

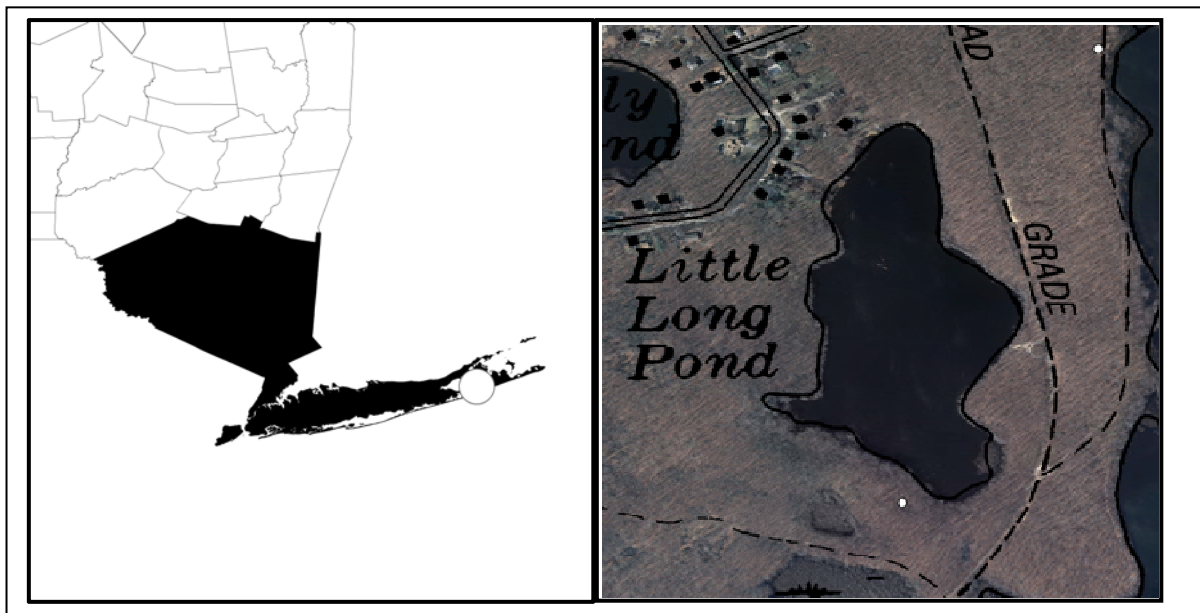
## CSLAP 2012 Lake Water Quality Summary: Little Long Pond

### General Lake Information

<b>Location</b>	town of Southampton
<b>County</b>	Suffolk
<b>Basin</b>	Long Island Sound/Atlantic City
<b>Size</b>	5.2 hectares (12.8 acres)
<b>Lake Origins</b>	Natural
<b>Watershed Area</b>	97.5 hectares (240.8 acres)
<b>Retention Time</b>	0.5 years
<b>Mean Depth</b>	2.9 meters
<b>Sounding Depth</b>	6.1 meters
<b>Public Access?</b>	no
<b>Major Tributaries</b>	no named tribs
<b>Lake Tributary To...</b>	no named outlet
<b>WQ Classification</b>	C (non-contact recreation = boating, angling)
<b>Lake Outlet Latitude</b>	40.975
<b>Lake Outlet Longitude</b>	-72.296
<b>Sampling Years</b>	2007-2009, 2011-2012
<b>2012 Samplers</b>	Dai Dayton and Jean Dodds
<b>Main Contact</b>	Dai Dayton

### Lake Map

(sampling location marked with a circle)



## **Background**

Little Long Pond is a 13 acre, class C lake found in the Town of Southampton in Suffolk County, in the Long Island region of New York State. It was first sampled as part of CSLAP in 2008.

It is one of 6 CSLAP lakes among the >100 lakes found in Suffolk County, and one of 8 CSLAP lakes among the >200 lakes and ponds in the Atlantic Ocean-Long Island Sound drainage basin.

## **Lake Uses**

Little Long Pond is a Class C lake; this means that the best intended use for the lake is for non-contact recreation—boating and aesthetics, although the lake may also support contact recreation—swimming and bathing. The lake is not used for swimming or other recreational uses, and there is no public access to the lake.

It is not known whether Little Long Pond has been stocked through any state fisheries stocking programs, or if any private stocking has occurred.

General statewide fishing regulations are applicable in Little Long Pond. In addition, there is a year-round open season on bluegill, crappie, pumpkinseed sunfish, trout and yellow perch. There is a size limit of 9", and a daily take limit of 15 for all of these fish except trout, which has a daily take limit of 3. Ice fishing of trout is permitted.

There are no lake-specific fish consumption advisories on Little Long Pond.

## **Historical Water Quality Data**

CSLAP sampling was conducted on Little Long Pond from 2007-2009 and 2011 to 2012. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at <http://nysfola.mylaketown.com>. The 2011 CSLAP report and scorecard for Little Long Pond can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77836.html>.

