

## Sunnyside Lake Questions and Answers, 2015 CSLAP

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

A1. Water quality conditions in Sunnyside Lake were highly favorable in 2015. Water clarity was higher than usual, despite nutrient and algae levels that were close to normal, and no shoreline blue green algae blooms were reported.

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

A2. Chloride testing results were indicative of lakes with moderate to high impacts from road salt runoff, although no biological impacts were reported or measured.

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

A3. Sunnyside Lake had higher water clarity, and lower nutrient and algae levels, than the typical lake in the area. Aquatic plant coverage was lower than in these other lakes in 2015, perhaps due to continued plant suppression after the 2014 fluridone treatments.

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

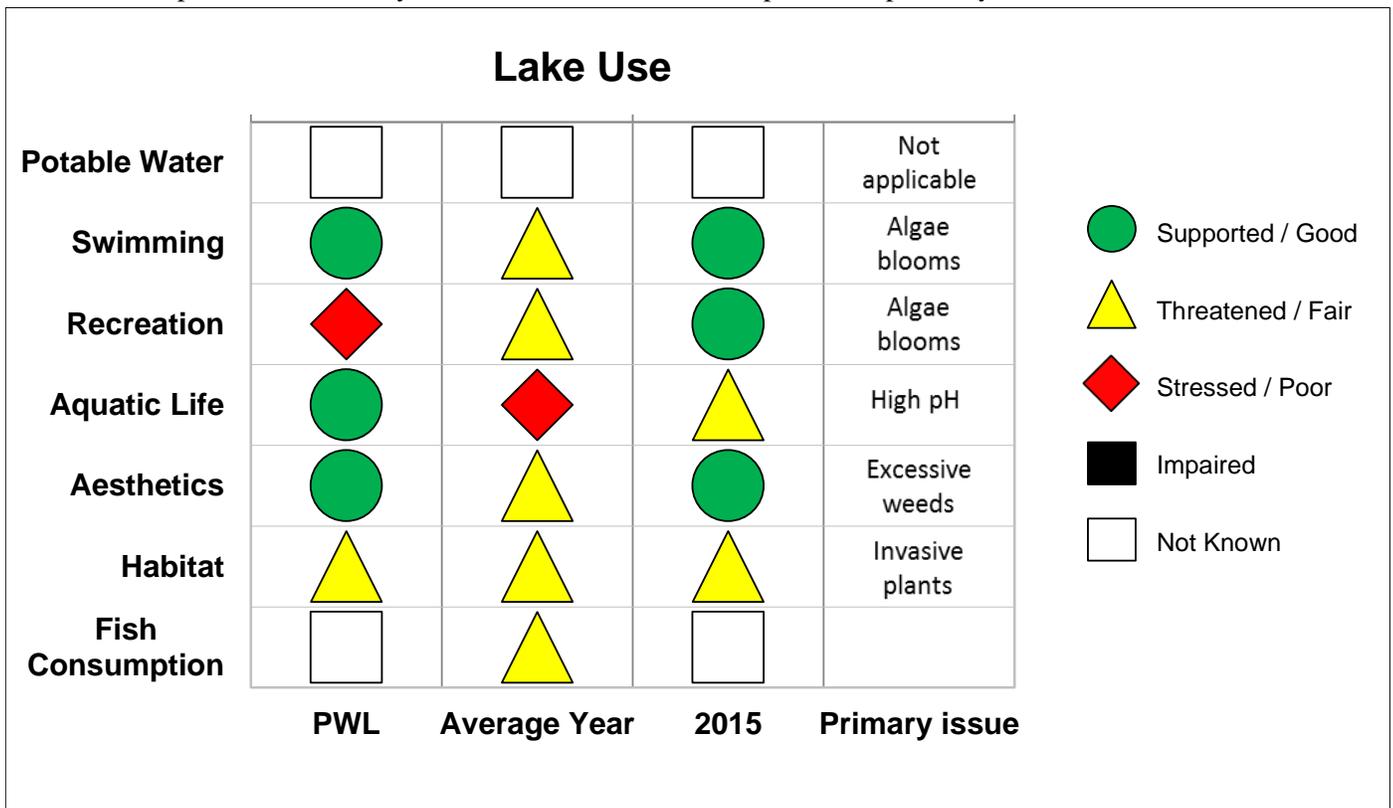
A4. pH readings have been lower in recent years and water clarity has increased slightly since the late 1990s. It is not known how much of the rise in water clarity is due to (more) active management of the lake, but this resulted in improved water quality assessments.

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

A5. Sunnyside Lake appears to be susceptible to shoreline blue green algae blooms, despite low open water nutrient and algae levels. The reason for shoreline blue green algae blooms in some years but not others is not yet known.

**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 and runoff into the lake will help to maintain lake health by reducing nutrient and sediment loading to the lake. Visiting boats should be inspected to reduce the risk of new invasive species, since nearby lakes harbor several invasive plants not presently found in the lake.



## CSLAP 2015 Lake Water Quality Summary: Lake Sunnyside

### General Lake Information

<b>Location</b>	Town of Queensbury
<b>County</b>	Warren
<b>Basin</b>	Lake Champlain
<b>Size</b>	10.4 hectares (25.7 acres)
<b>Lake Origins</b>	Natural
<b>Watershed Area</b>	63.3 hectares (156.4 acres)
<b>Retention Time</b>	1.5 years
<b>Mean Depth</b>	4.6 meters
<b>Sounding Depth</b>	6.4 meters
<b>Public Access</b>	No
<b>Major Tributaries</b>	Unnamed tributaries
<b>Lake Tributary To...</b>	Halfway Creek, Upper, and tribs to Lower, and tribs to Champlain Canal and minor tribs
<b>WQ Classification</b>	B
<b>Lake Outlet Latitude</b>	43.372778
<b>Lake Outlet Longitude</b>	-73.639444
<b>Sampling Years</b>	1998-2003; 2011-2015
<b>2015 Samplers</b>	Christie and Bill Bennett
<b>Main Contact</b>	Christie Bennett

### Lake Map



## **Background**

Sunnyside Lake is a 26 acre, class B lake found in the Town of Queensbury in Warren County, in the south-eastern Adirondacks region of New York State. It was first sampled as part of CSLAP in 1986.

It is one of 12 CSLAP lakes among the nearly 300 lakes and ponds found in Warren County, and one of 17 CSLAP lakes among the nearly 650 lakes and ponds in the Lake Champlain drainage basin.

## **Lake Uses**

Sunnyside 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 for swimming, non-power boating and other recreation via shoreline properties.

Sunnyside Lake is not on the Department of Environmental Conservation’s fish stocking list. Fish present include chain pickerel, pumpkinseed, rock bass, northern pike, brown bullhead and common carp. Please see the ‘Freshwater Fishing Regulations’ section of the DEC website at; <http://www.dec.ny.gov/outdoor/7917.html> and also the ‘Sportfishing Regulations’ section at; [http://www.dec.ny.gov/docs/fish\\_marine\\_pdf/fishguide11regs.pdf](http://www.dec.ny.gov/docs/fish_marine_pdf/fishguide11regs.pdf) for fishing regulations in Warren County.

General statewide fishing regulations are applicable in Sunnyside Lake.

## **Historical Water Quality Data**

CSLAP sampling was conducted on Sunnyside Lake from 1998 to 2003 and 2011 to 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 Sunnyside Lake can be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77831.html>.

## **Lake Association and Management History**

Sunnyside Lake is served by the Sunnyside Lake Association. The lake association has been involved in a variety of lake management activities, including:

- Aquatic plant management- diver assisted hand harvesting (using Aquatic Invasive Management, LLC) in 2010 and aquatic herbicides (fluridone) in 2000 and 2011
- Septic system educational programs
- Motorboat restrictions
- Discouraging the feeding of waterfowl

It is not known if the lake association maintains a web page.

## **Summary of 2015 CSLAP Sampling Results**

### **Evaluation of 2015 Annual Results Relative to 1998-2014**

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 – Lake Sunnyside” section in Appendix C.

### **Evaluation of Eutrophication Indicators**

Water quality conditions in Lake Sunnyside were probably close to normal in 2015. Water clarity was slightly higher than usual, as part of a long-term increase over the last fifteen years. However, phosphorus and algae levels were close to normal, and no shoreline blue green algae blooms were reported (the only reported shoreline bloom in 2015 was comprised primarily of green algae). Phosphorus and chlorophyll *a* readings have not changed significantly since first analyzed in 1998.

Algae levels in the open water and along the shoreline may be suppressed by the copper treatments; copper treatments occurred in late June and early July of 2014, and early in the summer in 2015.

In the typical year, phosphorus and algae levels increase slightly from mid-summer through late summer, and then more substantially into the fall in many years. The latter may be due to lake destratification, although deepwater nutrient levels are not significantly different than those measured at the lake surface. In 2015, water clarity decreased in mid-summer, in response to an increase in algae levels over the same period. However, phosphorus readings did not exhibit any clear changes in mid-summer.

The lake can be characterized as *mesoligotrophic*, or moderately to highly unproductive, based on total phosphorus, chlorophyll *a* (both indicative of *mesotrophic* lakes) and Secchi disk transparency readings (typical of *oligotrophic* lakes). The trophic state indices (TSI) evaluation shows that water clarity readings in the lake are slightly higher than expected given the nutrient and algae levels. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Potable Water Indicators**

Algae levels appear to be too low, at least in the open water, to make the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, and the lake is not used for drinking water. Hypolimnetic phosphorus and ammonia readings in Sunnyside Lake are usually only slightly higher than those measured at the lake surface. This suggests that deepwater intakes may be supported for any “unofficial” potable water use, although any water intakes drawn from shoreline algae blooms may be compromised. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Limnological Indicators**

Deepwater ammonia and phosphorus readings were slightly higher than normal in 2014 and 2015, and conductivity was also slightly higher than usual in both years. The latter change may be part of a long-term increase that was mostly apparent from the late 1990s to the mid-2000s. pH and ammonia levels were close to normal in 2015, but pH has decreased and ammonia has increased over the last decade. It is likely that the small changes in the other limnological indicators have been within the normal range of variability in the lake.

Chloride levels in the 2015 samples, conducted for the first time through CSLAP and cited in Appendix A, ranged from 75 to 79 mg/l. These values are within the range of “major” road salt runoff levels cited by the New Hampshire DES. These readings are well below the state potable water quality standard of 250 mg/l but above 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**

Macrophyte surveys conducted through CSLAP showed a moderate number of aquatic plants, and at least one exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil) has been found in the lake. The modified floristic quality indices (FQI) data indicate that the quality of the aquatic plant community is “fair.” It is not yet known if the diversity of aquatic plants has changed in response to the active management (herbicides and hand harvesting) of Eurasian watermilfoil in the last decade.

The composition of the fish community includes coolwater (at least three species) and warmwater fish species. This suggests that the lake supports a coolwater fishery.

Zooplankton and macroinvertebrate surveys have not been conducted through CSLAP at Sunnyside Lake. The fluoroprobe screening data analyzed by SUNY ESF in the last few years indicates low total algae and blue green algae levels in the open water, with a mix of green algae and other algae species measured in open water samples. Shoreline algae blooms exhibited high levels of blue green algae in mid-summer of 2013, but only small green algae blooms were measured in early summer of 2014 and in 2015. A microscopic analysis of 2013 shoreline bloom samples shows a mix of green algae, diatoms, and blue green algae species, including *Microcystis*, *Planktothrix*, *Woronichina*, and *Lyngbya*. Most of these are capable of producing toxins, although toxin levels were low. It is not known to what extent blooms in 2014 and 2015, particularly along the shoreline, were suppressed by the copper treatments.

The biological condition of the lake is summarized in the Lake Scorecard and Lake Condition Summary Table

### **Evaluation of Lake Perception**

Water quality assessments have improved since the late 1990s, perhaps due to active water quality management in some years. These improved water quality assessments contributed to more favorable recreational assessments in 2014 and 2015, although recreational conditions in some years also reflect less coverage of aquatic weeds after fluridone treatments. Neither aquatic plant coverage nor recreational assessments has exhibited any clear long-term changes, although this may reflect periodic management of algae and plants.

