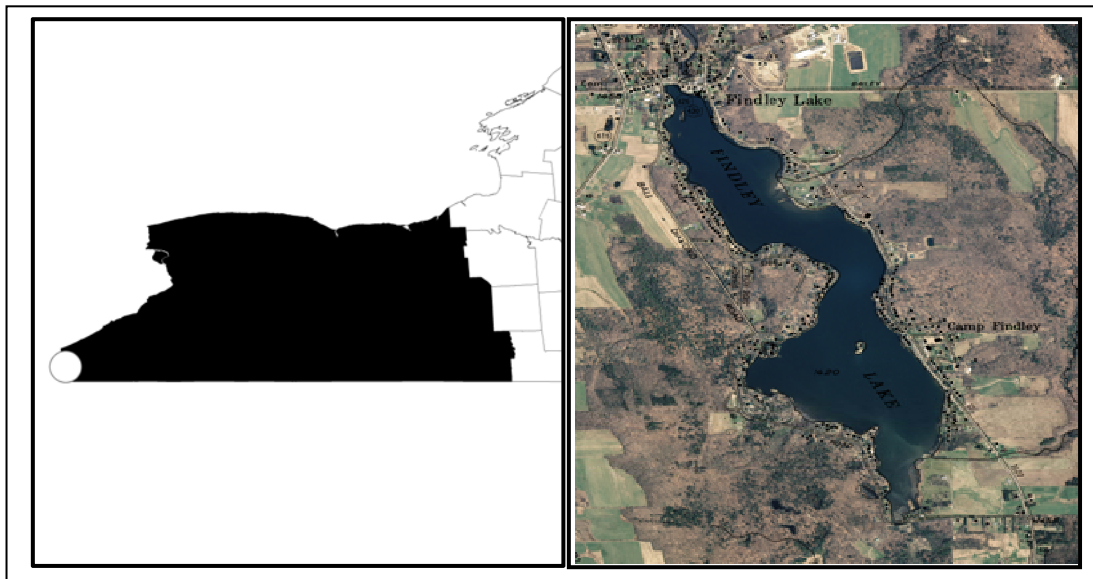


CSLAP 2011 Lake Water Quality Summary: Findley Lake

General Lake Information

Location	Town of Findley Lake
County	Chautauqua
Basin	Allegheny River
Size	124.3 hectares (307.0 acres)
Lake Origins	Natural
Watershed Area	1,240 hectares (3,063 acres)
Retention Time	0.5 years
Mean Depth	3.3 meters
Sounding Depth	11.7 meters
Public Access?	cartop launch
Major Tributaries	West Branch French Creek
Lake Tributary To...	Findley Lake outlet to West Branch French Creek to Allegheny River
WQ Classification	B (contact recreation = swimming)
Lake Outlet Latitude	42.119
Lake Outlet Longitude	-79.734
Sampling Years	1986-2000, 2003-2011
2011 Samplers	Ed Mulkearn, Dennis Brumagin, Joseph Siperstein, Rick Vonk
Main Contact	Don Keppel

Lake Map



Background

Findley Lake is a 307 acre, class B lake found in the Town of Findley Lake in Chautauqua County, in western New York State. It has first sampled as part of CSLAP in 1986.

It is one of three CSLAP lakes among the more than 15 lakes found in Chautauqua County, and one of nine CSLAP lakes among the more than 50 lakes and ponds in the Allegheny/Chemung River drainage basins.

Lake Uses

Findley Lake is a Class B lake; this means that the best intended use for the lake is for contact recreation—swimming and bathing, non-contact recreation—boating, aquatic life, and aesthetics. The lake is used by lake residents and visitors for swimming, power boating and other recreation via shoreline properties and a cartop boat launch.

It is not known by the report authors if private fish stocking occurs in Findley Lake. The state usually stocks about 1000 9 to 10 inch tiger muskellunge in the lake, and about 5500 four inch walleye were stocked several years ago. Fish species in the lake include bluegill, carp, muskellunge, northern pike, smallmouth bass, pumpkinseed sunfish, walleye, and yellow perch.

General statewide fishing regulations are applicable in Findley Lake. In addition, open season on walleye lasts from the 1st Saturday in May through March 15, with an 18 inch size limit and a take limit of three fish. Ice fishing is allowed.

Historical Water Quality Data

CSLAP sampling was conducted on Findley Lake from 1986 to 2000, and 2003 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 Findley Lake can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77881.html>.

Findley Lake was sampled by the NYSDEC as part of the state ambient lake monitoring program (referred to as the LCI, or Lake Classification and Inventory Survey) in 1976 and 1985. These sampling programs indicated water quality conditions that were probably similar to those measured through CSLAP- the lake was less productive in 1985 (with nutrient and clarity readings similar to those measured in 2003 and 2004), and more productive in 1976. Conductivity readings have steadily increased from the 1970s sampling to the present day, but this has also occurred in most NYS lakes, and at present the increase in conductivity has not been connected to any other water quality changes.

Findley Lake was also sampled in 1937 as part of the Conservation Department (predecessor to the NYSDEC) Biological Survey of the Allegheny River basin. This survey showed slightly higher pH than in the typical CSLAP (or other contemporary monitoring program) sampling season, and oxygen deficits starting at a depth between 15 and 20 feet from the lake surface. The field notes for the 1937 survey included the following:

“This, the westernmost lake in New York State, is a very irregularly shaped body of water with numerous shallow bays and several islands. The level is maintained by a dam at the north end. A large part of the south end is a shallow area with flat bottom covered with a thick growth of hornwort, waterweed, and Robbins pondweed. These plants cover almost the entire bottom and

apparently have been the most successful invaders of what was once a wooded area, as evidenced by the numerous large submerged stumps. In this same weed bed are found many plants of the broad-leaved pondweed (P.amplifolius), of najad and bladderwort, as well as the ubiquitous waterlilies and water shield. Along the marshy shore, at the south end of the lake, are extensive marshes of cattail and large floating masses of water smartweed. Other large weed beds were found at the north end of the lake and along the east side.

Findley Lake has very poor bottom chemical conditions in the face of which it will be difficult if not impossible to improve production by stocking alone. To form the present lake, an 8-foot dam was built across the outlet of two small ponds. The total area of the two ponds was slightly more than half the area of the new lake. As a result about one-half of Findley Lake is less than 10 feet deep. Within recent years this shallow area has become quite completely choked with vegetation. During the summer this vegetation becomes so dense that only the tops are alive. In the lower levels where sufficient light fails to penetrate, the vegetation is dead or dying. While green plants normally aerate the water, here so little of the plant actually is green that stagnant conditions prevail on the bottom. It is not unusual for algal and rooted aquatic plant growths to become sufficiently unpleasant although these growths seldom become sufficiently abundant to affect fish life adversely. The conditions in Findley Lake, however, leads one to conclude that vegetation may become so abundant as to be detrimental to fishing and fish production....

Bottom samples of water taken among the vegetation at a depth of 8 feet had only 0.4 parts per million of oxygen. In contrast to this in deeper water where vegetation is lacking and where surface winds can mix the water more completely, at a depth of 14 feet there were 3.96 parts per million of oxygen at one station. At this same station below the plane of the 14-foot contour or in that areas not greatly affected by surface winds, the oxygen dropped from 0.84 parts per million at 15 feet to 0.0 parts per million on the bottom at 31 feet. From this it can be seen that among the vegetation the oxygen is less at 8 feet than at almost twice the depth where the oxygen is lacking. The bottom chemical conditions were inadequate for fish needs. A probably contributing factor is the nature of the bottom. Most of the area flooded when the dam was built was low, muck land that in earlier times had probably been covered by natural ponds.

To remedy the condition here will not be easy. Weed elimination by chemical methods is out of the question for the present since so far as is known, chemicals sufficiently strong to eliminate rooted vegetation on a large scale would kill all fish life. Algal blooms in water supply reservoirs are controlled by chemical means but here it probably could not be done without some harmful effect to fish life. Mechanical methods are the only safe means of removing rooted aquatic plants, laborious as the task may be. Wood saws or rakes may be used for the purpose but it should be pointed out that the weeds should be completely removed after they are cut for two reasons: (1) if left in the water to decompose and use up oxygen, the main purpose of their destruction would be defeated and (2) since many aquatic plants reproduce asexually, more cutting is not sufficient to stop their growth or to prevent them from spreading into other suitable areas. The process would have to be repeated as often as necessary”

There are no Findley Lake tributary sites monitored through the NYSDEC Rotating Intensive Basins (RIBS) program. The major tributary to the lake is the West Branch of French Creek, which has not been sampled through any statewide monitoring programs.

Fisheries monitoring was also conducted in at least 1988 and 1989 in support of the state stocking program. Water clarity readings were within the range found through CSLAP, but the conductivity readings in CSLAP were higher than those measured through the fisheries monitoring program.

Lake Association and Management History

Findley Lake is served by the Findley Lake Watershed Foundation. The lake association is involved in a variety of lake management activities, including:

- Water level control
- shoreline stabilization of the Nature Center's small island
- ownership and operation of the weed harvester
- depositing navigation buoys in the lake
- overseeing the lake fishery

The Findley Lake Watershed Foundation maintains a website at <http://www.flwf.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

Evaluation of the 2011 CSLAP data is limited by the lack of water quality data, including no samples collected in June and August. Secchi disk transparency readings were higher than normal and have increased slightly in recent years, despite the lack of short- or long-term changes in chlorophyll *a* or total phosphorus. Lake productivity increases substantially during the summer, but there was not enough data in 2011 to verify this seasonal trend. The lake can be characterized as *eutrophic*, or highly productive, based on total phosphorus, water clarity, and chlorophyll *a* readings (all typical of *eutrophic* lakes). The trophic state indices (TSI) evaluation suggests that chlorophyll *a* readings are higher than expected given the total phosphorus readings in the lake, and water clarity readings were higher than expected in 2011. This suggests that the lake may be susceptible to algal blooms with small increases in nutrient readings. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels may be sufficiently high 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, but the lake is not used for drinking water. Hypolimnetic phosphorus and ammonia readings in Findley Lake are higher than those measured at the lake surface. This suggests that deepwater intakes may be compromised for any “unofficial” 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

Color readings were higher than normal in 2011, and NO_x, ammonia and conductivity readings were lower than normal. The higher color readings were also measured in many other CSLAP

lakes (perhaps due to recent wetter weather or the change in laboratories in 2002), and has been part of a long-term trend. None of the other water quality indicators has exhibited any clear long-term trends, and it is likely that the small changes in each of the limnological indicators have been within the normal range of variability in the lake. Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

The 1992 phytoplankton survey showed slightly lower algal biomass than expected given the chlorophyll *a* readings in the lake, and the algal community was dominated by golden brown algae, diatoms, and blue green algae. It is not known if this community composition is typical of the lake, given the relatively low algal biomass relative to the typical chlorophyll *a* readings in the lake.

