

Lorton Lake Questions and Answers, 2015 CSLAP

Q1. What is the condition of our lake this year?

A1. Lake conditions in 2015 were probably close to normal in Lorton Lake- algae and water clarity levels were close to normal, while phosphorus readings were slightly higher than usual. No shoreline blooms were reported in 2015.

Q2. Is there anything new that showed up in the testing this year?

A2. Chloride testing results were typical of lakes with no to low impact from road salt runoff, and biological impacts were not reported or measured.

Q3. How does the condition of our lake this year compare with other lakes in the area?

A3. Lorton Lake had lower water clarity, but similar algae and nutrient levels - than many other nearby lakes. These conditions are probably common to other shallow lakes in the area.

Q4. Are there any trends in our lake's condition?

A4. Phosphorus readings have increased slightly over the last decade. This may have contributed to less favorable water quality and recreational assessments and increased weed growth over the last two decades, although neither water clarity nor algae levels have changed significantly over the same period.

Q5. Should we be concerned about the condition of our lake? Are we close to a tipping point?

A5. The lake may be susceptible to blue green algae blooms, based on the 2012 shoreline bloom, but these have not been seen in recent years. Reducing nutrient levels, as discussed below, may reduce the susceptibility for these blooms.

Q6. Are any actions indicated, based on the trends and this year's results?

A6. Individual stewardship activities such as pumping your septic system, growing a buffer of native plants next to the water bodies, and reducing erosion from shoreline properties will help to reduce nutrient loading to the lake and therefore improve water quality. Lake residents should continue to keep outside boats from entering the lake to reduce the risk of new invasive species, since nearby lakes harbor several invasive plants not found in the lake.

Lake Use				
	PWL	Average Year	2015	Primary issue
Potable Water				Not applicable
Swimming				High nutrients
Recreation				High nutrients
Aquatic Life				No impacts
Aesthetics				Poor perception
Habitat				Invasive plants
Fish Consumption				

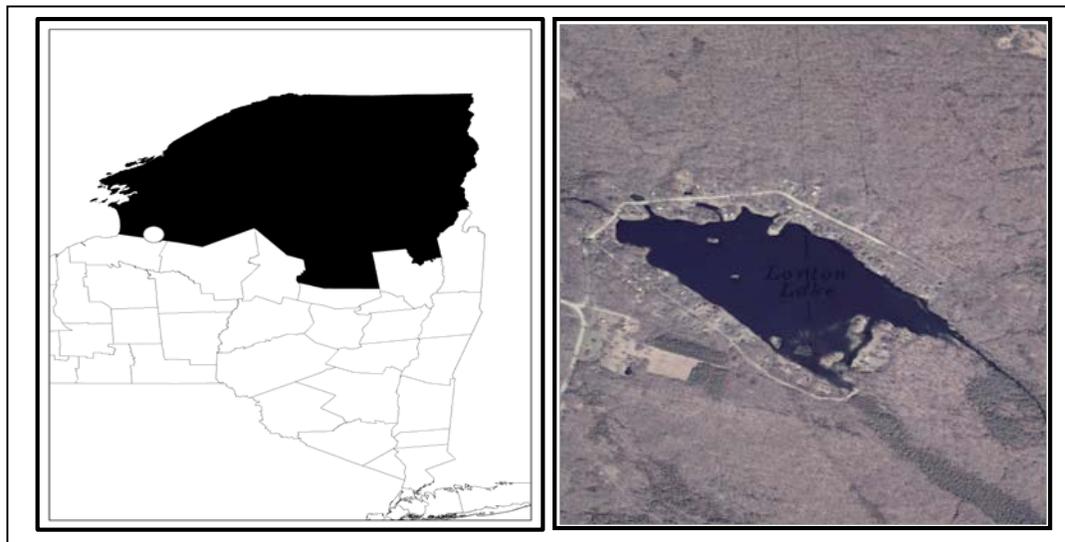
 Supported / Good
 Threatened / Fair
 Stressed / Poor
 Impaired
 Not Known

CSLAP 2015 Lake Water Quality Summary: Lorton Lake

General Lake Information

Location	Town of Albion
County	Oswego
Basin	Lake Ontario
Size	18.2 hectares (45 acres)
Lake Origins	Augmented by Dam
Watershed Area	1235 hectares (2,470 acres)
Retention Time	0.03 years
Mean Depth	1.4 meters
Sounding Depth	2.9 meters
Public Access?	lake association beach
Major Tributaries	Beaverdam Brook
Lake Tributary To...	Beaverdam Brook to Salmon River to Lake Ontario
WQ Classification	C (non-contact recreation = boating, angling)
Lake Outlet Latitude	43.505
Lake Outlet Longitude	-75.8955
Sampling Years	1990-1994, 2000-2013, 2015
2015 Samplers	George Brindak, Jan Ivkovich, and Bea Gloude
Main Contact	Barbara Sherman

Lake Map



Background

Lorton Lake is a 45 acre, class C lake found in the Towns of Orwell and Redfield in Oswego County, in the Tug Hill region of New York State. It was sampled for the first time through CSLAP in 1990.

It is one of five CSLAP lakes among the nearly 275 lakes and ponds found in Oswego County, and one of 12 CSLAP lakes among the nearly 1000 lakes and ponds in the Seneca/ Oneida/ Oswego Rivers drainage basin.

Lake Uses

Lorton Lake is a Class C lake; this means that the best intended use for the lake is for non-contact recreation—boating and fishing, aquatic life, and aesthetics—although the lake may also support swimming and bathing. The lake is used by lake residents and invited guests for swimming and passive boating—the lake has no public access.

It is not known by the report authors if Lorton Lake has been stocked as part of any private stocking efforts.

General statewide fishing regulations are applicable in Lorton Lake. In addition, open season for trout lasts from April 1st to October 15th, with no minimum size but a daily limit of five fish, with no more than two trout greater than 12 inches and no more than five brook trout less than eight inches.

Historical Water Quality Data

CSLAP sampling was conducted on Lorton Lake from 1990 to 1994, 2000 to 2013, and 2015. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at <http://nysfola.mylaketown.com>. The most recent CSLAP report and scorecard for Lorton Lake can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77850.html>.

Lorton Lake has not been sampled by the NYSDEC as part of any of its major statewide or regional monitoring programs. It is not known if local sampling has been conducted in support of resource management activities, such as those in support of fish stocking.

Lorton Lake was sampled as part of the DEC Lake Biomonitoring project in 2008. These data showed water quality conditions comparable to those measured through CSLAP. The other data collected through the program indicate that road salt runoff is minimal and that regular algal blooms may occur. The depth profiles indicate high dissolved oxygen levels to the lake bottom, as is typical of most shallow, unstratified lakes.

Beaverdam Brook (as inlet or outlet of the lake) has not been monitored through the NYSDEC Rotating Intensive Basins (RIBS) program or the state stream macroinvertebrate monitoring program. The lake has not been sampled by DEC fisheries staff in support of fish stocking activities.

Lake Association and Management History

Lorton Lake is represented by the Lorton Lake Association. The lake association maintains the common areas around the lake, including the (non-powered) boat launch and swimming area. It is not known if the Lorton Lake Association maintains a website.

Summary of 2015 CSLAP Sampling Results

Evaluation of 2015 Annual and Monthly Results Relative to 1990-2013

The summer (mid-June through mid-September) average readings are compared to historical averages for all CSLAP sampling seasons in the “Lake Condition Summary” table, and are compared to individual historical CSLAP sampling seasons in the “Long Term Data Plots – Lorton Lake” section in Appendix C.

Evaluation of Eutrophication Indicators

Water quality conditions were close to normal in 2015. Water clarity and algae levels (as measured by chlorophyll *a*) were close to the long-term average in 2015. Neither of these indicators has exhibited any clear long-term trends. Phosphorus levels were slightly higher than normal in 2015, and these readings have increased over the last decade. Shoreline algae blooms were not found in 2013 or 2015, so it is not known if the 2012 shoreline bloom represents a normal occurrence in Lorton Lake.

Nutrient and algae levels typically decrease slightly from mid to late summer, leading to a slight increase in water clarity. Although nutrient and water clarity readings followed the same seasonal trend in 2015, algae levels generally increased during the summer.

The lake continues to be characterized as *mesoeutrophic*, or moderately to highly productive, based on water clarity (representative of *eutrophic* lakes), and chlorophyll *a* and total phosphorus readings (typical of *mesotrophic* lakes). However, phosphorus readings in 2015 were more typical of *eutrophic* lakes. The trophic state indices (TSI) evaluation suggests that the phosphorus, Secchi disk transparency and chlorophyll *a* readings are “internally” consistent; all are in the expected range given the readings for the other indicators. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels are at times high enough to render the lake susceptible to taste and odor compounds, elevated DBP (disinfection by product) compounds or algal toxins that could affect the potability of the water, particularly near shoreline blooms, but the lake is not classified for use for potable water. Lorton Lake is not thermally stratified, at least on a consistent basis, so deepwater samples have not been collected in the lake (and deepwater intakes to avoid surface algae-enriched waters are not possible). 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 readings were slightly lower than usual in 2015, although nearly all readings have been low since the early 1990s, and no NO_x trends have been apparent. Conductivity readings have decreased slightly over the last half decade, although the 2015 readings were still close to the long-term average for the lake. It is likely that the small changes in each of these indicators from year to year represent normal variability.

Chloride levels in the 2015 samples, conducted for the first time through CSLAP and cited in Appendix A, were less than 5 mg/l. These values are within the lower end of the range of “low” road salt” runoff levels cited by the New Hampshire DES, well below the state potable water quality standard of 250 mg/l and below the range of values found in a number of NYS lakes

Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

The fluoroprobe samples show moderate to low overall algae levels and a mix of algae species (mostly green algae) in the open water samples. The single shoreline bloom sample in 2012 was dominated by green algae, but blue green algae levels were high enough to exhibit moderately high algal toxin levels. However, no shoreline blooms were reported or sampled since 2012.

The macrophyte data collected through CSLAP show very high plant diversity, although two exotic plant species (*Najas minor*, brittle naiad; and *Myriophyllum heterophyllum*, variable watermilfoil) were found in the lake. Several protected plant species, including Farwells milfoil (*Myriophyllum farwellii*), slender leafed pondweed (*Potamogeton filiformis*), narrow leaf pondweed (*Potamogeton strictifolius*), and lesser bladderwort (*Utricularia minor*) were also found in the lake. The modified floristic quality index (FQI) indicates that the quality of the aquatic plant community in the lake is “excellent.”

The fish community in the lake has not been reported, although it has been reported that the lake possesses largemouth bass.

The DEC biomonitoring study on Lorton Lake continues to be evaluated. The preliminary results indicate a large number of macroinvertebrate taxa, a high index of healthy benthic communities, and a high percentage of tolerant macroinvertebrate species. The evaluation of these data will continue as additional data are collected from other lakes.

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

Evaluation of Lake Perception

Water quality and recreational assessments were less favorable than normal in 2015, and these assessments have generally degraded over the last two decades. Most unfavorable assessments have been attributed to “excessive weeds”, and plant coverage has also increased since the mid-1990s. Recreational assessments improved during the summer of 2015, despite degrading recreational assessments and increasing weed growth during the typical summer. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Water temperatures were lower than usual in 2015, but temperatures have not exhibited significant long-term change. 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. Fluoroprobe readings are typically below the threshold for harmful algal blooms (HABs) in the open water, although a shoreline bloom was apparent in 2012. Algal toxin levels in open water samples have been well below the threshold established for protecting swimming and contact recreation. However,

shoreline blooms in 2012 demonstrated high algae levels and algal toxin levels (both microcystis-LR and anatoxin-a), indicating an elevated risk to swimmers and pets within blooms. No shoreline blooms have been reported since 2012.

