

## Summit Lake Questions and Answers, 2015 CSLAP

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

A1. Water quality conditions in Summit Lake continue to be favorable. Water clarity is high, due to moderate nutrient and algae levels. However, while phosphorus readings were slightly higher than usual in 2015, water clarity was also higher than usual, suggesting 2015 exhibited normal variability.

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

A2. Chloride testing results are typical of lakes with low to moderate impacts from road salt runoff, although no biological impacts have been measured or reported at the lake.

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

A3. Summit Lake had slightly higher water clarity, and lower nutrient and algae levels, than other nearby lakes. Shoreline blooms have been reported in some of these lakes, including Cossayuna Lake. Aquatic plant coverage was probably similar to the coverage in these other lakes in 2015.

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

A4. Phosphorus readings were slightly higher than usual in 2015, but water clarity was also higher, while water temperatures and pH were lower. It is not yet known if there any long-term trends associated with these changes.

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

A5. Water quality conditions are favorable, but any new or seasonal sources of nutrients should be evaluated as a potential trigger for shoreline algae blooms that have been seen in other lakes.

**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.

<b>Lake Use</b>				
	PWL	Average Year	2015	Primary issue
<b>Potable Water</b>				Not applicable
<b>Swimming</b>				No impacts
<b>Recreation</b>				High nutrients
<b>Aquatic Life</b>				Road salt
<b>Aesthetics</b>				High nutrients
<b>Habitat</b>				Invasive plants
<b>Fish Consumption</b>				

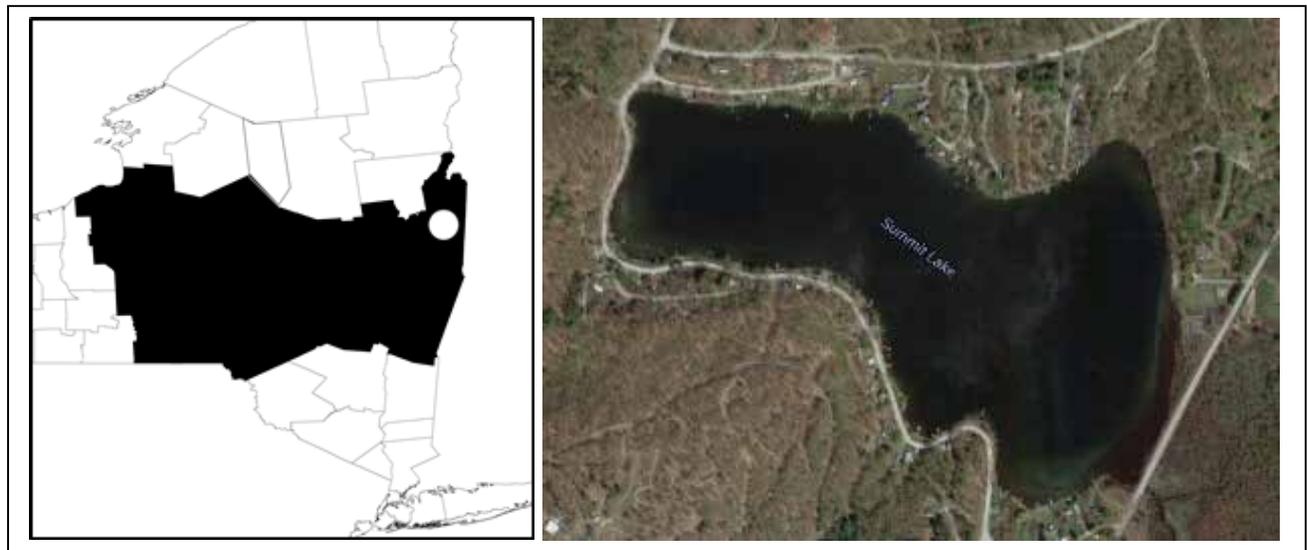
 Supported / Good  
 Threatened / Fair  
 Stressed / Poor  
 Impaired  
 Not Known

## CSLAP 2015 Lake Water Quality Summary: Summit Lake

### General Lake Information

<b>Location</b>	Town of Argyle
<b>County</b>	Washington
<b>Basin</b>	Upper Hudson River
<b>Size</b>	33.7 hectares (83 acres)
<b>Lake Origins</b>	Natural
<b>Watershed Area</b>	286 hectares (706 acres)
<b>Retention Time</b>	1.0 years
<b>Mean Depth</b>	4.1 meters
<b>Sounding Depth</b>	9.5 meters
<b>Public Access?</b>	none
<b>Major Tributaries</b>	unnamed tributaries
<b>Lake Tributary To...</b>	unnamed ephemeral outlet to Cossayuna Lake to Whittaker Brook to Batten Kill to Hudson River
<b>WQ Classification</b>	B (contact recreation = swimming, bathing)
<b>Lake Outlet Latitude</b>	43.210
<b>Lake Outlet Longitude</b>	-73.464
<b>Sampling Years</b>	1990-1995, 1997, 2002-2003, 2015
<b>2015 Samplers</b>	Mike and Karen Lockhart, Veronica Denio, Timothy Bearor
<b>Main Contact</b>	Mike Lockhart

### Lake Map



## **Background**

Summit Lake is an 83 acre, class A lake found in the Town of Argyle in Washington County southeast of the Adirondack Region of New York State. It was first sampled as part of CSLAP in 1990.

It is one of five CSLAP lakes among the nearly 200 lakes found in Washington County, and one of 32 CSLAP lakes among the more than 1370 lakes and ponds in the Upper Hudson River drainage basin.

## **Lake Uses**

Summit Lake is a Class A lake; this means that the best intended use for the lake is for potable water—drinking, contact recreation—swimming and bathing, non-contact recreation—boating and fishing, aquatic life, and aesthetics. The lake is used by lake residents and invited guests for swimming, boating and other recreation; private access is available thru off road access.

The lake association periodically stocks smallmouth bass; the state of New York does not stock fish in the lake. Fish species in the lake include the stocked bass, yellow perch, pumpkinseed sunfish, and black crappie.

General statewide fishing regulations are applicable in Summit Lake. There are no lake-specific fish consumption advisories on Summit Lake.

## **Historical Water Quality Data**

CSLAP sampling was conducted on Summit Lake from 1990-1995, 1997, 2002-2003, and in 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 for Summit Lake can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77835.html>.

Summit Lake was not sampled by the NYSDEC as part of any of the major regional or statewide monitoring programs.

There are no RIBS monitoring sites on or near Summit Lake, and none of the tributaries to the lake are named nor have they been sampled through any statewide monitoring programs.

## **Lake Association and Management History**

Summit Lake is served by the Summit Lake Association. Their activities can be summarized as follows:

- A summer camp (Camp Algonquin) was located on the northeast shoreline of the lake from 1927 through the mid-1980s, when it was sold to the Summit Lake Development Association
- The Washington County SWCD works (or previously worked) with the lake association to facilitate septic tank pumpouts, leach field dye testing, fertilizer control, soil erosion practices, and stormwater runoff controls
- Some land use controls were initially instituted but rolled back by the town
- Waterfowl congregation was discouraged
- The lake association oversees fish stocking, weed control (with hydrorakes, hand harvesting and limited benthic barrier use) and nuisance animal (beaver) control
- There are periodic social events serving the lake community

The lake association maintains a website at <http://summitlake.wikidot.com/start>.

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

### **Evaluation of 2015 Annual Results Relative to 1990-2003**

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 – Summit Lake” section in Appendix C.

### **Evaluation of Eutrophication Indicators**

Water quality conditions in Summit Lake were probably similar to those measured in previous CSLAP sampling seasons. Phosphorus readings were slightly higher than usual, but water clarity was also higher than usual, and algae levels were close to normal. Both phosphorus and water clarity have increased since the early 1990s, while algae levels (as measured by chlorophyll *a*) have not exhibited any clear long-term trends. It is not yet known if the higher water clarity is in response to more dense growth of zebra mussels.

Lake productivity typically increases slightly in late summer into the fall, as manifested in decreasing water clarity and increasing nutrient and algae levels. Water clarity and phosphorus readings varied in “related” cyclical patterns (clarity increased as phosphorus decreased), although algae levels were fairly stable.