These assessments decrease slightly from May through July, but improve from July through the end of the summer in the typical year. In 2015, plant coverage increased in early summer, but decreased in late summer, but water quality and recreational assessments did not exhibit any clear seasonal changes. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

## Evaluation of Local Climate Change

Air and water temperatures in the summer index period were close to normal in the last several years, although water temperatures may have increased slightly over the last two decades. 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 below the threshold for harmful algal blooms (HABs) in open water. Shoreline blooms exhibited elevated blue green algae levels in 2013, and an analysis of algae samples indicated toxin readings that at times exceed thresholds associated with safe swimming conditions in 2012. However, shoreline toxin levels were lower in 2013, and blue green algae blooms were not apparent along the shoreline in 2014 and 2015 (the small blooms were associated with green algae). Lake residents are advised to avoid exposure to any shoreline blooms, since the exposure risk from algal toxins cannot be easily predicted from visual appearance of the blooms.

## Lake Condition Summary

Category	Indicator	Min	Overall Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	2.80	5.66	7.55	6.13	Oligotrophic	Within Normal Range	No Change
	Chlorophyll <i>a</i>	0.14	2.23	13.20	2.16	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.007	0.012	0.023	0.012	Mesotrophic	Within Normal Range	No Change
Potable Water Indicators	Hypolimnetic Ammonia	0.00	0.03	0.06	0.05	Close to Surface NH4 Readings	Higher than Normal	Not known
	Hypolimnetic Arsenic							Not known
	Hypolimnetic Iron							Not known
	Hypolimnetic Manganese							Not known
Limnological Indicators	Hypolimnetic Phosphorus	0.008	0.014	0.037	0.019	Close to Surface TP Readings	Higher than Normal	Not known
	Nitrate + Nitrite	0.00	0.01	0.10	0.01	Low NOx	Within Normal Range	No Change
	Ammonia	0.00	0.02	0.06	0.03	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.22	0.45	0.94	0.46	Low Total Nitrogen	Within Normal Range	No Change
	pH	6.89	7.96	9.25	7.77	Alkaline	Within Normal Range	Decreasing Slightly
	Specific Conductance	138	323	447	355	Hardwater	Higher than Normal	No Change
	True Color	2	7	17	5	Uncolored	Within Normal Range	No Change
	Calcium	12.1	18.3	22.3	12.7	May be Susceptible to Zebra Mussels	Lower Than Normal	No Change
Lake Perception	WQ Assessment	0	2.0	5	1.1	Not Quite Crystal Clear	More Favorable Than Normal	Highly Improving
	Aquatic Plant Coverage	0	2.6	5	2.0	Surface Plant Growth	Within Normal Range	No Change
	Recreational Assessment	0	2.3	4	1.0	Excellent	More Favorable Than Normal	No Change
Biological Condition	Phytoplankton					Not measured through CSLAP	Not known	Not known
	Macrophytes					Fair quality of the aquatic plant community	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Not measured through CSLAP	Not known	Not known
	Fish					Coolwater fishery?	Not known	Not known
	Invasive Species					Eurasian watermilfoil	Not known	Not known

Category	Indicator	Min	Overall Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Local Climate Change	Air Temperature	14	24.9	36	25.1		Within Normal Range	No Change
	Water Temperature	14	23.6	28	24.3		Within Normal Range	No Change
Harmful Algal Blooms	Open Water Phycocyanin	0	4	13	3	No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a	0	7	123	1	Few readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	1	26	0	Few readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	<DL	0.8	<DL	Low to undetectable open water MC-LR	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	10.7	630.7	2426.3	119.0	Most readings indicate high algae levels	Not known	Not known
	Shoreline FP BG Chl.a	0.0	312.4	2426.3	4.8	Most readings indicate high BGA levels	Not known	Not known
	Shoreline Microcystis	<DL	4.7	22.6	<DL	Occasionally high shoreline bloom MC-LR	Not known	Not known
	Shoreline Anatoxin a	<DL	<DL	1.2	<DL	Shoreline bloom Anatoxin-a at times detectable	Not known	Not known

## Evaluation of Lake Condition Impacts to Lake Uses

The 2009 NYSDEC Priority Waterbody Listings (PWL) for the Lake Champlain basin indicate that recreation is *stressed* by excessive weeds. The PWL listing for Sunnyside Lake is cited in Appendix B.

### Potable Water (Drinking Water)

The CSLAP dataset at Sunnyside 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. Any "unofficial" use of the lake for potable water may be threatened by shoreline algal blooms.

### Public Bathing

The CSLAP dataset at Sunnyside 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 *threatened* at times by shoreline harmful algal blooms, although these blooms appear to be sporadic and may vary in response to copper treatments. 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 Sunnyside Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that recreation may also be *threatened* by shoreline blue green algae blooms. These impacts vary from year to year (and perhaps in response to active management).

### Aquatic Life

The CSLAP dataset on Sunnyside Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *stressed* by high pH

and *threatened* by road salt runoff. Additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

### **Aesthetics and Habitat**

The CSLAP dataset on Sunnyside Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be only *fair* in some years due to shoreline algal blooms, and habitat may be *fair* due to invasive plant growth, although these impacts may be reduced in some years due to fluridone treatments or other plant control measures.

### **Fish Consumption**

There are no fish consumption advisories posted for Sunnyside Lake.

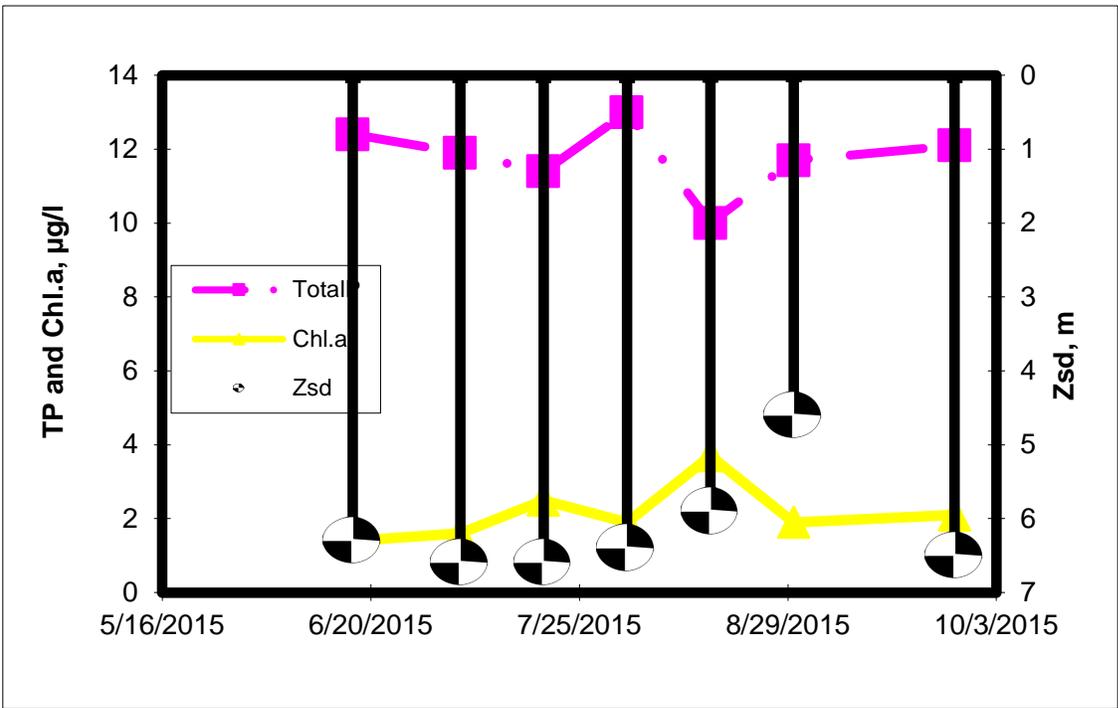
### **Additional Comments and Recommendations**

Sunnyside Lake should continue to be evaluated for the frequency, duration, and intensive of harmful algal blooms, and to determine if plant management actions affect the quality of the aquatic plant community.

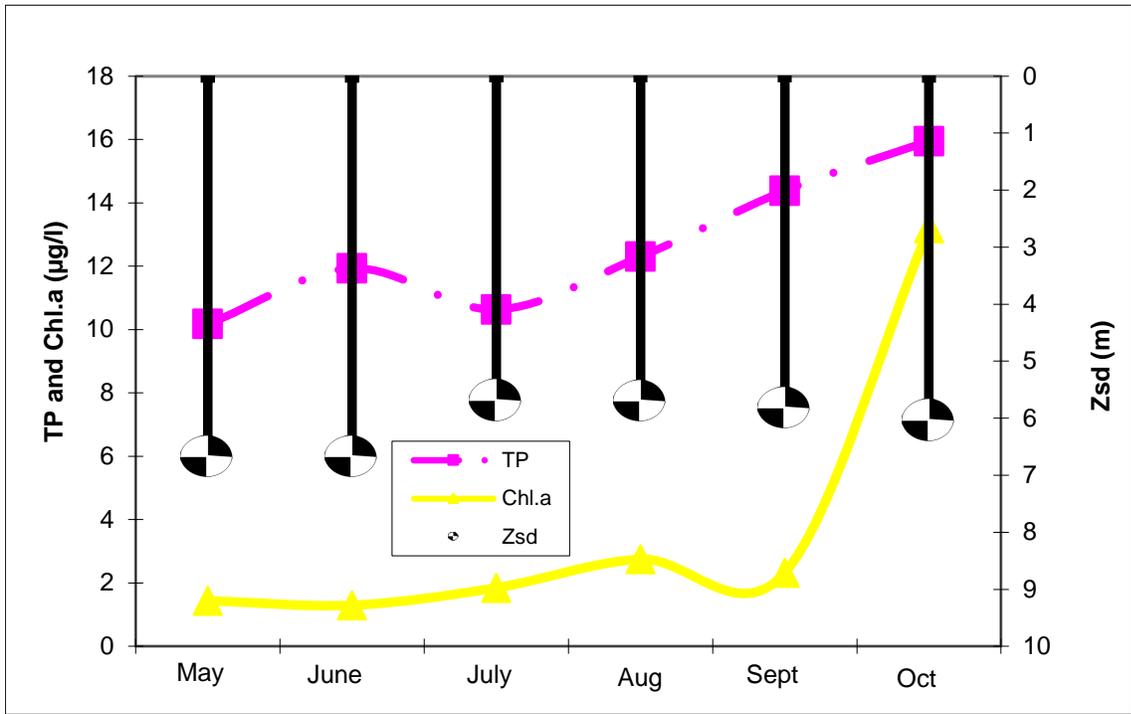
### **Aquatic Plant IDs-2015**

None submitted for identification in 2015.

