	Silver L (W)	9/8/1988	epi	22	19												
25	Silver L (W)	9/16/1988	epi	17	17												
25	Silver L (W)	9/21/1988	epi	14	12												
25	Silver L (W)	9/28/1988	epi	12	10												
25	Silver L (W)	6/23/1989	epi	22	19												
25	Silver L (W)	7/5/1989	epi	21	22												
25	Silver L (W)	7/18/1989	epi	21	22												
25	Silver L (W)	7/28/1989	epi	18	22												
25	Silver L (W)	8/4/1989	epi	25	22												
25	Silver L (W)	8/11/1989	epi	17	20												
25	Silver L (W)	8/15/1989	epi	29	22												
25	Silver L (W)	8/22/1989	epi	24	22												
25	Silver L (W)	8/30/1989	epi	23	20												
25	Silver L (W)	9/6/1989	epi	24	20												
25	Silver L (W)	9/13/1989	epi	20	19												
25	Silver L (W)	9/20/1989	epi	21	19												
25	Silver L (W)	7/5/1990	epi	21	19												
25	Silver L (W)	7/18/1990	epi	23	21												
25	Silver L (W)	8/4/1990	epi	20	22												
25	Silver L (W)	8/16/1990	epi	19	21												
25	Silver L (W)	8/28/1990	epi	25	22												
25	Silver L (W)	9/12/1990	epi	24	20												
25	Silver L (W)	10/8/1990	epi	13	13												
25	Silver L (W)	6/3/1991	epi	25	22												
25	Silver L (W)	6/15/1991	epi	24	20												
25	Silver L (W)	7/11/1991	epi	20	22												
25	Silver L (W)	8/12/1991	epi	19	20												
25	Silver L (W)	9/13/1991	epi	22	20												
25	Silver L (W)	8/14/1996	epi	27	24	3	3	4	346								
25	Silver L (W)	6/25/1997	epi	29	17												
25	Silver L (W)	7/9/1997	epi	17	21												
25	Silver L (W)	7/30/1997	epi	27	20												
25	Silver L (W)	10/8/1997	epi	24	17	3	2	3	13								
25	Silver L (W)	6/15/2006	epi	16	14	2	2	2	2								
25	Silver L (W)	6/30/2006	epi	21	22	2	2	2	2								
25	Silver L (W)	7/14/2006	epi	22	24	3	3	3	2								
25	Silver L (W)	7/28/2006	epi	24	25	3	3	2	25								
25	Silver L (W)	8/11/2006	epi	22	25	3	3	2	2								
25	Silver L (W)	8/25/2006	epi	18	22	3	3	2	2								
25	Silver L (W)	9/8/2006	epi	16	20	3	3	3	2								
25	Silver L (W)	9/21/2006	epi	10	17	3	3	3	12								