The lake can be characterized as *mesotrophic*, or moderately productive, based on water clarity, chlorophyll *a*, and total phosphorus readings (all typical of *mesotrophic* lakes). The trophic state indices (TSI) evaluation suggests that each of these trophic indicators is “internally consistent”—each of these indicators is in the expected range given the readings of the other indicators. However, phosphorus readings were slightly higher than expected given the algae levels and water clarity, perhaps indicating higher than usual loading of suspended (sediment-bound) phosphorus. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

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

Algae levels are not high enough to render the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, although it is not known if the lake is used for drinking water (it is classified for this use). Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Limnological Indicators**

NO<sub>x</sub> and ammonia readings were higher than usual in 2015, and both indicators may have increased since first measured in the mid-1990s and early 2000s, respectively. pH readings were lower than usual in 2015 and appears to have decreased significantly. However, no ecological impacts have been apparent from this decrease, and these readings remain well within the state standards. It is likely that the small changes in each of the other indicators have been within the normal range of variability in the lake, although this may be more apparent with additional data.

Chloride levels in the 2015 samples, conducted for the first time through CSLAP and cited in Appendix A, ranged from 18 to 21 mg/l. These values are within the lower end of the range of “moderate” 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 and below 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 2015 fluoroprobe data indicates very low total algae and low blue green algae levels in open water samples, with a mix of algae species apparent. No shoreline blooms were reported or sampled in 2015.

Macrophyte surveys in the mid-2000s found a number of native plants and one exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil). Another invasive plant- *Potamogeton crispus* (curly-leafed pondweed)- has also been reported at the lake. The modified floristic quality index (FQI) for the lake indicates that the quality of the aquatic plant community is “fair” to “good”, and it is likely that the lake supports a much broader mix of native plants.

Zooplankton and macroinvertebrates have not been evaluated through CSLAP in Summit Lake. Fisheries surveys conducted by DEC have found a mix of warmwater, coolwater, and coldwater fish species, including lake trout, rainbow trout, northern pike, largemouth bass, smallmouth bass, Atlantic salmon, lake whitefish, bluegill, brown bullhead, black crappie, and yellow perch. Zebra mussels have been found at the lake, and may have increased significantly in recent years.

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

### **Evaluation of Lake Perception**

Recreational and water quality assessments were close to normal in 2015, despite the higher water clarity, but perhaps consistent with plant coverage that may also have been close to normal. None of these indicators has exhibited any long-term trends.

These assessments are fairly stable during the typical summer, despite the usual (late) seasonal increase in lake productivity and a seasonal decrease in plant coverage in late summer. Aquatic plant coverage increased during the summer of 2015, but this (also) did not appear to affect recreational assessments. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

### **Evaluation of Local Climate Change**

Air and water temperature readings in the summer index period were slightly lower than usual in 2015, and surface and water temperature readings may have decreased slightly over the last twenty years. However, additional data are needed to evaluate long-term trends.

## 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 algae levels were well below the thresholds for harmful algal blooms (HABs) in open water samples, and open water algal toxin levels were not detectable. No shoreline blooms have been measured or reported, at least in 2015.

## Lake Condition Summary

Category	Indicator	Min	CSLAP Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	2.30	4.73	7.60	5.78	Mesotrophic	Higher Than Normal	Increasing Slightly
	Chlorophyll <i>a</i>	0.24	2.92	10.25	2.46	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.004	0.011	0.027	0.017	Mesotrophic	Higher than Normal	Increasing Slightly
Potable Water Indicators	Hypolimnetic Ammonia	0.00	0.07	0.25	0.03	Close to Surface NH <sub>4</sub> Readings	Lower Than Normal	Not known
	Hypolimnetic Arsenic							Not known
	Hypolimnetic Iron							Not known
	Hypolimnetic Manganese							Not known
Limnological Indicators	Hypolimnetic Phosphorus	0.005	0.031	0.118	0.035	Close to Surface TP Readings	Within Normal Range	Not known
	Nitrate + Nitrite	0.00	0.02	0.12	0.03	Low NO <sub>x</sub>	Higher than Normal	Increasing Significantly
	Ammonia	0.00	0.03	0.08	0.04	Low Ammonia	Higher than Normal	No Change
	Total Nitrogen	0.17	0.40	0.69	0.36	Low Total Nitrogen	Within Normal Range	Decreasing Slightly
	pH	6.97	8.11	8.62	7.56	Alkaline	Lower Than Normal	Decreasing Significantly
	Specific Conductance	122	219	270	236	Intermediate Hardness	Within Normal Range	No Change
	True Color	1	8	34	5	Uncolored	Within Normal Range	No Change
	Calcium	10.8	28.2	40.0	18.8	Highly Susceptible to Zebra Mussels	Lower Than Normal	Decreasing Slightly
Lake Perception	WQ Assessment	1	2.0	3	2.0	Not Quite Crystal Clear	Within Normal Range	No Change
	Aquatic Plant Coverage	2	2.9	5	3.1	Surface Plant Growth	Within Normal Range	Slightly Improving
	Recreational Assessment	1	2.0	3	2.0	Excellent	Within Normal Range	No Change
Biological Condition	Phytoplankton					Open water-low blue green algae biomass	Not known	Not known
	Macrophytes					Good 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					Coldwater fishery; smallmouth bass below expected size	Not known	Not known
	Invasive Species					Eurasian watermilfoil, curly-leaf pondweed, zebra mussels	Not known	Not known
Local Climate Change	Air Temperature	15	22.7	30	21.3		Lower Than Normal	Decreasing Significantly
	Water Temperature	15	22.5	29	22.3		Within Normal Range	Decreasing Significantly

Category	Indicator	Min	CSLAP Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Harmful Algal Blooms	Open Water Phycocyanin	1	4	8	4	No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a	0	1	2	1	No readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	0	0	0	No readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	<DL	<DL	<DL	Open water MC-LR consistently not detectable	Not known	Not known
	Open Water Anatoxin a	<DL	<DL	0.0	<DL	Open water Anatoxin-a at times detectable	Not known	Not known
	Shoreline Phycocyanin					No shoreline blooms sampled for PC	Not known	Not known
	Shoreline FP Chl.a					No shoreline blooms sampled for FP	Not known	Not known
	Shoreline FP BG Chl.a					No shoreline blooms sampled for FP	Not known	Not known
	Shoreline Microcystis					No shoreline bloom MC-LR data	Not known	Not known
	Shoreline Anatoxin a					No shoreline bloom anatoxin data	Not known	Not known

## Evaluation of Lake Condition Impacts to Lake Uses

Summit Lake is not among the lakes on the 2006 Upper Hudson River drainage basin Priority Waterbody List (PWL)- it is listed as “unassessed”.

### Potable Water (Drinking Water)

The CSLAP dataset at Summit 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 low algae levels indicate excessive algae would impact any “unofficial” potable water use.

### Public Bathing

The CSLAP dataset at Summit Lake, including water chemistry data, physical measurements, and volunteer samplers’ perception data, suggests that public bathing, if conducted at a public swimming beach, should be supported. 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 Summit Lake, including water chemistry data, physical measurements, and volunteer samplers’ perception data, suggest that recreation should be supported, although this use may be *threatened* by excessive nutrients.

### Aquatic Life

The CSLAP dataset on Summit Lake, including water chemistry data, physical measurements, and volunteer samplers’ perception data, suggest that aquatic life should be supported, although this use may be *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 Summit Lake, including water chemistry data, physical measurements, and volunteer samplers’ perception data, suggest that aesthetics and habitat may be only *fair* due to occasionally excessive nutrients and invasive plants, respectively, although actual impacts have not been documented.

**Fish Consumption**

There are no fish consumption advisories posted for Summit Lake.

