

Bradley Brook Reservoir Questions and Answers, 2014 CSLAP

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

A1. Bradley Brook Reservoir has been very clear over the last few years- much clearer than normal- due to low algae and nutrient levels. This may have contributed to more aquatic plant growth, but recreational assessments were more favorable. No shoreline algae blooms have been observed in at least the last two years.

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

A2. The HABs testing includes information about the types of algae found in the water samples. These results showed low algae levels and algae communities that are comprised of a variety of algae types, with little evidence of blue green algae.

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

A3. Bradley Brook Reservoir had more favorable water quality- high water clarity and low algae levels with little evidence of blooms- than many other nearby lakes.

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

A4. Lake productivity has decreased over the last 20+ years, particularly in the last four years, resulting in more favorable water quality assessments. pH levels have decreased significantly, but these readings are still in the acceptable range. Color readings have also risen, but this may not be apparent to the casual observer.

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

A5. The lake has highly favorable water quality, but the recent increase in water clarity and decrease in algae levels may eventually shift the productivity of warmwater fish. This may indicate an invasion of zebra mussels, and lake residents should look for the presence of zebra mussels in the lake.

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

A6. Individual stewardship activities such as pumping your septic system, growing a buffer of native plants next to the water bodies, and reducing erosion from shoreline properties will help to maintain highly favorable lake conditions 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 found in the lake

Lake Use				
	PWL	Average Year	2014	Primary issue
Potable Water				Not applicable
Swimming				Algae blooms
Boating / Fishing				No impacts
Aquatic Life				No impacts
Aesthetics				No impacts
Fish Consumption				Not applicable

 Supported
 Threatened
 Stressed
 Impaired
 Not Known

CSLAP 2014 Lake Water Quality Summary: Bradley Brook Reservoir

General Lake Information

Location	Town of Eaton
County	Madison
Basin	Susquehanna
Size	57 hectares (140.9 acres)
Lake Origins	Augmented by 35ft high by 1060ft wide earthen dam built in 1917
Watershed Area	662.9 hectares (1.638 acres)
Retention Time	0.91 years
Mean Depth	4.2 meters
Sounding Depth	8.2 meters
Public Access	No- access limited to lake residents
Major Tributaries	Outlet from Hatch Lake
Lake Tributary To...	Bradley Brook to Chenango River, Upper, and minor tribs to Middle, Main Stem to Lower, Main Stem to Susquehanna River, Lower, Main Stem
WQ Classification	B
Lake Outlet Latitude	42.832778
Lake Outlet Longitude	-75.651944
Sampling Years	1988-2001; 2011-2014
2014 Samplers	James Kallmerton
Main Contact	James Kallmerton

Lake Map



Background

Bradley Brook Reservoir is a 141 acre, Class B reservoir found in the Town of Eaton in Madison County, in central New York State. It was first sampled as part of CSLAP since 1988.

It is one of 12 CSLAP lakes among the more than 20 lakes found in Madison County, and one of 24 CSLAP lakes among the more than 120 lakes and ponds in the Susquehanna River drainage basin.

Lake Uses

Bradley Brook Reservoir 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, power boating and other recreation via shoreline properties.

Bradley Brook Reservoir 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/regs/4026.html> for fishing regulations in Madison County.

General statewide fishing regulations are applicable in Bradley Brook Reservoir. In addition, the open season for trout is April 1st thru October 15th; there is no minimum size limit, but a daily take limit of five, with no more than two greater than 12 inches and five brook trout under eight inches.

Historical Water Quality Data

CSLAP sampling was conducted on Bradley Brook Reservoir from 1988 to 2001 and 2011 to 2014. 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 Bradley Brook Reservoir will eventually be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77861.html>.

The lake was also sampled by the Conservation Department (the predecessor to the NYSDEC) in 1935 as part of the Biological Survey of the Susquehanna River basin. Most of the water quality parameters measured through CSLAP were not included in this study of the lake. However, the limited water quality monitoring showed pH readings (= 7.2 to 8.4) comparable to those measured through CSLAP, and dissolved oxygen readings at the lake bottom much lower than those at the lake surface.