Little Long Pond has not been sampled through any previous NYSDEC monitoring program. It is not known if the lake has been sampled by any organizations associated with the Long Island Greenbelt.

There are no NYSDEC RIBS monitoring sites near Little Long Pond, and there are no named tributaries to the lake.

## **Lake Association and Management History**

Little Long Pond is part of the Long Pond Greenbelt complex, along with (among other CSLAP lakes) Black Pond and Lily Pond. The Long Pond Greenbelt is an approximately 11-kilometer (7-mile) north-south corridor of ponds, streams, and adjacent upland areas in the Outer Coastal Plain physiographic province. The preservation of land in the Long Pond Greenbelt has been a goal in the master plan for the town of Southampton since 1970. Long Pond Greenbelt is recognized by the New York State Department of State as a Significant Coastal Fish and Wildlife Habitat, and by the U.S. Fish and Wildlife Service as a priority wetland complex under the federal Emergency Wetlands Resources Act of 1986. The New York State Natural Heritage Program, in conjunction with The Nature Conservancy, recognizes several Priority Sites for Biodiversity within the Long Pond Greenbelt complex. Other excellent examples of coastal plain pond shore communities occur at Black Pond and Lily Pond.

Information about the Long Pond Greenbelt can be found at [http://library.fws.gov/pubs5/web\\_link/text/lpg\\_form.htm](http://library.fws.gov/pubs5/web_link/text/lpg_form.htm).

## **Summary of 2012 CSLAP Sampling Results**

### **Evaluation of 2012 Annual and Monthly Results Relative to 2006-2011**

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 –Little Long Pond” section in Appendix D.

### **Evaluation of Eutrophication Indicators**

Phosphorus readings were much higher than normal in 2012, driven by phosphorus “spikes” in late summer. However, this did not appear to affect algae levels or water clarity; in fact, water clarity was also higher than normal. These differences might be within the normal range of variability for the lake, although this may become more apparent with additional data. Lake productivity is usually fairly stable during the summer, and (except for the aforementioned phosphorus spikes) water clarity, phosphorus and chlorophyll *a* readings were consistent during most of the summer.

The lake can be characterized as *mesoeutrophic*, or moderately to highly productive, based on chlorophyll *a*, water clarity (both indicative of *mesotrophic*, or moderately productive lakes) and total phosphorus readings (typical of *eutrophic*, or highly productive, lakes). The TSI evaluation suggests that phosphorus readings are usually higher than expected given the algae and water clarity readings in the lake—this was particularly apparent in 2012. This may be due to high pond turnover rates (water moving in and out of the pond quickly), or algae growth being limited by some other factor. Overall trophic conditions are summarized on the Lake Scorecard.

### **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 the lake is not classified for use for drinking water. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table

### **Evaluation of Limnological Indicators**

Ammonia, calcium and conductivity were higher than normal in 2012, particularly in late summer and conductivity was also higher than normal in 2011, but none of these indicators has exhibited any clear long-term trends. Each of the other limnological indicators (NO<sub>x</sub>, total nitrogen, pH, and color) were close to normal and have also not exhibited any clear long-term trends. It is likely that the small changes in most of these indicators have been within the normal range of variability in the lake. Overall limnological conditions are summarized in the Lake Scorecard.

### **Evaluation of Biological Condition**

Phytoplankton, macrophyte, zooplankton and macroinvertebrate surveys have not been evaluated through CSLAP in Little Long Pond, and the composition of the fish community is not known.

No fluoroprobe (raw water) samples were submitted for algal analysis, so it is not known if the algal community is dominated by blue green algae or other species.

### **Evaluation of Lake Perception**

Water quality assessments were more favorable than normal in 2011 and 2012, and in 2012 were consistent with the increase in water clarity. The more favorable water quality assessments may have been part of a longer-term trend. Aquatic plant coverage and recreational assessments were close to normal in 2012, and none of these measures of lake perception has exhibited any clear long-term trends. Recreational and water quality perception is generally more favorable in late summer, and this was apparent in 2012. Overall lake perception is summarized on the Lake Scorecard.

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

Air and water temperature readings in the summer index period were lower than normal in 2012, but neither air nor water temperature have exhibited any clear long-term trends. It is not known if this is an indication of the lack of local climate change or if these changes cannot be well evaluated through CSLAP.

### **Evaluation of Algal Toxins**

Algal toxin levels can vary significantly within blooms and from shoreline to lake, and the absence of toxins in a sample does not indicate safe swimming conditions. Phycocyanin readings were below the levels indicating susceptibility for harmful algal blooms (HABs) in the open water, but not measured in blooms. A limited analysis of algae samples indicated microcystin levels well below the levels needed to support safe swimming in open water. No fluoroprobe or toxin samples were submitted for analysis in 2012.