Lake Condition Summary

Category	Indicator	Min	Annual Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	0.55	2.00	2.95	1.95	Eutrophic	Within Normal Range	No Change
	Chlorophyll <i>a</i>	0.30	6.17	80.56	5.33	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.002	0.019	0.064	0.022	Mesotrophic	Within Normal Range	No Change
Potable Water Indicators	Hypolimnetic Ammonia							Not known
	Hypolimnetic Arsenic							Not known
	Hypolimnetic Iron							Not known
	Hypolimnetic Manganese							Not known
Limnological Indicators	Hypolimnetic Phosphorus							Not known
	Nitrate + Nitrite	0.00	0.02	0.57	0.03	Low NOx	Within Normal Range	No Change
	Ammonia	0.00	0.03	0.15	0.01	Low Ammonia	Lower Than Normal	No Change
	Total Nitrogen	0.09	0.60	1.27	0.69	Intermediate Total Nitrogen	Within Normal Range	No Change
	pH	5.49	7.61	9.22	7.49	Alkaline	Within Normal Range	No Change
	Specific Conductance	21	49	140	46	Softwater	Within Normal Range	No Change
	True Color	17	53	160	53	Colored	Within Normal Range	No Change
	Calcium	1.6	5.8	8.0	5.4	Not Susceptible to Zebra Mussels	Within Normal Range	No Change
Lake Perception	WQ Assessment	1	1.7	3	2.1	Not Quite Crystal Clear	Less Favorable than Normal	No Change
	Aquatic Plant Coverage	1	2.6	4	3.0	Surface Plant Growth	Within Normal Range	No Change
	Recreational Assessment	1	2.2	4	2.9	Excellent	Less Favorable than Normal	No Change
Biological Condition	Phytoplankton					Open water-low blue green algae biomass; Shoreline-high blue green algae in bloom	Not known	Not known
	Macrophytes					Excellent quality of aquatic plant community	Not known	Not known
	Zooplankton					Not sampled through CSLAP	Not known	Not known
	Macroinvertebrates					High diversity, high tolerance	Not known	Not known
	Fish					Little information available	Not known	Not known
	Invasive Species					Brittle naiad, Variable watermilfoil	Not known	Not known
Local Climate Change	Air Temperature	8	20.9	30	19.4		Within Normal Range	Increasing Slightly
	Water Temperature	8	21.3	28	19.8		Lower Than Normal	No Change

Category	Indicator	Min	Annual Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Harmful Algal Blooms	Open Water Phycocyanin	3	12	123	6	Most readings indicate low risk of BGA	Not known	Not known
	Open Water FP Chl.a	1	3	6	3	No readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	0	4	0	No readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	<DL	1.1	<DL	Low to undetectable open water microcystins	Not known	Not known
	Open Water Anatoxin a	<DL	<DL	<DL	<DL	Open water Anatoxin-a consistently not detectable	Not known	Not known
	Shoreline Phycocyanin					No shoreline blooms sampled for PC	Not known	Not known
	Shoreline FP Chl.a	101	101	101		All readings indicate very high algae levels	Not known	Not known
	Shoreline FP BG Chl.a	16	16	16		Some readings indicate high BGA levels	Not known	Not known
	Shoreline Microcystis	<DL	14.3	27.8		Occasionally high shoreline bloom MC-LR	Not known	Not known
	Shoreline Anatoxin a	<DL	3.9	7.6		Shoreline bloom Anatoxin-a at times detectable	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

The 2007 NYSDEC Priority Waterbody Listings (PWL) for the Lake Ontario (Black River) basin do not include a citation for Lorton Lake.

Potable Water (Drinking Water)

The CSLAP dataset at Lorton 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. The limited CSLAP dataset indicate that any "unofficial" use of the lake for this purpose may be impacted by excessive algae.

Public Bathing

The CSLAP dataset at Lorton Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that public bathing, if conducted at a public swimming beach, may be supported, although this use may be *threatened* by high nutrient levels and shoreline blooms. However, Lorton Lake is not classified for this use. Additional information about bacterial levels is needed to evaluate the safety of the water for swimming.

Recreation (Swimming and Non-Contact Uses)

The CSLAP dataset on Lorton Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that recreation may be *threatened* by high nutrients and reduced water clarity.

Aquatic Life

The CSLAP dataset on Lorton Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life should be supported, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics and Habitat

The CSLAP dataset on Lorton Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *poor* at times due to poor perception associated with excessive weeds and shoreline algae blooms. Habitat at times (or in places) may be only *fair* due to invasive plants- variable watermilfoil and brittle naiad.

Fish Consumption

There is no fish consumption advisories posted for Lorton Lake.

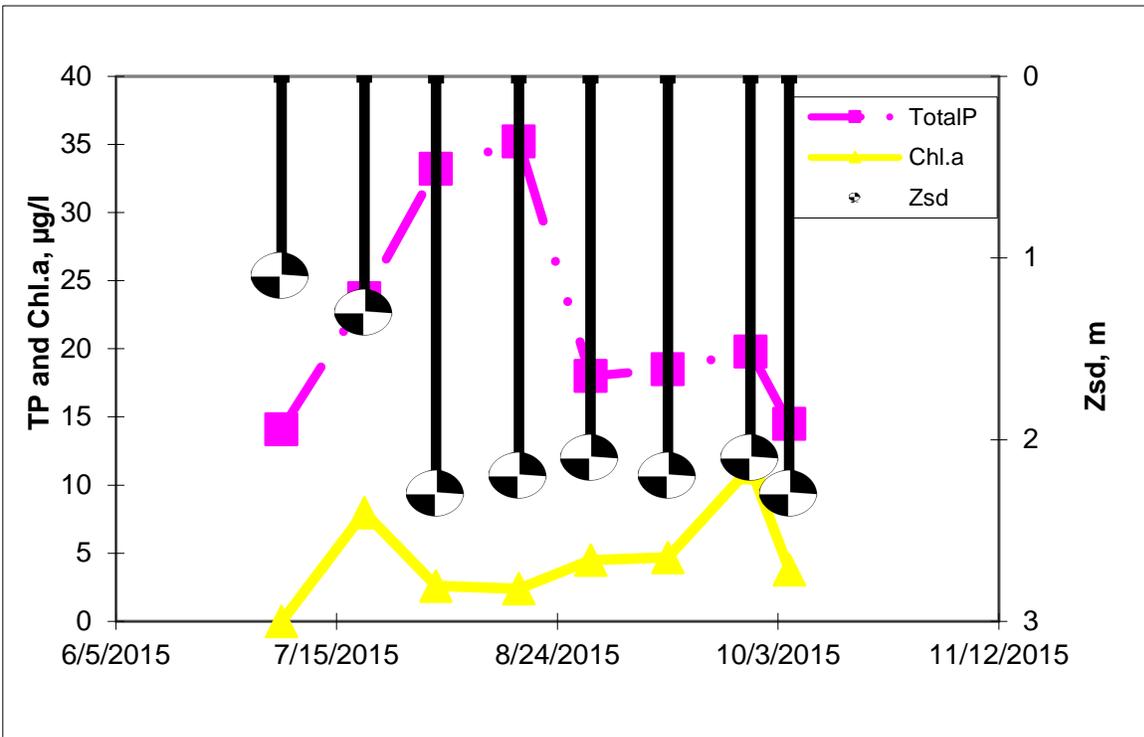
Additional Comments and Recommendations

The continued evaluation of the 2008 biomonitoring survey data will help to better evaluate aquatic life impacts and the biological condition of the lake.

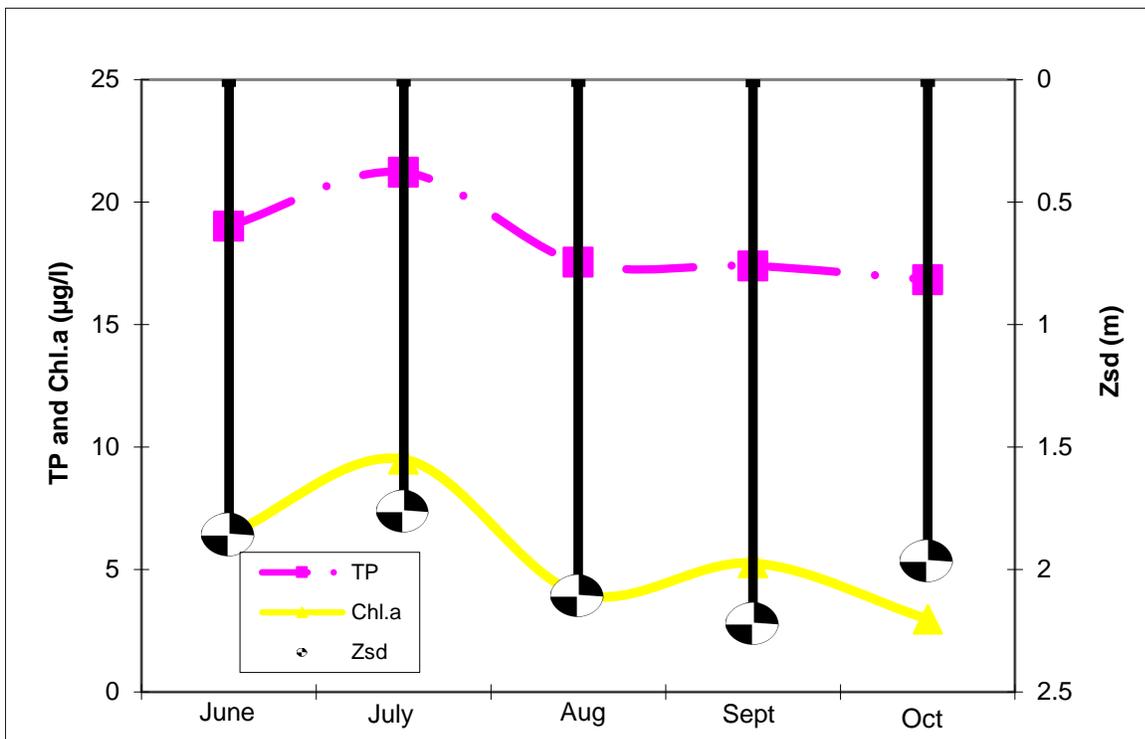
Aquatic Plant IDs-2015

No aquatic plants were submitted for identification through CSLAP in 2015.