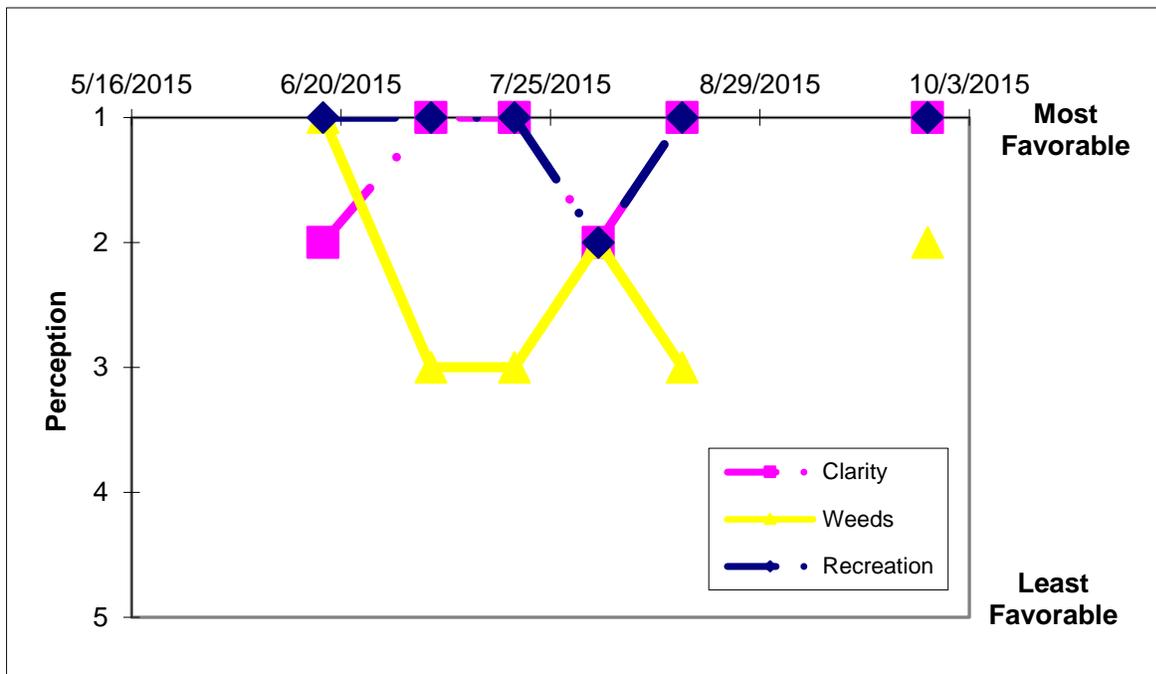
### Time Series: Trophic Indicators, 2015



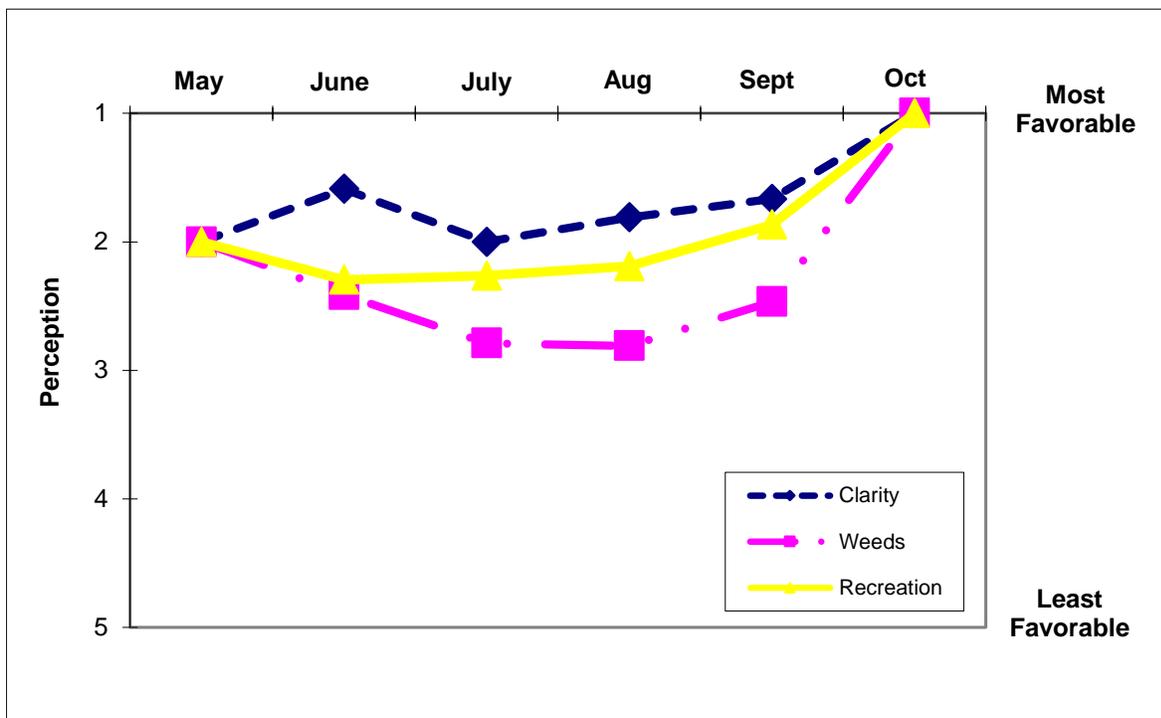
### Time Series: Trophic Indicators, Typical Year (1998-2015)



## Time Series: Lake Perception Indicators, 2015



## Time Series: Lake Perception Indicators, Typical Year (1998-2015)



## Appendix A- CSLAP Water Quality Sampling Results for Sunnyside Lake

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
166	Sunnyside L	5/6/1998		6.75												
166	Sunnyside L	5/7/1998		7.45												
166	Sunnyside L	5/14/1998		7.40												
166	Sunnyside L	5/18/1998		7.30												
166	Sunnyside L	5/23/1998		7.05												
166	Sunnyside L	5/25/1998		6.10												
166	Sunnyside L	6/14/1998		6.85												
166	Sunnyside L	6/21/1998		7.40												
166	Sunnyside L	6/29/1998		4.95												
166	Sunnyside L	7/4/1998		6.20												
166	Sunnyside L	7/5/1998		6.45												
166	Sunnyside L	7/9/1998		6.55												
166	Sunnyside L	7/13/1998		6.60												
166	Sunnyside L	7/21/1998		4.90												
166	Sunnyside L	7/28/1998		4.60												
166	Sunnyside L	8/14/1998		4.25												
166	Sunnyside L	8/23/1998		4.15												
166	Sunnyside L	8/30/1998		4.15												
166	Sunnyside L	9/6/1998		3.55												
166	Sunnyside L	9/13/1998		3.85												
166	Sunnyside L	9/20/1998		3.80												
166	Sunnyside L	9/27/1998		2.80												
166	Sunnyside L	10/4/1998		3.05												
166	Sunnyside L	10/11/1998		2.80												
166	Sunnyside L	10/18/1998		3.00												
166	Sunnyside L	10/26/1998		3.40												
166	Sunnyside L	11/4/1998		3.15												
166	Sunnyside L	11/16/1998		2.95												
166	Sunnyside L	11/23/1998		3.25												
166	Sunnyside L	11/30/1998		3.55												
166	Sunnyside L	12/6/1998		3.00												
166	Sunnyside L	5/31/1999		6.05	1.5	0.011	0.01				2	8.23	322		1.12	
166	Sunnyside L	6/15/1999		7.15	1.5	0.012	0.01				7	8.45	319		0.14	
166	Sunnyside L	6/29/1999	9.5	6.60	1.5	0.012	0.01				5	8.79	314		2.90	
166	Sunnyside L	7/13/1999	9.1	6.10	1.5	0.009	0.01				6	8.54	307		2.14	
166	Sunnyside L	7/25/1999	7.5	6.00	1.5	0.008	0.01				3	9.04	298		2.64	
166	Sunnyside L	8/9/1999	8.2	4.30	1.5	0.014	0.01				6	8.54	303		6.05	
166	Sunnyside L	8/23/1999		4.00	1.5	0.014	0.01				7	7.37	315		5.25	
166	Sunnyside L	9/12/1999	7.5	4.38	1.5	0.014	0.01				8	8.02	325		1.68	
166	Sunnyside L	6/1/2000	7.2	6.35	1.0	0.012	0.01				2	7.88	320		1.50	
166	Sunnyside L	6/15/2000	7.2	5.40	1.0	0.009	0.01				6	8.23	311		2.64	
166	Sunnyside L	6/26/2000	7.6	6.80		0.008	0.01				6	8.31	309		1.07	
166	Sunnyside L	7/10/2000	7.9	5.20	1.0	0.007	0.01				2	8.23	308		2.40	
166	Sunnyside L	7/22/2000	7.8	5.20	1.5	0.008	0.01				3	7.68	304		1.94	
166	Sunnyside L	8/15/2000	7.8	5.60	1.5	0.010	0.01				6	7.89	302		3.48	
166	Sunnyside L	8/28/2000		6.00	1.0	0.008	0.01				6	7.68	305		1.84	
166	Sunnyside L	9/18/2000	8.0	7.20	1.5	0.013	0.01				7	7.68	310		2.28	
166	Sunnyside L	6/18/2001	8.5	6.40	1.0	0.012	0.01				3	7.67	322		2.02	
166	Sunnyside L	7/9/2001	8.5	4.78	1.0		0.01				6	7.25	323		4.89	
166	Sunnyside L	7/17/2001	8.5	4.40	1.0	0.014	0.01				4	8.03	321		2.46	
166	Sunnyside L	7/29/2001	7.7	4.15	1.0		0.01				4	8.68	323		0.85	
166	Sunnyside L	8/14/2001	8.5	3.75	1.0	0.014	0.01				8	8.87	327		1.31	
166	Sunnyside L	8/14/2001	8.5	3.25	1.0	0.015	0.01				6	8.12	328		4.55	
166	Sunnyside L	9/9/2001	7.8	3.55	1.5	0.012	0.01				6	8.68	330		0.84	
166	Sunnyside L	10/3/2001	8.5	6.48	1.0	0.013	0.01				8	7.39	335			
166	Sunnyside L	5/28/2002	7.7	7.30	1.0	0.009	0.02	0.04	0.94	101.08	4	8.23	312		1.76	
166	Sunnyside L	6/11/2002	7.7	7.50	1.0	0.010	0.01	0.01	0.68	69.89	7	8.62	315		0.84	
166	Sunnyside L	6/24/2002	7.7	7.55	1.0	0.011	0.00	0.01	0.52	47.00	5	8.75	317		0.98	
166	Sunnyside L	7/8/2002	7.7	6.35	1.0	0.011	0.00	0.03	0.49	43.33	6	8.97	319		1.71	
166	Sunnyside L	7/21/2002	7.7	5.20	1.0	0.008	0.00	0.03	0.62	76.78	12	9.03	313		1.41	
166	Sunnyside L	8/12/2002	7.7	6.45	1.0	0.011	0.02	0.03	0.51	45.64	14	8.80	316		1.47	
166	Sunnyside L	8/30/2002	7.7	4.80	1.0	0.013	0.00	0.03	0.69	53.43	8	7.85	317		3.99	
166	Sunnyside L	9/10/2002	7.7	5.60	1.0	0.013	0.01	0.04	0.78	60.24	4	8.71	447		1.57	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
166	Sunnyside L	6/3/2003	7.6	7.30	1.0	0.013	0.00	0.02	0.39	29.78	6	7.8	327.0	21	1.3	
166	Sunnyside L	6/22/2003	7.6	6.70		0.013	0.00	0.00	0.28	21.30		8.9	291.0		1.2	
166	Sunnyside L	7/7/2003	7.5	6.65		0.011	0.01	0.00	0.36	32.97	6	9.3	319.0		1.2	
166	Sunnyside L	7/22/2003	7.6	6.15		0.012	0.00	0.02	0.36	30.53	7	8.6	313.0		1.7	
166	Sunnyside L	8/13/2003	7.6	5.85	1.0		0.00	0.01	0.34	5.96	9	8.9	310.0	18	2.3	
166	Sunnyside L	8/24/2003	7.7	5.55	1.0	0.009	0.00	0.00	0.22	24.09	3	8.5	311.0		2.7	
166	Sunnyside L	9/9/2003	7.6	6.90		0.016	0.03	0.02			7	7.9	319.0		3.6	
166	Sunnyside L	6/13/2011	8.0	5.60		0.013	0.04	0.02	0.32	54.31		7.4	138.4	22.3		
166	Sunnyside L	7/4/2011	3.8	3.75	1.5	0.010	0.02	0.03	0.32	66.63	15	7.5	349.3		0.6	
166	Sunnyside L	7/19/2011	8.0	6.25	0.5	0.013	0.04	0.02	0.35	58.78	10	8.0	334.7		1.3	
166	Sunnyside L	7/19/2011			bloom											
166	Sunnyside L	8/1/2011	8.0	7.30	1.0	0.013	0.06	0.03	0.32	54.74	15	7.3	334.9		1.0	
166	Sunnyside L	8/1/2011			Bloom											
166	Sunnyside L	8/1/2011			Bloom											
166	Sunnyside L	8/16/2011		7.10	1.0	0.010	0.01	0.03	0.38	83.64	17	7.4	338.2	20.4	1.6	
166	Sunnyside L	8/16/2011			Bloom											
166	Sunnyside L	8/30/2011	8.0	7.28	1.5	0.016	0.02	0.03	0.44	61.05	9	7.3	354.4		1.5	
166	Sunnyside L	8/30/2011			Bloom											
166	Sunnyside L	9/13/2011	8.0	7.40	1.5	0.011	0.02	0.04	0.39	75.63	14	7.7	331.9		1.8	
166	Sunnyside L	9/26/2011	7.9	6.78	1.5	0.013	0.01	0.05	0.33	54.67	13	7.2	281.4		1.2	
166	Sunnyside L	7/2/2012			Bloom											
166	Sunnyside L	7/9/2012	9.0	6.00		0.013	0.03	0.01	0.31	50.90	12	8.0	339.7	20	2.2	
166	Sunnyside L				Bloom											
166	Sunnyside L	7/23/2012	7.5	5.80	1.5	0.014	0.09	0.03	0.38	58.51	6	7.6	349.6		1.0	
166	Sunnyside L	8/5/2012			Bloom											
166	Sunnyside L	8/6/2012	7.5	5.85		0.015	0.01	0.01	0.41	62.06	8	8.5	333.6		1.8	
166	Sunnyside L	8/21/2012			bloom											
166	Sunnyside L	8/21/2012	7.4	4.50	1.5	0.015	0.01	0.01	0.71	106.53	7	8.3	353.4		3.0	
166	Sunnyside L	9/1/2012	7.4	4.30	1.5	0.021	0.01	0.03	0.54	55.77	5	7.7	209.7	20.3	4.6	
166	Sunnyside L	9/16/2012	7.5	5.30	1.5	0.013	0.01	0.04	0.48	81.91	5	6.9	340.4		2.3	
166	Sunnyside L	9/30/2012		6.80		0.017	0.02	0.05	0.47	61.65	5	6.9	207.8		2.4	
166	Sunnyside L	10/22/2012	7.3	5.60	1.5	0.019	0.10	0.01	0.58	66.34	7	8.1	333.2		13.2	
166	Sunnyside L	6/3/2013	7.4	7.28	1.5	0.023	0.02	0.02	0.34	32.05	14	7.5	332.8		1.1	
166	Sunnyside L	6/15/2013	7.4	7.00	1.5	0.009			0.31	79.72		7.7	326.3		1.3	
166	Sunnyside L	6/29/2013	7.4	6.55	1.5	0.011	0.01	0.01	0.29	57.28	14	7.4	266.4		0.9	
166	Sunnyside L	6/29/2013			bloom											
166	Sunnyside L	7/14/2013	7.3	6.89	1.5	0.011			0.31	62.36	15	7.7	305.3		1.3	
166	Sunnyside L	7/15/2013			bloom											
166	Sunnyside L	7/15/2013			bloom											
166	Sunnyside L	7/28/2013	7.3	6.15	1.5	0.010	0.01	0.01	0.28	59.65	12	8.1	309.2			
166	Sunnyside L	7/28/2013			bloom											
166	Sunnyside L	8/11/2013	7.3	6.08	1.5	0.008			0.48	125.59	9	8.2	333.6		0.9	
166	Sunnyside L	8/11/2013			bloom											
166	Sunnyside L	8/25/2013	7.3	6.60	1.5	0.012	0.01	0.02	0.44	80.48	14	7.7	338.2		0.8	
166	Sunnyside L	8/25/2013			bloom											
166	Sunnyside L	9/10/2013	7.5	6.98	1.5	0.017			0.44	55.38	10	7.3	299.8		3.1	
166	Sunnyside L	6/2/2014	7.8	6.80	1.0	0.009	0.02	0.03	0.55	141.84	16	7.21	354	19.3	1.10	
166	Sunnyside L	6/2/2014			Bloom											
166	Sunnyside L	6/17/2014	7.4	6.20	1.5	0.012			0.40	75.86	7	7.39	358		0.30	
166	Sunnyside L	7/20/2014				0.008	0.01	0.06	0.39	105.11	6	7.58	359		1.30	
166	Sunnyside L	8/3/2014	7.3	7.20	1.5	0.010			0.46	101.56	2	7.26	307		1.40	
166	Sunnyside L	8/17/2014	7.3	7.10	1.5	0.016	0.01	0.01	0.43	58.44	6	7.92	357	16.5	8.10	
166	Sunnyside L	8/17/2014			bloom											
166	Sunnyside L	9/1/2014	7.5	5.25	1.5	0.016			0.40	56.47	9	7.67	360		1.20	
166	Sunnyside L	9/14/2014	7.6	5.35	1.5	0.015	0.01	0.05	0.49	73.23	5	7.24	360		4.20	
166	Sunnyside L	9/28/2014	7.3	5.00	1.5	0.012			0.62	110.71	8	6.92	347		2.00	
166	Sunnyside L	6/17/2015	7.5	6.30	1.5	0.012	0.03	0.04	0.33	26.53	4	7.36	322	12.1	1.40	
166	Sunnyside L	7/5/2015	7.1	6.60	1.5	0.012			0.45	37.48	8	7.46	336		1.60	
166	Sunnyside L	7/5/2015			bloom											
166	Sunnyside L	7/19/2015	7.2	6.60	1.5	0.011	0.01	0.02	0.51	44.30	5	7.74	369		2.50	76.3
166	Sunnyside L	8/2/2015	7.3	6.40	1.5	0.013			0.43	32.77	8	8.22	355		1.90	
166	Sunnyside L	8/16/2015	7.1	5.90	1.5	0.010	0.00	0.04	0.50	49.80	6	8.24	366	13.3	3.70	
166	Sunnyside L	8/30/2015	7.0	4.60	1.5	0.012			0.54	45.90	4	7.91	385		1.90	
166	Sunnyside L	9/26/2015	6.6	6.50	1.5	0.012	0.01	0.03	0.46	37.60	2	7.45	354		2.10	78.9
166	Sunnyside L	5/28/2002	7.7			6.2	0.011	0.01	0.02	0.54						
166	Sunnyside L	6/11/2002	7.7			6.2	0.010	0.00	0.01	0.62						