## Lake Condition Summary

Category	Indicator	Min	06-12 Avg	Max	2012 Avg	Classification	2012 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	0.75	2.51	3.74	2.99	Mesotrophic	Higher than Normal	No Change
	Chlorophyll <i>a</i>	0.10	2.41	10.14	2.73	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.003	0.035	0.173	0.072	Eutrophic	Higher than Normal	Increasing Slightly
Potable Water Indicators	Hypolimnetic Ammonia							
	Hypolimnetic Arsenic							
	Hypolimnetic Iron							
	Hypolimnetic Manganese							
Limnological Indicators	Hypolimnetic Phosphorus							
	Nitrate + Nitrite	0.03	0.13	0.29	0.13	Intermediate NOx	Within Normal Range	No Change
	Ammonia	0.03	0.14	0.45	0.24	Intermediate Ammonia	Higher than Normal	No Change
	Total Nitrogen	0.45	0.89	1.40	1.03	Intermediate Total Nitrogen	Within Normal Range	No Change
	pH	6.81	7.61	8.35	7.52	Alkaline	Within Normal Range	No Change
	Specific Conductance	72	134	176	160	Intermediate Hardness	Higher than Normal	No Change
	True Color	1	26	59	28	Intermediate Color	Within Normal Range	No Change
	Calcium	6.5	7.8	9.6	9.5	Not Susceptible to Zebra Mussels	Higher than Normal	No Change
Lake Perception	WQ Assessment	1	1.6	3	1.0	Not Quite Crystal Clear	More Favorable Than Normal	Slightly Improving
	Aquatic Plant Coverage	1	2.9	4	3.0	Surface Plant Growth	Within Normal Range	No Change
	Recreational Assessment	1	1.4	3	1.0	Could Not Be Nicer	Within Normal Range	No Change
Biological Condition	Phytoplankton					No fluoroprobe samples submitted for analysis	Not known	Not known
	Macrophytes					Not measured through CSLAP	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Not measured through CSLAP	Not known	Not known
	Fish					Warmwater fishery?	Not known	Not known
	Invasive Species					None observed	Improving	Not known
Local Climate Change	Air Temperature	10	23.0	33	21.3		Lower Than Normal	No Change
	Water Temperature	11	25.0	31	21.2		Lower Than Normal	No Change
Harmful Algal Blooms	Open Water Phycocyanin	5	18	46		No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a						Not known	Not known
	Open Water FP BG Chl.a						Not known	Not known
	Open Water Microcystis	0.5	0.5	0.5		Mostly undetectable open water MC-LR	Not known	Not known
	Open Water Anatoxin a	<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					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**

Little Long Pond is not presently listed on the Atlantic Ocean / Long Island Sound PWL, last updated in 2002.

### **Potable Water (Drinking Water)**

The CSLAP dataset at Little Long Pond, 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 algae levels in the lake suggest that the "unofficial" potable water use may be threatened by occasionally elevated nutrient levels.

### **Contact Recreation (Swimming)**

The CSLAP dataset at Little Long Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation would be fully supported, although occasionally low water clarity and very high phosphorus readings may *threaten* this use. Additional information about bacterial levels is needed to evaluate the safety of the water for swimming (and it is not known if any swimming occurs in the lake).

### **Non-Contact Recreation (Boating and Fishing)**

The CSLAP dataset on Little Long Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation should be fully supported.

### **Aquatic Life**

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

### **Aesthetics**

The CSLAP dataset on Little Long Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics should be fully supported.

### **Fish Consumption**

There are no fish consumption advisories posted for Little Long Pond.

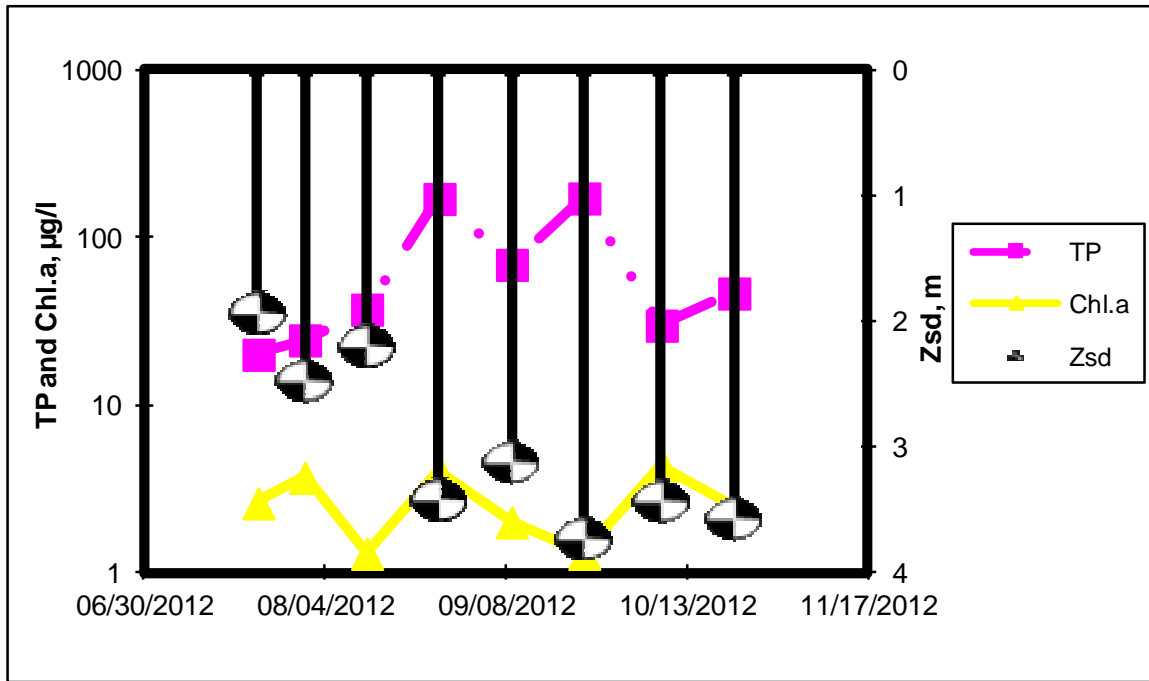
## **Additional Comments and Recommendations**