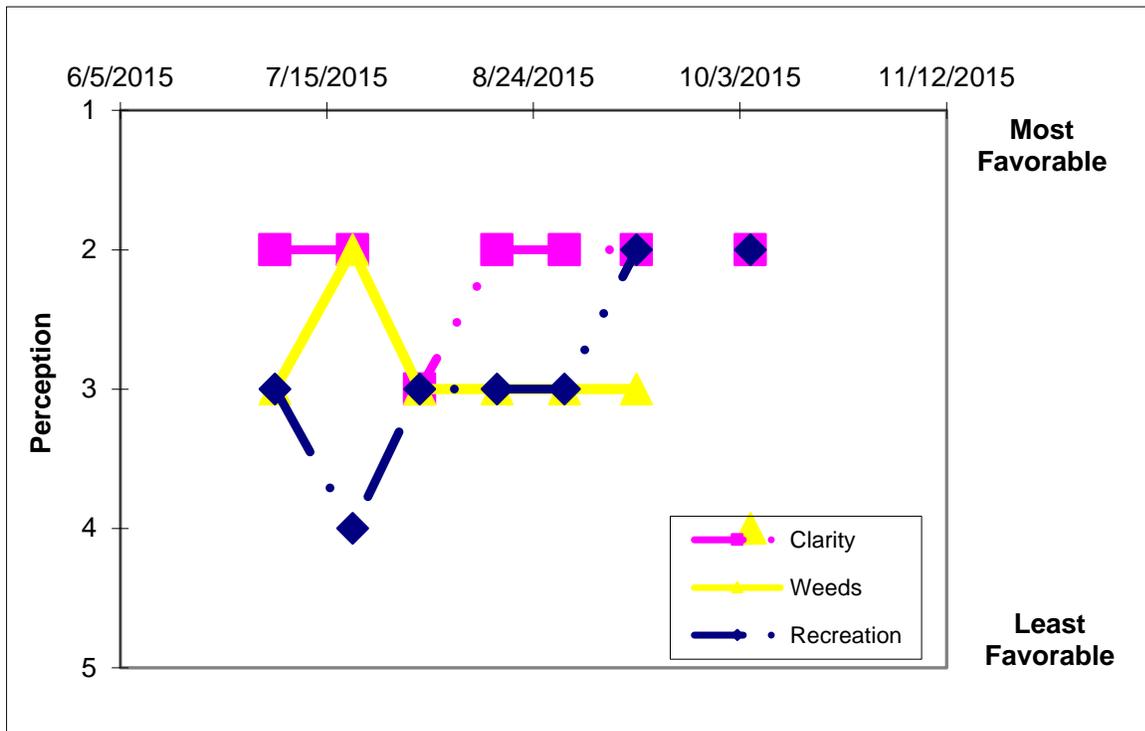
Time Series: Trophic Indicators, 2015



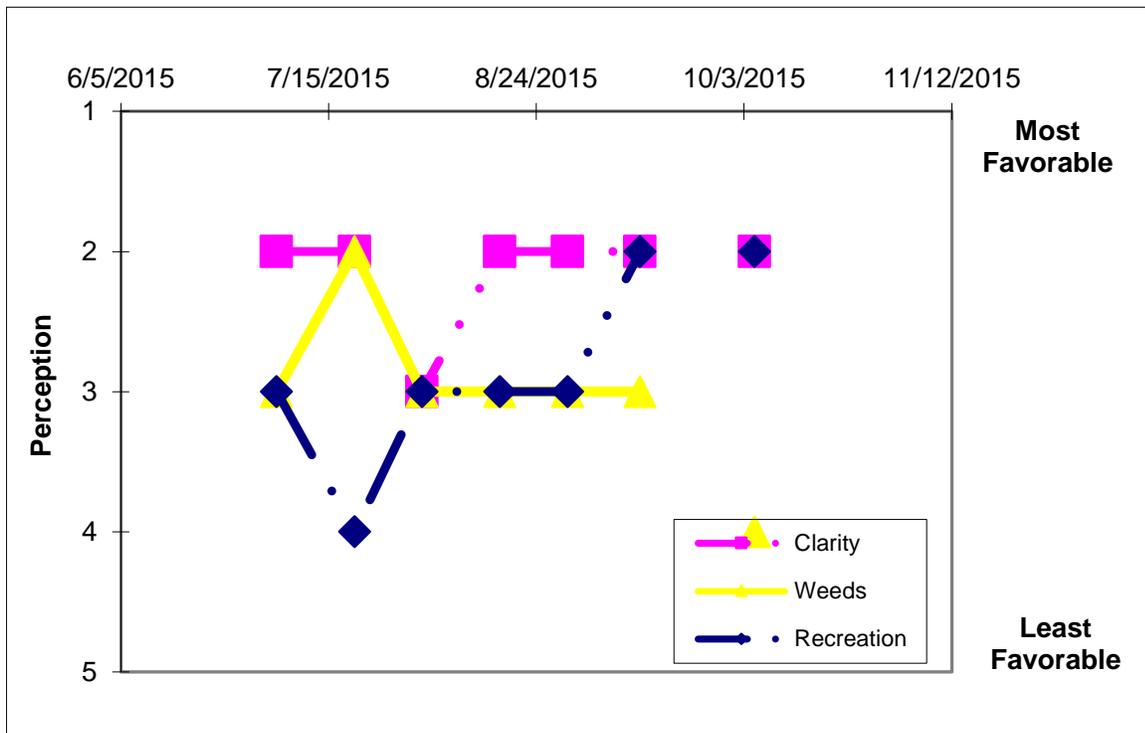
Time Series: Trophic Indicators, Typical Year (1990-2015)



Time Series: Lake Perception Indicators, 2015



Time Series: Lake Perception Indicators, Typical Year (1990-2015)