Macrophyte surveys conducted through CSLAP identified at least 16 aquatic plant species, and at least two exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil, and *Potamogeton crispus*, curly-leafed pondweed) have been found in the lake. The modified floristic quality index (FQI) data indicate that the quality of the aquatic plant community is “fair.”

The composition of the fish community includes a mix of coolwater (at least four species) and warmwater (at least five species) fish species. The lake fishery can likely be described as coolwater.

Zooplankton and macroinvertebrate surveys have not been conducted through CSLAP at Findley Lake.

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

Evaluation of Lake Perception

Recreational assessments were more favorable than normal in 2011, consistent with higher water clarity and more favorable water quality assessments, and despite more extensive weed coverage. None of these indicators of lake perception has exhibited any clear long-term changes. Lake recreational and water quality assessments degrade during the typical summer, despite the lack of significant seasonal change in aquatic plant coverage, but this could not be verified in 2011 (due to the lack of summer-long data). Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Air and water temperature readings in the summer index period were higher than normal in 2011, but temperatures have not exhibited any clear 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 usually indicate a high susceptibility for harmful algal blooms (HABs). An analysis of algae

bloom samples indicate microcystin readings well above the levels needed to support safe swimming, although open water microcystin readings were below this threshold.

Lake Condition Summary

Category	Indicator	Min	08-11 Avg	Max	2011 Avg	Classification	2011 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	0.33	1.71	5.35	3.42	Eutrophic	Higher than Normal	Increasing Slightly
	Chlorophyll <i>a</i>	0.20	30.24	274.0	18.20	Eutrophic	Within Normal Range	No Change
	Total Phosphorus	0.005	0.035	0.082	0.034	Eutrophic	Within Normal Range	No Change
Potable Water Indicators	Hypolimnetic NH4	0.00	0.48	1.91	1.39	Elevated Deepwater NH4	Higher than Normal	Not known
	Hypolimnetic As					Not measured through CSLAP		
	Hypolimnetic Iron					Not measured through CSLAP		
	Hypolimnetic Mn					Not measured through CSLAP		
Limnological Indicators	Hypolimnetic TP	0.003	0.186	0.960	0.300	Elevated Deepwater TP	Higher than Normal	Not known
	Nitrate + Nitrite	0.00	0.03	0.38	0.01	Low NOx	Lower Than Normal	No Change
	Ammonia	0.00	0.03	0.16	0.02	Low Ammonia	Lower Than Normal	No Change
	Total Nitrogen	0.16	0.55	1.49	0.72	Intermediate Total Nitrogen	Within Normal Range	No Change
	pH	6.82	7.99	9.05	8.01	Alkaline	Within Normal Range	No Change
	Specific Conductance	124	209	270	173	Intermediate Hardness	Lower Than Normal	No Change
	True Color	2	16	222	36	Intermediate Color	Higher than Normal	Increasing Significantly
	Calcium	19.4	27.0	33.2	29.9	Highly Susceptible to Zebra Mussels	Within Normal Range	No Change
Lake Perception	WQ Assessment	1	2.7	5	2.0	Definite Algal Greenness	More Favorable Than Normal	No Change
	Plant Coverage	1	2.4	4	3.0	Subsurface Plant Growth	Less Favorable than Normal	No Change
	Rec. Assessment	1	3.0	4	1.0	Slightly Impaired	More Favorable Than Normal	No Change
Biological Condition	Phytoplankton					Algal community comprised of golden brown algae, diatoms, cyanobacteria	Not known	Not known
	Macrophytes					Fair quality of the aquatic plant community	Not known	Not known
	Zooplankton					Not evaluated through CSLAP	Not known	Not known
	Macroinvertebrates					Not evaluated through CSLAP	Not known	Not known
	Fish					Coolwater fishery	Not known	Not known
	Invasive Species					Eurasian watermilfoil, curly leafed pondweed	Not known	Not known
Local Climate Change	Air Temperature	9	22.9	36	29.0		Higher Than Normal	No Change
	Water Temperature	12	22.7	28	27.0		Higher Than Normal	No Change
Harmful Algal Blooms	Open Water Phycocyanin	12	459	1291	283	Nearly all readings indicate high risk of BGA	Not known	Not known
	Open Water Microcystis	0.2	0.7	1.2		All readings indicate low lakewide toxins	Not known	Not known
	Shoreline Phycocyanin	470	288762	2e06		Shoreline BGA blooms common	Not known	Not known
	Shoreline Microcystis	0.7	20.7	126.7		Shoreline bloom toxins regularly above drinking water and swimming criteria	Not known	Not known
	Other Toxins					No anatoxin-a and cylindrospermopsin data	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

Findley Lake is presently among the lakes listed on the 2007 Allegheny River drainage basin Priority Waterbody List (PWL), with public bathing and recreation listed as *impaired* due to excessive nutrients, algae and weeds, and reduced water clarity. Aquatic life was listed as *stressed* due to hypolimnetic dissolved oxygen depletion. The PWL listing for Findley Lake is listed in Appendix C.

Potable Water (Drinking Water)

The CSLAP dataset at Findley Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water, and the lake is not used for this purpose. Algae levels may be high enough in the surface waters, and ammonia may be high enough in bottom waters to impact any "unofficial" use of the lake for potable water.

Contact Recreation (Swimming)

The CSLAP dataset at Findley Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation may be *impaired* by excessive algae, poor water clarity, and the potential for harmful algal blooms, although 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 Findley Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation is *stressed* by excessive weeds and the presence of Eurasian watermilfoil and curly leafed pondweed, although recreational use impacts from excessive weeds were not apparent in 2010 or 2011.

Aquatic Life

The CSLAP dataset on Findley Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *stressed* by hypolimnetic oxygen depletion, invasive plants, and *threatened* by 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 Findley Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *stressed* by excessive algae and weeds, and by frequent reports that the lake "looks bad."

Fish Consumption

There are no fish consumption advisories posted for Findley Lake.

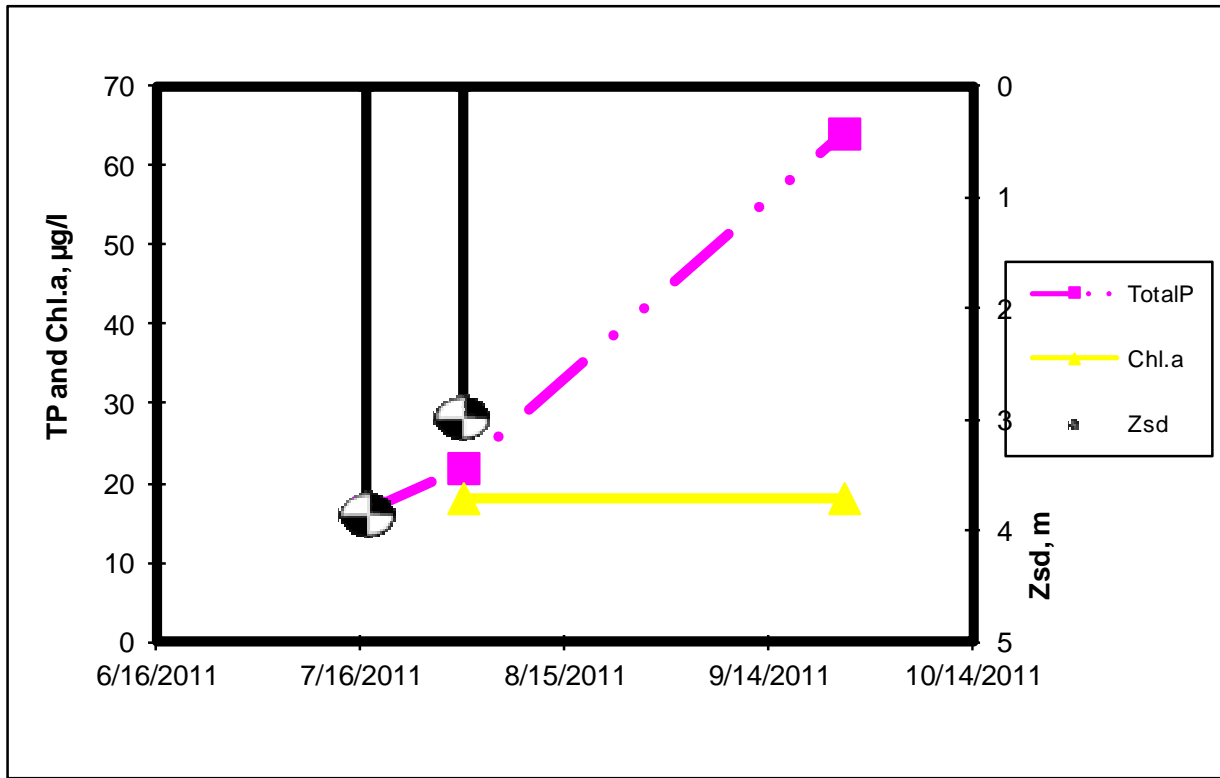
Additional Comments and Recommendations

Findley Lake may be a good candidate for future biomonitoring to evaluate the impact of the aquatic plant management actions and water quality problems in the lake. The lake association should resume collection of season-long biweekly samples to improve lake evaluations.

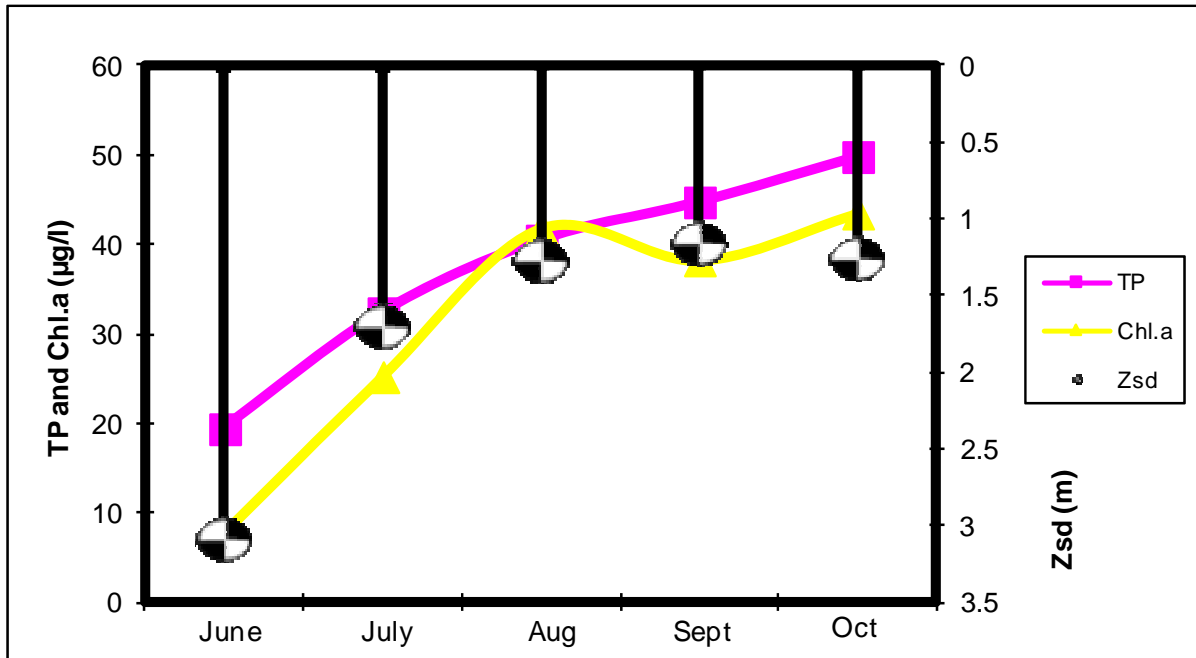
Aquatic Plant IDs-2011

None submitted for identification.