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
166	Sunnyside L	6/24/2002	7.7		6.2	0.011	0.00	0.01	0.41	37.68					
166	Sunnyside L	7/8/2002	7.7		6.2	0.009	0.00	0.03	0.43	47.26					
166	Sunnyside L	7/21/2002	7.7		6.2	0.014	0.00	0.05	0.57	41.83					
166	Sunnyside L	8/12/2002	7.7		6.2	0.014	0.01	0.03	0.47	34.60					
166	Sunnyside L	8/30/2002	7.7		6.2	0.012	0.00	0.02	0.66	56.63					
166	Sunnyside L	9/10/2002	7.7		6.2		0.00	0.02	0.62						
166	Sunnyside L	6/3/2003				0.011	0.00	0.02	0.41	38.68					
166	Sunnyside L	6/22/2003				0.012	0.06	0.00	0.23	18.58					
166	Sunnyside L	7/7/2003				0.013	0.01	0.00	0.37	29.77					
166	Sunnyside L	7/22/2003				0.012	0.00	0.05	0.39	34.02					
166	Sunnyside L	8/13/2003				0.011	0.00	0.01	0.37	34.22					
166	Sunnyside L	8/24/2003				0.009	0.00	0.01	0.44	49.45					
166	Sunnyside L	9/9/2003			1.5	0.014	0.03	0.03							
166	Sunnyside L	6/13/2011	8.0			0.018		0.04							
166	Sunnyside L	7/19/2011	8.0			0.011		0.02							
166	Sunnyside L	8/16/2011				0.019		0.04							
166	Sunnyside L	9/13/2011	8.0		7.4	0.008		0.03							
166	Sunnyside L	7/9/2012			6.5	0.017		0.03							
166	Sunnyside L	8/6/2012			6.0	0.018		0.01							
166	Sunnyside L	9/1/2012			7.4	0.015		0.02							
166	Sunnyside L	9/30/2012				0.013		0.06							
166	Sunnyside L	6/3/2013			6.0	0.012		0.03							
166	Sunnyside L	6/15/2013			6.0	0.010									
166	Sunnyside L	6/29/2013			5.6	0.018		0.02							
166	Sunnyside L	7/14/2013			5.8	0.010									
166	Sunnyside L	7/28/2013			5.8	0.017		0.01							
166	Sunnyside L	8/11/2013			5.8	0.010									
166	Sunnyside L	8/25/2013			5.8	0.014		0.02							
166	Sunnyside L	9/10/2013			6.0	0.012									
166	Sunnyside L	6/2/2014			5.5	0.012		0.03							
166	Sunnyside L	6/17/2014			6.0	0.010									
166	Sunnyside L	7/20/2014				0.022		0.04							
166	Sunnyside L	8/3/2014			7.1	0.019									
166	Sunnyside L	8/17/2014			6.9	0.016		0.02							
166	Sunnyside L	9/1/2014			5.0	0.012									
166	Sunnyside L	9/14/2014			5.3	0.013		0.06							
166	Sunnyside L	9/28/2014			5.0	0.011									
166	Sunnyside L	6/17/2015			6.0	0.037		0.06							
166	Sunnyside L	7/5/2015			6.6	0.017									
166	Sunnyside L	7/19/2015			6.4	0.015		0.05							
166	Sunnyside L	8/2/2015			6.5	0.017									
166	Sunnyside L	8/16/2015			6.2	0.015		0.04							
166	Sunnyside L	8/30/2015				0.016									
166	Sunnyside L	9/20/2015				0.015		0.04							

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cylin	FP-Chl	FP-BG	HABform	Shore HAB
166	Sunnyside L	5/6/1998	epi			2	2	2	5											
166	Sunnyside L	5/7/1998	epi			1	2	1	5											
166	Sunnyside L	5/14/1998	epi			1	2	1	5											
166	Sunnyside L	5/18/1998	epi			2	2	2	6											
166	Sunnyside L	5/23/1998	epi			1	2	2	5											
166	Sunnyside L	5/25/1998	epi			4	2	3	4											
166	Sunnyside L	6/14/1998	epi			3	2	2	5											
166	Sunnyside L	6/21/1998	epi			1	3	1	0											
166	Sunnyside L	6/29/1998	epi			2	2	2	5											
166	Sunnyside L	7/4/1998	epi			2	2	3	5											
166	Sunnyside L	7/5/1998	epi			2	2	2	0											
166	Sunnyside L	7/9/1998	epi			2	5	2	0											
166	Sunnyside L	7/13/1998	epi			2	2	2	0											
166	Sunnyside L	7/21/1998	epi			2	2	2	0											
166	Sunnyside L	7/28/1998	epi			2	2	2	2											
166	Sunnyside L	8/14/1998	epi			3	3	2	2											
166	Sunnyside L	8/23/1998	epi			3	3	2	5											
166	Sunnyside L	8/30/1998	epi			3	3	2	6											