Aquatic plant monitoring in Little Long Pond may be useful in determining if the plant community is more strongly affected by native or invasive plants. Additional blue green algae and algal toxin sampling will help to evaluate the potential threat from shoreline or open water blooms.

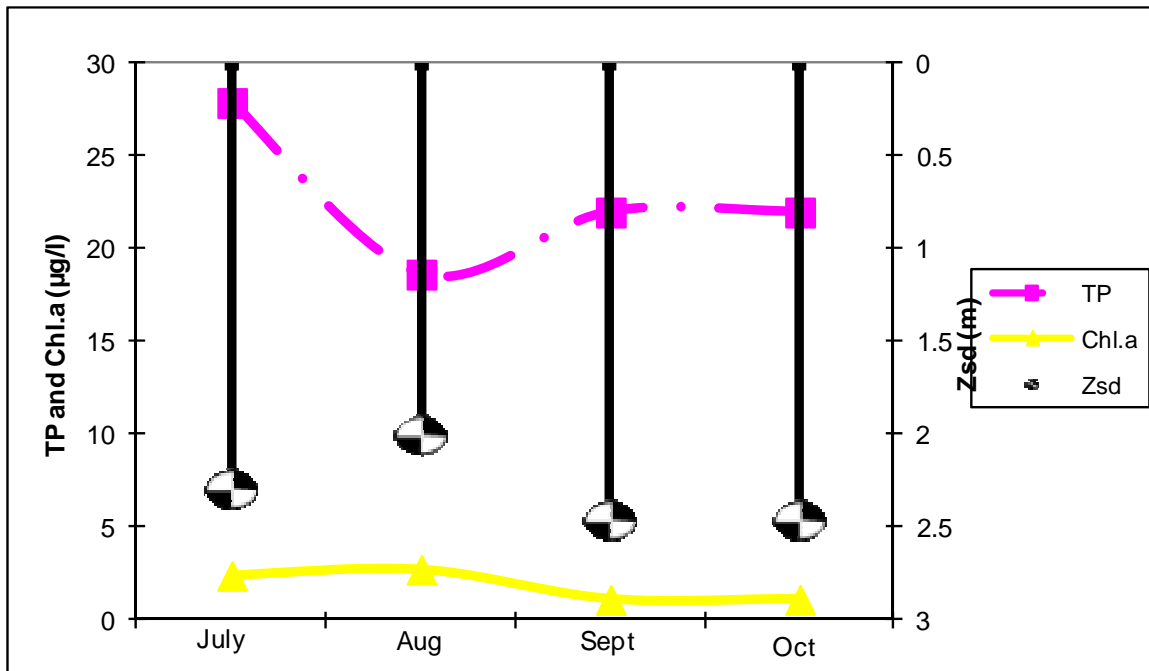
### **Aquatic Plant IDs-2012**

None submitted for identification.