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
25	Silver L (W)	7/19/2007	epi														
25	Silver L (W)	7/28/2007	epi														
25	Silver L (W)	8/20/2007	epi														
25	Silver L (W)	9/1/2007	epi														
25	Silver L (W)	6/13/2008	epi	24	15	3	1	2	0								
25	Silver L (W)	6/24/2008	epi	21	21	2	2	2	0								
25	Silver L (W)	7/17/2008	epi	32	25	2	3	3	25								
25	Silver L (W)	7/24/2008	epi	27	25	4	3	4	123								
25	Silver L (W)	8/12/2008	epi	20	22	2	2	3	258								
25	Silver L (W)	8/28/2008	epi	18	16	3	4	4	24								
25	Silver L (W)	9/12/2008	epi	18	20	3	3	4	125								
25	Silver L (W)	06/10/2009	epi	21	19	1	2	1	0								
25	Silver L (W)	06/22/2009	epi	22	21	2	1	2	0								
25	Silver L (W)	07/05/2009	epi	23	22	2	2	2	0								
25	Silver L (W)	07/20/2009	epi	28	22	3	3	3	13								
25	Silver L (W)	08/03/2009	epi	26	23	3	3	3	0								
25	Silver L (W)	08/16/2009	epi	30	26	3	3	2	7						0.22		
25	Silver L (W)	08/29/2009	epi	25	23	3	3	2	0								
25	Silver L (W)	09/10/2009	epi	23	22	3	3	3	1			328.3			0.25		
25	Silver L (W)	10/04/2009	epi												0.24		
25	Silver L (W)	5/15/2010	epi	14	13	1	1	1	5	0	0						
25	Silver L (W)	5/30/2010	epi	30	22	1	2	2	6	5	0						
25	Silver L (W)	6/11/2010	epi	33	22	1	3	2	2	0	0						
25	Silver L (W)	6/26/2010	epi	21	22	2	4	3	234	0	0						
25	Silver L (W)	7/10/2010	epi	37	27	2	3	2	2	0	0						
25	Silver L (W)	8/6/2010	epi	23	25	4	2	3	15	7	0	182.50					
25	Silver L (W)	8/21/2010	epi	24	24							428.30					
25	Silver L (W)	9/2/2010	epi	32	26	3	3	2	0	0	0	533.80					
25	Silver L (W)	10/8/2010										700.00			0.34		
25	Silver L (W)	5/25/2011	epi	25	19	2	1	2	0	5	5						
25	Silver L (W)	6/10/2011	epi	26	23	2	2	2	0	0	0	16.70	3.00				
25	Silver L (W)	6/30/2011	epi	20	22	2	3	4	2	0	5	12.20	2.10				
25	Silver L (W)	7/13/2011	epi	26	26	2	4	4	2	0	0	31.60	4.80	0.63	<0.5	<0.1	
25	Silver L (W)	7/13/2011	bloom												1.43	<440	0.00
25	Silver L (W)	7/27/2011	epi	24	26	3	3	3	2	0	0	38.50	11.20	0.41	<0.4	<0.1	
25	Silver L (W)	8/9/2011	bloom												158.53	<0.8	<0.1
25	Silver L (W)	8/17/2011	epi	25	25	2	3	3	2	0	0						
25	Silver L (W)	8/31/2011	epi	24	22	2	3	2	0	0	0	183.80	4.50	0.46	<0.4	<0.1	
25	Silver L (W)	9/14/2011	epi	19	22	3	3	3	2	0	0	382.70	9.70	2.62			
25	Silver L (W)	9/14/2011	bloom												59.82	<0.8	0.00
25	Silver L (W)	9/23/2011	bloom												101.63		
25	Silver L (W)	10/22/2011	bloom														
25	Silver L (W)	7/28/2006	hypo		16												
25	Silver L (W)	8/11/2006	hypo		15												
25	Silver L (W)	7/28/2007	hypo		18												
25	Silver L (W)	9/1/2007	hypo		17												
25	Silver L (W)	6/24/2008	hypo		13												
25	Silver L (W)	7/17/2008	hypo		15												
25	Silver L (W)	7/24/2008	hypo		16												
25	Silver L (W)	8/12/2008	hypo		16												
25	Silver L (W)	8/28/2008	hypo		21												
25	Silver L (W)	9/12/2008	hypo		19												
25	Silver L (W)	06/10/2009	hypo		16												
25	Silver L (W)	06/22/2009	hypo		17												
25	Silver L (W)	07/05/2009	hypo		18												
25	Silver L (W)	07/20/2009	hypo		18												
25	Silver L (W)	08/03/2009	hypo		19												
25	Silver L (W)	08/16/2009	hypo		19												
25	Silver L (W)	08/29/2009	hypo		19												
25	Silver L (W)	09/10/2009	hypo		18												
25	Silver L (W)	5/15/2010	hypo		12												

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxina	Cyclin
25	Silver L (W)	5/30/2010	hypo		14											
25	Silver L (W)	6/11/2010	hypo		15											
25	Silver L (W)	6/26/2010	hypo		15											
25	Silver L (W)	7/10/2010	hypo		15											
25	Silver L (W)	8/6/2010	hypo		17											
25	Silver L (W)	8/21/2010	hypo		16											
25	Silver L (W)	9/2/2010	hypo		21											
25	Silver L (W)	5/25/2011	hypo		13											
25	Silver L (W)	6/10/2011	hypo		14											
25	Silver L (W)	6/30/2011	hypo		14											
25	Silver L (W)	7/11/2011	hypo		19											
25	Silver L (W)	7/13/2011	hypo		17											
25	Silver L (W)	8/17/2011	hypo		16											
25	Silver L (W)	8/31/2011	hypo		20											
25	Silver L (W)	9/14/2011	hypo		20											