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cylin	FP-Chl	FP-BG	HABform	ShoreHAB
166	Sunnyside L	9/6/1998	epi			3	3	2	6												
166	Sunnyside L	9/13/1998	epi			3	3	2	6												
166	Sunnyside L	9/20/1998	epi			3	3	2	6												
166	Sunnyside L	9/27/1998	epi			3	3	3	6												
166	Sunnyside L	10/4/1998	epi			3	3	3	6												
166	Sunnyside L	10/11/1998	epi			4	3	4	4												
166	Sunnyside L	10/18/1998	epi			4	3	4	4												
166	Sunnyside L	10/26/1998	epi			4	3	4	4												
166	Sunnyside L	11/4/1998	epi			4	3	4	4												
166	Sunnyside L	11/16/1998	epi			4	3	4	5												
166	Sunnyside L	11/23/1998	epi			4	3	4	5												
166	Sunnyside L	11/30/1998	epi			4	3	4	5												
166	Sunnyside L	12/6/1998	epi			4	3	4	5												
166	Sunnyside L	5/31/1999	epi	28	24	2	2	2													
166	Sunnyside L	6/15/1999	epi	22	25	1	2	2													
166	Sunnyside L	6/29/1999	epi	27	24	1	3	2	6												
166	Sunnyside L	7/13/1999	epi	22	24	2	3	2													
166	Sunnyside L	7/25/1999	epi	26	27	2	3	3	2												
166	Sunnyside L	8/9/1999	epi	21	24	3	3	2	12												
166	Sunnyside L	8/23/1999	epi	26	24	3	3	3	2												
166	Sunnyside L	9/12/1999	epi	23	24	1	3	2	2												
166	Sunnyside L	6/1/2000	epi	27	20	3	3	3	2												
166	Sunnyside L	6/15/2000	epi		19	2	4	3	25												
166	Sunnyside L	6/26/2000	epi	29	23	2	4	3	2												
166	Sunnyside L	7/10/2000	epi	27	23	3	4	3	23												
166	Sunnyside L	7/22/2000	epi	24	23	1	3	3	2												
166	Sunnyside L	8/15/2000	epi	23	23	3	4	3	23												
166	Sunnyside L	8/28/2000	epi	27	23	2	4	3	2												
166	Sunnyside L	9/18/2000	epi	22	20	1	4	3	2												
166	Sunnyside L	6/18/2001	epi	27	17	2	1	1	0												
166	Sunnyside L	7/9/2001	epi	22	22	2	1	2	3												
166	Sunnyside L	7/17/2001	epi	24	23	2	1	2	35												
166	Sunnyside L	7/29/2001	epi	29	25	2	2	2													
166	Sunnyside L	8/14/2001	epi	29	28	3	1	2	13												
166	Sunnyside L	8/14/2001	epi	26	25	2	1	2	1												
166	Sunnyside L	9/9/2001	epi	26	23	2	2	2													
166	Sunnyside L	10/3/2001	epi	21	18	1	1	1													
166	Sunnyside L	5/28/2002	epi	27	21																
166	Sunnyside L	6/11/2002	epi	32	23	2	1	2	6												
166	Sunnyside L	6/24/2002	epi	25	24	2	2	2	8												
166	Sunnyside L	7/8/2002	epi	31	26	2	3	2	8												
166	Sunnyside L	7/21/2002	epi	28	26	2	3	2	23												
166	Sunnyside L	8/12/2002	epi	33	27	2	3	3	2												
166	Sunnyside L	8/30/2002	epi	17	22	2	3	2	2												
166	Sunnyside L	9/10/2002	epi	32	26	2	3	3	26												
166	Sunnyside L	6/3/2003	epi	23	18	1	1	1	6												
166	Sunnyside L	6/22/2003	epi	24	22	2	3	3	36												
166	Sunnyside L	7/7/2003	Epi	29	27	5	3	4	23												
166	Sunnyside L	7/22/2003	Epi	25	24	2	2	2	6												
166	Sunnyside L	8/13/2003	Epi	26	26	3	3	2	12												
166	Sunnyside L	8/24/2003	Epi	17	24	1	3	2	2												
166	Sunnyside L	9/9/2003	Epi	23	22	3	3	2	2												
166	Sunnyside L	6/13/2011	Epi	19	22	1	3	4	2	0	0	3.7	0.6								
166	Sunnyside L	7/4/2011	Epi	28	25	2	4	3	2	0	0	2.9	1.5								
166	Sunnyside L	7/19/2011	Epi	26	26	1	4	3	234	4	4	8.8	1.4	<0.30	<0.218						
166	Sunnyside L	7/19/2011	Bloom											16.8	toxic	<0.054				e	
166	Sunnyside L	8/1/2011	Epi	30	27	1	4	2	56	4	4	8.2	1.5	<0.30	<0.218						
166	Sunnyside L	8/1/2011	Bloom											22.6	<2.696	<0.363				i	
166	Sunnyside L	8/1/2011	Bloom											9.0	toxic	<0.027					
166	Sunnyside L	8/16/2011	Epi	21	26	2	3	3	2	4	4	13.2	1.8	0.8	<0.185						
166	Sunnyside L	8/16/2011	Bloom											10.8	<0.370						f

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cylin	FP-Chl	FP-BG	HABform	ShoreHAB
166	Sunnyside L	8/30/2011	Epi	19	23	2	3	3	2	0	4	6.7	1.2	<0.30	<0.178	<0.014				
166	Sunnyside L	8/30/2011	Bloom											12.3	<0.719				di	
166	Sunnyside L	9/13/2011	Epi	24	23	1	3	2	5	0	0	4.0	1.0	<0.30	<0.161				i	
166	Sunnyside L	9/26/2011	Epi	36	24	2	3	2	8	0	0	10.0	1.3	<0.30	<0.161					
166	Sunnyside L	7/2/2012	Bloom											1.1	<0.820	103.8	25.0			
166	Sunnyside L	7/9/2012	Epi	24	26	1	3	2	15	4	4			<0.30	<0.423				F	
166	Sunnyside L		Bloom											0.2	1.2					
166	Sunnyside L	7/23/2012	Epi	27	27	1	1	1	8	4	4	3.8	0.2	<0.30	<0.585		0.5	0.4	E	
166	Sunnyside L	8/5/2012	Bloom											0.6	<1.318	216.3	57.2			
166	Sunnyside L	8/6/2012	Epi	28	27	1	1	1	0	4	4	7.2	0.2	<0.30	<0.330		2.4	1.6		
166	Sunnyside L	8/21/2012	Bloom											<0.60	<1.314	10.7	3.8			
166	Sunnyside L	8/21/2012	Epi	22	25		3	1						<0.30	<0.657	123.1	25.9			
166	Sunnyside L	9/1/2012	Epi	22	25	1	3		2	0	0			<0.30	<0.580					
166	Sunnyside L	9/16/2012	Epi	21	21	3	1	2	0	0	0			0.5	<3.299					
166	Sunnyside L	9/30/2012	Epi	14	17	1	2	2	1	0	0			<0.30	<3.205					
166	Sunnyside L	10/22/2012	Epi	18	14	1	1	1	1	0	0			<0.30	<3.205					i
166	Sunnyside L	6/3/2013	Epi	22	22	2	3	3	46	4	4			<0.30	<0.630	9.9	0.0	D		
166	Sunnyside L	6/15/2013	Epi	24	22	1	3	2	2	4	4	0.7	0.6	<0.30	<0.440	1.3	0.6	H		
166	Sunnyside L	6/29/2013	Epi	25	25	1	3	2	2	4	4	1.7	0.7	<0.30	<0.610	1.7	0.6	I	E	
166	Sunnyside L	6/29/2013	Bloom											<0.60	<1.220	1122.1	582.7			
166	Sunnyside L	7/14/2013	Epi	27	28	1	3	2	23	4	4	1.4	0.6	<0.30	<0.490	0.7	0.0	I	D	
166	Sunnyside L	7/15/2013	Bloom											0.7	<0.750	137.7	14.2	de		
166	Sunnyside L	7/15/2013	Bloom											<0.60	<0.750	677.0	203.3	de		
166	Sunnyside L	7/28/2013	Epi	25	26	5	4	3	1235	47	47	1.6	0.8	<0.30	<0.400	0.2	0.2	I	ae	
166	Sunnyside L	7/28/2013	Bloom											<0.90	<0.239	2426.3	2426.3	ae		
166	Sunnyside L	8/11/2013	Epi	25	25	1	4	3	23	4	4	1.9	0.9	<0.30	<0.340	1.0	0.6	I	de	
166	Sunnyside L	8/11/2013	Bloom											<0.77	<0.880	423.7	350.0	de		
166	Sunnyside L	8/25/2013	Epi	26	25	1	4	3	23	4	4	1.7	0.6	0.3	<0.570	0.4	0.3	I	D	
166	Sunnyside L	8/25/2013	Bloom											<1.80	<2.320	16.2	591.5	81.5	d	
166	Sunnyside L	9/10/2013	Epi	20	22	1	3	2	0	4	4			0.5	<19.130		0.0	0.0	I	H
166	Sunnyside L	6/2/2014	Epi	24	22	1	2	2	6	0	0	0.1	0.4	<0.53	<0.09	<0.001	2.12	0.00	f	
166	Sunnyside L	6/2/2014	Epi											<7.31	<0.34	<0.005	1640.00	0.00		e
166	Sunnyside L	6/17/2014	Epi	27	24	1	2	3	2	0	0			<0.53	<0.08	<0.002			i	i
166	Sunnyside L	7/20/2014	Epi																	
166	Sunnyside L	8/3/2014	Epi	25	26	2	2	2	0	0	0			<0.33	<0.01	<0.002			f	
166	Sunnyside L	8/17/2014	Epi	28	22	1	2	1	0	0	0	0.8	0.5	<0.35	<0.03	<0.001	2.66	0.00	i	i
166	Sunnyside L	8/17/2014	Epi											<0.78	<0.06	<0.002	100.00	0.00		d
166	Sunnyside L	9/1/2014	Epi	24	24	3	2	2	0	0	0	1.6	0.2	<0.29	<0.14	<0.002	0.22	0.00	d	d
166	Sunnyside L	9/14/2014	Epi	30	25	1	2	1	0	0	0	0.2	0.2	<0.24	<0.03	<0.001	0.78	0.00	i	i
166	Sunnyside L	9/28/2014	Epi	18	21	2	1	2	0	0	0	0.1	0.2	<0.19	<0.12	<0.001	0.79	0.00	f	f
166	Sunnyside L	6/17/2015	Epi	28	23	2	1	1	0	0	0	2.6	0.1	<0.55	<0.004	<0.003	0.00	0.00	H	BH
166	Sunnyside L	7/5/2015	Epi	23	23	1	3	1	0	0	0	3.3	0.2	<0.88	<0.010	<0.000	0.48	0.00	FH	I
166	Sunnyside L	7/5/2015	bloom											<0.82	0.51	<0.001	119.01	4.84		f
166	Sunnyside L	7/19/2015	Epi	33	28	1	3	1	0	0	0	2.5	0.3	<0.30	<0.009	<0.049	0.78	0.00		I
166	Sunnyside L	8/2/2015	Epi	21		2	2	2	0	0	3	1.4	0.2	<0.19	<0.004	<0.015	0.96	0.00		I
166	Sunnyside L	8/16/2015	Epi	26	26	1	3	1	0	0	0	5.9	0.3	<0.44	<0.002	<0.014	0.99	0.46	I	I
166	Sunnyside L	8/30/2015	Epi	28	25	0	0	0						<0.49	<0.003	<0.014	0.85	0.39		
166	Sunnyside L	9/26/2015	Epi	17	21	1	2	1	0	0	0	2.6	0.4	<0.58	<0.082	<0.016	0.66	0.00	I	I
166	Sunnyside L	5/28/2002	Hypo	27	19															
166	Sunnyside L	6/11/2002	Hypo	32	22															
166	Sunnyside L	6/24/2002	Hypo	25	23															
166	Sunnyside L	7/8/2002	hypo	31	26															
166	Sunnyside L	7/21/2002	hypo	28	21															
166	Sunnyside L	8/12/2002	hypo	33	26															
166	Sunnyside L	8/30/2002	hypo	17	22															
166	Sunnyside L	9/10/2002	hypo	32	26															
166	Sunnyside L	6/3/2003	hypo		17															
166	Sunnyside L	6/22/2003	hypo		17															
166	Sunnyside L	7/7/2003	hypo		26															
166	Sunnyside L	7/22/2003	hypo		23															
166	Sunnyside L	8/13/2003	hypo		26															