Appendix A- CSLAP Water Quality Sampling Results for Lorton Lake

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
72	Lorton L	7/22/1990	2.8	2.50	1.5	0.017	0.01				50	7.18	42		7.40	
72	Lorton L	8/5/1990	2.8	2.63	1.5	0.014	0.01				40	7.78	48		3.41	
72	Lorton L	8/16/1990	3.0	2.38	1.5	0.012	0.01				28	7.63	49		4.06	
72	Lorton L	9/2/1990	2.8	2.75	1.5	0.012	0.01				28	7.65	50		1.93	
72	Lorton L	9/16/1990	2.8	2.50	1.5	0.010	0.01				20	7.70	53		3.61	
72	Lorton L	9/30/1990	2.6	2.22	1.5	0.012	0.01				34	7.75	53		5.15	
72	Lorton L	10/14/1990	2.8	1.90	1.5	0.017	0.01				120	7.66	21		3.30	
72	Lorton L	10/28/1990	2.5	1.70	1.5	0.019	0.01				160	7.28	43		1.81	
72	Lorton L	6/23/1991	2.7	2.30	1.5	0.024	0.01				55	7.13	47		12.50	
72	Lorton L	7/7/1991	2.8	1.60	1.5	0.016					48	7.79	44		6.88	
72	Lorton L	7/21/1991	2.5	2.00	1.5	0.014	0.01				39	7.65	54		4.77	
72	Lorton L	8/4/1991	2.5	2.05	1.5	0.017					29	7.80	50		8.93	
72	Lorton L	8/18/1991	2.5	2.13	1.5	0.016	0.01				26	7.65	52		6.04	
72	Lorton L	9/1/1991	2.8	2.42	1.5	0.016					25	7.67	55		5.15	
72	Lorton L	9/15/1991	2.7	2.00	1.5	0.021	0.01				32	7.65	56		8.46	
72	Lorton L	9/29/1991	2.8	2.55	1.5	0.015					34	7.38	57		6.04	
72	Lorton L	6/6/1992	2.9	1.50	1.5	0.024	0.01				70	7.70	38		10.50	
72	Lorton L	6/20/1992	2.8	1.68	1.5	0.022					65	7.26	42		9.55	
72	Lorton L	7/3/1992	2.8	1.90	1.5	0.024	0.01				58	7.51	42		2.78	
72	Lorton L	7/18/1992	2.9	2.50	1.5	0.017					50	7.60	43		4.40	
72	Lorton L	8/1/1992	2.9	1.85	1.5	0.023	0.01				80	7.52	40		15.30	
72	Lorton L	8/15/1992	2.6	1.60	1.5	0.020					80	7.40	39		10.80	
72	Lorton L	8/29/1992	3.0	1.68	1.5	0.020	0.01				65	7.66	42		4.26	
72	Lorton L	9/12/1992	3.0	2.20	1.5	0.018					60	7.56	43		5.78	
72	Lorton L	6/6/1993	3.0	2.50	1.5	0.026					45	6.96	39		8.23	
72	Lorton L	6/19/1993	2.9	1.88	1.5	0.019	0.02				43	7.61	41		6.04	
72	Lorton L	7/3/1993	3.0	2.45	1.5	0.020					47	7.37	44		2.01	
72	Lorton L	7/17/1993	2.9	2.78	1.5	0.015	0.01				43	7.76	46		3.08	
72	Lorton L	7/31/1993	2.9	2.60	1.5	0.017	0.01				23	7.40	47		4.35	
72	Lorton L	8/14/1993	2.7	2.50	1.5	0.016	0.01				24	7.12	48		3.50	
72	Lorton L	8/28/1993	2.9	2.35	1.5	0.020					20	7.84	50		7.35	
72	Lorton L	9/13/1993	3.2	2.85	1.5	0.016	0.01				24	7.16	53		2.68	
72	Lorton L	6/11/1994	2.8	1.73	1.5	0.024	0.01				47	7.42	42		7.88	
72	Lorton L	6/29/1994		2.20	1.5	0.031					53	7.40	47		5.95	
72	Lorton L	7/9/1994	3.0	1.55	1.5	0.032	0.01				63	7.45	46		53.30	
72	Lorton L	7/23/1994	2.8	1.55	1.5	0.024					57	7.18	50		14.20	
72	Lorton L	8/6/1994	2.8	1.35	1.5	0.019	0.01				65	7.87	54		3.05	
72	Lorton L	8/20/1994	2.9	1.50	1.5	0.021					48	7.65	53		4.85	
72	Lorton L	9/3/1994	2.9	1.90	1.5	0.029	0.01				40	7.56	53		8.01	
72	Lorton L	9/16/1994	2.9	1.80	1.5	0.017					45	7.45	51		11.20	
72	Lorton L	6/18/2000	2.9	1.83	1.5	0.018	0.01				68	7.24	44		5.80	
72	Lorton L	7/2/2000	2.7	1.63	1.5	0.014	0.01				36	7.81	53		3.58	
72	Lorton L	7/16/2000	3.0	1.25	1.5	0.018	0.01				57	7.70	47		4.64	
72	Lorton L	7/30/2000	2.8	1.97	1.5	0.012	0.01				54	7.12	51		5.15	
72	Lorton L	8/13/2000	3.0	2.30	1.5	0.016	0.01				37	6.96	55		2.46	
72	Lorton L	8/29/2000	2.9	2.40	1.5	0.013	0.01				45	7.29	56		3.68	
72	Lorton L	9/10/2000	2.8	2.55	1.5	0.014	0.57				45	7.77	57		3.08	
72	Lorton L	9/24/2000	2.6	2.19	1.5	0.013	0.01				49	7.77	56		2.76	
72	Lorton L	6/17/2001	2.8	1.25	1.5	0.039	0.01				80	7.81	43		18.40	
72	Lorton L	7/1/2001	2.8	0.88	1.5	0.064	0.01				70	7.26	46		69.50	
72	Lorton L	7/15/2001	2.6	1.03	1.5	0.004	0.01				80	7.35	47		9.60	
72	Lorton L	7/29/2001	2.7	1.10	1.5	0.060	0.01				65	7.90	50		80.56	
72	Lorton L	8/12/2001	2.6	1.30	1.5	0.028	0.01				55	7.48	54		5.83	
72	Lorton L	8/26/2001	2.9	1.25	1.5	0.024	0.01				60	7.57	55		3.80	
72	Lorton L	9/9/2001	2.8	1.10	1.5	0.026	0.01				65	6.74	54		10.63	
72	Lorton L	9/24/2001	2.9	1.85	1.5	0.022	0.01				50	7.56	56			
72	Lorton L	06/02/02	2.9	1.35	1.5	0.018	0.01	0.07	0.73	87.77	103	6.99	36	1.6	0.56	
72	Lorton L	06/16/02	2.9	2.30	1.5	0.018	0.02	0.05	0.70	86.75	58	7.12	41		2.82	
72	Lorton L	06/30/02	3.0	1.40	1.5	0.002	0.00	0.05	0.65	611.26	84	7.31	43		2.61	
72	Lorton L	07/14/02	2.5	1.83	1.5	0.018	0.01	0.07	0.72	90.10	72	7.43	48		0.49	
72	Lorton L	07/28/02	2.5	2.08	1.5	0.022	0.03	0.10	0.87	87.17	66	7.47	49		4.79	
72	Lorton L	08/11/02	2.5	2.45	1.5	0.019	0.02	0.03	0.63	74.71	53	7.63	51		1.72	
72	Lorton L	08/25/02	2.6	2.40	1.5	0.014			0.73	111.06	35	7.41	52		1.87	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
72	Lorton L	09/08/02	2.6	2.60	1.5	0.015	0.00	0.01	0.65	94.57	25	8.00	52		3.60	
72	Lorton L	6/8/2003	2.9	1.63	1.5		0.00	0.02	0.32		62	7.10	35	4.1	5.51	
72	Lorton L	6/22/2003	2.6	1.58	1.5	0.005	0.00	0.05	0.33	137.99	63	7.15	35		9.20	
72	Lorton L	7/5/2003	2.7	1.90	1.5	0.018	0.00	0.02	0.42	52.15	53	7.51	40		3.16	
72	Lorton L	7/20/2003	2.9	1.85	1.5	0.024	0.00	0.02	0.44	39.79	46	7.38	46		3.43	
72	Lorton L	8/3/2003	3.0	2.35	1.5	0.021	0.00	0.02	0.52	55.46	32	7.24	47	5.9	3.86	
72	Lorton L	8/17/2003	2.8	2.35	1.5	0.018	0.00	0.02	0.66	80.76	115	7.11	48		3.57	
72	Lorton L	8/31/2003	2.9	2.30	1.5	0.017	0.00	0.02	0.64	83.08	40	7.21	52		4.06	
72	Lorton L	9/14/2003	2.9	2.35	1.5	0.019	0.00	0.01	0.57	67.45	41	7.34	51		1.19	
72	Lorton L	6/6/2004	2.5	1.35	1.5		0.01	0.01			76	7.23	33	4.5	4.12	
72	Lorton L	6/20/2004	2.7	1.70	1.5	0.018	0.01	0.01	1.16	140.50	71	5.49	44		1.76	
72	Lorton L	7/3/2004	2.8	2.00	1.5	0.027	0.01	0.01	0.12	10.05	59	5.64	46		2.40	
72	Lorton L	7/17/2004	2.8	1.60	1.5	0.015	0.02	0.01	0.81	117.57	61	6.44	40		1.90	
72	Lorton L	8/1/2004	2.9	1.77	1.5	0.019	0.01	0.01	0.13	15.44	72	6.86	39	6.1	9.20	
72	Lorton L	8/15/2004	2.8	2.02	1.5	0.009	0.01	0.01	0.55	136.45	52	7.54	48		3.80	
72	Lorton L	8/28/2004	2.8	1.85	1.5	0.019	0.02	0.08	1.05	122.44	74	8.29			3.00	
72	Lorton L	9/12/2004	2.9	1.87	1.5	0.020	0.01	0.01	0.09	9.95	133	7.76	38		3.40	
72	Lorton L	6/12/2005	2.5	1.75	1.5	0.014	0.04	0.01	0.32	50.48	47	6.54	45	5.3	0.32	
72	Lorton L	6/26/2005	2.3	2.15	1.5	0.010	0.02	0.01	0.40	86.90	57	8.28	36		1.96	
72	Lorton L	7/10/2005	2.0	1.75	1.5	0.014	0.01	0.01	0.21	33.56	45	6.90	52		3.21	
72	Lorton L	7/24/2005	2.9	1.93	1.5	0.013	0.01	0.03	0.38	66.92	26	8.38	48		2.78	
72	Lorton L	8/7/2005	2.8	2.80	1.5	0.005	0.01	0.01	0.11	50.31	35	9.22	53	7.0	1.74	
72	Lorton L	8/21/2005	2.5	2.50	1.5	0.003	0.01	0.01	0.22	144.64	21	8.52	59		2.95	
72	Lorton L	9/4/2005	2.5	1.95	1.5	0.017	0.01	0.01	0.30	37.90	52	7.31	52		2.36	
72	Lorton L	9/18/2005	2.5	2.35	1.5	0.016	0.01	0.01			46	7.56	59		2.55	
72	Lorton L	6/11/2006	2.8	2.10	1.5	0.013	0.04	0.02	0.71	116.74	59		41	5.7	4.99	
72	Lorton L	6/25/2006	2.8	2.50	1.5	0.013	0.02	0.02	0.91	153.28	31	8.35	65		2.66	
72	Lorton L	7/9/2006	2.9	1.65	1.5	0.020	0.00	0.01	0.71	77.57	72	8.36	46		3.62	
72	Lorton L	7/23/2006	2.7	2.03	1.5	0.016	0.01	0.02	0.85	115.67	98	8.40	46		3.71	
72	Lorton L	8/6/2006	2.8	1.63	1.5	0.021	0.01	0.02	0.89	94.74	96	7.07	53	6.5	2.43	
72	Lorton L	8/20/2006	2.7	1.80	1.5	0.016	0.01	0.02	1.01	140.17	60	7.94	47		4.47	
72	Lorton L	9/4/2006	2.8	1.65	1.5	0.024			0.99	92.27	53	7.19	48		5.88	
72	Lorton L	9/17/2006	2.3	2.18	1.5	0.015	0.01	0.01	0.88	131.48	87	7.76	54		3.37	
72	Lorton L	6/24/2007	2.7	1.65	1.5	0.015	0.01	0.02	0.59	86.3	29	8.73	46	5.1	0.65	
72	Lorton L	7/7/2007	1.9	0.55	1.5	0.017	0.00	0.02	0.64	85.6	31	9.19	49		2.43	
72	Lorton L	7/22/2007	2.4	2.35	1.5	0.018	0.01	0.01	0.62	75.4	23	8.67	38		3.58	
72	Lorton L	8/5/2007	2.7	2.28	1.5	0.016	0.00	0.01	0.90	125.1	23	8.77	59		2.08	
72	Lorton L	8/19/2007	2.6	2.23	1.5	0.014	0.00	0.01	0.94	150.6	22	8.78	46	6.6	1.80	
72	Lorton L	9/2/2007	2.4	2.40	1.5	0.014	0.01	0.04	0.95	154.7	24	8.86	42		1.69	
72	Lorton L	9/16/2007	2.8	2.33	1.5	0.014	0.00	0.02	0.87	140.9	20	8.39	51		2.37	
72	Lorton L	9/23/2007	2.5	2.50	1.5	0.013	0.00	0.01	1.07	181.6		8.28	57		2.18	
72	Lorton L	6/1/2008	2.9	1.85	1.5	0.022	0.03	0.04			44	7.30	50	4.4	5.31	
72	Lorton L	6/15/2008	2.8	2.80	1.5	0.019	0.01	0.02	0.51	59.07	40	6.94	29		3.61	
72	Lorton L	6/29/2008	2.9	2.40	1.5	0.017	0.03	0.04	0.60	76.24	38	6.96	49		5.15	
72	Lorton L	7/13/2008	2.8	1.38	1.5	0.023	0.02	0.02	0.62	60.26	65	7.99	50		10.10	
72	Lorton L	7/27/2008	2.3	1.68	1.5	0.017	0.00	0.02	0.65	84.91	45	7.43	30	5.9	7.86	
72	Lorton L	8/10/2008	2.8	1.54	1.5	0.015	0.02	0.02	0.51	73.14	55	7.88	45		4.81	
72	Lorton L	8/24/2008	2.9	1.40	1.5	0.018	0.00	0.08	0.51	61.58	75	8.65	33		6.39	
72	Lorton L	9/7/2008	2.5	1.55	1.5	0.017	0.00	0.03	0.59	77.08	75	7.13	48		6.00	
72	Lorton L	07/26/2009	2.7	2.00	1.5	0.026	0.01	0.02	0.64	54.03	47	8.21	36	7.0	4.58	
72	Lorton L	08/02/2009	2.8	2.75	1.5	0.006	0.01	0.02	0.61	214.41	80	7.90	37		2.06	
72	Lorton L	08/09/2009	2.8	2.00	1.5	0.017	0.02	0.01	0.54	69.09	48	7.87	49		1.80	
72	Lorton L	08/16/2009	3.0	2.95	1.5	0.015	0.01	0.02	0.56	81.34	47	7.86	35		2.30	
72	Lorton L	08/23/2009	2.6	2.56	1.5	0.016	0.01	0.03	0.53	70.83	87	6.74	41	6.9	1.90	
72	Lorton L	08/30/2009	2.9	2.85	1.5	0.015	0.16	0.03	0.53	78.26	64	8.87	48		3.10	
72	Lorton L	09/06/2009	2.6	2.60	1.5	0.012	0.01	0.01	0.48	84.27	55	8.26	49		1.50	
72	Lorton L	09/13/2009	2.9	2.78	1.5	0.012	0.18	0.02	1.01	182.13	48	6.90	36		1.60	
72	Lorton L	6/27/2010	2.4	1.89	1.5	0.004	0.01	0.01	0.71	372.43	73	7.47	51	6.3	7.90	
72	Lorton L	7/11/2010	2.8	1.85	1.5	0.020	0.03	0.02	0.54	58.27	48	7.12	140		5.60	
72	Lorton L	7/18/2010	2.6	1.55		0.026	0.01	0.02	0.43	36.50	65	8.63	52		6.30	
72	Lorton L	7/25/2010	2.5	1.85	1.5	0.021	0.04	0.03	0.56	58.14	54	7.84	54		3.50	
72	Lorton L	8/1/2010	2.8	1.43	1.5	0.017	0.03	0.12	0.42	53.34	62	8.98	57	8.0	3.40	
72	Lorton L	8/29/2010	2.5	2.20	1.5	0.015	0.09	0.15	0.46	65.71	58	7.72	48		2.60	
72	Lorton L	9/11/2010	2.6	2.60	1.5	0.042	0.01	0.03	0.47	24.47	73	7.50	55		4.10	
72	Lorton L	9/19/2010	2.1	1.93	1.5	0.010	0.02	0.04	0.55	126.73	54	7.08	60		10.10	
72	Lorton L	6/12/2011	2.9	1.65		0.023	0.01	0.04	0.62	60.74	59	7.80	57	6.6	5.20	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
72	Lorton L	6/24/2011	3.0	1.45	1.5	0.031	0.01	0.02	0.70	49.96	59	8.38	59		14.50	
72	Lorton L	7/10/2011	2.9	1.65	1.5	0.019	0.01	0.02	0.62	70.67	64	8.03	52		3.70	
72	Lorton L	7/23/2011	grab	bloom												
72	Lorton L	7/23/2011	2.9	1.65	1.5	0.025	0.01	0.01	0.58	52.35	50	7.88	58		4.80	
72	Lorton L	8/7/2011	2.8	2.75	1.5	0.021	0.01	0.03	0.79	84.17	46	7.32	58	6.3	0.30	
72	Lorton L	8/24/2011	2.8	1.70	1.5	0.013	0.03	0.03	0.65	108.66	39	8.30	70		5.40	
72	Lorton L	9/9/2011	2.9	2.10	1.5	0.018	0.02	0.03	0.62	77.13	17	7.55	56		4.60	
72	Lorton L	9/25/2011	1.7	1.70	1.5	0.013	0.01	0.03	0.71	120.49		7.69	59		3.60	
72	Lorton L	6/30/2012	2.2	1.80	1.5	0.017	0.01	0.10	0.45	56.26	43	6.04	53	5.0	2.70	
72	Lorton L	7/15/2012	2.3	2.15	1.5	0.023	0.02	0.06	0.59	55.99	44	8.87	52		2.30	
72	Lorton L	7/28/2012	2.8	2.35	1.5	0.017	0.05	0.01	0.15	19.58	41	6.79	53		2.40	
72	Lorton L	8/12/2012	2.5	2.18	1.5	0.016	0.01	0.01	0.41	58.05	33	8.43	53	7.4	3.20	
72	Lorton L	8/24/2012			bloom											
72	Lorton L	8/25/2012	2.7	2.70	1.5	0.013	0.01	0.02	0.47	83.25	28	7.58	57		1.70	
72	Lorton L	9/14/2012	2.4	2.37	1.5	0.016	0.01	0.03	0.20	28.21	21	7.88	61		2.60	
72	Lorton L	9/22/2012	2.4	2.37	1.5	0.016	0.01	0.02	0.26	35.63	25	8.17	58		6.60	
72	Lorton L	6/23/2013	2.5	1.80	1.5	0.025	0.01	0.03	0.66	59.09	68	7.20	39		19.90	
72	Lorton L	7/7/2013	2.8	1.25	1.5	0.024			0.44	39.63	60	7.96	46		5.70	
72	Lorton L	7/20/2013	2.7	1.50	1.5	0.027	0.01	0.01	0.56	45.30	69	8.31	50		12.90	
72	Lorton L	8/4/2013	2.6	1.55		0.015			0.65	92.80	60	7.29	50		3.90	
72	Lorton L	8/18/2013	3.0	1.95	1.5	0.016	0.01	0.02	0.55	75.89	59	7.67	53		2.70	
72	Lorton L	9/1/2013	2.8	2.25	1.4	0.023			0.71	67.64	49	7.48	56		27.70	
72	Lorton L	9/14/2013	2.4	2.40		0.013	0.01	0.01	0.50	84.16	55	7.16	57		3.90	
72	Lorton L	9/29/2013	2.5	2.50	1.5	0.015			0.57	85.74	43	7.84	58		3.10	
72	Lorton L	7/5/2015	2.5	1.10	1.5	0.014	0.03	0.00	0.54	83.63	65	8.02	42			
72	Lorton L	7/20/2015	2.4	1.30	1.5	0.024			0.68	62.94	100	6.69	44	4.9	8.00	
72	Lorton L	8/2/2015	2.7	2.30	1.5	0.033	0.04	0.01	1.27	84.02	65	7.35	44		2.60	5.00
72	Lorton L	8/17/2015	2.5	2.20	1.5	0.035			0.64	40.19	48	7.82	49		2.40	
72	Lorton L	8/30/2015	2.6	2.10	1.5	0.018	0.03	0.01	0.63	77.12	39	7.11	45	5.9	4.50	
72	Lorton L	9/13/2015	2.7	2.20	1.5	0.019			0.66	78.25	37	7.92	46		4.70	
72	Lorton L	9/28/2015	2.5	2.10	1.5	0.020	0.03	0.00	0.56	62.67	38	7.83	52		11.30	5.00
72	Lorton L	10/5/2015	2.7	2.30	1.5	0.015			0.54	81.48	35	7.17	50		3.80	