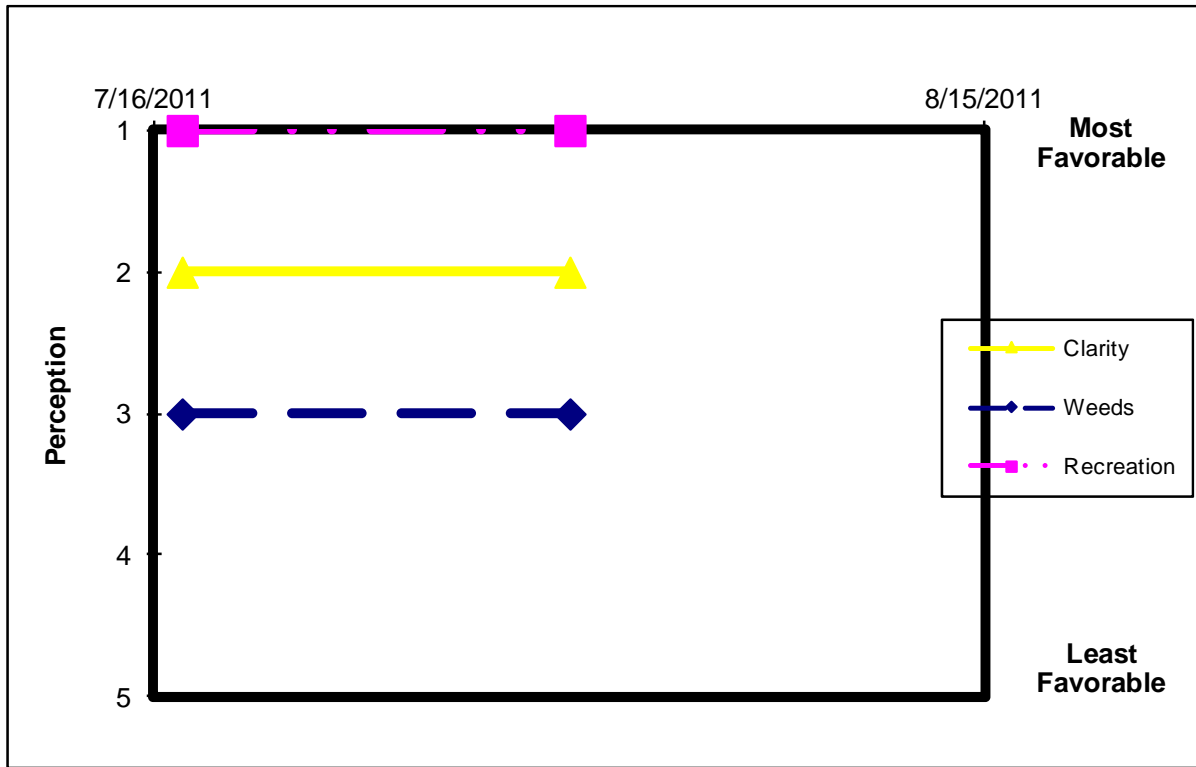
Time Series: Trophic Indicators, 2011



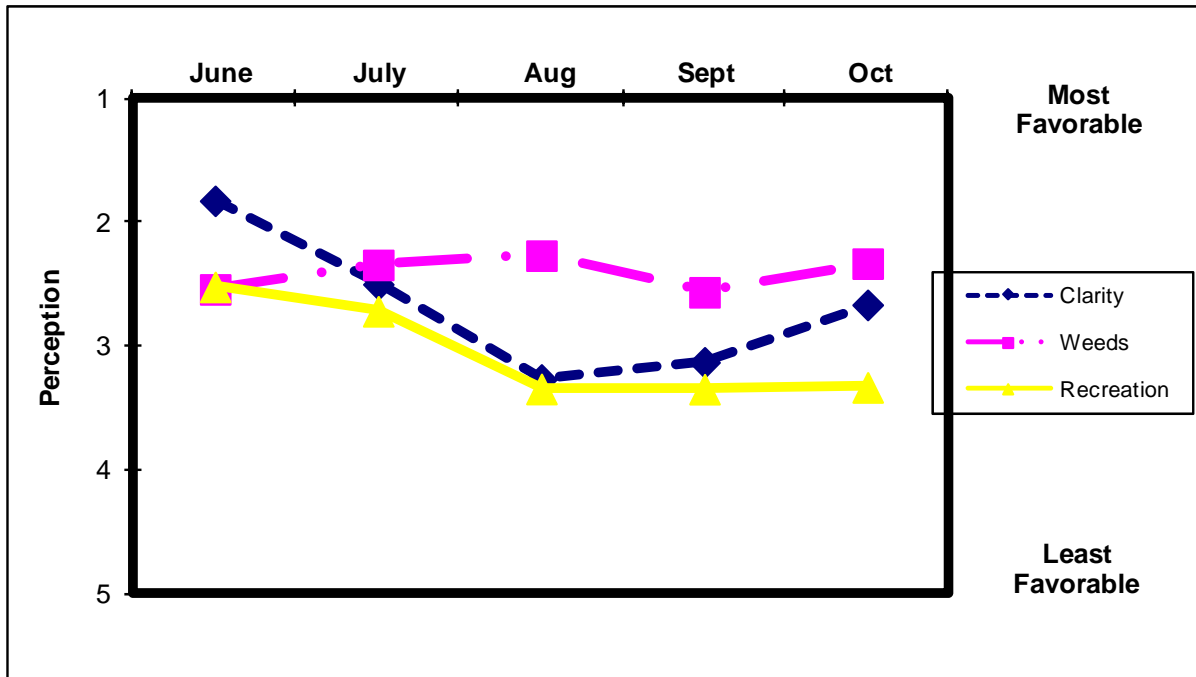
Time Series: Trophic Indicators, Typical Year (1986-2011)



Time Series: Lake Perception Indicators, 2011



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



Appendix A- CSLAP Water Quality Sampling Results for Findley Lake

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
24	Findley L	6/15/1986	11.5	3.00	1.5	0.026	0.12				5	6.92	190		2.22
24	Findley L	6/21/1986	11.5	3.13	1.5	0.013	0.11				5	7.50	180		2.29
24	Findley L	6/29/1986	11.5	2.25	1.5	0.011	0.09				10	7.62	185		2.00
24	Findley L	7/3/1986	11.5	2.75	1.5	0.022	0.11				15	7.82	194		0.80
24	Findley L	7/11/1986	11.5	2.00	1.5	0.021	0.03				2	7.84	185		5.03
24	Findley L	7/18/1986	11.5	1.50	1.5	0.030	0.06				5	8.38	194		
24	Findley L	7/24/1986	11.5	2.63											
24	Findley L	8/1/1986	11.5	1.63	1.5	0.028	0.03				14	8.05	197		
24	Findley L	8/5/1986	11.5	1.13	1.5	0.018	0.03				11	7.75	191		53.30
24	Findley L	8/12/1986			1.5	0.023	0.03				13	8.15	199		15.30
24	Findley L	8/16/1986	11.5	0.75	1.5	0.035	0.03				12	8.98	195		36.30
24	Findley L	8/21/1986	11.5	0.63	1.5	0.037	0.03				15	8.12	198		40.00
24	Findley L	8/30/1986	11.5	1.00	1.5	0.034	0.03				3	7.60	205		29.60
24	Findley L	9/5/1986	11.5	0.75	1.5	0.033	0.03				3	8.17	206		25.90
24	Findley L	9/14/1986	11.5	0.63	1.5	0.036	0.03				13	7.55	215		22.20
24	Findley L	9/21/1986	11.5	0.75	1.5	0.039	0.03				8	7.29	214		34.00
24	Findley L	6/8/1987	11.5	2.75	1.5	0.023	0.03				15	8.10	201		
24	Findley L	6/14/1987	11.5	3.00	1.5	0.018					12	8.22	198		
24	Findley L	6/21/1987	11.5	2.00	1.5	0.023	0.01				15	7.83	203		17.00
24	Findley L	6/28/1987	11.8	1.25	1.5	0.021	0.01				15	7.76	202		37.70
24	Findley L	7/5/1987	11.8	0.75	1.5	0.032	0.01				11	7.70	206		
24	Findley L	7/12/1987	11.5	0.63	1.5	0.033					11	7.86	206		116.00
24	Findley L	7/19/1987	11.5	0.75	1.5	0.040	0.01				15	7.49	206		109.00
24	Findley L	7/26/1987	11.5	1.00	1.5	0.052					13	7.63	209		45.10
24	Findley L	7/30/1987	11.5	0.75	1.5	0.056					12	7.38	210		73.30
24	Findley L	8/9/1987	11.5	0.75	1.5	0.042	0.01				7	7.33	208		116.00
24	Findley L	8/16/1987	11.5	0.50	1.5	0.060					6	7.14	216		274.00
24	Findley L	8/23/1987	11.5	0.75	1.5	0.054	0.01				10	7.42	208		
24	Findley L	8/30/1987	11.5	0.75	1.5	0.052					12	7.46	204		73.00
24	Findley L	9/6/1987	11.5	0.75	1.5	0.059	0.17				8	7.36	221		99.00
24	Findley L	10/1/1987	11.5	0.75	1.5	0.049	0.03				11	7.30	215		73.20
24	Findley L	6/21/1988	12.0	2.25	1.5	0.022	0.01				8	7.72	213		17.50
24	Findley L	6/28/1988	11.5	1.75	1.5	0.022	0.01				7	7.77	219		10.10
24	Findley L	7/5/1988	11.5	1.50	1.5	0.020	0.01				9	8.10	220		10.40
24	Findley L	7/12/1988	11.0	1.00	1.5	0.023	0.01				11	8.19	234		
24	Findley L	7/19/1988	11.5	1.00	1.5	0.025	0.01				7	8.31	223		20.70
24	Findley L	7/26/1988	12.0	1.50	1.5	0.029	0.01				10	7.71	221		1.78
24	Findley L	7/31/1988	11.5	1.25	1.5	0.031	0.01				10	8.10	223		17.80
24	Findley L	8/8/1988	11.5	1.00	1.5	0.037	0.01				11	7.97	219		31.10
24	Findley L	8/12/1988	11.5	0.75	1.5	0.042	0.01				10	7.96	221		52.50
24	Findley L	8/21/1988	11.8	0.75	1.5	0.042	0.01				6	8.32	227		49.60
24	Findley L	8/30/1988	11.5	2.25	1.5	0.032	0.02				11	7.97	227		10.10
24	Findley L	9/6/1988	11.3	1.75	1.5	0.037	0.03				14	7.86	227		18.50
24	Findley L	9/12/1988	11.5	1.50	1.5	0.035	0.03				12	7.95	229		24.40
24	Findley L	9/19/1988	11.8	1.00	1.5	0.040	0.01				8	8.09	230		38.50
24	Findley L	9/25/1988	11.8	1.00	1.5	0.039	0.01				6	8.27	227		30.30
24	Findley L	6/26/1989	11.0	3.25	1.5	0.017	0.14				7	7.94	198		2.16
24	Findley L	7/2/1989	11.0	2.25	1.5	0.015					12	7.98	199		18.50
24	Findley L	7/9/1989	11.0	2.25	1.5	0.022					15	7.76	204		6.45
24	Findley L	7/16/1989	11.5	2.50	1.5	0.020					11	7.85	210		6.18
24	Findley L	7/27/1989	11.5	2.50	1.5	0.025					10	8.13	200		9.77
24	Findley L	7/31/1989	11.0	2.00	1.5	0.026					8	7.82	210		6.36
24	Findley L	8/7/1989	10.5	2.50	1.5	0.029	0.06				8	8.18	214		7.19
24	Findley L	8/14/1989	11.3	2.00	1.5	0.020					7	7.98	211		6.45
24	Findley L	8/20/1989	11.5	2.00	1.5	0.024					2	8.24	212		6.65
24	Findley L	8/29/1989	11.5	2.25	1.5	0.028					2	8.24	208		11.30
24	Findley L	9/11/1989	11.0	1.75	1.5	0.025	0.01				5	8.16	211		17.80
24	Findley L	9/25/1989	11.5	1.00	1.5	0.029					6	8.18	203		19.60
24	Findley L	10/11/1989	11.0	1.25	1.5	0.038					5	8.16	210		18.50
24	Findley L	7/10/1990	11.5	1.25	1.5	0.046	0.01					7.95			
24	Findley L	7/17/1990	11.3	1.25	1.5	0.037	0.01				13	7.72	209		36.60
24	Findley L	7/31/1990	11.5	0.75	1.5	0.048	0.01				10	7.40	199		57.40
24	Findley L	8/14/1990	11.5	0.81	1.5	0.044					10	7.24	199		45.10