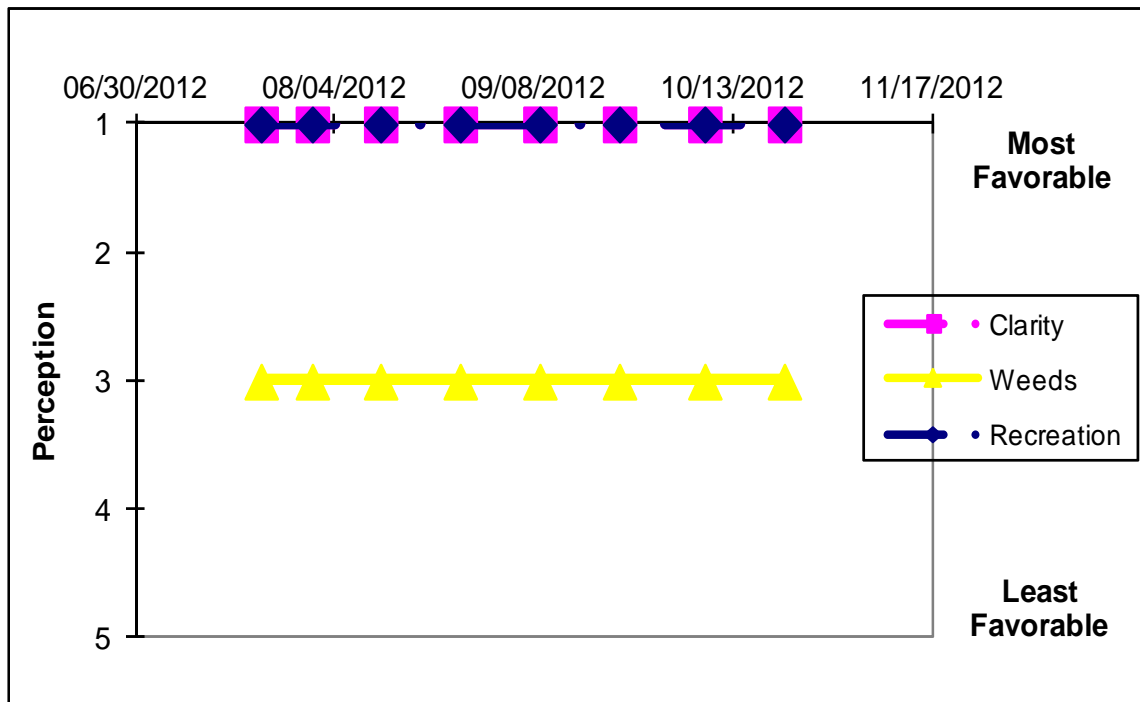
### Time Series: Trophic Indicators, 2012



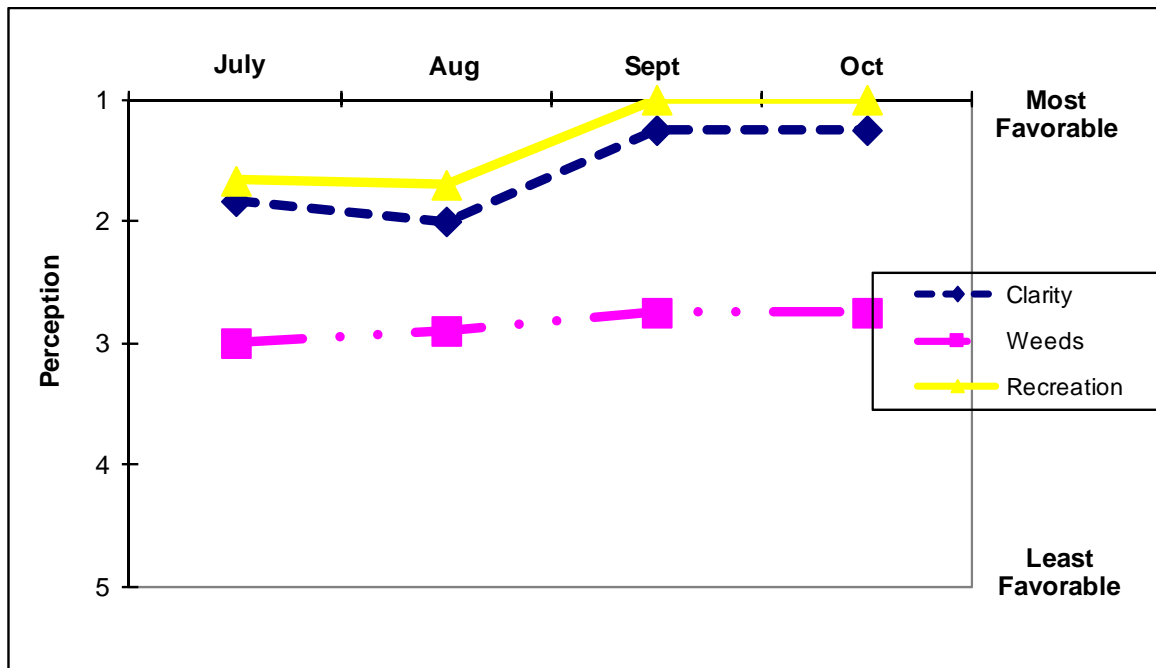
### Time Series: Trophic Indicators, Typical Year (2006-2012)