LNum	PName	Date	Type	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
72	Lorton L	7/22/1990	Epi	26	24															
72	Lorton L	8/5/1990	Epi	19	24															
72	Lorton L	8/16/1990	Epi	19	22															
72	Lorton L	9/2/1990	Epi	20	23															
72	Lorton L	9/16/1990	Epi	14	17															
72	Lorton L	9/30/1990	Epi	15	15															
72	Lorton L	10/14/1990	Epi	11	15															
72	Lorton L	10/28/1990	Epi	11	8															
72	Lorton L	6/23/1991	Epi	22	21															
72	Lorton L	7/7/1991	Epi	21	22															
72	Lorton L	7/21/1991	Epi	28	26															
72	Lorton L	8/4/1991	Epi	23	22															
72	Lorton L	8/18/1991	Epi	25	25															
72	Lorton L	9/1/1991	Epi	17	20															
72	Lorton L	9/15/1991	Epi	22	20															
72	Lorton L	9/29/1991	Epi	10	10															
72	Lorton L	6/6/1992	Epi	18	16	1	3	1	5											
72	Lorton L	6/20/1992	Epi	14	20	2	3	2	25											
72	Lorton L	7/3/1992	Epi	17	19	2	3	2	25											
72	Lorton L	7/18/1992	Epi	19	15	2	3	2	5											
72	Lorton L	8/1/1992	Epi	14	17	2	3	4	5											
72	Lorton L	8/15/1992	Epi	15	18	2	3	3	25											
72	Lorton L	8/29/1992	Epi	18	22	2	3	3	5											
72	Lorton L	9/12/1992	Epi	14	15	1	2	1												
72	Lorton L	6/6/1993	Epi	13	14	2	1	3	5											
72	Lorton L	6/19/1993	Epi	20	20	2	1	2	5											
72	Lorton L	7/3/1993	Epi	18	20	1	2	1												
72	Lorton L	7/17/1993	Epi	15	20	1	2	1												
72	Lorton L	7/31/1993	Epi	20	22	2	2	1	0											

LNum	PName	Date	Type	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
72	Lorton L	8/14/1993	Epi	22	23	2	2	2	0											
72	Lorton L	8/28/1993	Epi	23	24	2	2	2												
72	Lorton L	9/13/1993	Epi	23	20	2	2	2	0											
72	Lorton L	6/11/1994	Epi	20	19	2	2	2												
72	Lorton L	6/29/1994	Epi	20	20	2	2	2												
72	Lorton L	7/9/1994	Epi	29	26	2	2	1												
72	Lorton L	7/23/1994	Epi	19	20	2	2	2												
72	Lorton L	8/6/1994	Epi	19	20	2	2	2												
72	Lorton L	8/20/1994	Epi	26	24	2	2	2												
72	Lorton L	9/3/1994	Epi	16	17	2	2	2												
72	Lorton L	9/16/1994	Epi	25	18	2	2	2												
72	Lorton L	6/18/2000	Epi	17	21	1	2	1	6											
72	Lorton L	7/2/2000	Epi	24	23	1	3	1												
72	Lorton L	7/16/2000	Epi	20	21	1	3	2	5											
72	Lorton L	7/30/2000	Epi	24	24	1	3	2	6											
72	Lorton L	8/13/2000	Epi	21	22	1	3	1												
72	Lorton L	8/29/2000	Epi	21	22	2	2	2												
72	Lorton L	9/10/2000	Epi	20	19	1	2	1												
72	Lorton L	9/24/2000	Epi	12	17	1	2	1	5											
72	Lorton L	6/17/2001	Epi	21	23	3	2	1	0											
72	Lorton L	7/1/2001	Epi	20	24	3	2	4	15											
72	Lorton L	7/15/2001	Epi	21	21	2	2	2	0											
72	Lorton L	7/29/2001	Epi	22	24	2	2	1	6											
72	Lorton L	8/12/2001	Epi	26	26	1	2	1												
72	Lorton L	8/26/2001	Epi	22	23	1	2	2	6											
72	Lorton L	9/9/2001	Epi	23	24	1	2	1	0											
72	Lorton L	9/24/2001	Epi	18	19	2	3	3	5											
72	Lorton L	06/02/02	Epi	18	19	1	1	1	8											
72	Lorton L	06/16/02	Epi	16	18	1	1	3	5											
72	Lorton L	06/30/02	Epi	26	24	1	2	1	8											
72	Lorton L	07/14/02	Epi	28	23	2	3	2	8											
72	Lorton L	07/28/02	Epi	24	24	2	3	2	5											
72	Lorton L	08/11/02	Epi	26	23	1	3	2	8											
72	Lorton L	08/25/02	Epi	19	22	2	3	2	8											
72	Lorton L	09/08/02	Epi	23	23	2	3	2	6											
72	Lorton L	6/8/2003	Epi	22	18	1	1	3	5											
72	Lorton L	6/22/2003	Epi	18	19	2	2	3	5											
72	Lorton L	7/5/2003	Epi	23	26	1	1	2	8											
72	Lorton L	7/20/2003	Epi	22	23	1	1	1	8											
72	Lorton L	8/3/2003	Epi	24	24	1	1	1	8											
72	Lorton L	8/17/2003	Epi	22	24	1	2	1	8											
72	Lorton L	8/31/2003	Epi	16	19	1	2	1	8											
72	Lorton L	9/14/2003	Epi	22	21	1	2	2	8											
72	Lorton L	6/6/2004	Epi	19	20	2	2	3	15											
72	Lorton L	6/20/2004	Epi	14	21	1	3	1	5											
72	Lorton L	7/3/2004	Epi	24	23	1	3	1	8											
72	Lorton L	7/17/2004	Epi	21	22	2	3	4	15											
72	Lorton L	8/1/2004	Epi	25	23	2	3	3	5											
72	Lorton L	8/15/2004	Epi	18	23	2	3	2	2											
72	Lorton L	8/28/2004	Epi	23	23	2	3	3	2											
72	Lorton L	9/12/2004	Epi	20	21	2	3	2	5											
72	Lorton L	6/12/2005	Epi	28	28	2	2	2	68											
72	Lorton L	6/26/2005	Epi	29	26	1	2	1	8											
72	Lorton L	7/10/2005	Epi	24	23	2	2	2	8											
72	Lorton L	7/24/2005	Epi	24	26	1	2	1	8											
72	Lorton L	8/7/2005	Epi	23	25	1	2	1	8											
72	Lorton L	8/21/2005	Epi	21	23	1	2	1	2											
72	Lorton L	9/4/2005	Epi	17	20	2	2	3	5											
72	Lorton L	9/18/2005	Epi	17	20	2	2	3	5											
72	Lorton L	6/11/2006	Epi	11	17	2	2	4	5											
72	Lorton L	6/25/2006	Epi	13	23	1	3	2	5											