Legend Information

<i>Indicator</i>	<i>Description</i>	<i>Detection Limit</i>	<i>Standard (S) / Criteria (C)</i>
General Information			
Lnum	lake number (unique to CSLAP)		
Lname	name of lake (as it appears in the Gazetteer of NYS Lakes)		
Date	sampling date		
Field Parameters			
Zbot	lake depth at sampling point, meters (m)		
Zsd	Secchi disk transparency or clarity	0.1m	1.2m (C)
Zsamp	water sample depth (m) (epi = epilimnion or surface; bot = bottom)	0.1m	none
Tair	air temperature (C)	-10C	none
TH20	water temperature (C)	-10C	none
Laboratory Parameters			
Tot.P	total phosphorus (mg/l)	0.003 mg/l	0.020 mg/l (C)
NOx	nitrate + nitrite (mg/l)	0.01 mg/l	10 mg/l NO3 (S), 2 mg/l NO2 (S)
NH4	total ammonia (mg/l)	0.01 mg/l	2 mg/l NH4 (S)
TN	total nitrogen (mg/l)	0.01 mg/l	none
TN/TP	nitrogen to phosphorus (molar) ratio, = (TKN + NOx)*2.2/TP		none
TCOLOR	true (filtered) color (ptu, platinum color units)	1 ptu	none
pH	powers of hydrogen (S.U., standard pH units)	0.1 S.U.	6.5, 8.5 S.U. (S)
Cond25	specific conductance, corrected to 25C (umho/cm)	1 umho/cm	none
Ca	calcium (mg/l)	1 mg/l	none
Chl.a	chlorophyll a (ug/l)	0.01 ug/l	none
Fe	iron (mg/l)	0.1 mg/l	1.0 mg/l (S)
Mn	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
As	arsenic (ug/l)	1 ug/l	10 ug/l (S)
AQ-PC	Phycocyanin (aquafior) (unitless)	1 unit	none
AQ-Chl	Chlorophyll a (aquafior) (ug/l)	1 ug/l	none
MC-LR	Microcystis-LR (ug/l)	0.01 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
Ana	Anatoxin-a (ug/l)	0.3 ug/l	none
Cyl	Cylindrospermopsin (ug/l)	0.1 ug/l	none
Lake Assessment			
QA	water quality assessment; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
QB	aquatic plant assessment; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other		
QF, QG	Health and safety issues today (QF) and past week (QG); 0 = none, 1 = taste/odor, 2 = GI illness humans/animals, 3 = swimmers itch, 4 = algae blooms, 5 = dead fish, 6 = unusual animals, 7 = other		

Appendix B- Monthly Evaluation of Silver Lake Data, 2006-2011

June Data

	2006	2007	2008	2009	2010	2011
<i>Zsd</i>	NORMAL		NORMAL	NORMAL	NORMAL	NORMAL
<i>TP</i>	NORMAL		NORMAL	NORMAL	NORMAL	NORMAL
<i>Chl.a</i>	NORMAL		LOW	NORMAL	NORMAL	LOW
<i>NOx</i>	NORMAL		NORMAL	NORMAL	HIGH	HIGH
<i>NH4</i>	NORMAL		NORMAL	NORMAL	NORMAL	NORMAL
<i>TN</i>	NORMAL		HIGH	NORMAL	NORMAL	NORMAL
<i>pH</i>	NORMAL		NORMAL	NORMAL	NORMAL	LOW
<i>SpCond</i>	NORMAL		NORMAL	NORMAL	HIGH	NORMAL
<i>Color</i>	NORMAL		LOW	NORMAL	NORMAL	NORMAL
<i>Ca</i>	LOW		NORMAL			
<i>QA</i>	NORMAL		NORMAL	NORMAL	NORMAL	NORMAL
<i>QB</i>	NORMAL		NORMAL	NORMAL	HIGH	NORMAL
<i>QC</i>	NORMAL		NORMAL	LOW	NORMAL	NORMAL
<i>TH20</i>	NORMAL		NORMAL	NORMAL	NORMAL	NORMAL

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

July Data

	2006	2007	2008	2009	2010	2011
<i>Zsd</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
<i>TP</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
<i>Chl.a</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
<i>NOx</i>	NORMAL	NORMAL	NORMAL	NORMAL	LOW	NORMAL
<i>NH4</i>	NORMAL	NORMAL	NORMAL	NORMAL	HIGH	NORMAL
<i>TN</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
<i>pH</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
<i>SpCond</i>	NORMAL	NORMAL	NORMAL	NORMAL		NORMAL
<i>Color</i>	NORMAL	NORMAL	NORMAL	HIGH	NORMAL	NORMAL
<i>Ca</i>		HIGH		NORMAL	NORMAL	NORMAL
<i>QA</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
<i>QB</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	HIGH
<i>QC</i>	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
<i>TH20</i>	NORMAL	NORMAL	NORMAL	NORMAL	HIGH	HIGH

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

August Data

	2006	2007	2008	2009	2010	2011
Zsd	NORMAL	NORMAL	NORMAL	NORMAL	LOW	NORMAL
TP	LOW	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Chl.a	NORMAL	NORMAL	NORMAL	NORMAL	HIGH	HIGH
NOx	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	LOW
NH4	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	LOW
TN	NORMAL	NORMAL	NORMAL	LOW	NORMAL	NORMAL
pH	NORMAL	NORMAL	HIGH	NORMAL	NORMAL	NORMAL
SpCond	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Color	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Ca	NORMAL		NORMAL	NORMAL		
QA	NORMAL	NORMAL	NORMAL	NORMAL	HIGH	NORMAL
QB	NORMAL	HIGH	NORMAL	NORMAL	NORMAL	NORMAL
QC	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
TH20	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