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cylin	FP-Chl	FP-BG	HABform	ShoreHAB
166	Sunnyside L	8/24/2003	hypo		24															
166	Sunnyside L	9/9/2003	hypo		21															
166	Sunnyside L	9/13/2011	hypo		23															
166	Sunnyside L	6/3/2013	hypo		16															
166	Sunnyside L	6/15/2013	hypo		19															
166	Sunnyside L	6/29/2013	hypo		22															
166	Sunnyside L	7/14/2013	hypo		28															
166	Sunnyside L	7/28/2013	hypo		25															
166	Sunnyside L	8/11/2013	hypo		24															
166	Sunnyside L	8/25/2013	hypo		25															
166	Sunnyside L	6/2/2014	hypo		17															
166	Sunnyside L	6/17/2014	hypo		19															
166	Sunnyside L	8/3/2014	hypo		19															
166	Sunnyside L	8/17/2014	hypo		25															
166	Sunnyside L	9/1/2014	hypo		23															
166	Sunnyside L	9/14/2014	hypo		24															
166	Sunnyside L	9/28/2014	hypo		21															
166	Sunnyside L	6/17/2015	hypo		20															
166	Sunnyside L	7/5/2015	hypo		22															
166	Sunnyside L	7/19/2015	hypo		24															
166	Sunnyside L	8/2/2015	hypo		22															
166	Sunnyside L	8/16/2015	hypo		26															
166	Sunnyside L	8/30/2015	hypo		25															
166	Sunnyside L	9/20/2015	hypo		21															

## Legend Information

<i>Indicator</i>	<i>Description</i>	<i>Detection Limit</i>	<i>Standard (S) / Criteria (C)</i>
<b>General Information</b>			
Lnum	lake number (unique to CSLAP)		
Lname	name of lake (as it appears in the Gazetteer of NYS Lakes)		
Date	sampling date		
<b>Field Parameters</b>			
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
<b>Laboratory Parameters</b>			
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	Cylindrospermopsin (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
<b>Lake Assessment</b>			
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 B: Priority Waterbody Listing for Sunnyside Lake

### Lake Sunnyside ( 1005-0047)

### MinorImpacts

#### Waterbody Location Information

Revised: 03/11/2009

<b>Water Index No:</b>	C-134- 4-19-19-P440	<b>Drain Basin:</b>	Lake Champlain
<b>Hydro Unit Code:</b>	02010001/140	<b>Str Class:</b>	B
<b>Waterbody Type:</b>	Lake (Mesotrophic)	<b>Reg/County:</b>	5/Warren Co. (57)
<b>Waterbody Size:</b>	37.4 Acres	<b>Quad Map:</b>	LAKE GEORGE (H-26-1)
<b>Seg Description:</b>	entire lake		

#### Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Recreation	Stressed	Known

#### Type of Pollutant(s)

Known: PROBLEM SPECIES (Eurasian milfoil)  
Suspected: ---  
Possible: ---

#### Source(s) of Pollutant(s)

Known: HABITAT MODIFICATION  
Suspected: Urban/Storm Runoff  
Possible: On-Site/Septic Syst

#### Resolution/Management Information

<b>Issue Resolvability:</b>	1 (Needs Verification/Study (see STATUS))	
<b>Verification Status:</b>	4 (Source Identified, Strategy Needed)	
<b>Lead Agency/Office:</b>	ext/WQCC	<b>Resolution Potential:</b> Medium
<b>TMDL/303d Status:</b>	n/a	

#### Further Details

##### Overview

Recreational uses in Lake Sunnyside are known to experience minor impacts/threats due to excess aquatic weed growth. Invasive species (Eurasian watermilfoil) is considered to be the primary water quality issue.

##### Water Quality Sampling

Lake Sunnyside has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1999 and continuing through 2003. An Interpretive Summary report of the findings of this sampling was published in 2004. These data indicate that the lake continues to be best characterized as mesoligotrophic, or moderately unproductive. Conditions have been mostly stable over the sampling period. Phosphorus levels in the lake rare consistently below the state guidance values indicating impacted/stressed recreational uses. Corresponding transparency measurements easily exceed the recommended minimum for swimming beaches. Measurements of pH are typically high, at times exceeding the state water quality range of 6.5 to 8.5, however impacts to aquatic life are not suspected. The lake water is weakly colored, and color does not limit water transparency. (DEC/DOW, BWAM/CSLAP, May 2004)

##### Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This assessment indicates

recreational suitability of the lake to be favorable since the lake was first evaluated and continuing through the most recent assessment. The recreational suitability of the lake is described most frequently as "excellent" or only "slightly" impacted, an assessment that is less favorable than expected given measured water quality characteristics. The lake itself is most often described as "not quite crystal clear." Assessments have noted that aquatic plants regularly grow to the lake surface, and are often sufficiently dense to restrict recreational use. Aquatic plants are dominated by non-native species (Eurasian watermilfoil), prompting herbicide treatment of the lake in 2000. (DEC/DOW, BWAM/CSLAP, May 2004)

#### Lake Uses

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 public 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 potable water supply and public bathing use is generally the responsibility of state and/or local health departments.

#### Previous Source Assessment

A variety of urban and other nonpoint runoff sources have in the past been identified as affect the water quality in the lake. Heavy shoreline development result in roadway and stormwater runoff. Inadequate and/or failing septic systems serving lake shore homes are also possible sources of nutrients, pathogens. Algal blooms have also been reported. (Lake Sunnyside Watershed Assessment, Warren County SWCD, September 1999)

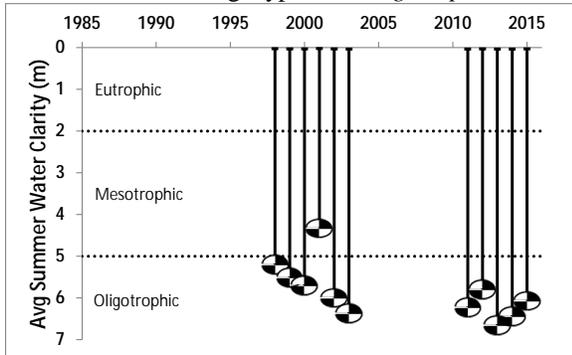
#### Segment Description

This segment includes the total area of Lake Sunnyside (P440). Lake Sunnyside is actually an isolated lake, which falls within the Glen Lake Brook watershed.

# Appendix C- Long Term Trends: Lake Sunnyside

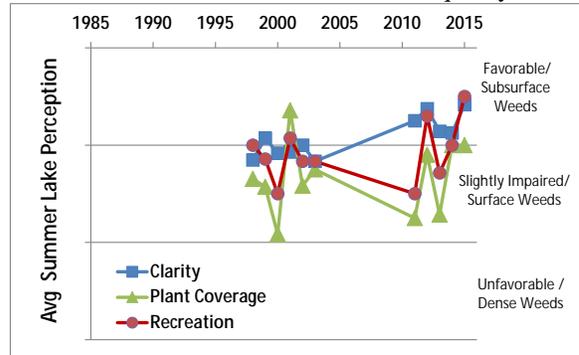
## Long Term Trends: Water Clarity

- Higher clarity 11-15 than from 1998-2003, though slight decrease last two years
- Most readings typical of *oligotrophic* lakes



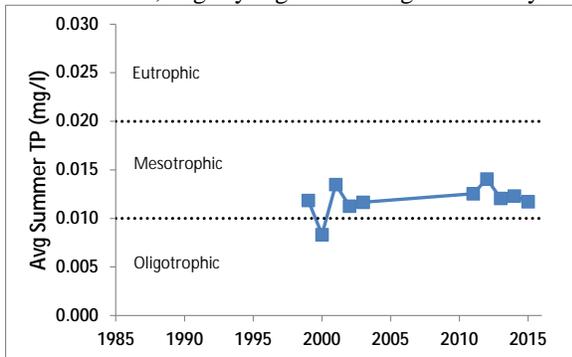
## Long Term Trends: Lake Perception

- WQ assessment improving w/higher clarity
- Rec. perception variable and more closely connected to weeds than water quality



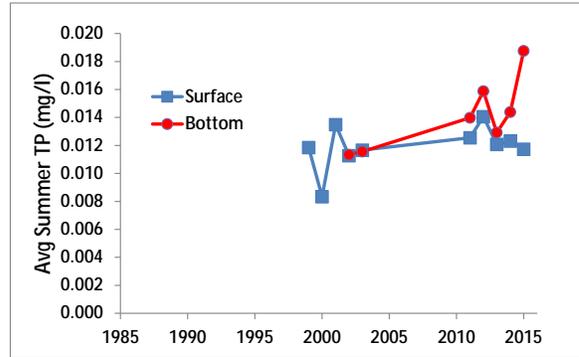
## Long Term Trends: Phosphorus

- Fairly stable phosphorus readings
- Most readings typical of *mesoligotrophic* lakes, slightly higher than algae or clarity



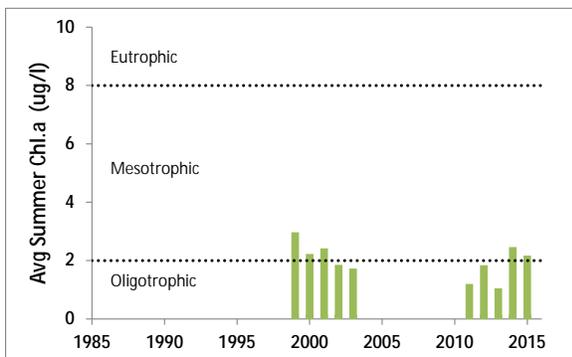
## Long Term Trends: Bottom Phosphorus

- Deepwater and surface TP levels similar
- Consistent with temperature data and indicates weak thermal stratification



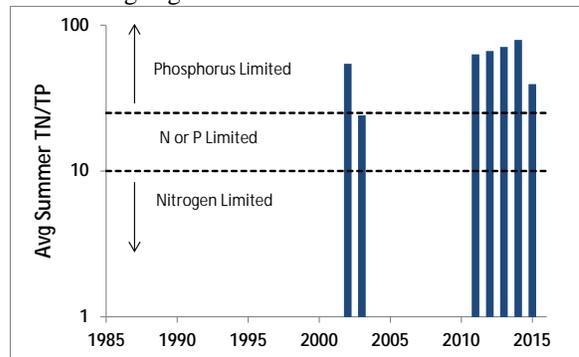
## Long Term Trends: Chlorophyll a

- Fairly stable open water algae levels
- Most readings typical of *oligotrophic* lakes



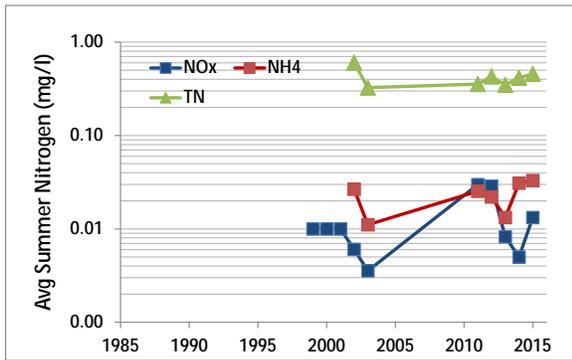
## Long Term Trends: N:P Ratio

- No long term trend; recent slight increase
- Most readings indicate phosphorus limits algae growth