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
24	Findley L	8/28/1990	11.5	0.75	1.5	0.053	0.01				10	7.50	206		58.60
24	Findley L	9/11/1990	11.0	0.75	1.5	0.051	0.01				12	8.11	205		62.70
24	Findley L	9/25/1990	11.0	1.50	1.5	0.048	0.02				17	7.78	222		26.90
24	Findley L	10/10/1990	11.0	2.50	1.5	0.062						8.23	205		9.40
24	Findley L	7/22/1991	11.3	1.00	1.5	0.049	0.01				10	8.22	215		30.90
24	Findley L	8/5/1991	13.0	0.75	1.5	0.055	0.01				14	7.63	220		82.80
24	Findley L	8/19/1991	11.0	0.75	1.5	0.054	0.01				11	8.28	224		68.80
24	Findley L	9/4/1991	11.7	0.33	1.5	0.079	0.01				9	7.59	219		149.00
24	Findley L	9/18/1991	11.0	0.67	1.5	0.065						7.90	221		132.00
24	Findley L	10/1/1991	11.5	0.58	1.5	0.064					7	7.81	220		126.00
24	Findley L	6/29/1992	11.5	2.00	1.5	0.023					6	7.81	237		9.18
24	Findley L	7/18/1992	11.5	1.50	1.5	0.013					6	8.05	232		15.40
24	Findley L	8/11/1992	11.3	1.33	1.5	0.025					8	8.34	223		11.60
24	Findley L	8/31/1992	11.5	1.75	1.5	0.035					9	8.23	228		10.20
24	Findley L	9/28/1992	11.5	1.75	1.5	0.024					8	8.24	218		15.80
24	Findley L	10/10/1992	11.6	1.50	1.5	0.034					11	8.06	225		28.50
24	Findley L	7/6/1993	11.5	1.50	1.5	0.030					7	8.20	210		21.70
24	Findley L	7/20/1993	11.5	1.50	1.5	0.043					2	7.75	210		15.50
24	Findley L	8/9/1993	11.0	1.00	1.5	0.049					7	8.15	211		49.30
24	Findley L	8/30/1993	11.3	0.75	1.5	0.063					7	8.16	202		45.90
24	Findley L	9/21/1993	11.5	1.25	1.5	0.044					6	8.26	214		33.20
24	Findley L	10/4/1993	11.5	1.29	1.5	0.048					5	8.07	216		18.90
24	Findley L	6/14/1994	11.3	3.63	1.5	0.015	0.12				6	8.60	222		3.73
24	Findley L	7/5/1994	11.5	2.00	1.5	0.023					7	7.90	221		10.20
24	Findley L	7/25/1994	11.5	1.50	1.5	0.031					4	8.04	224		21.50
24	Findley L	8/15/1994	11.8	1.25	1.5	0.039	0.03				11	7.96	206		32.70
24	Findley L	9/5/1994	11.5	1.00	1.5	0.048					10	7.70	206		39.40
24	Findley L	9/26/1994	13.0	0.80	1.5	0.059					12	7.83	208		50.30
24	Findley L	6/5/1995	11.0	2.00	1.5	0.020					6				9.86
24	Findley L	6/20/1995	11.0	1.00	1.5	0.028					7	8.16	230		24.40
24	Findley L	7/10/1995	11.3	0.77	1.5	0.037						7.76	235		51.30
24	Findley L	7/17/1995	11.4	0.75	1.5	0.053	0.01				5	8.07	237		53.80
24	Findley L	7/31/1995	11.0	0.55	1.5	0.059					10	8.07	231		86.70
24	Findley L	8/14/1995	11.5	0.33	1.5	0.082					5	7.48	232		172.00
24	Findley L	6/17/1996	11.3	4.75	1.5	0.013	0.05				5	8.18	225		3.50
24	Findley L	7/12/1996	11.5	1.65	1.5	0.023	0.08				10	7.84	218		20.50
24	Findley L	7/17/1996	11.0	3.25	1.5	0.015	0.07				20	7.85	220		8.20
24	Findley L	7/29/1996	11.0	3.25	1.5	0.018	0.04				10	8.03	218		5.90
24	Findley L	8/12/1996	11.0	2.75	1.5	0.023	0.01				20	7.93	217		7.70
24	Findley L	8/26/1996	11.0	3.75	1.5	0.018	0.01				5	8.43	214		5.20
24	Findley L	9/9/1996	11.0	2.25	1.5	0.024	0.01				10	7.95	212		14.10
24	Findley L	9/23/1996	11.5	2.28	1.5	0.056	0.01				10	7.96	210		19.10
24	Findley L	6/9/1997	11.0	4.25	1.5	0.013	0.10				10	7.52	190		2.60
24	Findley L	6/23/1997	11.0	5.13	1.5	0.015	0.08				10	8.07	186		3.08
24	Findley L	7/7/1997	11.3	1.50	1.5	0.031	0.01				10	7.56	200		18.50
24	Findley L	7/21/1997	11.8	1.28	1.5	0.030	0.01				10	7.83	202		19.70
24	Findley L	8/4/1997	11.0	1.42	1.5	0.029	0.01				10	7.39	207		27.80
24	Findley L	8/18/1997	11.5	1.71	1.5	0.032	0.01				7	7.56	206		20.20
24	Findley L	9/1/1997	11.7	1.40	1.5	0.032	0.01				7	8.48	202		21.90
24	Findley L	9/15/1997	11.3	1.75	1.5	0.025	0.01				9	8.41	200		13.90
24	Findley L	6/8/1998	12.0	2.42	1.5	0.025	0.01				5	8.41	178		9.34
24	Findley L	6/22/1998	11.5	3.13	1.5	0.020	0.01				3	7.51	185		6.32
24	Findley L	7/7/1998	11.5	1.38	1.5	0.038	0.01				2	8.53	186		22.10
24	Findley L	7/20/1998	11.5	0.78	1.5	0.044	0.14				5	8.61	173		40.50
24	Findley L	8/3/1998	11.5	0.83	1.5	0.053	0.01				5	8.13	181		51.60
24	Findley L	8/17/1998	11.8	0.83	1.5	0.070					14	9.05	183		57.10
24	Findley L	8/31/1998	11.5	0.94	1.5	0.067					12	8.96	184		47.20
24	Findley L	9/14/1998	10.8	0.80	1.5	0.067					6	7.80	194		43.20
24	Findley L	6/7/1999	11.5	1.05	1.5	0.031	0.01				8	7.47	211		19.20
24	Findley L	6/21/1999	11.8	1.19	1.5	0.035	0.01				6	8.21	204		21.90
24	Findley L	7/5/1999	11.3	0.78	1.5	0.061	0.02				10	7.54	196		63.50
24	Findley L	7/19/1999	11.7	0.71	1.5	0.081	0.01				12	7.36	198		69.00
24	Findley L	8/2/1999	11.0	0.50	1.5	0.069	0.01				11	8.33	202		53.50
24	Findley L	8/16/1999	11.0	0.55	1.5	0.068	0.01				7	7.33	215		45.90
24	Findley L	8/30/1999	11.0	0.85	1.5	0.050	0.01				10	7.85	221		43.80
24	Findley L	9/12/1999	11.0	0.68	1.5	0.054	0.01				6	7.21	227		57.00