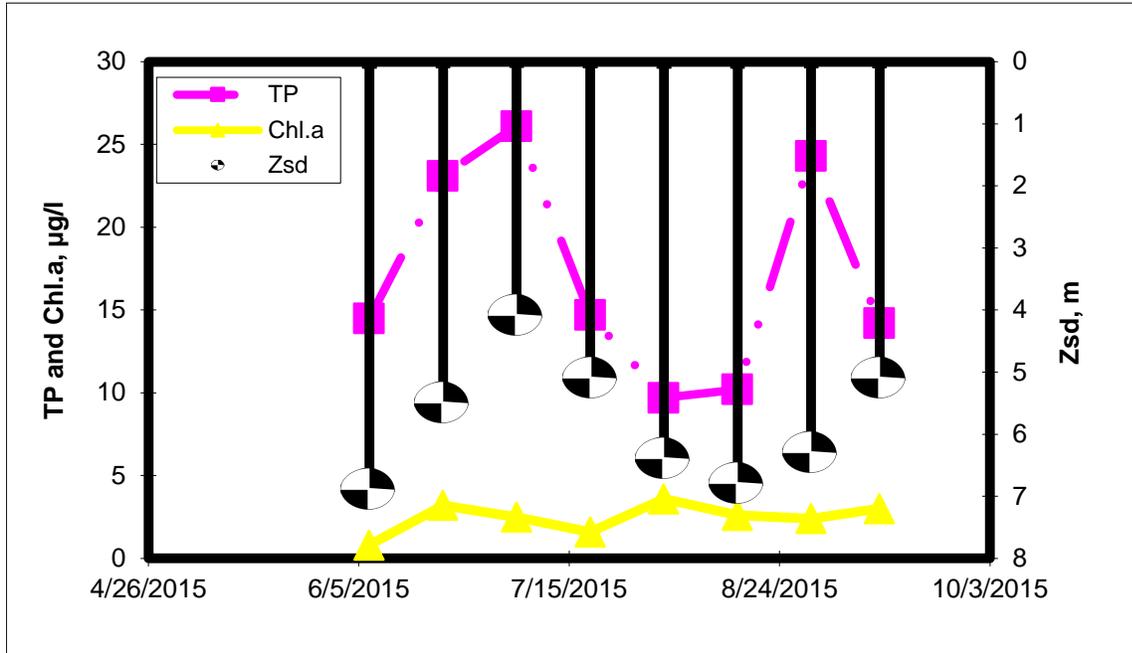
**Additional Comments and Recommendations**

An updated aquatic plant survey may help to determine where there is a high diversity of aquatic plants, as common found in lakes with good water quality. Lake residents should also continue to report and avoid exposure to surface scums or heavily discolored water associated with harmful algae blooms. This might help to determine if these shoreline blooms are present at the lake.

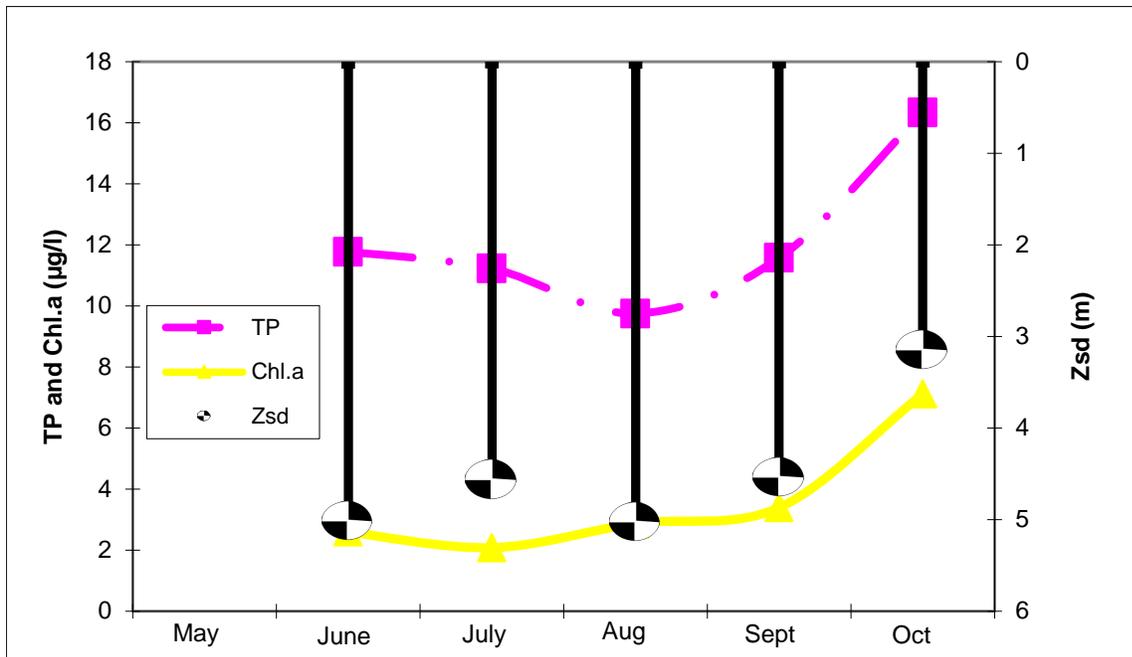
**Aquatic Plant IDs-2015**

None submitted for identification in 2015.

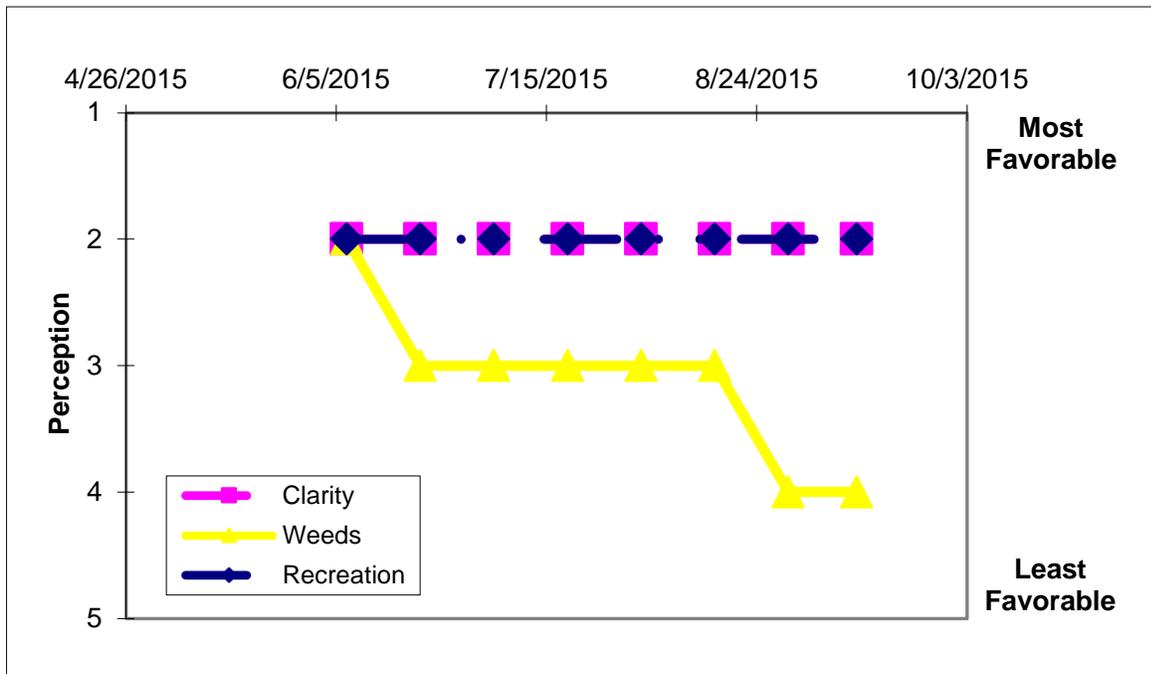
## Time Series: Trophic Indicators, 2015



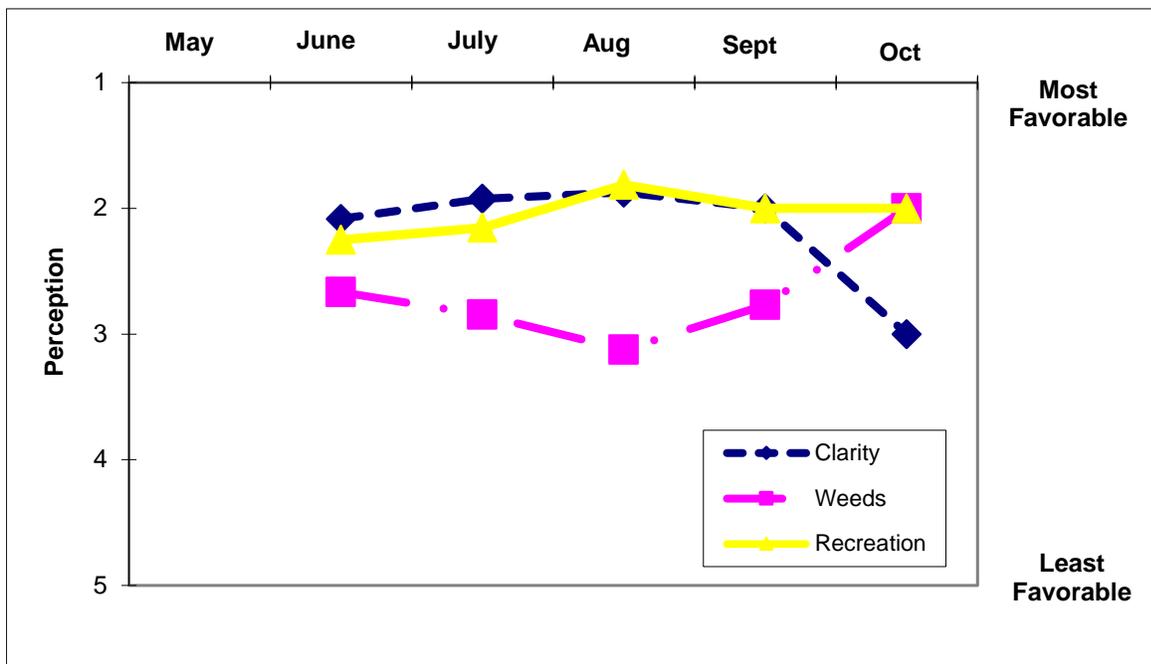
## Time Series: Trophic Indicators, Typical Year (1990-2015)