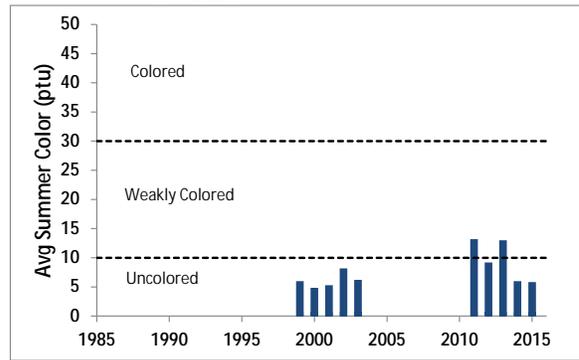
### Long Term Trends: Nitrogen

- NH4 may be increasing; TN and NOx stable
- Low NOx, ammonia and total nitrogen



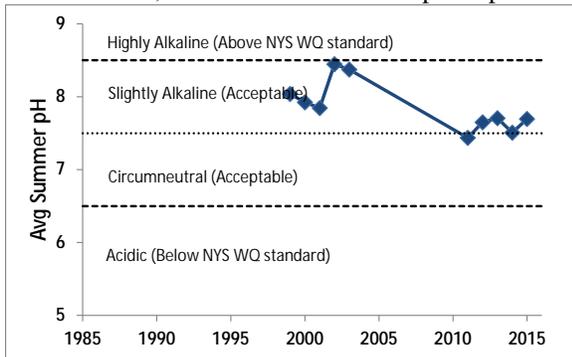
### Long Term Trends: Color

- Slightly higher since lab change early '00s
- Most readings typical of *uncolored* to *slightly colored* lakes



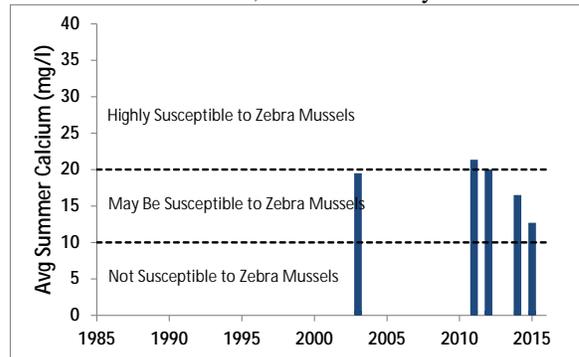
### Long Term Trends: pH

- Decreasing pH since early 2000s
- Most readings typical of *slightly alkaline* lakes, but occasional elevated pH in past



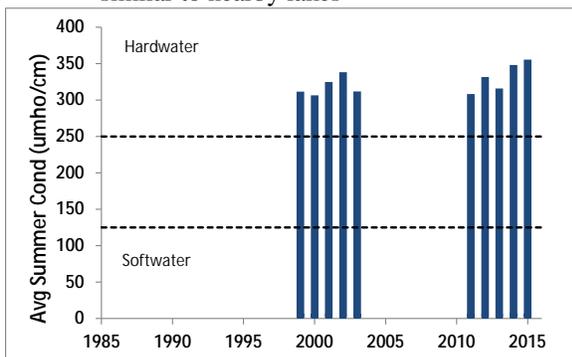
### Long Term Trends: Calcium

- Calcium levels may be decreasing
- Most readings indicate some susceptibility to zebra mussels, found in nearby lakes



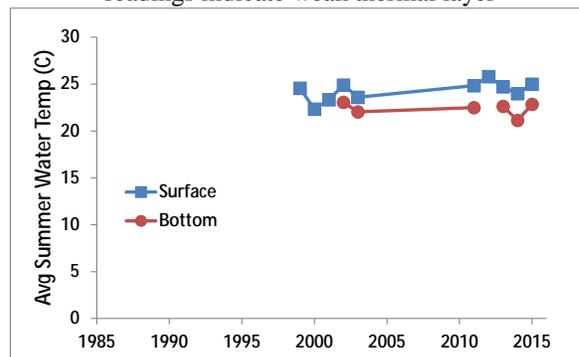
### Long Term Trends: Conductivity

- ↑ over last 4 years and higher than 99-03
- Most readings typical of *hardwater* lakes, similar to nearby lakes



### Long Term Trends: Water Temperature

- Surface T might be slightly > than 99-03
- Similar deepwater and surface temperature readings indicate weak thermal layer



## **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

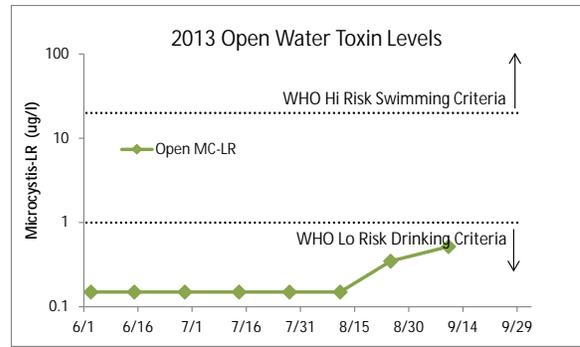
Some of these results are reported in other portions of these reports. This appendix the seasonal change in blue green algae, other algae types, and the primary algal toxin (microcystin-LR, a liver toxin). Analysis was completed on open water samples and, for some lakes, shoreline samples that were collected 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.

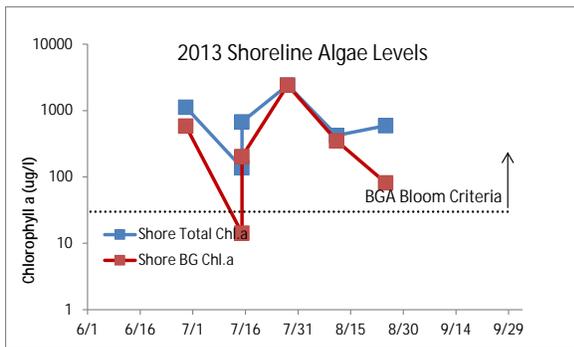
The results from these samples are summarized within the CSLAP report for the lake.



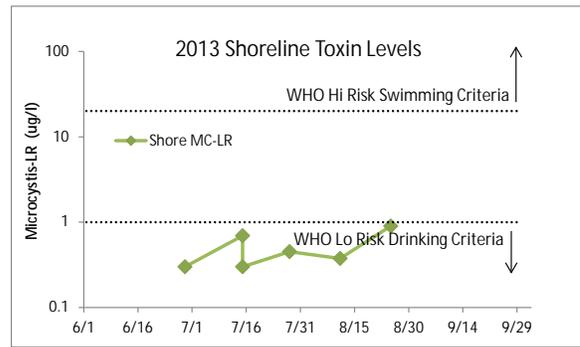
**Figure D1:**  
2013 Open Water Total and BGA Chl.a



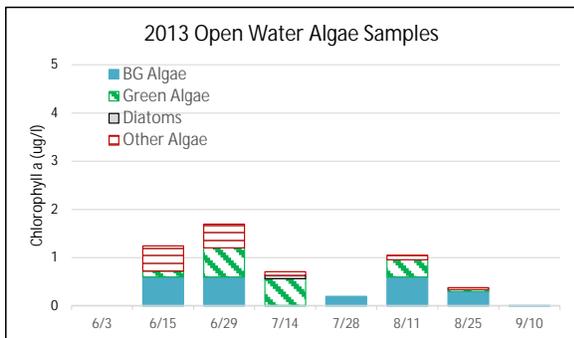
**Figure D2:**  
2013 Open Water Microcystin-LR



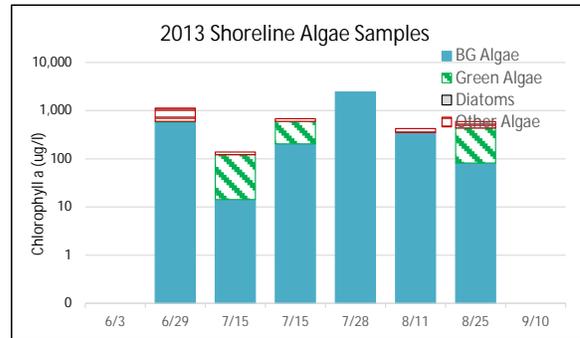
**Figure D3:**  
2013 Shoreline Total and BGA Chl.a



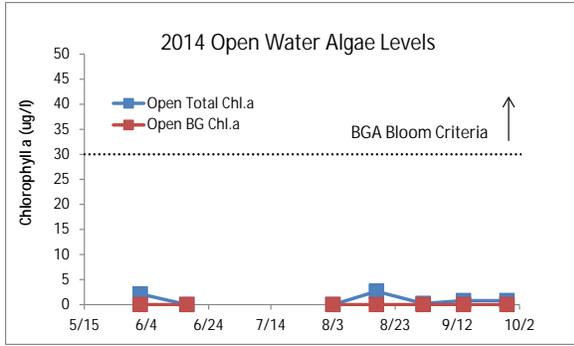
**Figure D4:**  
2013 Shoreline Microcystin-LR



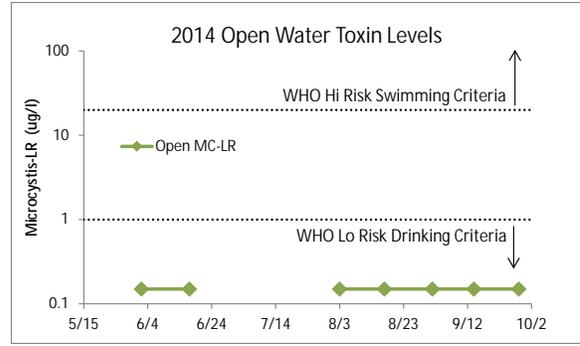
**Figure D5:**  
2013 Open Water Algae Types



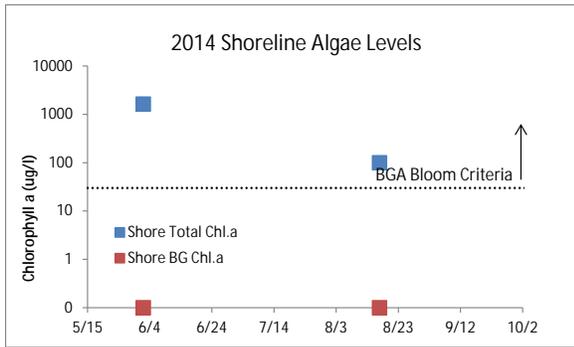
**Figure D6:**  
2013 Shoreline Algae Types



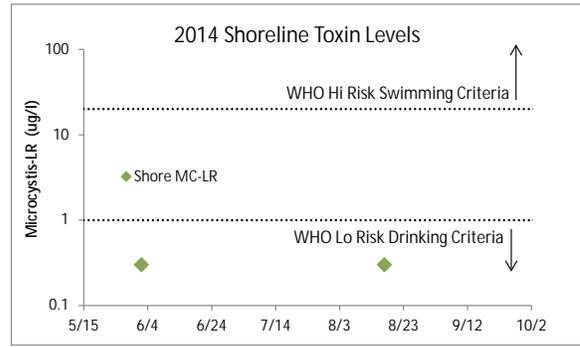
**Figure D7:**  
2014 Open Water Total and BGA Chl.a



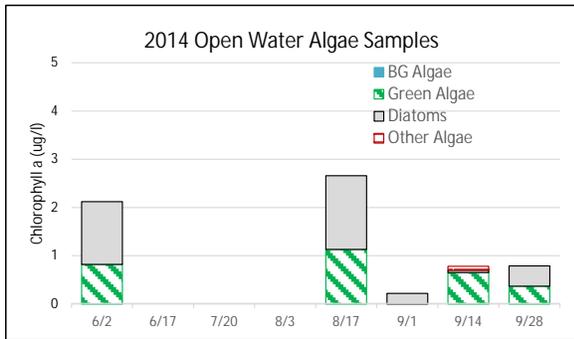
**Figure D8:**  
2014 Open Water Microcystin-LR



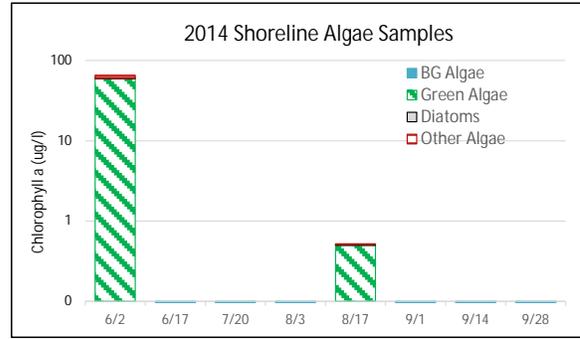
**Figure D9:**  
2014 Shoreline Total and BGA Chl.a