Aquatic vegetation surveys conducted by SUNY Oneonta reported the following:

“Myriophyllum spicatum grows over a substantial portion of the lake's perimeter, but without recreation impairing density or canopies. Also present was the non-canopy forming native, Myriophyllum sibiricum, northern watermilfoil (NWM). Cattails (Typha sp.) and some smartweed (Polygonum sp.) occupied the shorelines. There were not floating leaf pondweeds present. There was a diverse mix of native submerged aquatic plants present. These included clasping-leaf pondweed (Potamogeton richardsonii), leafy pondweed (Potamogeton epihydrus), flat-stemmed pondweed (Potamogeton zosteriformis), large-leafed pondweed (Potamogeton

amplifolius), coontail (*Ceratophyllum echinatum* and *C. demersum*), water stargrass (*Zosterella dubia*), waterweed (*Elodea canadensis*), tapegrass (*Vallisneria americana*), slender water nymph (*Najas flexilis*), white water crowfoot (*Ranunculus trichophyllus*), and stonewort (*Nitella* sp.)

(10) EWM stems were collected randomly, using a plant rake, from .. three EWM beds.. Both moths (*Acentria ephemerella*) and weevils (*Euhrychiopsis lecontei*) were noted on the EWM collected. One tip had both a moth and a weevil present. (9 stems exhibited apparent herbivory, 5 stems had weevils, and 2 stems had moths).

Given the large number of herbivores in Bradley Brook Reservoir and the presence of NWM along with the EWM, consideration should be given to implementing a program of EWM control using divers and barriers to physically remove and smother small beds and larger beds of EWM, respectively.”

Lake Association and Management History

Bradley Brook Reservoir is served by the Hatch and Bradley Brook Lakes Association. It is not known to what extent the lake association is involved in lake management activities, nor if the lake association maintains a website.

Summary of 2014 CSLAP Sampling Results

Evaluation of 2014 Annual Relative to 1988-2014

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 – Bradley Brook Reservoir” section in Appendix C.

Evaluation of Eutrophication Indicators

Chlorophyll *a* readings were lower than normal in each of the last four years, leading to higher than normal water transparency readings. Phosphorus readings were also lower than normal in 2014, but the long-term increase in water transparency is consistent with a zebra mussel infestation, which has been documented in other nearby lakes (but not Bradley Brook Reservoir). No shoreline algae blooms have been reported in either of the last two years, as expected given the low algae levels in the lake.

Lake productivity slightly increases during the summer (water clarity decreases due to slight increases in algae and nutrient levels). A slight seasonal increase in lake productivity was also apparent in 2014.

The lake can be characterized as *mesotrophic*, or moderately productive, based on total phosphorus, chlorophyll *a*, and water clarity readings (all indicative of *mesotrophic* lakes), although Secchi disk transparency readings and phosphorus readings in 2014 were more typical of *oligotrophic* (unproductive) lakes. The trophic state indices (TSI) evaluation suggests that the trophic indicators were “internally consistent”—that is, each trophic indicator can be predicted based on the readings from the other indicators. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels are usually 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, especially in the last four years, and the lake is not used for drinking water. Hypolimnetic phosphorus and ammonia readings in Bradley Brook Reservoir are close to those measured at the lake surface, although deep ammonia levels were slightly higher than normal in 2014. This suggests that deepwater intakes may support any “unofficial” potable water use. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Limnological Indicators

pH readings were lower than normal in 2014, and these readings have decreased over the last two decades. However, nearly all pH readings remain in the acceptable range for most aquatic organisms. NO_x readings were slightly higher than normal in 2014. (Measured) color readings have increased slightly (probably due to the change in laboratories in 2002), and ammonia and TN readings have decreased slightly. However, it is likely that the small changes in these limnological indicators have been within the normal range of variability in the lake. Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

The fluoroprobe screening samples analyzed by SUNY ESF in 2012 and 2013 indicated low algae and blue green algae levels in the open water, and a relatively low percentage of blue green algae in the fall shoreline bloom in 2012. 2013 and 2014 open water results showed low overall algae levels, with a mix of algae species in the mid lake samples, with little evidence of blue green algae. No shoreline blooms were reported in the last two years.

Macrophyte surveys conducted through SUNY Oneonta showed a moderate number of aquatic plants, and at least two exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil, and *Potamogeton crispus*, curly-leafed pondweed) has been found in the lake. The modified floristic quality indices (FQI) data indicate that the quality of the aquatic plant community is “fair.”