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
24	Findley L	6/19/2000	11.3	2.95	1.5	0.020	0.01				8	8.18	218		4.54
24	Findley L	7/10/2000	12.0	2.00	1.5	0.017	0.01				4	7.80	217		7.10
24	Findley L	7/17/2000	11.8	1.85	1.5	0.017	0.01				6	8.36	214		7.85
24	Findley L	7/31/2000	11.0	1.95	1.5	0.023	0.01				4	8.62	210		10.80
24	Findley L	8/14/2000	11.5	1.22	1.5	0.028	0.01				6	7.38	208		22.20
24	Findley L	8/28/2000	11.5	1.13	1.5	0.042	0.01				8	8.20	210		42.10
24	Findley L	9/11/2000	11.0	1.09	1.5	0.038	0.01				9	8.04	215		28.20
24	Findley L	9/25/2000	11.8	2.25	1.5	0.023	0.04				8	8.09	222		6.95
24	Findley L	06/15/03	8.3	5.35		0.011	0.09	0.03	0.36	72.66	7	7.95	245	31.0	2.46
24	Findley L	06/29/03	11.5	4.15		0.005	0.04	0.02	0.30	126.92	6	8.33	251		7.79
24	Findley L	07/13/03	11.1	1.95		0.017	0.02	0.00	0.23	29.22	10	8.52	242		1.09
24	Findley L	07/28/03	10.9	2.00		0.021	0.01	0.02	0.16	17.06	9	8.33	233		3.33
24	Findley L	08/10/03	8.7	3.05		0.018	0.03	0.04	0.59	72.43	20	8.32	229	29.0	3.35
24	Findley L	08/24/03	9.0	2.00		0.027	0.00	0.01	0.41	34.02	45	8.50	223		5.90
24	Findley L	09/07/03	10.1	1.90		0.025	0.03	0.03			43	8.42	218		32.94
24	Findley L	09/21/03	11.1	1.15		0.032	0.02	0.04	0.37	25.80	46	8.26	227		4.99
24	Findley L	6/13/2004	13.0	3.00		0.017	0.05	0.01	0.27	35.32	20	7.01	241	23.8	0.61
24	Findley L	6/27/2004	10.3	3.20		0.017	0.01	0.01	0.32	40.64	20	7.34	233		2.70
24	Findley L	7/18/2004	11.0	1.70		0.029	0.25	0.02	1.36	103.10	10	8.20	211		29.20
24	Findley L	8/15/2004		1.20	0.6	0.000	0.01	0.02	0.46		13	7.14	214		10.60
24	Findley L	9/18/2005	5.2	0.98	0.6	0.050	0.01	0.02	0.24	10.69	13	7.47	188		20.9
24	Findley L	10/2/2005	11.0	0.95	0.6	0.054	0.03	0.03	0.26	10.50	17	7.81	209		30.0
24	Findley L	6/18/2006	10.0	4.00		0.014	0.05	0.02	0.38	59.33	21	7.99	215	22.1	2.07
24	Findley L	7/17/2006	10.6	3.60		0.017	0.02	0.02	0.46	59.59	7	8.46	267		2.05
24	Findley L	6/30/2007	11.5	2.85		0.030	0.01	0.03	0.39	29.06	25	8.85	177	19.4	6.51
24	Findley L	7/15/2007	10.9	1.80		0.076	0.01	0.05	0.57	16.72	30	8.97			13.20
24	Findley L	7/29/2007	11.3	1.25		0.059	0.06	0.04	0.87	32.83	28	8.98	203		42.30
24	Findley L	8/11/2007	11.2	0.90		0.058	0.03	0.11	0.97	37.03		8.47	226		47.20
24	Findley L	8/25/2007	11.5	0.60		0.056	0.00	0.02	0.99	39.40	96	8.67	183	22.5	3.72
24	Findley L	9/8/2007	11.8	0.78		0.055	0.01	0.03	1.45	58.03	19	8.38	184		50.56
24	Findley L	9/16/2007	11.3	0.88		0.049	0.01	0.16	0.84	37.62	15	7.94	214		35.40
24	Findley L	9/30/2007	11.5	0.90		0.054	0.01	0.02	0.94	38.78	11	7.98	220		46.84
24	Findley L	6/8/2008	11.3	4.10	1.5	0.020	0.05	0.04	0.39	44.20	7	8.11	225	27.7	2.72
24	Findley L	6/16/2008	11.0	4.40	1.0	0.025	0.02	0.02	0.19	17.25	120	7.92	172		0.38
24	Findley L	6/30/2008	11.1	3.00	1.0	0.016	0.09	0.04	0.25	33.72	41	8.42	201		2.16
24	Findley L	7/14/2008	11.0	2.05	1.0	0.021	0.01	0.02	0.28	29.04	16	8.18	193		5.24
24	Findley L	8/4/2008	11.7	1.30	1.0	0.031	0.00	0.05	0.47	32.84	22	8.47	213	23.8	23.62
24	Findley L	8/11/2008	11.0	1.10	1.0	0.035	0.01	0.05	0.46	28.73	29	8.16	216		26.42
24	Findley L	9/2/2008	11.1	0.65	1.0	0.054	0.00	0.06	1.04	42.78	49	8.47	166		66.24
24	Findley L	9/23/2008	11.6	0.75	1.0	0.049	0.02	0.06	0.78	34.53	31	8.09	220		52.76
24	Findley L	06/19/2009	11.6	4.30	1.5	0.016	0.00	0.02	0.30	41.00	22	8.07	196	28.4	5.42
24	Findley L	07/03/2009	12.0	2.95		0.017	0.04	0.03	0.27	35.25	33	8.09	158		1.45
24	Findley L	07/18/2009	10.8	2.70	1.0	0.024	0.01	0.04	0.31	28.55	34	7.60	161		1.43
24	Findley L	07/31/2009	11.4	2.45	1.0	0.019	0.01	0.04	0.28	33.00	25	7.88	154		10.51
24	Findley L	08/13/2009	11.7	2.35	1.5	0.019	0.03	0.02	0.32	36.93	39	7.92	166	30.3	5.70
24	Findley L	08/30/2009	10.6	1.45	1.5	0.029	0.01	0.06	0.32	24.42	28	7.69	208		18.00
24	Findley L	09/07/2009	11.7	1.15	1.5	0.030	0.38	0.05	0.48	35.19	37	7.93	166		23.80
24	Findley L	09/07/2009	grab	HAB											
24	Findley L	09/18/2009	11.0	1.65	1.5	0.028	0.01	0.04	0.49	38.60	53	6.82	181		3.00
24	Findley L	6/4/2010	11.6	4.95	1.0	0.018	0.01	0.03	0.34	41.69	28	8.19	222	29.9	0.20
24	Findley L	6/17/2010	11.1	3.65	1.0	0.017	0.01	0.04	0.51	65.36	16	8.43	270		4.80
24	Findley L	7/1/2010	10.8	2.65	1.0	0.020	0.01	0.02	0.35	38.50	16	8.38	218		5.20
24	Findley L	7/25/2010	11.4	0.90	1.0	0.043	0.01	0.03	0.60	30.48	104	8.46	202		10.60
24	Findley L	8/1/2010	11.5	0.85	1.0	0.044	0.01	0.03	0.88	43.50	49	8.97	211	33.2	35.30
24	Findley L	8/1/2010	grab	HAB											
24	Findley L	8/4/2010	grab	HAB											
24	Findley L	8/4/2010	grab	HAB											
24	Findley L	8/8/2010	11.7	0.80	1.0	0.051	0.01	0.03			20	8.30	221		30.40
24	Findley L	8/25/2010	grab	HAB											
24	Findley L	8/25/2010	grab	HAB											
24	Findley L	8/25/2010	grab	HAB											
24	Findley L	8/29/2010	11.6	0.63	1.0	0.069	0.02	0.04	1.16	36.97	222	8.29	251		67.40
24	Findley L	9/23/2010	11.7	0.70	1.0	0.073	0.05	0.05	1.13	34.32	55	7.57	242		54.60
24	Findley L	9/25/2010	grab	HAB											
24	Findley L	7/17/2011	11.4	3.85		0.016	0.01	0.01	0.30	39.98	17	8.43	204	29.9	
24	Findley L	7/31/2011		2.98		0.022	0.01	0.02	0.36	35.90	28	7.69	124		18.20

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
24	Findley L	9/25/2011				0.064	0.01	0.05	1.49	51.17	64	7.92	189		18.20
24	Findley L	6/22/1998			10.0	0.211									
24	Findley L	7/20/1998				0.465									
24	Findley L	8/17/1998				0.618									
24	Findley L	9/14/1998				0.960									
24	Findley L	06/15/03				0.012	0.11	0.08	0.28	23.33					
24	Findley L	06/29/03				0.008	0.02	0.02	0.31	37.80					
24	Findley L	07/13/03				0.017	0.04	0.06	0.36	21.19					
24	Findley L	07/28/03				0.018	0.00	0.00	0.05	2.50					
24	Findley L	08/10/03				0.003	0.06	0.03	0.63	186.11					
24	Findley L	08/24/03				0.017	0.00	0.01	0.43	25.40					
24	Findley L	09/07/03				0.025	0.03	0.01							
24	Findley L	09/21/03				0.028	0.01	0.01	0.37	13.42					
24	Findley L	6/13/2004				0.036	0.07	0.02	0.50	13.87					
24	Findley L	6/30/2007	11.5			0.140									
24	Findley L	7/15/2007	10.9			0.070									
24	Findley L	7/29/2007	11.3			0.154									
24	Findley L	8/11/2007	11.2			0.199									
24	Findley L	8/25/2007	11.5			0.192									
24	Findley L	9/8/2007	11.8			0.045									
24	Findley L	9/16/2007	11.3			0.242									
24	Findley L	9/30/2007	11.5			0.565									
24	Findley L	6/8/2008	11.3		10.0	0.029									
24	Findley L	6/16/2008	11.0		10.0	0.072									
24	Findley L	6/30/2008	11.1		10.0	0.019									
24	Findley L	7/14/2008	11.0		10.0	0.038									
24	Findley L	8/4/2008	11.7		10.0	0.106									
24	Findley L	8/11/2008	11.0		9.0	0.092									
24	Findley L	9/2/2008	11.1		10.1	0.477									
24	Findley L	9/23/2008	11.6		10.0	0.416									
24	Findley L	06/19/2009			10.0	0.038		0.40							
24	Findley L	07/03/2009				0.145		0.66							
24	Findley L	07/18/2009			9.5	0.009		0.51							
24	Findley L	07/31/2009			10.0	0.180		0.72							
24	Findley L	08/13/2009			10.0	0.220		0.03							
24	Findley L	08/30/2009			9.5	0.276		1.41							
24	Findley L	09/07/2009			10.0	0.150		1.44							
24	Findley L	09/18/2009			10.0	0.366		1.09							
24	Findley L	6/4/2010	11.6		10.0	0.033		0.33							
24	Findley L	6/17/2010	11.1		10.0	0.037		0.34							
24	Findley L	7/1/2010	10.8		9.0	0.033		0.14							
24	Findley L	7/25/2010	11.4		10.0	0.247		0.78							
24	Findley L	8/1/2010	11.5		10.0	0.194		0.67							
24	Findley L	8/8/2010	11.7		10.0	0.244		0.57							
24	Findley L	8/29/2010	11.6		10.0	0.272		0.95							
24	Findley L	9/23/2010	11.7		10.0	0.190		1.39							
24	Findley L	7/17/2011	11.4		11.0	0.321		1.22							
24	Findley L	7/31/2011			11.3	0.095		1.04							
24	Findley L	9/25/2011				0.484		1.91							