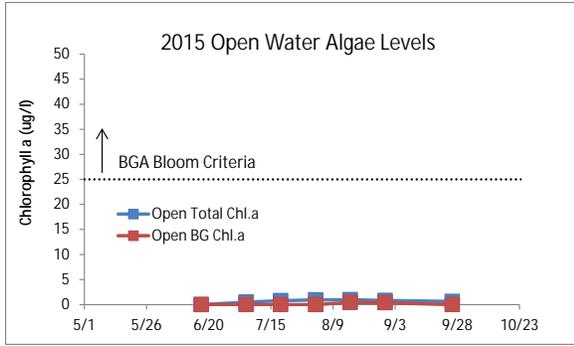
**Figure D10:**  
2014 Shoreline Microcystin-LR



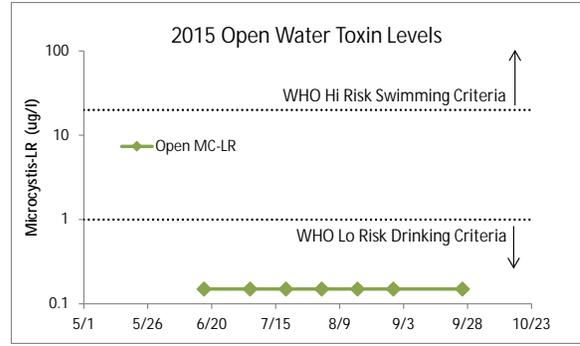
**Figure D11:**  
2014 Open Water Algae Types



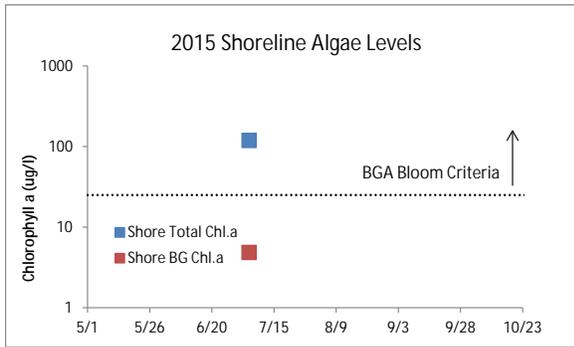
**Figure D12:**  
2014 Shoreline Algae Types



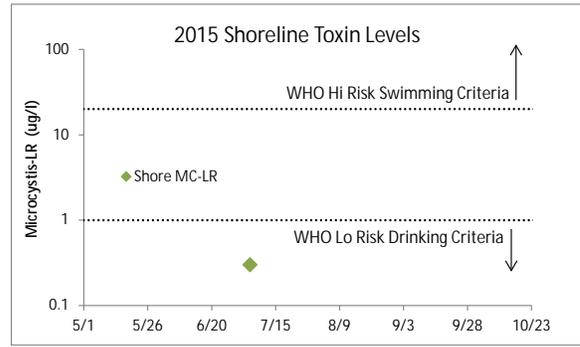
**Figure D13:**  
2015 Open Water Total and BGA Chl.a



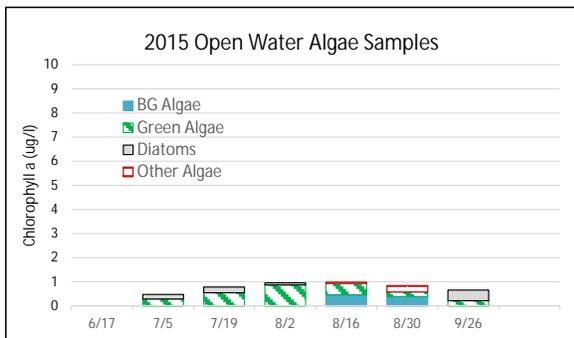
**Figure D14:**  
2015 Open Water Microcystin-LR



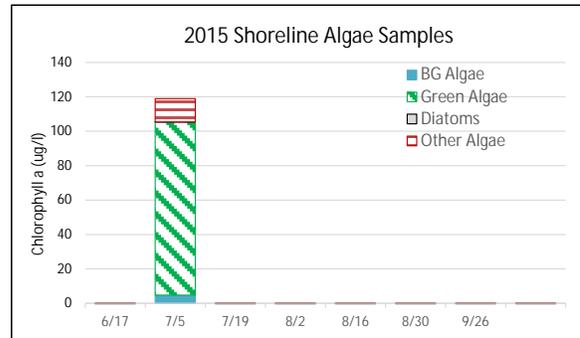
**Figure D15:**  
2015 Shoreline Total and BGA Chl.a



**Figure D16:**  
2015 Shoreline Microcystin-LR



**Figure D17:**  
2015 Open Water Algae Types



**Figure D18:**  
2015 Shoreline Algae Types

## Appendix E: AIS Species in Warren County

The table below shows the invasive aquatic plants and animals that have been documented in Warren 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](http://www.dec.ny.gov/docs/lands_forests_pdf/islist.pdf)).

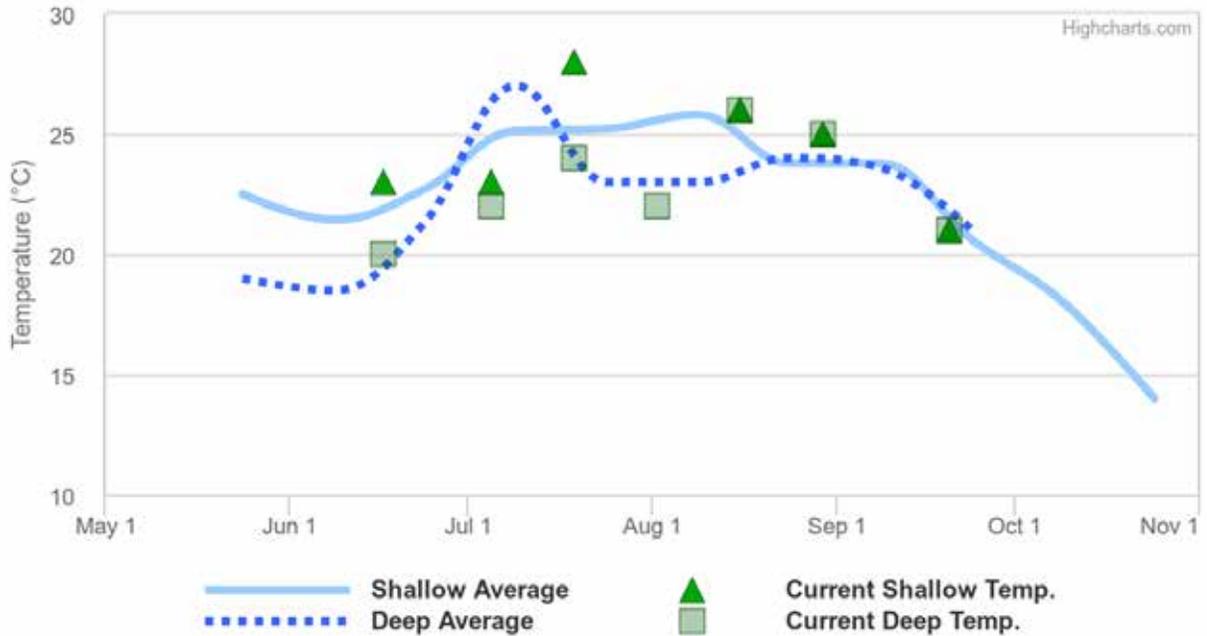
This list is not complete, but instead represents only those species that have been reported and verified within the county. If any additional aquatic invasive species (AIS) are known or suspected in these or other waterbodies in the county, this information should be reported through iMap invasives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

<b>Aquatic Invasive Species - Warren County</b>			
<b>Waterbody</b>	<b>Kingdom</b>	<b>Common name</b>	<b>Scientific name</b>
Brant Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Brant Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Brant Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Crandall Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Daggett Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Friends Lake	Animal	Banded mystery snail	<i>Viviparus georgianus</i>
Glen Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Glen Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Glen Lake	Plant	Brittle naiad	<i>Najas minor</i>
Glen Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Hovey Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lake George	Animal	Spiny waterflea	<i>Bythotrephes longimanus</i>
Lake George	Animal	Asian clam	<i>Corbicula fluminea</i>
Lake George	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Lake George	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lake George	Plant	Brittle naiad	<i>Najas minor</i>
Lake George	Animal	Virile crayfish	<i>Orconectes virilis</i>
Lake George	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lake Luzerne	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lake Luzerne	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lake Sunnyside	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Loon Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
North Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Schroon Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>

<b>Waterbody</b>	<b>Kingdom</b>	<b>Common name</b>	<b>Scientific name</b>
Schroon Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Trout Lake	Animal	Rusty crayfish	<i>Orconectes rusticus</i>

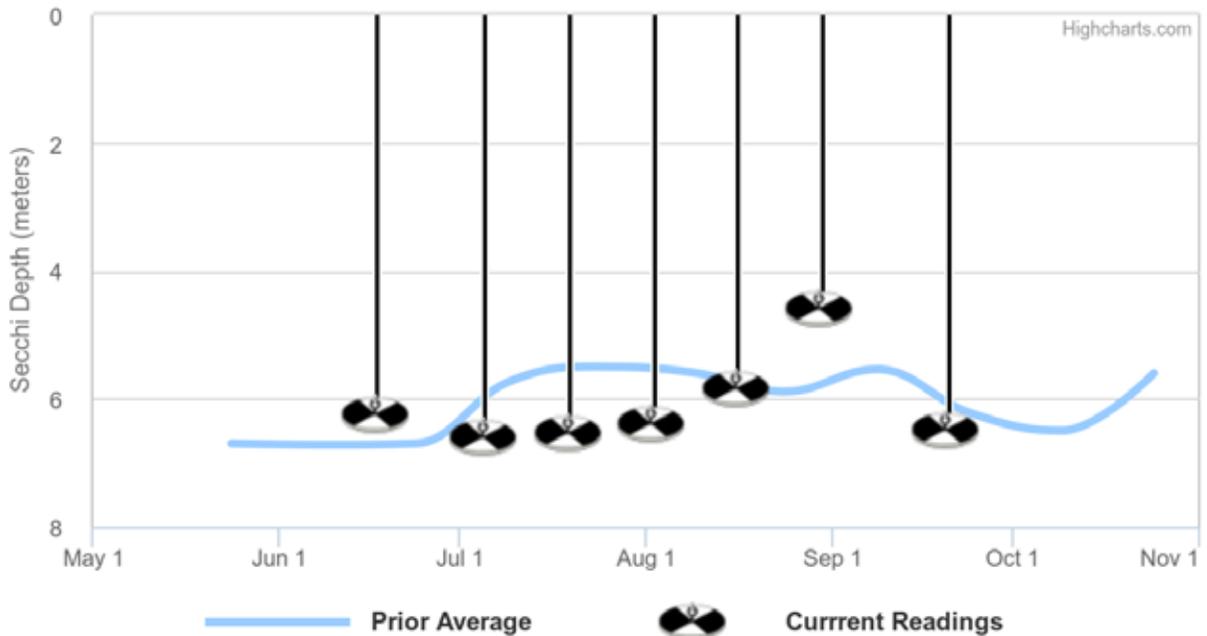
## Appendix F: Current Year vs. Prior Averages for Lake Sunnyside

### Current Year Water Temperatures vs. Prior Average



This year's shallow water sample temperatures are tending to be higher than normal when compared to the average of readings collected from 1999 to 2014. There are not enough deep water sample temperatures to determine a trend for the current year when compared to the average of readings collected from 2002 to 2014.

### Current Year Secchi Readings vs. Prior Average



This year's session Secchi readings are tending to be higher than normal when compared to the average of readings collected from 1999 to 2014

## Appendix G: Watershed and Land Use Map for Sunnyside 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.