The composition of the fish community includes a mix of coldwater (at least two species), coolwater (at least three species) and warmwater (at least five species) fish species. This suggests that the lake supports a two story fishery. A 2003 SUNY Oneonta survey conducted electrofishing; an analysis of the fish community using the Minnesota biotic IBI (index for biotic integrity) suggests that the health of the fish community is “excellent”.

Zooplankton surveys have not been conducted through CSLAP at Bradley Brook Reservoir.

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

Evaluation of Lake Perception

Water quality assessments were more favorable than normal in the last two years, consistent with lower than normal algae levels and higher water clarity. None of these lake perception indicators has exhibited any clear long-term trends. Lake perception is normally stable during the summer, although these assessments degrade slightly as the summer progresses in most years, including

2014. This is consistent with slight seasonal increases in lake productivity, particularly seasonal increases in algae and decreases in water clarity. 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 close to normal in 2014, and neither air nor water temperatures has 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), and fluoroprobe results in the last three years indicate very low blue green algae levels in the open water. There was also a low percentage of blue green algae in the (2012) shoreline bloom, and no shoreline blooms were reported in the last two years. Algal toxin (microcystin and anatoxin) readings are below the levels needed to support safe swimming.

Lake Condition Summary

Category	Indicator	Min	88-14 Avg	Max	2014 Avg	Classification	2014 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	2.01	4.96	9.00	6.86	Mesotrophic	Higher than Normal	Increasing Slightly
	Chlorophyll <i>a</i>	0.10	3.67	13.60	2.13	Mesotrophic	Lower Than Normal	No Change
	Total Phosphorus	0.006	0.011	0.020	0.008	Mesotrophic	Lower Than Normal	No Change
Potable Water Indicators	Hypolimnetic Ammonia	0.01	0.05	0.16	0.07	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	0.003	0.013	0.033	0.007	Close to Surface TP Readings	Lower Than Normal	Not known
	Nitrate + Nitrite	0.01	0.03	0.23	0.06	Low NOx	Higher than Normal	No Change
	Ammonia	0.01	0.03	0.06	0.04	Low Ammonia	Not yet known	Decreasing Slightly
	Total Nitrogen	0.18	0.31	0.47	0.33	Low Total Nitrogen	Not yet known	Decreasing Slightly
	pH	6.73	7.94	8.63	7.19	Alkaline	Lower Than Normal	Decreasing Significantly
Lake Perception	Specific Conductance	104	200	227	201	Intermediate Hardness	Within Normal Range	No Change
	True Color	1	7	28	6	Uncolored	Within Normal Range	Increasing Slightly
	Calcium	26.2	30.4	33.9	27.5	Highly Susceptible to Zebra Mussels	Lower Than Normal	No Change
	WQ Assessment	1	2.1	4	1.8	Not Quite Crystal Clear	More Favorable Than Normal	Slightly Improving
	Aquatic Plant Coverage	1	2.1	3	2.6	Subsurface Plant Growth	Less Favorable than Normal	No Change
Recreational Assessment	1	2.1	4	1.6	Excellent	More Favorable Than Normal	No Change	

Category	Indicator	Min	88-14 Avg	Max	2014 Avg	Classification	2014 Change?	Long-term Change?
Biological Condition	Phytoplankton					Open water-low blue green algae biomass	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					Two story fishery?; "excellent" fish IBI	Not known	Not known
	Invasive Species					Eurasian watermilfoil, curly-leafed pondweed	Not known	Not known
Local Climate Change	Air Temperature	10	20.9	37	20.1		Within Normal Range	No Change
	Water Temperature	12	22.4	29	22.6		Within Normal Range	No Change
Harmful Algal Blooms	Open Water Phycocyanin	0	5	38	2	No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a	0	1	7	0	No readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	0	2	0	No readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	0.3	1.8	<0.30	Mostly 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	217	217	217		All readings indicate very high algae levels	Not known	Not known
	Shoreline FP BG Chl.a	36	36	36		All readings indicate very high BGA levels	Not known	Not known
	Shoreline Microcystis	1.2	10.1	27.7		Occasionally high shoreline bloom MC-LR	Not known	Not known
	Shoreline Anatoxin a	<DL	<DL	<DL	<DL	Shoreline bloom Anatoxin-a consistently not detectable	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

The 2009 NYSDEC Priority Waterbody Listings (PWL) for the Susquehanna River basin indicate that there are *no use impairments*. The PWL listing for Bradley Brook Reservoir is cited in Appendix C.