## Time Series: Lake Perception Indicators, 2015



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



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

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
75	Summit L-W	6/30/1990	8.8	3.75	1.5	0.010	0.01				5	8.15	208		4.08	
75	Summit L-W	7/15/1990	8.8	4.05	1.5	0.008	0.01				3	8.20	210		3.63	
75	Summit L-W	7/30/1990	8.8	3.90	1.5	0.009	0.01				3	8.32	187		1.07	
75	Summit L-W	8/12/1990	8.7	4.00	1.5	0.008	0.01				2	7.87	214		3.47	
75	Summit L-W	8/26/1990	8.8	4.15	1.5	0.013	0.01				4	8.35	193		7.10	
75	Summit L-W	9/9/1990	8.8	4.40	1.5	0.009	0.01				9	8.20	200		4.62	
75	Summit L-W	9/24/1990	8.8	4.40	1.5	0.012	0.01				5	8.38	195		8.12	
75	Summit L-W	10/7/1990		4.50	1.5	0.012	0.01				7	8.38	196		7.26	
75	Summit L-W	6/24/1991	7.9	3.40	1.5	0.013	0.01				5	8.36	182		3.42	
75	Summit L-W	7/9/1991	7.5	3.55	1.5	0.013					6	8.28	200		3.46	
75	Summit L-W	7/22/1991	8.2	4.05	1.5	0.010	0.01				5	8.38	170		2.31	
75	Summit L-W	8/5/1991	8.0	4.05	1.5	0.010					7	8.41	174		2.99	
75	Summit L-W	8/21/1991	8.5	3.95	1.5	0.008	0.01				5	8.44	222		4.76	
75	Summit L-W	9/2/1991	8.0	4.05	1.5	0.013					5	8.39	188		2.65	
75	Summit L-W	9/16/1991		3.40	1.5	0.014	0.04				5	8.31	215		3.20	
75	Summit L-W	10/2/1991	8.0	2.65	1.5	0.010					7	8.40	214		3.84	
75	Summit L-W	6/16/1992	8.5	4.05	1.5	0.010	0.01				4	8.39	209		2.26	
75	Summit L-W	6/30/1992	8.2	3.65	1.5	0.010					5	8.46	238		1.79	
75	Summit L-W	7/13/1992	8.4	3.75	1.5	0.009	0.01				8	8.46	227		3.04	
75	Summit L-W	7/28/1992	8.5	4.25	1.5	0.008					3	8.48	224		2.13	
75	Summit L-W	8/11/1992	8.5	4.15	1.5	0.009	0.01				6	8.47	221		1.98	
75	Summit L-W	8/24/1992	8.5	4.05	1.5	0.012					7	8.33	203		2.46	
75	Summit L-W	9/7/1992	8.5	4.05	1.5	0.014	0.01				4	8.24	222		2.34	
75	Summit L-W	9/28/1992	8.5	3.60	1.5	0.009					6	8.46	221		1.95	
75	Summit L-W	6/21/1993	8.0	5.50	1.5	0.010	0.01				6	8.34	240		1.80	
75	Summit L-W	7/5/1993	8.0	5.75	1.5	0.006	0.01				1	8.47	234		0.89	
75	Summit L-W	7/19/1993	8.0	4.90	1.5	0.006	0.01				1	8.44	231		2.04	
75	Summit L-W	8/2/1993	8.0	4.05	1.5	0.005					2	8.36	226		2.55	
75	Summit L-W	8/16/1993	8.0	4.65	1.5	0.008	0.01				4	8.39	223		2.13	
75	Summit L-W	8/30/1993	8.0	5.10	1.5	0.010	0.01				2	8.48	220		2.74	
75	Summit L-W	9/13/1993	8.0	5.65	1.5	0.007	0.01				5	8.35	227		2.32	
75	Summit L-W	9/27/1993	8.0	5.70	1.5	0.009					5	8.43	230		3.33	
75	Summit L-W	6/13/1994	9.0	3.00	1.5	0.011	0.01				1	8.59	239		2.88	
75	Summit L-W	6/27/1994	8.8	4.25	1.5	0.010					4	8.49	241		5.11	
75	Summit L-W	7/12/1994	8.8	3.10	1.5	0.009	0.01				3	8.59	233		2.81	
75	Summit L-W	7/25/1994	8.7	3.95	1.5	0.008					2	8.40	228		1.99	
75	Summit L-W	8/8/1994	8.0	3.75	1.5	0.010	0.01				6	8.41	229		2.88	
75	Summit L-W	8/23/1994	8.0	4.10	1.5	0.008					7	8.30	230		5.80	
75	Summit L-W	9/8/1994	8.0	3.90		0.012	0.01				2	8.28	233		3.03	
75	Summit L-W	9/19/1994	8.0	4.35	1.5	0.008					6	8.28	233		3.72	
75	Summit L-W	06/12/02	9.3	5.05	1.5	0.013	0.00	0.03	0.52	89.01	14	8.33	266		1.63	
75	Summit L-W	06/23/02	9.5	5.23	1.5	0.009	0.00	0.01	0.45	112.98	10	8.62	256		2.99	
75	Summit L-W	07/07/02	9.6	4.18	1.5	0.009	0.01	0.03	0.37	90.72	7	8.56	251		2.45	
75	Summit L-W	07/21/02	9.5	4.25	1.5	0.026	0.05	0.04	0.59	48.99	13	7.98	232		1.25	
75	Summit L-W	08/04/02	9.4	6.05	1.5	0.007	0.00	0.03	0.40	119.69	9	7.37	241		0.24	
75	Summit L-W	08/18/02	9.4	6.25	1.5	0.009	0.00	0.01	0.43	110.88	4	8.39	222		2.54	
75	Summit L-W	09/01/02	9.3	5.85	1.5	0.010	0.02	0.03	0.63	134.82	13	6.97	245		0.46	
75	Summit L-W	09/15/02	9.2	4.55	1.5	0.015	0.03	0.07	0.69	100.56						
75	Summit L-W	6/15/2003	9.4	7.00	1.5	0.007	0.01	0.02	0.50	152.32	6	8.44	256	34.0	0.4	
75	Summit L-W	6/30/2003	9.4	7.10	1.5	0.010	0.00	0.03	0.35	75.35	5	8.27	270		3.4	
75	Summit L-W	7/20/2003	9.7	7.60	1.5	0.010	0.00	0.01	0.32	71.25	8	8.31	249		1.2	
75	Summit L-W	8/10/2003	9.5	7.00	1.5	0.004	0.12	0.07	0.36	183.74	9	8.45	222	29.0	1.7	
75	Summit L-W	8/24/2003	9.5	5.65	1.5	0.008	0.00	0.01	0.33	90.36	1	8.10	225		1.2	
75	Summit L-W	9/7/2003	9.5	4.95	1.5	0.015	0.00	0.01	0.51	76.29	6	7.58	235		2.8	
75	Summit L-W	9/21/2003	9.5	5.40	1.5	0.012	0.00	0.02	0.17	30.20	5	8.04	242		2.6	
75	Summit L-W	10/12/2003	9.5	2.30	8.0	0.027	0.00	0.01	0.29	23.84	14	8.07	243		10.3	
75	Summit L-W	6/22/2008	9.2	5.90	1.5	0.014	0.09	0.02	0.46	73.26	20	7.38	161	40.0	2.66	
75	Summit L-W	7/6/2008	9.4	5.75	1.5	0.009	0.01	0.02	0.34	81.15	34	7.41	122		1.05	
75	Summit L-W	7/20/2008	9.3	5.40	1.5	0.009	0.01	0.01	0.25	60.03	27	7.67	185		1.91	
75	Summit L-W	8/3/2008	9.8	5.60	1.5	0.011	0.01	0.02	0.36	75.62	17	7.52	173		2.00	
75	Summit L-W	8/17/2008	9.2	5.30	1.5	0.011	0.00	0.03	0.36	73.45	27	7.29	179	28.4	1.90	
75	Summit L-W	8/31/2008	9.3	4.35	1.5	0.010	0.01	0.00	0.27	60.16	25	7.26	211		3.27	
75	Summit L-W	9/15/2008	9.5	4.08	1.5	0.005	0.02	0.07	0.41	189.90	22	7.41	142		4.61	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
75	Summit L-W	9/28/2008	9.5	3.80	1.5	0.018	0.01	0.04	0.31	37.60	21	7.51	199		5.55	
75	Summit L-W	6/7/2015	9.4	6.90	1.5	0.015	0.04	0.03			8	7.13	259	26.8	0.80	
75	Summit L-W	6/21/2015	9.6	5.50	1.5	0.023			0.28	12.21	4	7.31	252		3.20	
75	Summit L-W	7/5/2015	9.6	4.10	1.5	0.026	0.02	0.03	0.47	17.89	7	7.70	214		2.50	18.1
75	Summit L-W	7/19/2015	9.4	5.10	1.5	0.015			0.36	24.76	5	7.74	254		1.60	
75	Summit L-W	8/2/2015	9.4	6.40	1.5	0.010	0.02	0.08	0.27	27.73	7	7.90	250	10.8	3.60	
75	Summit L-W	8/16/2015	9.4	6.80	1.5	0.010			0.50	48.82	5	7.73	197		2.60	
75	Summit L-W	8/30/2015	9.5	6.30	1.5	0.024	0.05	0.04	0.30	12.30	2	7.45	236		2.40	20.7
75	Summit L-W	9/12/2015	9.4	5.10	1.5	0.014			0.37	25.70	4	7.48	228		3.00	
75	Summit L-W	06/12/02	9.3	5.05	8.0	0.025	0.00	0.15	0.49	43.18						
75	Summit L-W	06/23/02	9.5	5.23	8.0		0.00	0.07	0.42							
75	Summit L-W	07/07/02	9.6	4.18	8.0		0.03	0.03	0.35							
75	Summit L-W	07/21/02	9.5	4.25	8.0		0.08	0.06	0.78							
75	Summit L-W	08/04/02	9.4	6.05	7.8		0.01	0.04	0.47							
75	Summit L-W	08/18/02	9.4	6.25	8.0		0.04	0.01	0.43							
75	Summit L-W	09/01/02	9.3	5.85	8.0		0.00	0.02	0.50							
75	Summit L-W	09/15/02	9.2	4.55	7.8	0.041	0.03	0.04	0.74	39.44	29	7.81	328	41.1	8.82	
75	Summit L-W	6/15/2003	9.4			0.023	0.02	0.23	0.40	38.40						
75	Summit L-W	6/30/2003	9.4			0.041	0.00	0.25	0.41	21.83						
75	Summit L-W	7/20/2003	9.7			0.018	0.01	0.19	0.38	45.60						
75	Summit L-W	8/10/2003	9.5			0.015	0.06	0.00	0.31	47.08						
75	Summit L-W	8/24/2003	9.5			0.024	0.00	0.01	0.25	22.25						
75	Summit L-W	9/7/2003	9.5			0.015	0.02	0.01								
75	Summit L-W	9/21/2003	9.5			0.024	0.00	0.05	0.19	17.48						
75	Summit L-W	10/12/2003	9.5			0.012	0.00	0.02	0.31	57.88						
75	Summit L-W	6/22/2008	9.5		9.0	0.023										
75	Summit L-W	7/6/2008	9.5		8.0	0.010										
75	Summit L-W	7/20/2008	9.5		8.0	0.029										
75	Summit L-W	8/3/2008	9.5		8.0	0.050										
75	Summit L-W	8/17/2008	9.5		8.0	0.046										
75	Summit L-W	8/31/2008	9.5		8.0	0.045										
75	Summit L-W	9/15/2008	9.5		8.0	0.049										
75	Summit L-W	9/28/2008	9.5		8.0	0.022										
75	Summit L-W	6/7/2015			9.0	0.016		0.03								
75	Summit L-W	6/21/2015			8.5	0.118										
75	Summit L-W	7/5/2015			8.5	0.022		0.02								
75	Summit L-W	7/19/2015			8.5	0.005										
75	Summit L-W	8/2/2015			8.5	0.035		0.05								
75	Summit L-W	8/16/2015			8.5	0.026										
75	Summit L-W	8/29/2015			8.5	0.008		0.04								
75	Summit L-W	9/12/2015			8.5	0.053										