LNum	PName	Date	Type	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
72	Lorton L	7/9/2006	Epi	28	24	2	3	3	2											
72	Lorton L	7/23/2006	Epi	23	24	2	3	3	2											
72	Lorton L	8/6/2006	Epi	23	24	3	4	3	2											
72	Lorton L	8/20/2006	Epi	22	23	2	4	3	2											
72	Lorton L	9/4/2006	Epi	18	18	2	2	3	258											
72	Lorton L	9/17/2006	Epi	18	17	2	3	2	8											
72	Lorton L	6/24/2007	Epi	17	19	2	3	3	28											
72	Lorton L	7/7/2007	Epi	25	22	2	3	4	28											
72	Lorton L	7/22/2007	Epi	23	22	2	3	3	28											
72	Lorton L	8/5/2007	Epi	23	25	1	4	2	2											
72	Lorton L	8/19/2007	Epi	18	21	2	3	3	2											
72	Lorton L	9/2/2007	Epi	19	21	2	3	3	23											
72	Lorton L	9/16/2007	Epi	13	18	1	4	2	25											
72	Lorton L	9/23/2007	Epi	18	19	1	3	3	5											
72	Lorton L	6/1/2008	Epi		18	2	2	2	5											
72	Lorton L	6/15/2008	Epi		24	1	3	1	8											
72	Lorton L	6/29/2008	Epi		24	2	3	2	8											
72	Lorton L	7/13/2008	Epi		24	2	3	3	5											
72	Lorton L	7/27/2008	Epi		23	2	3	3	28											
72	Lorton L	8/10/2008	Epi		21	2	3	3	25											
72	Lorton L	8/24/2008	Epi		23	2	3	2	2											
72	Lorton L	9/7/2008	Epi		21	1	3	2	8											
72	Lorton L	07/26/2009	Epi	24	23	2	3	3	28											
72	Lorton L	08/02/2009	Epi	24	23	1	2	3	2											
72	Lorton L	08/09/2009	Epi	18	22	2	3	3	5											
72	Lorton L	08/16/2009	Epi	29	25	1	2	2	0											
72	Lorton L	08/23/2009	Epi	27	25	1	3	2	0											
72	Lorton L	08/30/2009	Epi	22	20	1	3	2	2											
72	Lorton L	09/06/2009	Epi	18	19	1	3	2	28			26.1		0.01						
72	Lorton L	09/13/2009	Epi	18	20	2	3	3	2			25.02								
72	Lorton L	6/27/2010	Epi	27	23	2	3	2	0	0	0									
72	Lorton L	7/11/2010	Epi	28	25	2	3	2	0	0	0									
72	Lorton L	7/18/2010	Epi	26	25	2	3	2	0	6	0									
72	Lorton L	7/25/2010	Epi	23	24	2	3	3	2	46	4									
72	Lorton L	8/1/2010	Epi	24	23	2	4	3	2	4	0	11.00		0.00						
72	Lorton L	8/29/2010	Epi	22	20	2	3	3	2	4	4	122.80								
72	Lorton L	9/11/2010	Epi	26	18	2	3	3	2	4	4									
72	Lorton L	9/19/2010	Epi	17	16	2	3	3	2	4	4									
72	Lorton L	6/12/2011	Epi	22	21	2	2	1	0	0	0	25.70	8.40							
72	Lorton L	6/24/2011	Epi	22	23	2	2	2	0	0	0	14.20	10.40							
72	Lorton L	7/10/2011	Epi	26	24	2	3	2	4	4	0	10.00	7.80							
72	Lorton L	7/23/2011	Bloom																	d
72	Lorton L	7/23/2011	Epi	26	24	2	2	2	0	0	0	14.20	8.81	0.59	<0.5	<0.1				
72	Lorton L	8/7/2011	Epi	25	25	1	3	2	0	0	0	12.80	7.00							
72	Lorton L	8/24/2011	Epi	23	22	2	3		0	4	0	14.20	11.00						f	
72	Lorton L	9/9/2011	Epi	23	20	2	3	3	0	0	0	9.40	12.20						i	
72	Lorton L	9/25/2011	Epi	20	18	1	3	2	0	0	0	9.50	6.50							
72	Lorton L	6/30/2012	Epi	29	24	2	3	2	0	4	4	8.40	0.90	<0.30	<0.410		3.13	1.68	i	
72	Lorton L	7/15/2012	Epi	25	28	2	3	2	0	4	4	5.60	0.70	<0.30	<0.292		2.00	1.00	i	
72	Lorton L	7/28/2012	Epi	22	24	2	3	2	0	0	0	4.70	0.60	<0.30	<0.659		2.24	1.30	i	
72	Lorton L	8/12/2012	Epi	24	24	1	3	3	0	0	0	6.90	0.80	<0.30	<0.537		2.83	1.10	i	
72	Lorton L	8/24/2012	Bloom											27.80	7.60		100.90	15.80		
72	Lorton L	8/25/2012	Epi	23	23	2	3	3	23	4	4	2.50	0.50	<0.30	<0.552		5.70	3.51	H	
72	Lorton L	9/14/2012	Epi	20	21	1	3	2	2	4	4	2.90	0.70	0.54	<3.299		1.16	0.37	i	
72	Lorton L	9/22/2012	Epi	20	21	1	3	2	25	0	0	4.20	0.90	<0.30	<3.205		1.29	0.44	i	
72	Lorton L	6/23/2013	Epi	30	22	1	3	1	0	0	0	6.10	4.90				4.50	0.00		
72	Lorton L	7/7/2013	Epi	26	27	2	3	2	0	0	0	8.60	5.80	<0.30	<0.510		5.60	0.10	F	
72	Lorton L	7/20/2013	Epi	24	27	2	4	2	2	0	4	5.90	4.40	<0.30	<0.370		4.20	0.20	efg	
72	Lorton L	8/4/2013	Epi	21	22	2	4	3	2	0	4	3.90	3.00	1.12	<0.400		1.90	0.00	F	
72	Lorton L	8/18/2013	Epi	21	21	3	4	3	2	6	7	4.50	3.10	<0.30	<0.390		1.70	0.00	C	
72	Lorton L	9/1/2013	Epi	28	25	3	4	3	2	7	6	5.50	7.30	0.46	<0.570		1.00	0.00	A	

LNum	PName	Date	Type	TAir	TH2O	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
72	Lorton L	9/14/2013	Epi	12	18	2	3	3	8	67	0	4.90	2.40	<0.30	<19.130		1.30	0.00	H	
72	Lorton L	9/29/2013	Epi	15	16	2	4	3	2	6	0	2.90	2.80	<0.30	<10.600		0.90	0.00	I	
72	Lorton L	7/5/2015	Epi	24	18	2	3	3	2	4	4	4.70	1.10	<0.88	<0.010	<0.000	3.35	0.00	I	
72	Lorton L	7/20/2015	Epi	21	23	2	2	4	23	4	4	6.30	1.40	<0.30	<0.004	<0.015	3.60	0.00	E	E
72	Lorton L	8/2/2015	Epi	24	24	3	3	3	2	4	47	4.60	0.91	<0.18	<0.002	<0.009	2.07	0.00	CDE	DE
72	Lorton L	8/17/2015	Epi	28	25	2	3	3	2	0	0	3.60	0.90	<0.28	<0.008	<0.021	1.29	0.00	I	I
72	Lorton L	8/30/2015	Epi	21	20	2	3	3	2	47	4			<0.49	<0.003	<0.014	1.51	0.10	EG	EH
72	Lorton L	9/13/2015	Epi	13	19	2	3	2	2	0	0	9.70	1.40	<0.27	<0.009	<0.022	3.26	0.36	E	E
72	Lorton L	9/28/2015	Epi	16	17							6.20	1.70	<0.30	<0.007	<0.035	2.53	0.00	E	E
72	Lorton L	10/5/2015	Epi	8	12	2	4	2	2	4	4			<0.58	<0.225	<0.650	2.92	0.00	E	E

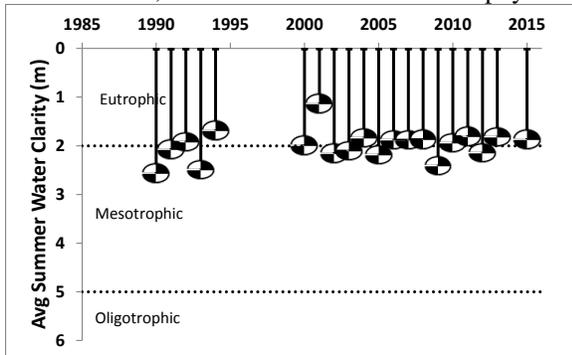
Legend Information

<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, Cl	calcium, chloride (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)	variable	none
Cyl	Cylindrospermopsis (ug/l)	0.1 ug/l	none
FP-Chl, FP-BG	Fluoroprobe total chlorophyll, fluoroprobe blue-green chlorophyll (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		
HAB form, Shore HAB	HAB evaluation; A = spilled paint, B = pea soup, C = streaks, D = green dots, E = bubbling scum, F = green/brown tint, G = duckweed, H = other, I = no bloom		

Appendix C- Long Term Trends: Lorton Lake

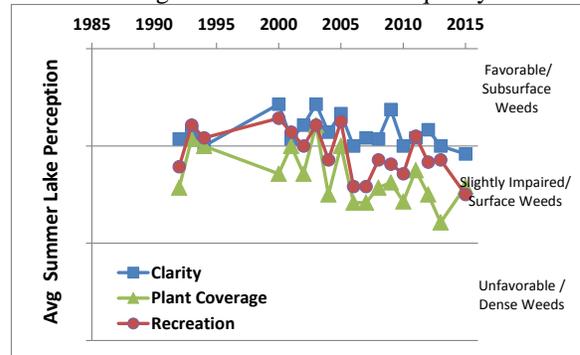
Long Term Trends: Water Clarity

- No trends apparent; mostly stable readings
- Most readings typical of *mesoeutrophic* lakes, consistent with TP and chlorophyll *a*



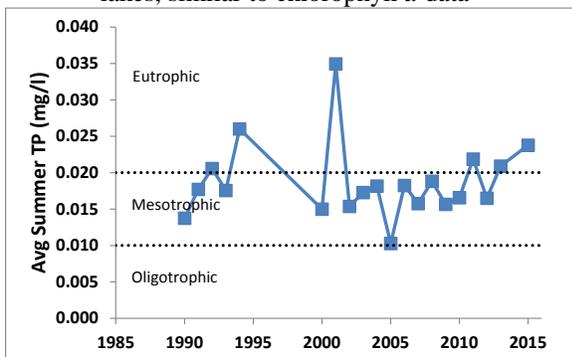
Long Term Trends: Lake Perception

- Degrading since early 2000s
- Recreational perception more linked to changes in weeds than water quality



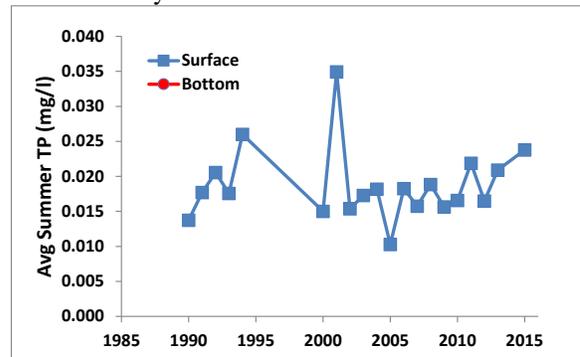
Long Term Trends: Phosphorus

- Increasing TP since early 2000s
- Most readings typical of *mesoeutrophic* lakes, similar to chlorophyll *a* data



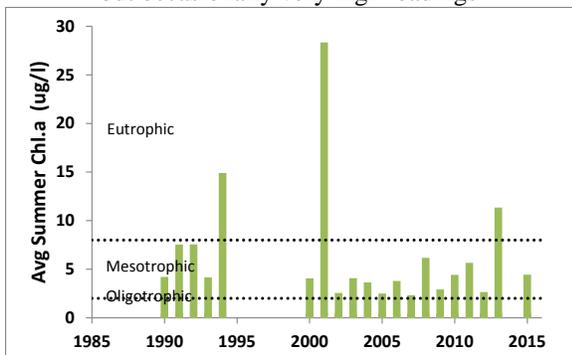
Long Term Trends: Bottom Phosphorus

- No deepwater TP readings
- Surface and bottom phosphorus readings likely similar in shallow lake



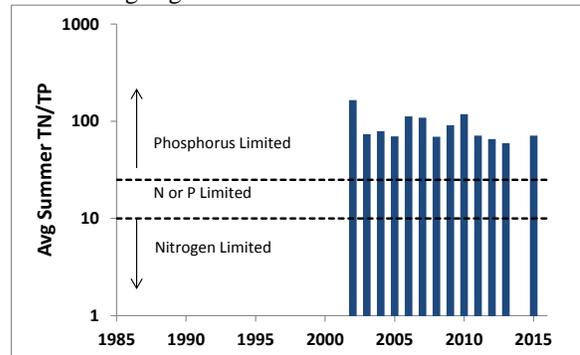
Long Term Trends: Chlorophyll a

- No trends apparent; highly variable
- Most readings typical of *mesotrophic* lakes, but occasionally very high readings