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
24	Findley L	6/15/1986	epi	18	19											
24	Findley L	6/21/1986	epi	23	20											
24	Findley L	6/29/1986	epi	22	21											
24	Findley L	7/3/1986	epi	15	20											
24	Findley L	7/11/1986	epi	15	20											
24	Findley L	7/18/1986	epi	30	24											
24	Findley L	7/24/1986	epi	30	25											
24	Findley L	8/1/1986	epi	26	24											
24	Findley L	8/5/1986	epi	26	25											
24	Findley L	8/16/1986	epi	24	24											
24	Findley L	8/21/1986	epi	26	25											
24	Findley L	8/30/1986	epi	20	19											
24	Findley L	9/5/1986	epi	21	20											
24	Findley L	9/14/1986	epi	14	19											
24	Findley L	9/21/1986	epi	17	18											
24	Findley L	6/8/1987	epi	22	24											
24	Findley L	6/14/1987	epi	25	22											
24	Findley L	6/21/1987	epi	27	25											
24	Findley L	6/28/1987	epi	19	23											
24	Findley L	7/5/1987	epi	23	23											
24	Findley L	7/12/1987	epi	30	27											
24	Findley L	7/19/1987	epi	27	26											
24	Findley L	7/26/1987	epi	24	27											
24	Findley L	7/30/1987	epi	25	27											
24	Findley L	8/9/1987	epi	24	24											
24	Findley L	8/16/1987	epi	27	27											
24	Findley L	8/23/1987	epi	18	22											
24	Findley L	8/30/1987	epi	21	20											
24	Findley L	9/6/1987	epi	19	19											
24	Findley L	10/1/1987	epi	14	17											
24	Findley L	6/21/1988	epi	25	24											
24	Findley L	6/28/1988	epi	20	24											
24	Findley L	7/5/1988	epi	29	25											
24	Findley L	7/12/1988	epi	28	27											
24	Findley L	7/19/1988	epi	26	28											
24	Findley L	7/26/1988	epi	26	25											
24	Findley L	7/31/1988	epi	24	26											
24	Findley L	8/8/1988	epi	27	28											
24	Findley L	8/12/1988	epi	26	27											
24	Findley L	8/21/1988	epi	20	25											
24	Findley L	8/30/1988	epi	18	23											
24	Findley L	9/6/1988	epi	15	20											
24	Findley L	9/12/1988	epi	24	20											
24	Findley L	9/19/1988	epi	24	20											
24	Findley L	9/25/1988	epi	24	18											
24	Findley L	6/26/1989	epi	29	27											
24	Findley L	7/2/1989	epi	22	23											
24	Findley L	7/9/1989	epi	27	25											
24	Findley L	7/16/1989	epi	25	24											
24	Findley L	7/27/1989	epi	27	25											
24	Findley L	7/31/1989	epi	21	24											
24	Findley L	8/7/1989	epi	17	23											
24	Findley L	8/14/1989	epi	24	22											
24	Findley L	8/20/1989	epi	20	23											
24	Findley L	8/29/1989	epi	26	24											
24	Findley L	9/11/1989	epi	21	22											
24	Findley L	9/25/1989	epi	14	16											
24	Findley L	10/11/1989	epi	11	12											
24	Findley L	7/10/1990	epi	22	23											
24	Findley L	7/17/1990	epi	25	23											
24	Findley L	7/31/1990	epi	21	24											
24	Findley L	8/14/1990	epi	22	23											
24	Findley L	8/28/1990	epi	23	23											
24	Findley L	9/11/1990	epi	21	22											

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
24	Findley L	9/25/1990	epi	14	15											
24	Findley L	10/10/1990	epi	21	16											
24	Findley L	7/22/1991	epi	26	27											
24	Findley L	8/5/1991	epi	24	23											
24	Findley L	8/19/1991	epi	23	24											
24	Findley L	9/4/1991	epi	20	22											
24	Findley L	9/18/1991	epi	20	22											
24	Findley L	10/1/1991	epi	19	17											
24	Findley L	6/29/1992	epi	22	21	3	2	3	1							
24	Findley L	7/18/1992	epi	22	23	3	2	3	14							
24	Findley L	8/11/1992	epi	23	24											
24	Findley L	8/31/1992	epi	17	20	3	2	2	15							
24	Findley L	9/28/1992	epi	20	18	2	2	2	5							
24	Findley L	10/10/1992	epi	14	15	2	3	3	5							
24	Findley L	7/6/1993	epi	26	25	3	2	2								
24	Findley L	7/20/1993	epi	21	24	3	2	3	5							
24	Findley L	8/9/1993	epi	24	23	3	2	3	1							
24	Findley L	8/30/1993	epi	27	26	3	3	4	123							
24	Findley L	9/21/1993	epi	15	18	2	4	4	25							
24	Findley L	10/4/1993	epi	17	14	3	3	4	125							
24	Findley L	6/14/1994	epi	31	23	2	2	2								
24	Findley L	7/5/1994	epi	27	24	2	2	3	56							
24	Findley L	7/25/1994	epi	23	25	3	2	3	14							
24	Findley L	8/15/1994	epi	21	21	3	2	4	135							
24	Findley L	9/5/1994	epi	19	20	4	2	3	134							
24	Findley L	9/26/1994	epi	19	19	3	3	4	135							
24	Findley L	6/5/1995	epi	25	22	2	2	2								
24	Findley L	6/20/1995	epi	30	27	3	2	4	14							
24	Findley L	7/10/1995	epi	23	23	3	3	3	15							
24	Findley L	7/17/1995	epi	28	27	3	2	3	14							
24	Findley L	7/31/1995	epi	30	28	3	3	3	134							
24	Findley L	8/14/1995	epi	31	27	4	2	3	134							
24	Findley L	6/17/1996	epi	24	22	1	2	1								
24	Findley L	7/12/1996	epi	27	25	2	2	3	14							
24	Findley L	7/17/1996	epi	32	25	2	2	3								
24	Findley L	7/29/1996	epi	22	23	2	2	2	5							
24	Findley L	8/12/1996	epi	22	23	2	2	3	2							
24	Findley L	8/26/1996	epi	23	24											
24	Findley L	9/9/1996	epi	25	22	3	4	4	24							
24	Findley L	9/23/1996	epi	19	17	3	4	4	24							
24	Findley L	6/9/1997	epi	24	19	1	3	3	2							
24	Findley L	6/23/1997	epi	24	23	1	3	3	2							
24	Findley L	7/7/1997	epi	20	23	3	2	3	1							
24	Findley L	7/21/1997	epi	26	25	3	3	3	134							
24	Findley L	8/4/1997	epi	20	23	3	3	3	2334							
24	Findley L	8/18/1997	epi	19	22	3	3	4	124							
24	Findley L	9/1/1997	epi	26	22	3	3	4	124							
24	Findley L	9/15/1997	epi	24	21	3	3	4	12							
24	Findley L	6/8/1998	epi	17	18	2	4	4	2							
24	Findley L	6/22/1998	epi	25	24	2	4	4	24							
24	Findley L	7/7/1998	epi	26	25	3	4	4	124							
24	Findley L	7/20/1998	epi	29	26	3	4	4	1234							
24	Findley L	8/3/1998	epi	25	23	5	4	4	1234							
24	Findley L	8/17/1998	epi	30	25	4	3	4	124							
24	Findley L	8/31/1998	epi	24	23	4	4	4	1234							
24	Findley L	9/14/1998	epi	22	20	4	3	4	1234							
24	Findley L	6/7/1999	epi	35	25	3	3	3	234							
24	Findley L	6/21/1999	epi	20	22	3	3	3	24							
24	Findley L	7/5/1999	epi	33	24	3	3	4	124							
24	Findley L	7/19/1999	epi	27	26	3	3	3	1234							
24	Findley L	8/2/1999	epi	23	26	4	3	4	134							
24	Findley L	8/16/1999	epi	28	22	3	3	4	134							
24	Findley L	8/30/1999	epi	20	22	4	2	4	134							
24	Findley L	9/12/1999	epi	22	21	4	3	3	134							
24	Findley L	6/19/2000	epi	26	22	2	3	2	2							