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HABform	ShoreHAB
75	Summit L-W	6/30/1990	epi	20	22															
75	Summit L-W	7/15/1990	epi	28	25															
75	Summit L-W	7/30/1990	epi	25	29															
75	Summit L-W	8/12/1990	epi	29	20															
75	Summit L-W	8/26/1990	epi	28	25															
75	Summit L-W	9/9/1990	epi	15	20															
75	Summit L-W	9/24/1990	epi	22	16															
75	Summit L-W	10/7/1990	epi	27	18															
75	Summit L-W	6/24/1991	epi	25	25															
75	Summit L-W	7/9/1991	epi	24	23															
75	Summit L-W	7/22/1991	epi	25	28															
75	Summit L-W	8/5/1991	epi	22	25															
75	Summit L-W	8/21/1991	epi	21	24															
75	Summit L-W	9/2/1991	epi	21	23															
75	Summit L-W	9/16/1991	epi	26	22															
75	Summit L-W	10/2/1991	epi	22	15															
75	Summit L-W	6/16/1992	epi	24	24	2	3	3	12											
75	Summit L-W	6/30/1992	epi	24	23	2	3	2	2											
75	Summit L-W	7/13/1992	epi	26	24	2	3	2	2											
75	Summit L-W	7/28/1992	epi	23	25	2	3	2	2											