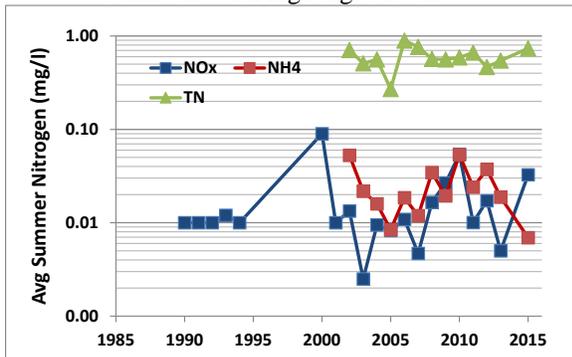
Long Term Trends: N:P Ratio

- No trends apparent
- Most readings indicate phosphorus limits algae growth



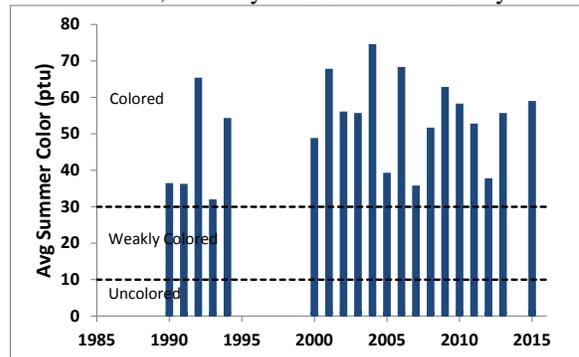
Long Term Trends: Nitrogen

- No trends; NH4 and NOx mostly in sync
- Occasionally elevated total nitrogen readings consistent with high algae levels



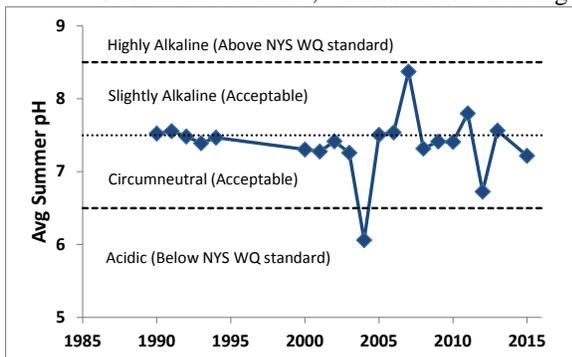
Long Term Trends: Color

- No trends apparent; many high readings
- Most readings still typical of *highly colored* lakes, and may influence water clarity



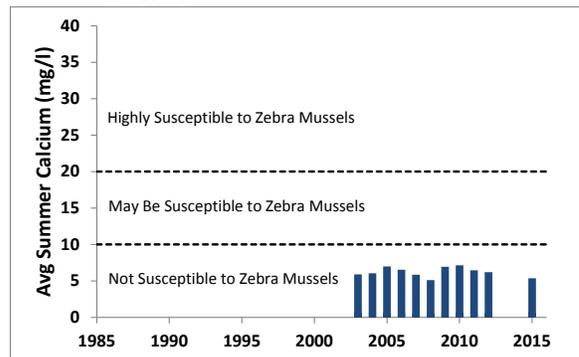
Long Term Trends: pH

- No trends apparent; highly variable recently
- Most readings typical of *slightly alkaline* to *circumneutral* lakes, with some low readings



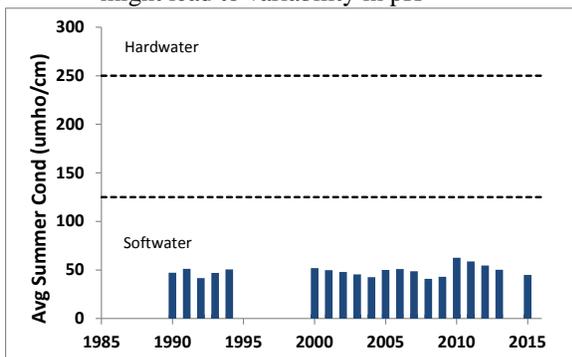
Long Term Trends: Calcium

- No trends apparent
- Data indicates low susceptibility to zebra mussels



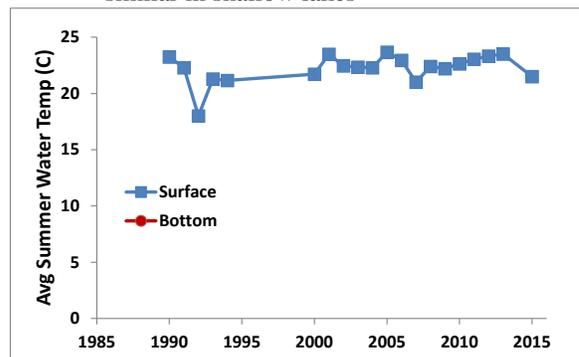
Long Term Trends: Conductivity

- No trends apparent; recent decrease
- Most readings typical of *softwater* lakes; might lead to variability in pH



Long Term Trends: Water Temperature

- No trends apparent
- Surface and deepwater temperatures likely similar in shallow lakes



Appendix D: Algae Testing Results from SUNY ESF Study

Most algae are harmless, naturally present, and an important part of the food web. However excessive algae growth can cause health, recreational, and aesthetic problems. Some algae can produce toxins that can be harmful to people and animals. High quantities of these algae are called harmful algal blooms (HABs). CSLAP lakes have been sampled for a variety of HAB indicators since 2008. This was completed on selected lakes as part of a NYS DOH study from 2008-2010. In 2011, enhanced sampling on all CSLAP lakes was initiated through an EPA-funded project that has continued through the current sampling season. This study has evaluated a number of HAB indicators as follows:

- Algae types - blue green, green, diatoms, and "other"
- Algae densities
- Microscopic analysis of bloom samples
- Algal toxin analysis

Some of these results are reported in other portions of these reports. This appendix the seasonal change in blue green algae, other algae types, and the primary algal toxin (microcystin-LR, a liver toxin). Analysis was completed on open water samples and, for some lakes, shoreline samples that were collected when visual evidence of blooms were apparent. Results are compared to the DEC criteria of 25-30 ug/l blue green chlorophyll a and 20 ug/l microcystin-LR (based on the World Health Organization (WHO) threshold for unsafe swimming conditions) and the WHO provisional criteria for long-term protection of treated water supplies (= 1 ug/l microcystin-LR). The data for algae types are drawn from a high end fluorometer used by SUNY ESF. While these results are useful for timely approximation of lake conditions, they are not as accurate as the total chlorophyll results measured as a regular part of CSLAP since 1986 in all open water samples. Therefore these results are used judiciously in the assessment of sampled waterbodies.

Two separate samples are evaluated. A sample is taken at the CSLAP sample point at the deepest point of the lake at every sample session. In addition, shoreline samples can be taken when a bloom is visible. It should be noted that shoreline conditions can vary significantly over time and from one location to another. The shoreline bloom sampling results summarized below are not collected as routinely as open water samples, and therefore represent snapshots in time. It is assumed that sampling results showing high blue green algae and/or toxin levels indicate that algae blooms may be common and/or widespread on these lakes. However, the absence of elevated blue green algae and toxin levels does not assure the lack of shoreline blooms on these lakes. Elevated open water readings may indicate a higher likelihood of shoreline blooms, but in some lakes, these shoreline blooms have not been (well) documented.

The results from these samples are summarized within the CSLAP report for the lake.