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
24	Findley L	7/10/2000	epi	26		2	3	3	2							
24	Findley L	7/17/2000	epi	27	24	2	3	3	2							
24	Findley L	7/31/2000	epi	29	26	2	3	3	12							
24	Findley L	8/14/2000	epi	27	25	3	2	3	125							
24	Findley L	8/28/2000	epi	27	23	3	2	4	13							
24	Findley L	9/11/2000	epi	26	24	3	2	3	134							
24	Findley L	9/25/2000	epi	12	18	2	2	2	5							
24	Findley L	06/15/03	epi	27		2	2	2								
24	Findley L	06/29/03	epi	25	23	2	3	3	2							
24	Findley L	07/13/03	epi	36	24											
24	Findley L	07/28/03	epi	22	23											
24	Findley L	08/10/03	epi	26	25											
24	Findley L	08/24/03	epi	20	25											
24	Findley L	09/07/03	epi	20	22	3	3	4	25							
24	Findley L	09/21/03	epi	21	22	4	4	4	123							
24	Findley L	6/13/2004	epi	25	22	2	3	3	2							
24	Findley L	6/27/2004	epi	22	22	2	3	3	2							
24	Findley L	7/18/2004	epi	27	23	3	2	3	13							
24	Findley L	8/15/2004	epi	24	21	3	2	3	3							
24	Findley L	9/18/2005	epi	24	23	3	1	3	3							
24	Findley L	10/2/2005	epi	29	18	3	1	3	13							
24	Findley L	6/18/2006	epi	29	25		3		2							
24	Findley L	7/17/2006	epi	29		2	1	2	8							
24	Findley L	6/30/2007	epi	13	22	2	3	3	2							
24	Findley L	7/15/2007	epi	17	23	3	2	3	15							
24	Findley L	7/29/2007	epi	18	24	3	2	3	123							
24	Findley L	8/11/2007	epi	17	26	3	1	3	1238							
24	Findley L	8/25/2007	epi	22	27	4	1	4	1234							
24	Findley L	9/8/2007	epi	19	26	4	2	3	158							
24	Findley L	9/16/2007	epi	11	20	4	2	3	12358							
24	Findley L	9/30/2007	epi	9	18	3	1	3	1							
24	Findley L	6/8/2008	epi	23	20	1	1	1	8							
24	Findley L	6/16/2008	epi	22	21	1	2	2	5							
24	Findley L	6/30/2008	epi	17	21	2	2	2	58							
24	Findley L	7/14/2008	epi	25	24	2	2	2	8							
24	Findley L	8/4/2008	epi	20	25	3	2	2	18							
24	Findley L	8/11/2008	epi	20	22	3	1	2	157							
24	Findley L	9/2/2008	epi	26	25	4	3	4	1378							
24	Findley L	9/23/2008	epi	19	18	3	2	3	18							
24	Findley L	06/19/2009	epi	25	23	1	2	2	0							
24	Findley L	07/03/2009	epi	21	21	2	2	2	0							
24	Findley L	07/18/2009	epi	20	22	2	1	2	8							
24	Findley L	07/31/2009	epi	23	24	2	2	3	56							
24	Findley L	08/13/2009	epi	26	24	2	2	3	68					0.45		
24	Findley L	08/30/2009	epi	19	21	3	2	3	5							
24	Findley L	09/07/2009	epi	22	22	2	2	3	1					0.99		
24	Findley L	09/07/2009	bloom											126.7		
24	Findley L	09/18/2009	epi	21	21	2	3	2	3	8		150.6				
24	Findley L	6/4/2010	epi	25	20	2	1	2	1	0	5					
24	Findley L	6/17/2010	epi	20	18	2	1	2	2	0	0					
24	Findley L	7/1/2010	epi	20	23	2	1	2	2	8	0					
24	Findley L	7/25/2010	epi	24	27	2	3	1	2	15	0					
24	Findley L	8/1/2010	epi	30	27	2	3	2	3	13	0	1291.		1.16		
24	Findley L	8/1/2010	bloom									480.0		0.73		
24	Findley L	8/4/2010	bloom									1076.		1.05		
24	Findley L	8/4/2010	bloom									7496.		9.84		
24	Findley L	8/8/2010	epi	22	24	2	3	2	3	18	0					
24	Findley L	8/25/2010	bloom									3940.		2.42		
24	Findley L	8/25/2010	bloom									470.0		9.19		
24	Findley L	8/25/2010	bloom									7870.		4.82		
24	Findley L	8/29/2010	epi	20	24	2	4	2	4	1	4					
24	Findley L	9/23/2010	epi	17	20	2	3	2	3	1	4	465.0		0.20		
24	Findley L	9/25/2010	bloom									2e06		11.10		
24	Findley L	7/17/2011	epi		27	2	2	3	1	0	0	11.70	1.80			
24	Findley L	7/31/2011	epi	29	27	2	2	3	1	0	0	52.30	5.10			

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
24	Findley L	9/25/2011	bloom									784.4	13.50			
24	Findley L	6/22/1998	hypo		14											
24	Findley L	7/20/1998	hypo		15											
24	Findley L	9/14/1998	hypo		12											
24	Findley L	6/4/2010	hypo		24											
24	Findley L	6/17/2010	hypo		22											
24	Findley L	7/1/2010	hypo		19											
24	Findley L	7/25/2010	hypo		20											
24	Findley L	8/1/2010	hypo		20											
24	Findley L	8/8/2010	hypo		20											
24	Findley L	8/29/2010	hypo		20											
24	Findley L	9/23/2010	hypo		17											
24	Findley L	7/17/2011	hypo													
24	Findley L	7/31/2011	hypo													
24	Findley L	9/25/2011	hypo													

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 Findley Lake Data, 2006-2011

June Data

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

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
Zsd	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
TP	LOW	HIGH	NORMAL	NORMAL	NORMAL	NORMAL
Chl.a	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
NOx	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
NH4	NORMAL	NORMAL	LOW	NORMAL	NORMAL	LOW
TN	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
pH	NORMAL	HIGH	NORMAL	NORMAL	NORMAL	NORMAL
SpCond	HIGH	NORMAL	NORMAL	LOW	NORMAL	LOW
Color	NORMAL	NORMAL	NORMAL	NORMAL	HIGH	NORMAL
Ca						NORMAL
QA	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QB	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	LOW
TH20		NORMAL	NORMAL	NORMAL	NORMAL	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		LOW	NORMAL	NORMAL	LOW	
TP		HIGH	NORMAL	NORMAL	NORMAL	
Chl.a		NORMAL	NORMAL	NORMAL	NORMAL	
NOx		NORMAL	NORMAL	NORMAL	NORMAL	
NH4		HIGH	NORMAL	NORMAL	NORMAL	
TN		NORMAL	NORMAL	NORMAL	HIGH	
pH		NORMAL	NORMAL	NORMAL	NORMAL	
SpCond		NORMAL	NORMAL	NORMAL	NORMAL	
Color		HIGH	NORMAL	NORMAL	HIGH	
Ca		NORMAL	NORMAL	NORMAL	HIGH	
QA		NORMAL	NORMAL	NORMAL	NORMAL	
QB		NORMAL	NORMAL	NORMAL	NORMAL	
QC		NORMAL	NORMAL	NORMAL	NORMAL	
TH20		HIGH	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	LOW	NORMAL	LOW	
TP		NORMAL	NORMAL	NORMAL	HIGH	HIGH
Chl.a		NORMAL	HIGH	NORMAL	HIGH	NORMAL
NOx		NORMAL	NORMAL	HIGH	NORMAL	NORMAL
NH4		HIGH	HIGH	NORMAL	NORMAL	HIGH
TN		HIGH	NORMAL	NORMAL	HIGH	HIGH
pH		NORMAL	NORMAL	LOW	NORMAL	NORMAL
SpCond		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
Color		NORMAL	NORMAL	NORMAL	HIGH	HIGH
Ca		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QA		NORMAL	NORMAL	NORMAL	NORMAL	
QB		NORMAL	NORMAL	NORMAL	NORMAL	
QC		NORMAL	NORMAL	NORMAL	NORMAL	
TH20		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

Appendix C: Priority Waterbody Listing for Findley Lake

Findley Lake (0202-0004)

Impaired Seg

Waterbody Location Information

Revised: 02/26/2007

Water Index No: Pa-84- 2-P153	Str Class: B	Drain Basin: Allegheny River
Hydro Unit Code: 05010004/010		French Creek
Waterbody Type: Lake		Reg/County: 9/Chautauqua Co. (7)
Waterbody Size: 307.1 Acres		Quad Map: CLYMER (M-02-4)
Seg Description: entire lake		

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
PUBLIC BATHING	Impaired	Known
Aquatic Life	Stressed	Known
RECREATION	Impaired	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH, D.O./OXYGEN DEMAND, NUTRIENTS (phosphorus)
 Suspected: Problem Species
 Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
 Suspected: AGRICULTURE, Habitat Modification
 Possible: Failing On-Site Syst

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: DOW/Reg9
TMDL/303d Status: 3a->1 ()

Resolution Potential: Medium

Further Details

Public Bathing and other recreational uses in Findley Lake are considered to be impaired by nutrient enrichment and excessive aquatic plant growth. Impacts to the fishery have also been noted. These impairments are attributed to agricultural and other nonpoint runoff sources.

Findley Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1986 and continuing through 2005. The most recent Interpretive Summary report of the findings of this sampling was published in 2006. These data indicate that the lake continues to be best characterized as eutrophic, or highly productive. Samples collected as recently as 2002 thru 2004 suggest possible improving conditions toward the mesotrophic, or moderately productive, range. However phosphorus levels in the lake consistently exceed the state guidance values indicating impacted recreational uses. Transparency measurements regularly fall below what is minimally recommended for swimming beaches. Nutrient levels at the lake bottom are usually elevated suggesting the bottom waters are poorly oxygenated and contribute to increases in surface water nutrient levels throughout the summer. This deepwater oxygen deficit was recorded in the lake at least back to the 1930s. (DEC/DOW, BWAM/CSLAP, February 2006)