LNum	PName	Date	Site	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
75	Summit L-W	8/11/1992	epi	30	24	2	3	2	2											
75	Summit L-W	8/24/1992	epi	25	24	2	5	3	23											
75	Summit L-W	9/7/1992	epi	23	22	2	3	3	25											
75	Summit L-W	9/28/1992	epi	18	18	2	3	2	5											
75	Summit L-W	6/21/1993	epi	24	24	1	4	2	25											
75	Summit L-W	7/5/1993	epi	28	25	1	3	3	2											
75	Summit L-W	7/19/1993	epi	24	24	2	3	2	2											
75	Summit L-W	8/2/1993	epi	29	25	2	3	2	2											
75	Summit L-W	8/16/1993	epi	26	25	2	3	2	2											
75	Summit L-W	8/30/1993	epi	22	24	2	2	2	2											
75	Summit L-W	9/13/1993	epi	20	21	2	2	2	2											
75	Summit L-W	9/27/1993	epi	17	18	2	2	2	2											
75	Summit L-W	6/13/1994	epi	26	23	3	3	3	123											
75	Summit L-W	6/27/1994	epi	29	25	2	3	3	23											
75	Summit L-W	7/12/1994	epi	24	26	2	3	3	2											
75	Summit L-W	7/25/1994	epi	27	27	2	3	2												
75	Summit L-W	8/8/1994	epi	26	23	2	3	2	2											
75	Summit L-W	8/23/1994	epi	16	21	2	3	2	5											
75	Summit L-W	9/8/1994	epi	16	19	2	2	2	15											
75	Summit L-W	9/19/1994	epi	17	20	2	3	2	25											
75	Summit L-W	06/12/02	epi	16	19	2	2	2	5											
75	Summit L-W	06/23/02	epi	24	22	2	2	2	8											
75	Summit L-W	07/07/02	epi	20	24	2	3	2												
75	Summit L-W	07/21/02	epi	22	24	2	3	2												
75	Summit L-W	08/04/02	epi	25	25	1	3	1	8											
75	Summit L-W	08/18/02	epi	27	25	1	3	1												
75	Summit L-W	09/01/02	epi	19	21	2	3	2												
75	Summit L-W	09/15/02	epi	23	21	2	3	2	5											
75	Summit L-W	6/15/2003	epi	22	20	3	2	2	8											
75	Summit L-W	6/30/2003	epi	24	24	2	3	2	0											
75	Summit L-W	7/20/2003	epi	23	23	2	3	2	0											
75	Summit L-W	8/10/2003	epi	24	25															
75	Summit L-W	8/24/2003	epi	26	24	2	3	1	0											
75	Summit L-W	9/7/2003	epi	22	21	2	3	1	0											
75	Summit L-W	9/21/2003	epi	22	21	2	2	2	0											
75	Summit L-W	10/12/2003	epi	17	16	3	2	2	5											
75	Summit L-W	6/22/2008	epi	19	21	2	2	2	5											
75	Summit L-W	7/6/2008	epi	25	24	2	2	2	0											
75	Summit L-W	7/20/2008	epi	23	25	2	2	2	8											
75	Summit L-W	8/3/2008	epi	20	24	2	3	2	0											
75	Summit L-W	8/17/2008	epi	24	23	2	3	2	8											
75	Summit L-W	8/31/2008	epi	23	22	2	3	1	0											
75	Summit L-W	9/15/2008	epi	19	21	2	3	2	5											
75	Summit L-W	9/28/2008	epi	19	19	2	3	2	5											
75	Summit L-W	6/7/2015	epi	20	19	2	2	2	5	0	0			<0.77	<0.126	<1.739			I	I
75	Summit L-W	6/21/2015	epi	21	21	2	3	2	5	4	0	8.40	0.50	<0.55	<0.004	<0.001	1.17	0.00	I	E
75	Summit L-W	7/5/2015	epi	21	21	2	3	2	0	0	0	3.10	0.50	<0.63	0.02	<0.000	1.52	0.00	I	E
75	Summit L-W	7/19/2015	epi	26	24	2	3	2	0	0	0	1.10	0.40	<0.30	<0.004	<0.015	0.70	0.00	I	E
75	Summit L-W	8/2/2015	epi	21	24	2	3	2	0	0	0	1.65	0.15	<0.25	<0.004	<0.015	0.49	0.00	I	E
75	Summit L-W	8/16/2015	epi	20	23	2	3	2	0	0	0	6.80	0.20	<0.44	<0.002	<0.014	0.63	0.12	I	E
75	Summit L-W	8/30/2015	epi	22	23	2	4	2	0	0	0			<0.49	<0.003	<0.014	0.84	0.09	E	E
75	Summit L-W	9/12/2015	epi	19	23	2	4	2	0	0	0	0.80	0.30	<0.27	<0.009	<0.022	1.37	0.00	I	E
75	Summit L-W	06/12/02	hypo	16	11	2	2	2	5											
75	Summit L-W	06/23/02	hypo	24	12	2	2	2	8											
75	Summit L-W	07/07/02	hypo	20	13	2	3	2												
75	Summit L-W	07/21/02	hypo	22	13	2	3	2												
75	Summit L-W	08/04/02	hypo	25	14	1	3	1	8											
75	Summit L-W	08/18/02	hypo	27	18	1	3	1												
75	Summit L-W	09/01/02	hypo	19	18	2	3	2												
75	Summit L-W	09/15/02	hypo	23	18	2	3	2	5											
75	Summit L-W	6/22/2008	hypo		13															

LNum	PName	Date	Site	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
75	Summit L-W	7/6/2008	hypo		15															
75	Summit L-W	7/20/2008	hypo		15															
75	Summit L-W	8/3/2008	hypo		15															
75	Summit L-W	8/17/2008	hypo		18															
75	Summit L-W	8/31/2008	hypo		18															
75	Summit L-W	9/15/2008	hypo		18															
75	Summit L-W	9/28/2008	hypo		18															
75	Summit L-W	6/7/2015	hypo		12															
75	Summit L-W	6/21/2015	hypo		12															
75	Summit L-W	7/5/2015	hypo		14															
75	Summit L-W	7/19/2015	hypo		15															
75	Summit L-W	8/2/2015	hypo		15															
75	Summit L-W	8/16/2015	hypo		17															
75	Summit L-W	8/29/2015	hypo		17															
75	Summit L-W	9/12/2015	hypo		17															

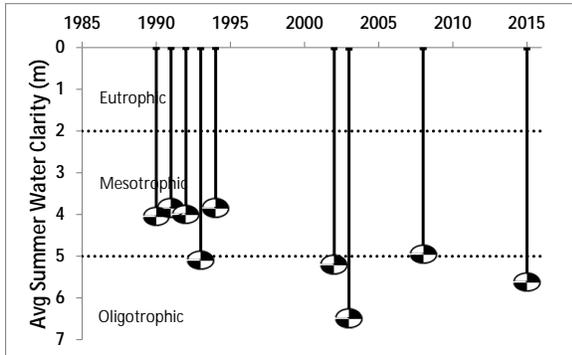
## Legend Information

<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 C- Long Term Trends: Summit Lake

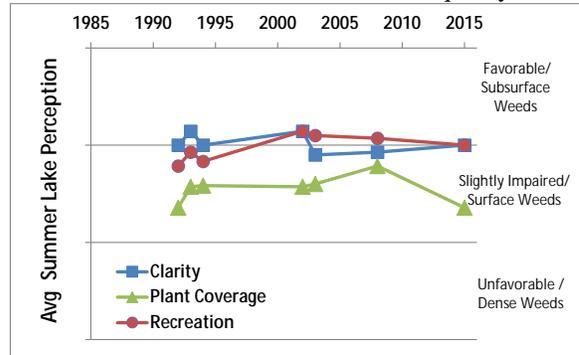
## Long Term Trends: Water Clarity

- Higher readings after 2000 than from 90-94
- Most readings typical of *mesoligotrophic* lakes



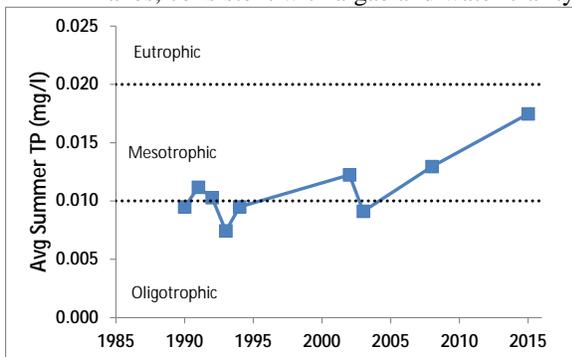
## Long Term Trends: Lake Perception

- Fairly stable perception from 1992-2015
- Recreational perception more likely connected to weeds than water quality



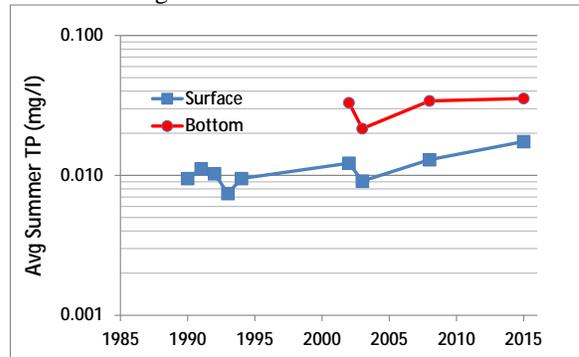
## Long Term Trends: Phosphorus

- ↑ TP from early 1990s to 2015
- Most readings now typical of *mesotrophic* lakes, consistent with algae and water clarity



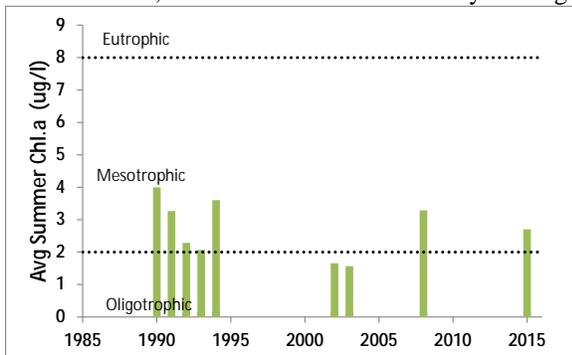
## Long Term Trends: Bottom Phosphorus

- Slight higher deep than surface TP
- Not likely that slightly higher TP triggers changes in surface TP after turnover



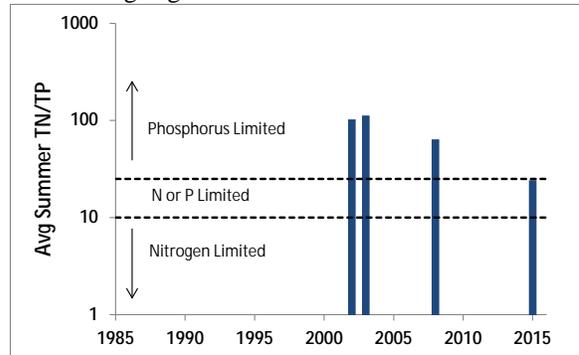
## Long Term Trends: Chlorophyll a

- Fairly stable (and low) algae levels
- Most readings typical of *mesoligotrophic* lakes, consistent with TP and clarity readings