Figure D1:
2013 Open Water Total and BGA Chl.a

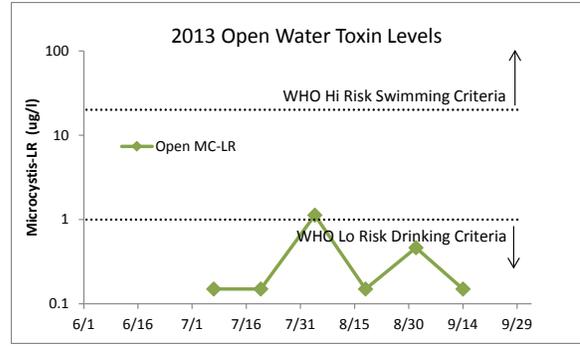


Figure D2:
2013 Open Water Microcystin-LR



Figure D3:
2013 Shoreline Total and BGA Chl.a

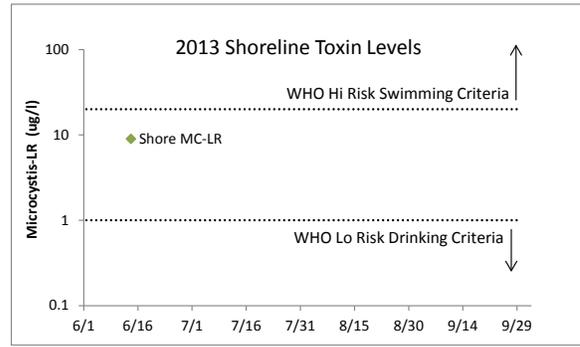


Figure D4:
2013 Shoreline Microcystin-LR

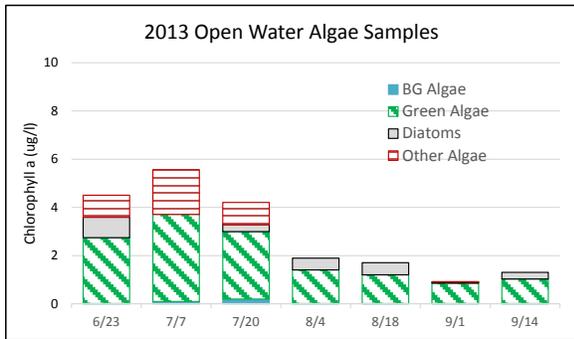


Figure D5:
2013 Open Water Algae Types

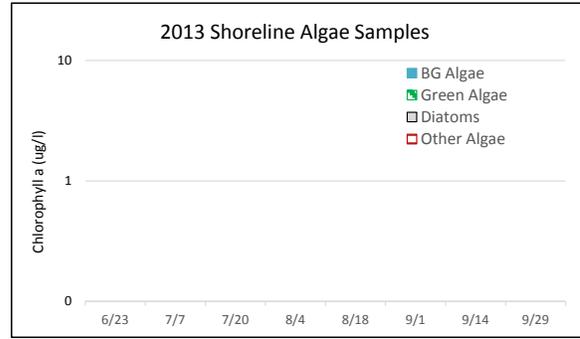


Figure D6:
2013 Shoreline Algae Types

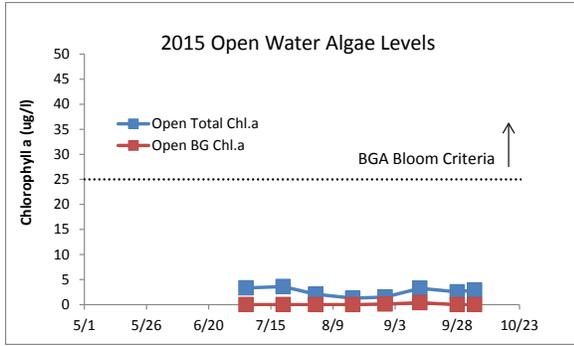


Figure D7:
2015 Open Water Total and BGA Chl.a

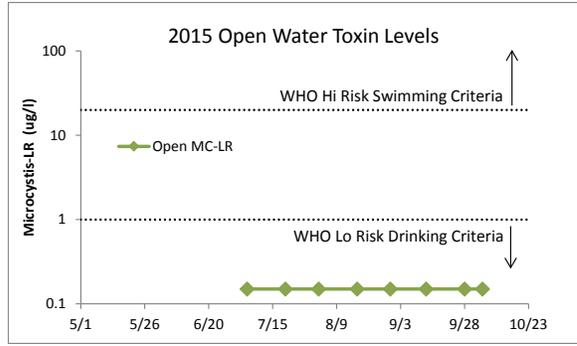


Figure D8:
2015 Open Water Microcystin-LR



Figure D9:
2015 Shoreline Total and BGA Chl.a

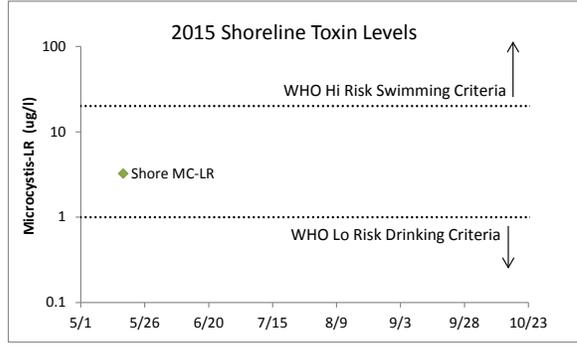


Figure D10:
2015 Shoreline Microcystin-LR

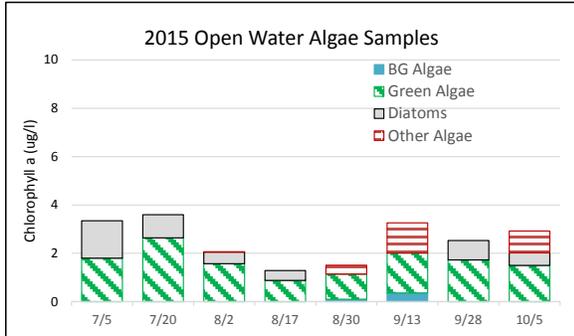


Figure D11:
2015 Open Water Algae Types

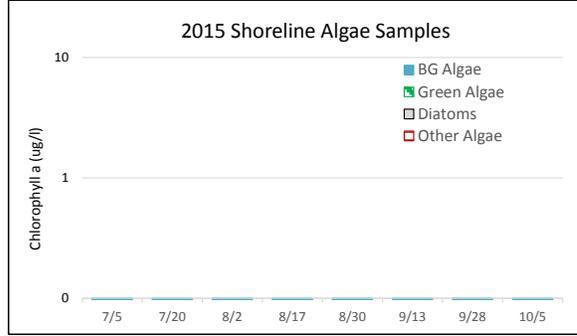


Figure D12:
2015 Shoreline Algae Types

Appendix E: AIS Species in Oswego County

The table below shows the invasive aquatic plants and animals that have been documented in Oswego County, as cited in either the iMapInvasives database (<http://www.imapinvasives.org/>) or in the NYSDEC Division of Water database. These databases may include some, but not all, non-native plants or animals that have not been identified as “Prohibited and Regulated Invasive Species” in New York state regulations (6 NYCRR Part 575; http://www.dec.ny.gov/docs/lands_forests_pdf/islist.pdf).

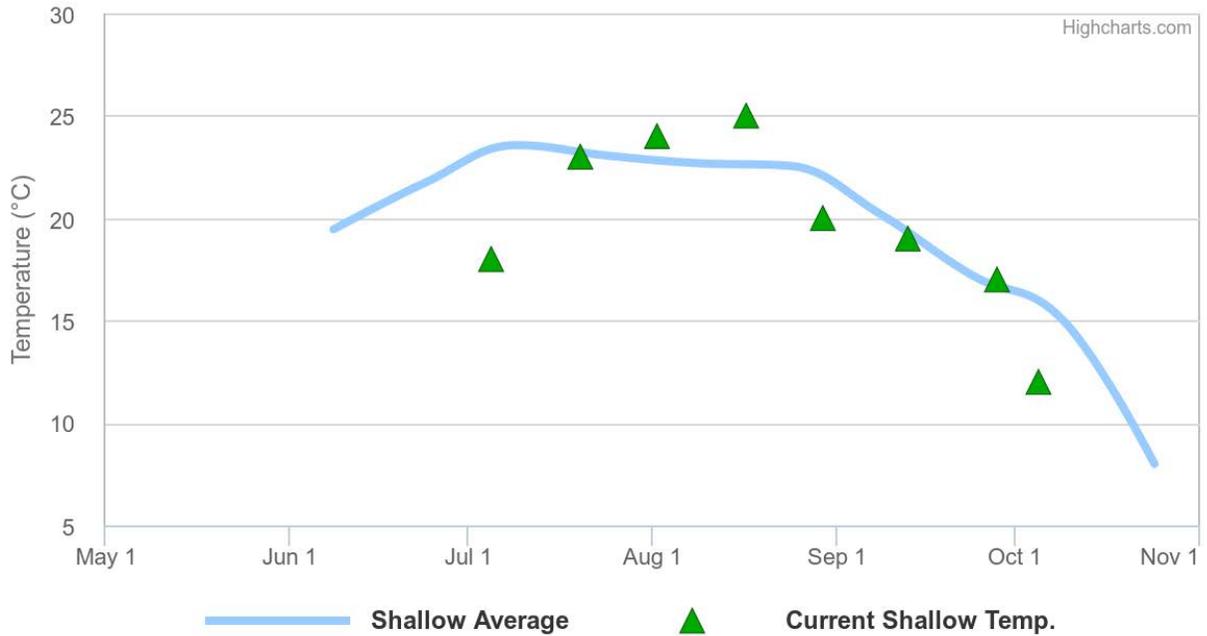
This list is not complete, but instead represents only those species that have been reported and verified within the county. If any additional aquatic invasive species (AIS) are known or suspected in these or other waterbodies in the county, this information should be reported through iMap invasives or by contacting NYSDEC at dowinfo@dec.ny.gov.

Aquatic Invasive Species - Oswego County			
Waterbody	Kingdom	Common name	Scientific name
Castor Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Castor Pond	Plant	Brittle naiad	<i>Najas minor</i>
Kasoag Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Kasoag Lake	Plant	Fanwort	<i>Cabomba caroliniana</i>
Lake Neatahwanta	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lake Neatahwanta	Plant	Water chestnut	<i>Trapa natans</i>
Lake Ontario	Animal	Common carp	<i>Cyprinus carpio</i>
Lake Ontario	Animal	Quagga mussel	<i>Dreissena bugensis</i>
Lake Ontario	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Lake Ontario	Animal	Round goby	<i>Neogobius melanostomus</i>
Lake Ontario	Animal	Mud bithynia snail	<i>Bithynia tentaculata</i>
Lake Ontario	Animal	Bloody-red shrimp	<i>Hemimysis anomala</i>
Lorton Lake	Plant	Variable watermilfoil	<i>Myriophyllum heterophyllum</i>
Lorton Lake	Plant	Brittle naiad	<i>Najas minor</i>
Mexico Pond	Plant	Fanwort	<i>Cabomba caroliniana</i>
North Sandy Pond	Animal	Round goby	<i>Neogobius melanostomus</i>
North Sandy Pond	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
North Sandy Pond	Plant	Variable watermilfoil	<i>Myriophyllum heterophyllum</i>
North Sandy Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
North Sandy Pond	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
North Sandy Pond	Plant	Brittle naiad	<i>Najas minor</i>
Oneida Lake	Animal	Mud bithynia	<i>Bithynia tentaculata</i>
Oneida Lake	Animal	Chinese mystery snail	<i>Cipangopaludina chinensis</i>
Oneida Lake	Animal	Common carp	<i>Cyprinus carpio</i>

Waterbody	Kingdom	Common name	Scientific name
Oneida Lake	Animal	Quagga mussel	<i>Dreissena bugensis</i>
Oneida Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Oneida Lake	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Oneida Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Oneida Lake	Plant	Starry stonewort	<i>Nitellopsis obtusa</i>
Oneida Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Oneida Lake	Plant	Water chestnut	<i>Trapa natans</i>
Oneida Lake	Animal	European stream valvata	<i>Valvata piscinalis</i>
Oneida River	Plant	Water chestnut	<i>Trapa natans</i>
Oswego River	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Oswego River	Plant	Water chestnut	<i>Trapa natans</i>
Paddy's Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Panther Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Pennellville Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Pleasant Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Pleasant Lake	Plant	Water chestnut	<i>Trapa natans</i>
Port Ontario, Lake Ontario	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Sage Creek	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Salmon River Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Salmon River Reservoir	Plant	Variable watermilfoil	<i>Myriophyllum heterophyllum</i>
Seneca River	Plant	Water chestnut	<i>Trapa natans</i>
South Pond	Plant	Variable watermilfoil	<i>Myriophyllum heterophyllum</i>
South Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
South Pond	Animal	Round goby	<i>Neogobius melanostomus</i>
South Sandy Pond	Plant	Variable watermilfoil	<i>Myriophyllum heterophyllum</i>
South Sandy Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>

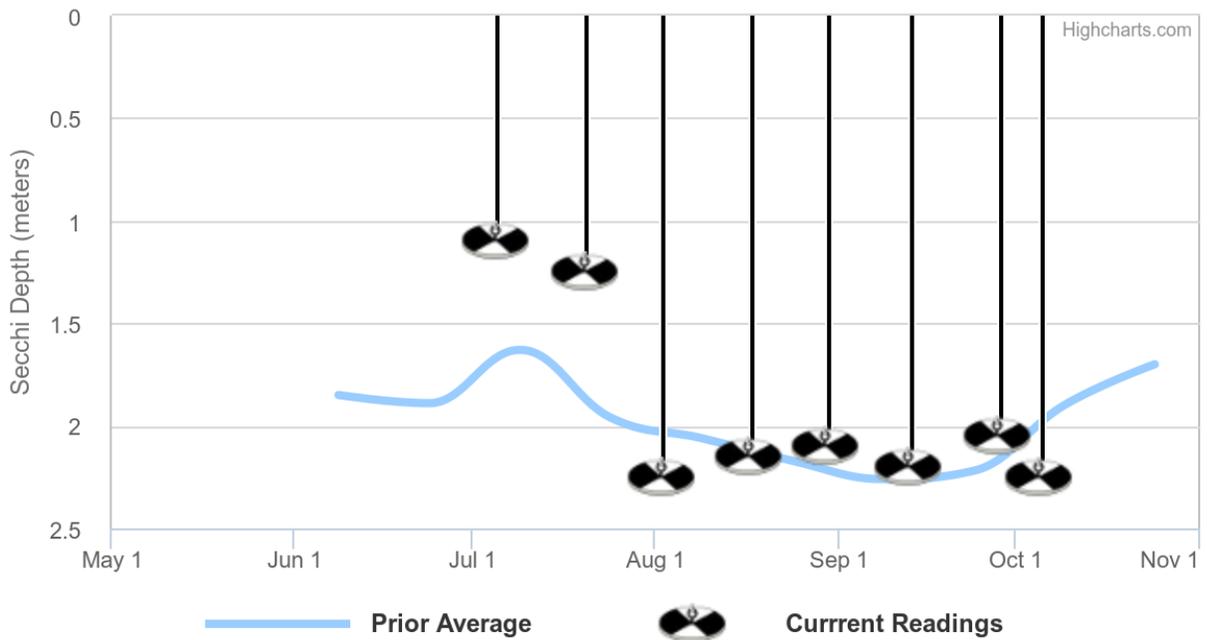
Appendix F: Current Year vs. Prior Averages for Lorton Lake

Current Year Water Temperatures vs. Prior Average



This year's shallow water sample temperatures are tending to be lower than normal when compared to the average of readings collected from 1990 to 2013.

Current Year Secchi Readings vs. Prior Average



This year's session Secchi readings are tending to be lower than normal when compared to the average of readings collected from 1990 to 2013

Appendix G: Watershed and Land Use Map for Lorton Lake

This watershed and land use map was developed using USGS StreamStats and ESRI ArcGIS using the 2006 land use satellite imagery. The actual watershed map and present land uses within this watershed may be slightly different due to the age of the underlying data and some limits to the use of these tools in some geographic regions and under varying flow conditions. However, these maps are intended to show the approximate extent of the lake drainage basin and the major land uses found within the boundaries of the basin.