### Time Series: Lake Perception Indicators, 2012



### Time Series: Lake Perception Indicators, Typical Year (2006-2012)







## Legend Information

<i>Indicator</i>	<i>Description</i>	<i>Detection Limit</i>	<i>Standard (S) / Criteria (C)</i>
<b>General Information</b>			
<b>Lnum</b>	lake number (unique to CSLAP)		
<b>Lname</b>	name of lake (as it appears in the Gazetteer of NYS Lakes)		
<b>Date</b>	sampling date		
<b>Field Parameters</b>			
<b>Zbot</b>	lake depth at sampling point, meters (m)		
<b>Zsd</b>	Secchi disk transparency or clarity	0.1m	1.2m ( C)
<b>Zsamp</b>	water sample depth (m) (epi = epilimnion or surface; bot = bottom)	0.1m	none
<b>Tair</b>	air temperature ( C)	-10C	none
<b>TH20</b>	water temperature ( C)	-10C	none
<b>Laboratory Parameters</b>			
<b>Tot.P</b>	total phosphorus (mg/l)	0.003 mg/l	0.020 mg/l ( C)
<b>NOx</b>	nitrate + nitrite (mg/l)	0.01 mg/l	10 mg/l NO3 (S), 2 mg/l NO2 (S)
<b>NH4</b>	total ammonia (mg/l)	0.01 mg/l	2 mg/l NH4 (S)
<b>TN</b>	total nitrogen (mg/l)	0.01 mg/l	none
<b>TN/TP</b>	nitrogen to phosphorus (molar) ratio, = (TKN + NOx)*2.2/TP		none
<b>TCOLOR</b>	true (filtered) color (ptu, platinum color units)	1 ptu	none
<b>pH</b>	powers of hydrogen (S.U., standard pH units)	0.1 S.U.	6.5, 8.5 S.U. (S)
<b>Cond25</b>	specific conductance, corrected to 25C (umho/cm)	1 umho/cm	none
<b>Ca</b>	calcium (mg/l)	1 mg/l	none
<b>Chl.a</b>	chlorophyll a (ug/l)	0.01 ug/l	none
<b>Fe</b>	iron (mg/l)	0.1 mg/l	1.0 mg/l (S)
<b>Mn</b>	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
<b>As</b>	arsenic (ug/l)	1 ug/l	10 ug/l (S)
<b>AQ-PC</b>	Phycocyanin (aquafior) (unitless)	1 unit	none
<b>AQ-Chl</b>	Chlorophyll a (aquafior) (ug/l)	1 ug/l	none
<b>MC-LR</b>	Microcystis-LR (ug/l)	0.01 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
<b>Ana</b>	Anatoxin-a (ug/l)	variable	none
<b>Cyl</b>	Cylindrospermopsis (ug/l)	0.1 ug/l	none
<b>FP-Chl, FP-BG</b>	Fluoroprobe total chlorophyll, fluoroprobe blue-green chlorophyll (ug/l)	0.1 ug/l	none
<b>Lake Assessment</b>			
<b>QA</b>	water quality assessment; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
<b>QB</b>	aquatic plant assessment; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
<b>QC</b>	recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
<b>QD</b>	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		
<b>QF, QG</b>	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		
<b>HAB form</b>	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- Monthly Evaluation of Little Long Pond Data, 2006-2012

### June Data

	2006	2007	2008	2009	2010	2011	2012
Zsd							
TP							
Chl.a							
NOx							
NH4							
TN							
pH							
SpCond							
Color							
Ca							
QA							
QB							
QC							
TH20							

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

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

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

### July Data

	2006	2007	2008	2009	2010	2011	2012
Zsd		HIGH	NORMAL	NORMAL		NORMAL	NORMAL
TP		NORMAL	NORMAL	NORMAL		HIGH	NORMAL
Chl.a		NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
NOx		NORMAL	NORMAL	HIGH		HIGH	NORMAL
NH4		HIGH	HIGH	NORMAL		NORMAL	NORMAL
TN		NORMAL	HIGH	NORMAL		NORMAL	NORMAL
pH		NORMAL	NORMAL	NORMAL		HIGH	NORMAL
SpCond		NORMAL	NORMAL	LOW		NORMAL	NORMAL
Color		LOW	NORMAL	NORMAL		NORMAL	NORMAL
Ca		NORMAL	HIGH	LOW		NORMAL	HIGH
QA		NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
QB		NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
QC		NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
TH20		NORMAL	HIGH	NORMAL		HIGH	NORMAL

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

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

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

## August Data

	2006	2007	2008	2009	2010	2011	2012
Zsd	NORMAL	NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
TP	NORMAL	NORMAL	NORMAL	NORMAL		NORMAL	HIGH
Chl.a	NORMAL	NORMAL	HIGH	NORMAL		NORMAL	NORMAL
NOx	NORMAL	NORMAL	LOW	NORMAL		NORMAL	NORMAL
NH4	NORMAL	NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
TN		NORMAL	LOW	LOW		NORMAL	HIGH
pH	NORMAL	NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
SpCond	NORMAL	NORMAL	NORMAL	LOW		NORMAL	HIGH
Color	NORMAL	NORMAL	NORMAL	HIGH		NORMAL	NORMAL
Ca	NORMAL						
QA	NORMAL	HIGH	HIGH	NORMAL		NORMAL	NORMAL
QB	NORMAL	NORMAL	HIGH	NORMAL		LOW	NORMAL
QC	HIGH	NORMAL	NORMAL	NORMAL		NORMAL	NORMAL
TH20	NORMAL	NORMAL	NORMAL	NORMAL		NORMAL	NORMAL