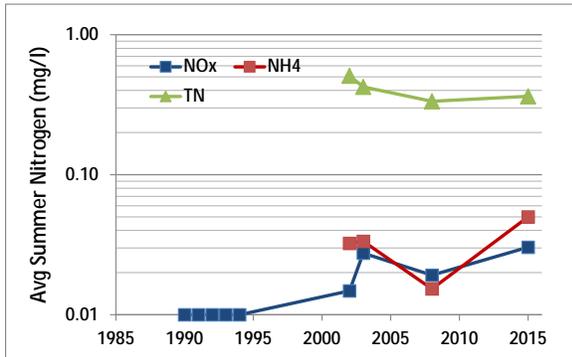
## Long Term Trends: N:P Ratio

- May be decreasing
- Most readings indicate phosphorus limits algae growth



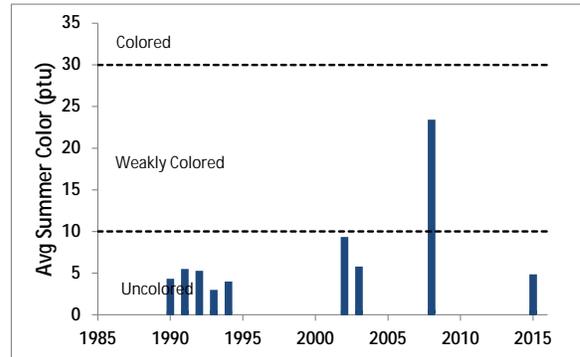
### Long Term Trends: Nitrogen

- Not yet clear if NOx and NH4 increasing
- Low NOx, ammonia and total nitrogen



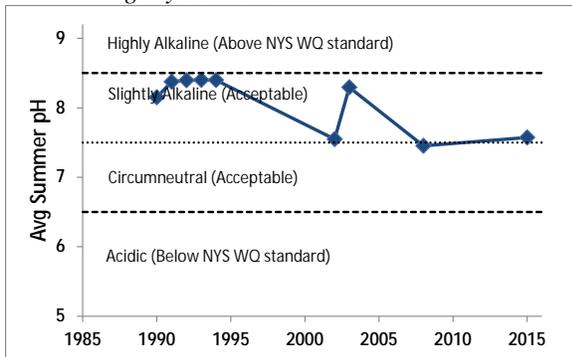
### Long Term Trends: Color

- No long term trend; variable but usually low
- Most readings typical of *uncolored* lakes



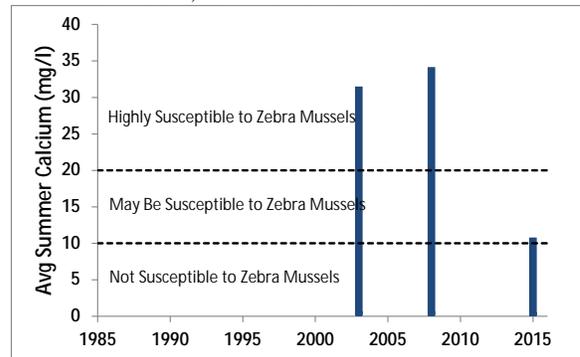
### Long Term Trends: pH

- Decreasing pH?
- Most readings typical of *circumneutral* to *slightly alkaline* lakes



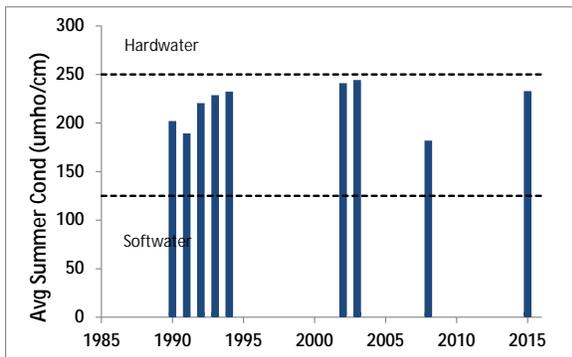
### Long Term Trends: Calcium

- Too little data to evaluate long-term trends
- Moderate calcium and susceptibility to zebra mussels, which are not in lake



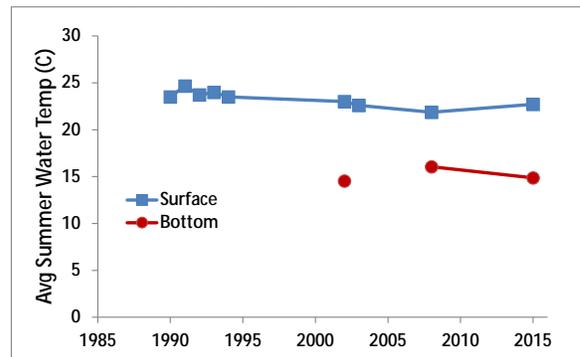
### Long Term Trends: Conductivity

- Somewhat variable readings w/no trend
- Most readings typical of lakes with *intermediate* hardness



### Long Term Trends: Water Temperature

- No long term trend; may be slight decrease
- Deepwater temperatures indicate moderate thermal stratification



## **Appendix D: Algae Testing Results from SUNY ESF Study**

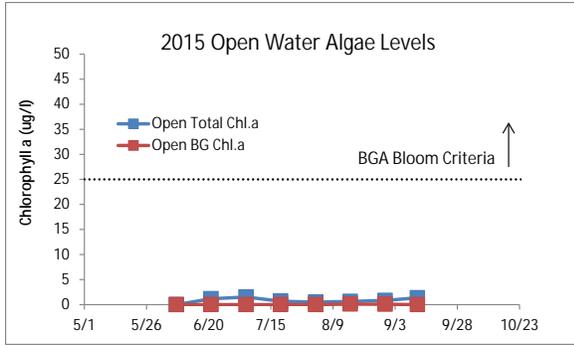
Most algae are harmless, naturally present, and an important part of the food web. However excessive algae growth can cause health, recreational, and aesthetic problems. Some algae can produce toxins that can be harmful to people and animals. High quantities of these algae are called harmful algal blooms (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

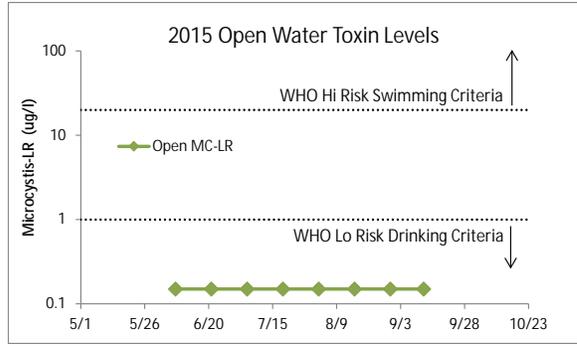
Some of these results are reported in other portions of these reports. This appendix the seasonal change in blue green algae, other algae types, and the primary algal toxin (microcystin-LR, a liver toxin). Analysis was completed on open water samples and, for some lakes, shoreline samples that were collected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



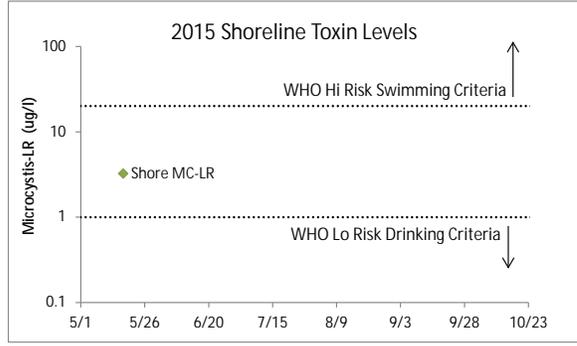
**Figure D1:**  
2015 Open Water Total and BGA Chl.a



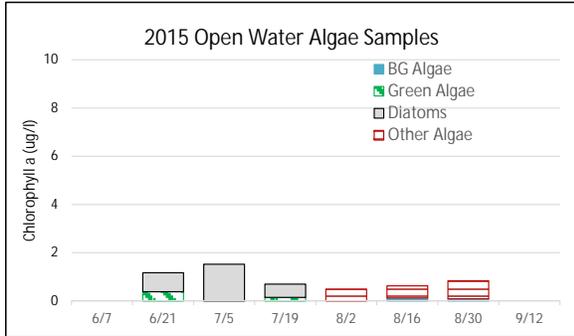
**Figure D2:**  
2015 Open Water Microcystin-LR



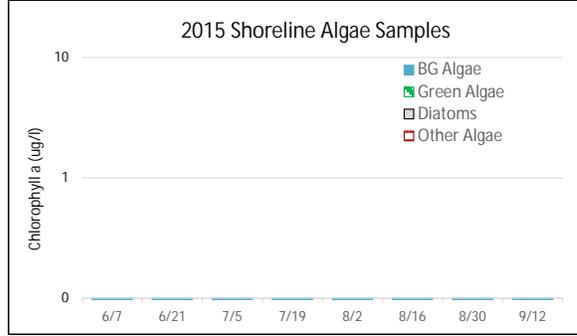
**Figure D3:**  
2015 Shoreline Total and BGA Chl.a



**Figure D4:**  
2015 Shoreline Microcystin-LR



**Figure D5:**  
2015 Open Water Algae Types



**Figure D6:**  
2015 Shoreline Algae Types

## Appendix E: AIS Species in Washington County

The table below shows the invasive aquatic plants and animals that have been documented in Washington 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)).