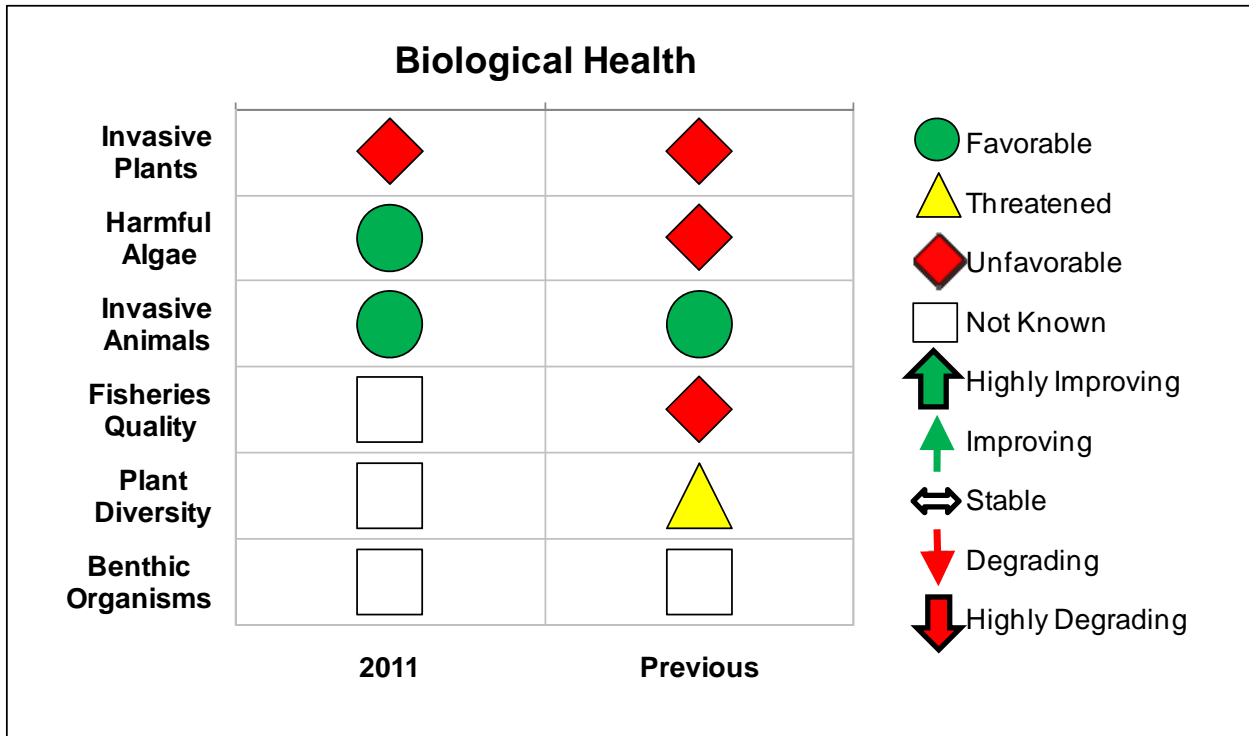
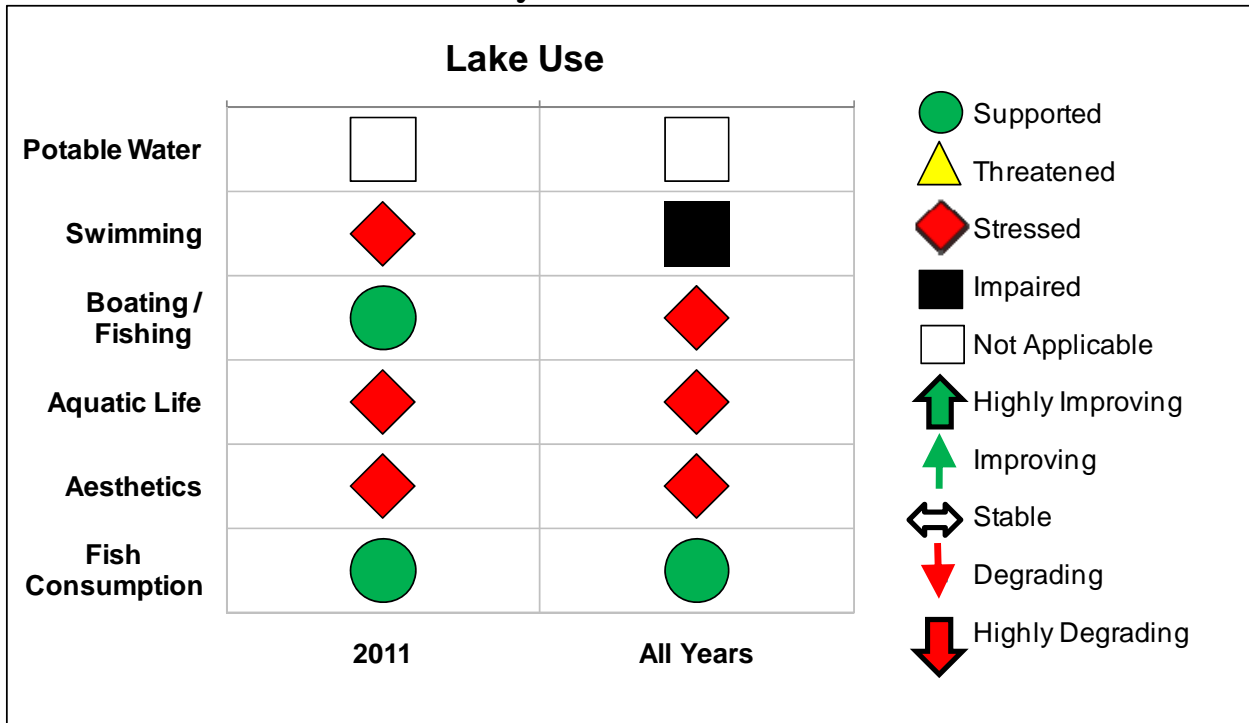
Public perception of the lake and its uses is also evaluated as part of the CSLAP program. These assessment also indicate recreational suitability of the lake to be somewhat unfavorable. The lake is described most frequently as "slightly" impacted

for most recreational uses. The lake itself is most often described as having "definite algal greenness," an assessment that is consistent with the perceived water quality conditions in the lake and its measured water quality characteristics. Assessments have noted that aquatic plants regularly grow to the lake surface. Aquatic plants are dominated by a mix of native and non-native species (though invasives may be on the decline) and have been cited as impacting recreational uses. (DEC/DOW, BWAM/CSLAP, February 2006)

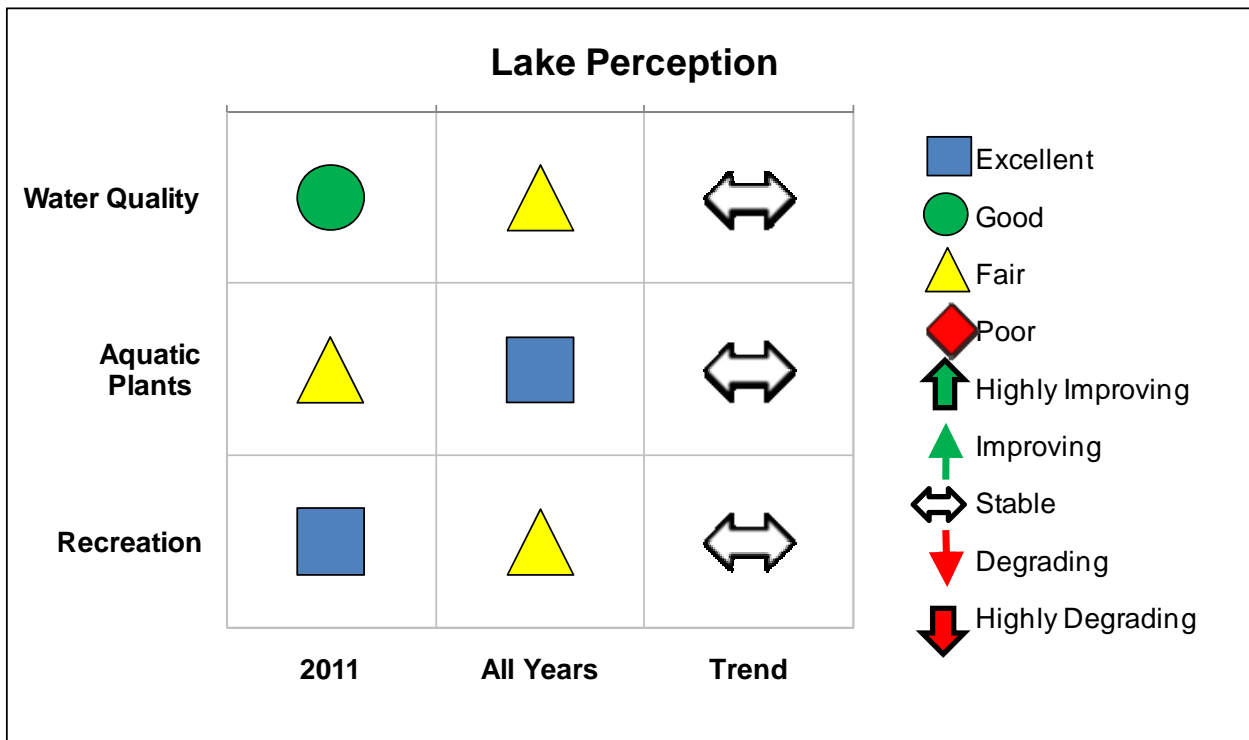
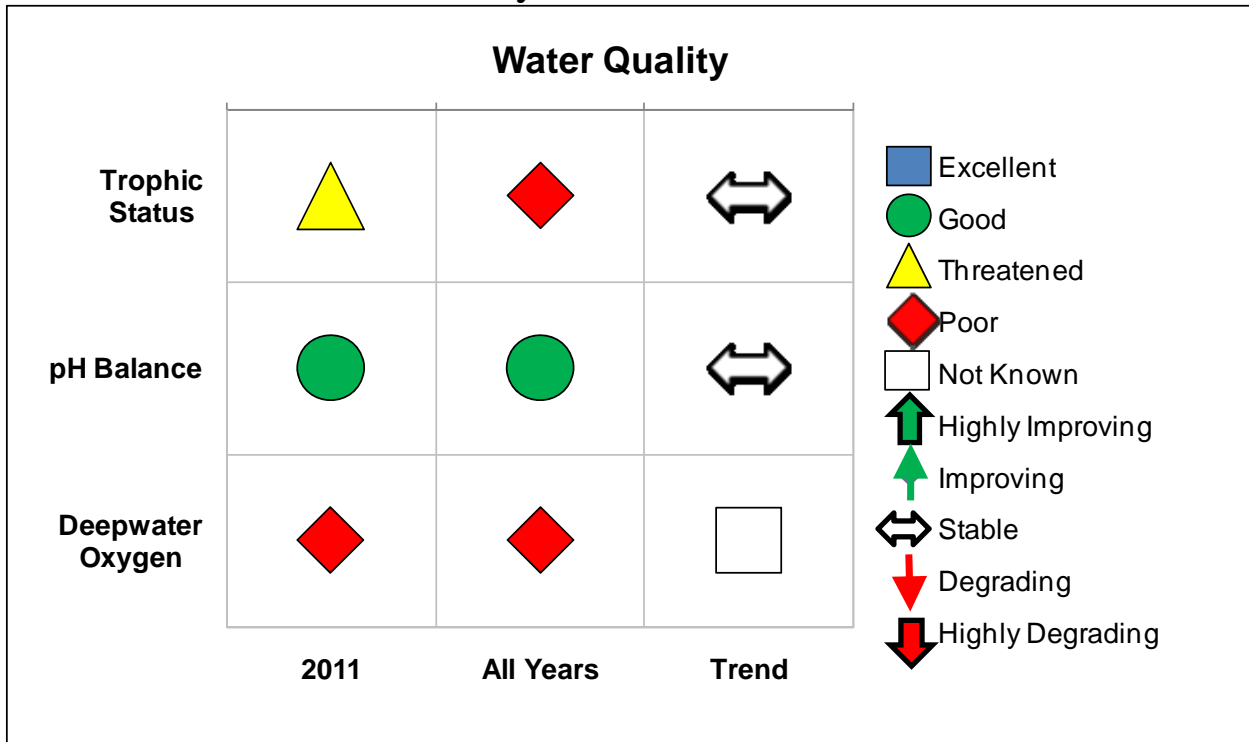
This lake waterbody is designated class B, suitable for use as a public bathing beach, general recreation and aquatic life support, but not as a water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess public bathing use is generally the responsibility of state and/or local health departments.

Periodic low dissolved oxygen in parts of the lake has some impact the fishery and aquatic life support. However tiger muskie and walleye are stocked by NYSDEC, and the lake provides a good smallmouth bass and largemouth bass fishery. (DEC/DFWMR, Region 9, January 2007)

2011 Findley Lake Scorecard



2011 Findley Lake Scorecard



The 2011 CSLAP annual report for Findley Lake will soon be found at <http://www.dec.ny.gov/lands/77881.html>