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

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

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

## September Data

	2006	2007	2008	2009	2010	2011	2012
Zsd	LOW					NORMAL	HIGH
TP	NORMAL					NORMAL	HIGH
Chl.a	NORMAL					NORMAL	NORMAL
NOx	NORMAL					NORMAL	NORMAL
NH4	NORMAL					NORMAL	HIGH
TN						NORMAL	HIGH
pH	HIGH					NORMAL	NORMAL
SpCond	LOW					NORMAL	HIGH
Color	NORMAL					NORMAL	NORMAL
Ca						NORMAL	HIGH
QA	NORMAL					NORMAL	NORMAL
QB	LOW					NORMAL	NORMAL
QC	NORMAL					NORMAL	NORMAL
TH20	LOW					NORMAL	LOW

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

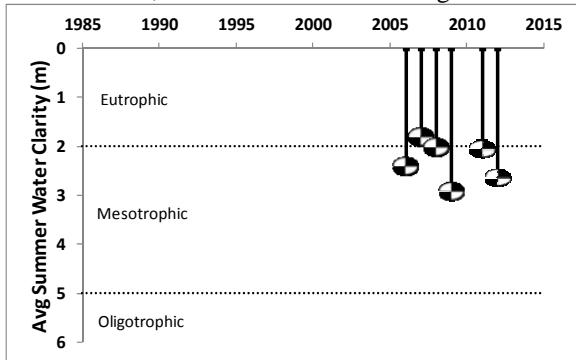
Low = average monthly reading < 10<sup>th</sup> percentile reading for lake, 2000-2010

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

# Appendix D- Long Term Trends: Little Long Pond

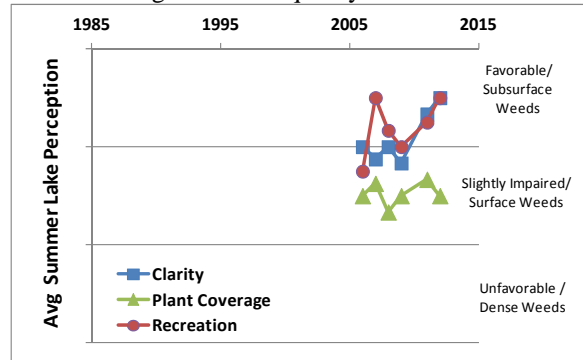
## Long Term Trends: Water Clarity

- No trends apparent
- Most readings typical of *mesoeutrophic* lakes, consistent with TP readings



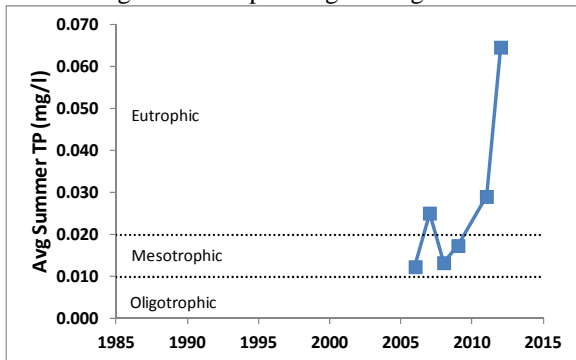
## Long Term Trends: Lake Perception

- Recreational assessments improving
- Recreational perception not closely linked to changes in water quality or weeds



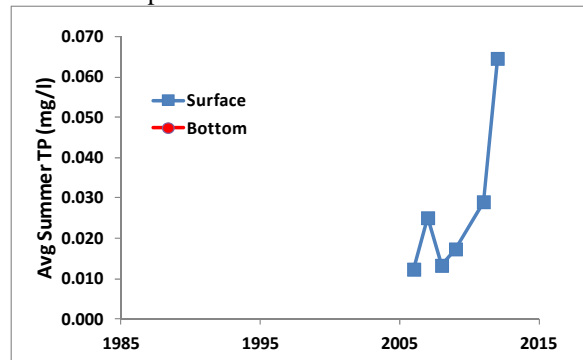
## Long Term Trends: Phosphorus

- Increasing, though not yet clear if long term
- Most readings typical of *eutrophic* lakes, higher than expected given algae levels



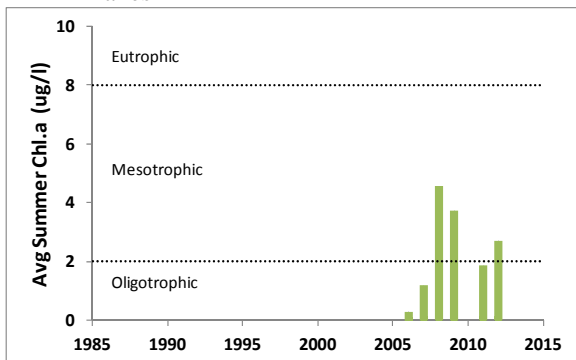
## Long Term Trends: Bottom Phosphorus

- No deepwater TP readings
- Surface and bottom TP readings usually comparable in shallow lakes