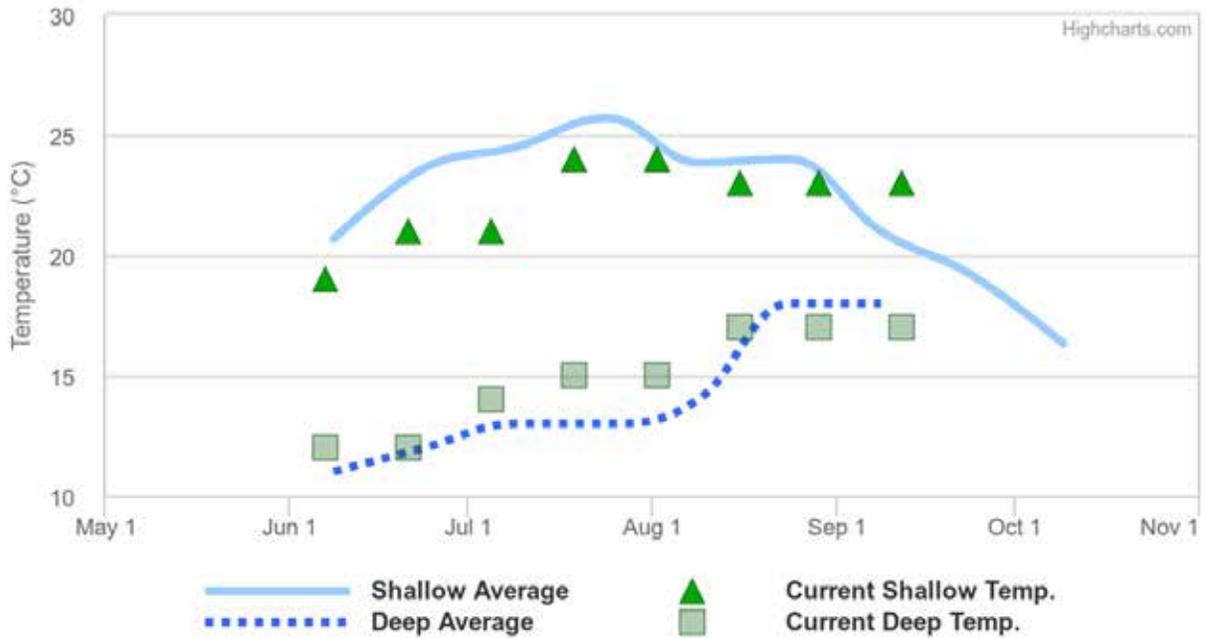
This list is not complete, but instead represents only those species that have been reported and verified within the county. If any additional aquatic invasive species (AIS) are known or suspected in these or other waterbodies in the county, this information should be reported through iMap invasives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

<b>Aquatic Invasive Species - Washington County</b>			
<b>Waterbody</b>	<b>Kingdom</b>	<b>Common name</b>	<b>Scientific name</b>
Barkley Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Barkley Pond	Plant	Water chestnut	<i>Trapa natans</i>
Batten Kill	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Champlain Canal, Clemons	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Champlain Canal, Fort Edward	Animal	Asian Clam	<i>Corbicula fluminea</i>
Cossayuna Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Cossayuna Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Cossayuna Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Finch Marsh	Plant	Water chestnut	<i>Trapa natans</i>
Great South Bay, Lake Champlain	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Great South Bay, Lake Champlain	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Hadlock Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Hadlock Pond	Plant	Brittle naiad	<i>Najas minor</i>
Hadlock Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Hadlock Pond	Plant	Water chestnut	<i>Trapa natans</i>
Hedges Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Hedges Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Hedges Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Hills Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lake Champlain	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Lake Champlain	Plant	Water chestnut	<i>Trapa natans</i>
Lake Champlain, Mill Bay	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Lake Lauderdale	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>

<b>Waterbody</b>	<b>Kingdom</b>	<b>Common name</b>	<b>Scientific name</b>
Lock 11, Champlain Barge Canal	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lock 11, Champlain Barge Canal	Plant	Water chestnut	<i>Trapa natans</i>
Lock 12, Champlain Barge Canal	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lock 12, Champlain Barge Canal	Plant	Water chestnut	<i>Trapa natans</i>
Sheltered Lakes	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Sheltered Lakes	Plant	Variable watermilfoil	<i>Myriophyllum heterophyllum</i>
Sheltered Lakes	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Sheltered Lakes	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Sheltered Lakes	Plant	Water chestnut	<i>Trapa natans</i>
Summit Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Summit Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Whitehall Launch, Champlain Barge Canal	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Whitehall Launch, Champlain Barge Canal	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Whitehall Launch, Champlain Barge Canal	Plant	Water chestnut	<i>Trapa natans</i>
Wood Creek	Plant	Water chestnut	<i>Trapa natans</i>

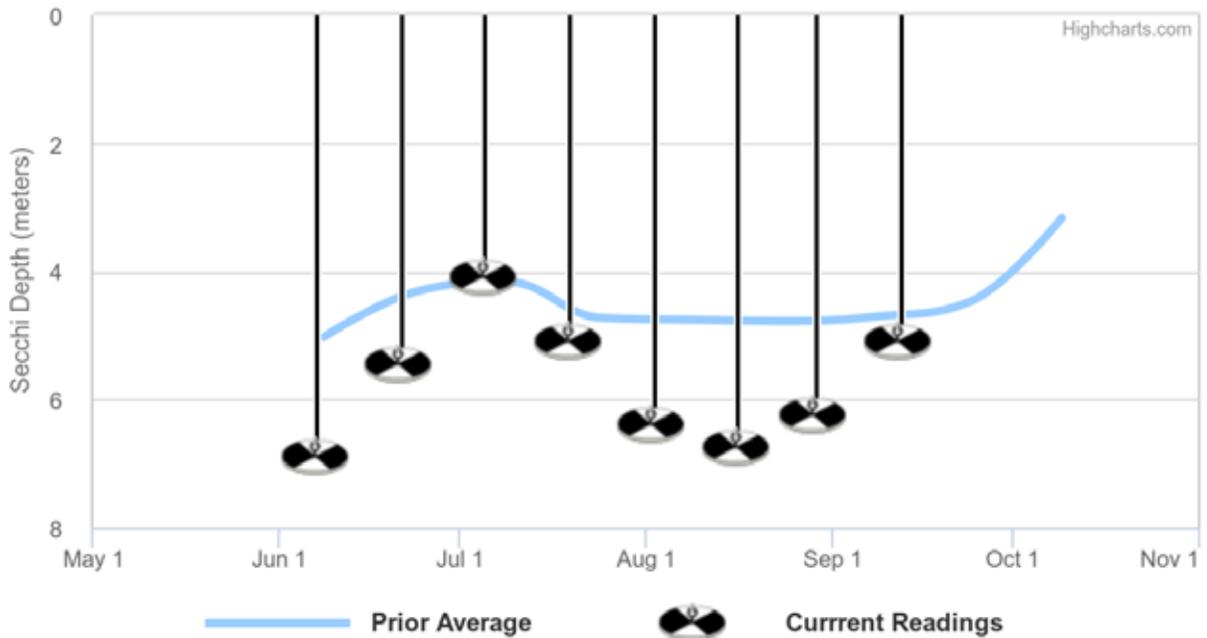
## Appendix F: Current Year vs. Prior Averages for Summit Lake

### 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 2003. There are not enough deep water sample temperatures to determine a trend for the current year when compared to the average of readings collected during 2002.

### 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 1990 to 2003.

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