September Data

	2006	2007	2008	2009	2010	2011
Zsd	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
TP	NORMAL	NORMAL	HIGH	HIGH	NORMAL	HIGH
Chl.a	NORMAL	NORMAL	NORMAL	HIGH	NORMAL	HIGH
NOx	NORMAL	NORMAL	LOW	NORMAL	NORMAL	NORMAL
NH4	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	HIGH
TN	NORMAL	NORMAL	NORMAL	HIGH	NORMAL	HIGH
pH	LOW	NORMAL	NORMAL	HIGH	NORMAL	NORMAL
SpCond	NORMAL	LOW	NORMAL	LOW	NORMAL	NORMAL
Color	NORMAL	NORMAL	NORMAL	HIGH	NORMAL	NORMAL
Ca		NORMAL		LOW		
QA	NORMAL	HIGH	NORMAL	NORMAL	NORMAL	NORMAL
QB	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
TH20	NORMAL	NORMAL	NORMAL	NORMAL	HIGH	NORMAL

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

Appendix C- Priority Waterbody Listing for Silver Lake

Silver Lake (0403-0002)

Impaired Seg

Waterbody Location Information

Revised: 10/28/02

Water Index No:	Ont 117- 70-P115	Drain Basin:	Genesee River
Hydro Unit Code:	04130002/160	Str Class:	A
Waterbody Type:	Lake	Reg/County:	9/Wyoming Co. (61)
Waterbody Size:	812.7 Acres (Eutrophic)	Quad Map:	CASTILE (K-08-2)
Seg Description:	entire lake		

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
WATER SUPPLY	Impaired	Known
Public Bathing	Stressed	Known
Recreation	Stressed	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (algal growth), NUTRIENTS, Pesticides, Silt/Sediment
 Suspected: ---
 Possible: Pathogens

Source(s) of Pollutant(s)

Known: AGRICULTURE, Streambank Erosion
 Suspected: Construction
 Possible: Failing On-Site Syst

Resolution/Management Information

Issue Resolvability:	2 (Strategy Exists, Needs Funding/Resources)		
Verification Status:	5 (Management Strategy has been Developed)		
Lead Agency/Office:	ext/WQCC	Resolution Potential:	Medium
TMDL/303d Status:	3 (Waters Requiring Re-Assessment Based on New Methodology)		

Further Details

The drinking water supply as well as public bathing/recreational uses and aesthetics of Silver Lake are impacted by nutrients (phosphorus) and algal growth that reduce clarity. Agricultural activities in the watershed are the primary source of nutrient loads. On-site septic systems are also an issue.

Turbidity (clarity) standards/guidance values are regularly not met in the lake and in finished waters from the drinking water treatment plant. The plant has experienced additional costs in order to meet existing standards; potential new (lower) standards are under consideration and raise concerns about the need for additional filtering. (DEC/DOW, Region 9, April 2001)

CSLAP volunteer monitoring of the lake conducted from 1986 through 1997 has documented elevated phosphorus and algal levels and reduced clarity. During the summer, lake clarity does not meet minimum recommendations (based on recommendations for siting new bathing beaches). Conditions are typical of stressed recreational uses. Although no data

is currently available, THM formation may be an issue given the algal densities in the lake. (DEC/DOW, BWM/Lake Services, April 2001)

Much of the area surrounding the lake is agricultural with high concentrations of dairy farming activity. Improper manure management (spreading on frozen or snow covered ground adjacent to the lake) and fertilizer use are the primary sources of nutrient loads to the lake. There are many on-going programs to install agricultural BMPs. Many area dairy farms fall under CAFO regulation and are working on plans to reduce and/or eliminate nutrient runoff over the next five years. Cropland soil erosion and pesticide/herbicide use are also concerns. A recent USGS study and report found pesticides to be present in the watershed, but at concentrations within applicable standards. (Wyoming County WQCC, April 2001)

Inadequate and/or failing on-site septic systems serving the many cottages around the lake are also a suspected source of nutrients. Algal blooms appear to be less of a problem since sanitary sewers were installed in the more densely populated areas (Silver Lake and Fairview) in the mid-1980s. However, not all cottages are connected to the lake sewer district and it is suspected that many have sub-standard and failing septic systems. Construction of new residences and the use fertilizers, herbicides and pesticides on lawns (and golf courses) bordering the lake are also a concern. The Wyoming County Soil and Water Conservation District and Water Quality Committee are undertaking studies to implement non-point source BMP's, such as the construction of a sediment trap on the lake inlet. (Wyoming County WQCC, April 2001)

The lake is included on the NYS 2002 Section 303(d) List of Impaired Waters. The lake is included on Part 3 of the List as a Water Previously Listed But Requiring Re-Assessment Based on New Assessment/List Methodology.