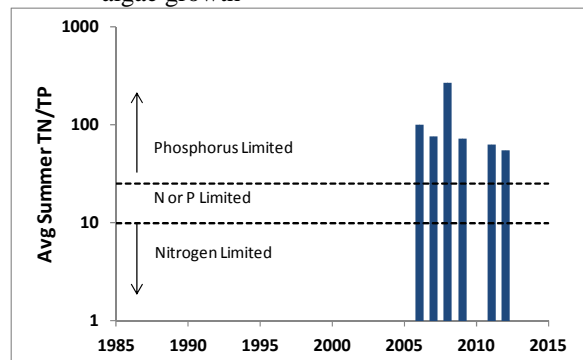
## Long Term Trends: Chlorophyll a

- No trends apparent
- Most readings typical of *mesoligotrophic* lakes



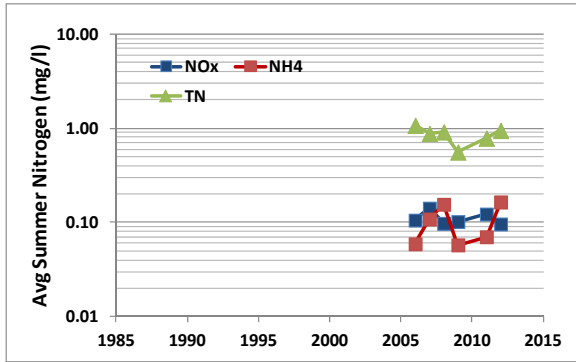
## Long Term Trends: N:P Ratio

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



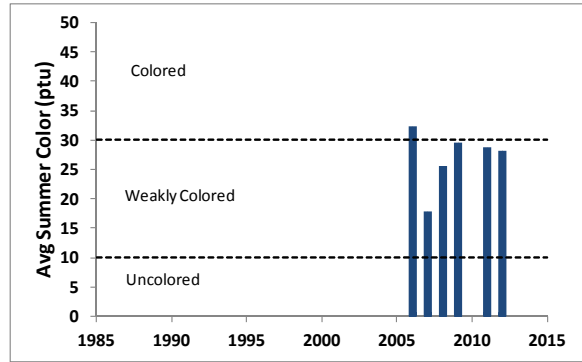
### Long Term Trends: Nitrogen

- No trends apparent
- Total nitrogen readings elevated at times



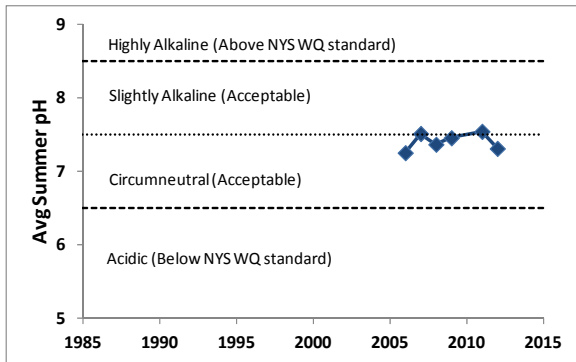
### Long Term Trends: Color

- No trends apparent
- Most readings typical of *weakly colored* lakes



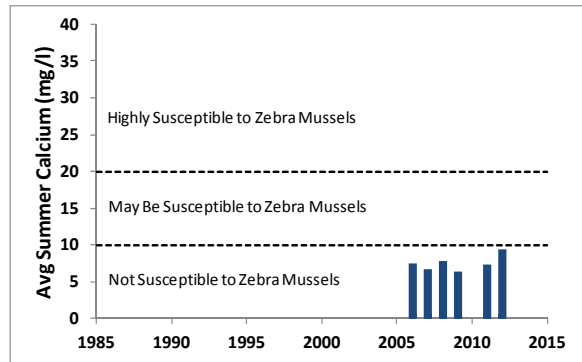
### Long Term Trends: pH

- No trends apparent
- Most readings typical of *slightly alkaline* to *circumneutral* lakes



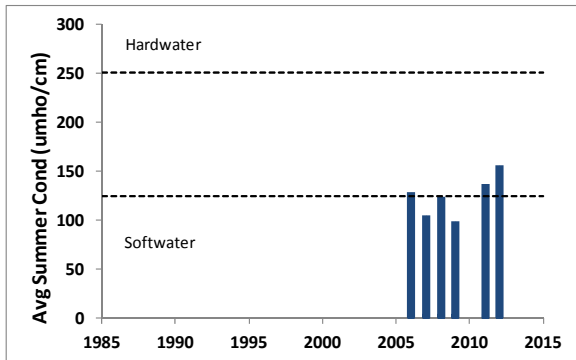
### Long Term Trends: Calcium

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



### Long Term Trends: Conductivity

- No trends apparent
- Most readings typical of *softwater* to *intermediate* hardness lakes



### Long Term Trends: Water Temperature

- No trends apparent
- Surface and bottom temperatures probably comparable in shallow lakes