Potable Water (Drinking Water)

The CSLAP dataset at Bradley Brook Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water, and the lake is not used for this purpose. The limited CSLAP data does not show any impacts to "unofficial" potable water use, although water intakes near shoreline algae blooms may lead to water intake problems.

Contact Recreation (Swimming)

The CSLAP dataset at Bradley Brook Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation should be fully supported, although shoreline blooms in previous years indicated that this use may at times be *stressed*. Additional information about bacterial levels is needed to evaluate the safety of the water for swimming.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Bradley Brook Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation should be fully supported, although this use may be *threatened* by excessive weeds and the presence of invasive plants, particularly Eurasian watermilfoil.

Aquatic Life

The CSLAP dataset on Bradley Brook Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *threatened* by the presence of exotic plant species, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake. If zebra mussels are present in the lake, aquatic life may be *threatened* by this use.

Aesthetics

The CSLAP dataset on Bradley Brook Reservoir, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *stressed* by the presence of shoreline algae blooms, although this was not apparent in the last two years.

Fish Consumption

There are no fish consumption advisories posted for Bradley Brook Reservoir.

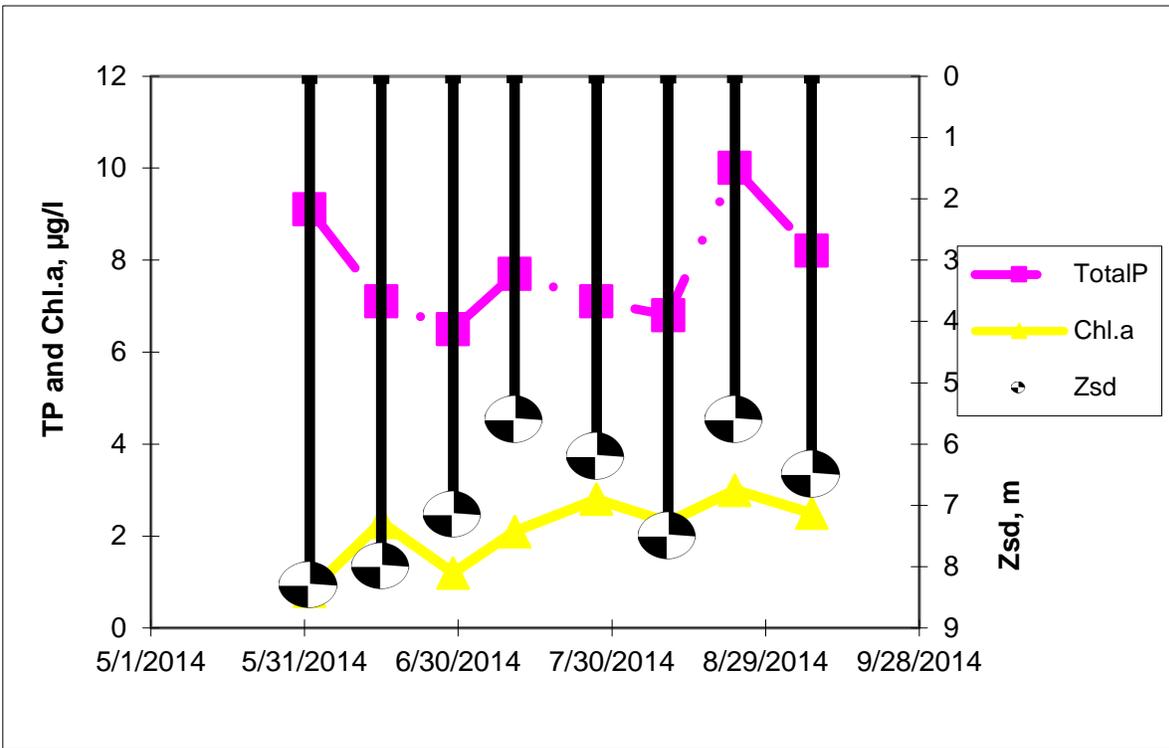
Additional Comments and Recommendations

Additional water quality data will help to determine if the drop in lake productivity is part of a long-term trend or temporary phenomena. The lake association is also advised to look for the presence of zebra mussels and to report any shoreline algae blooms- lake residents are advised to avoid exposure to surface scums and discolored water.

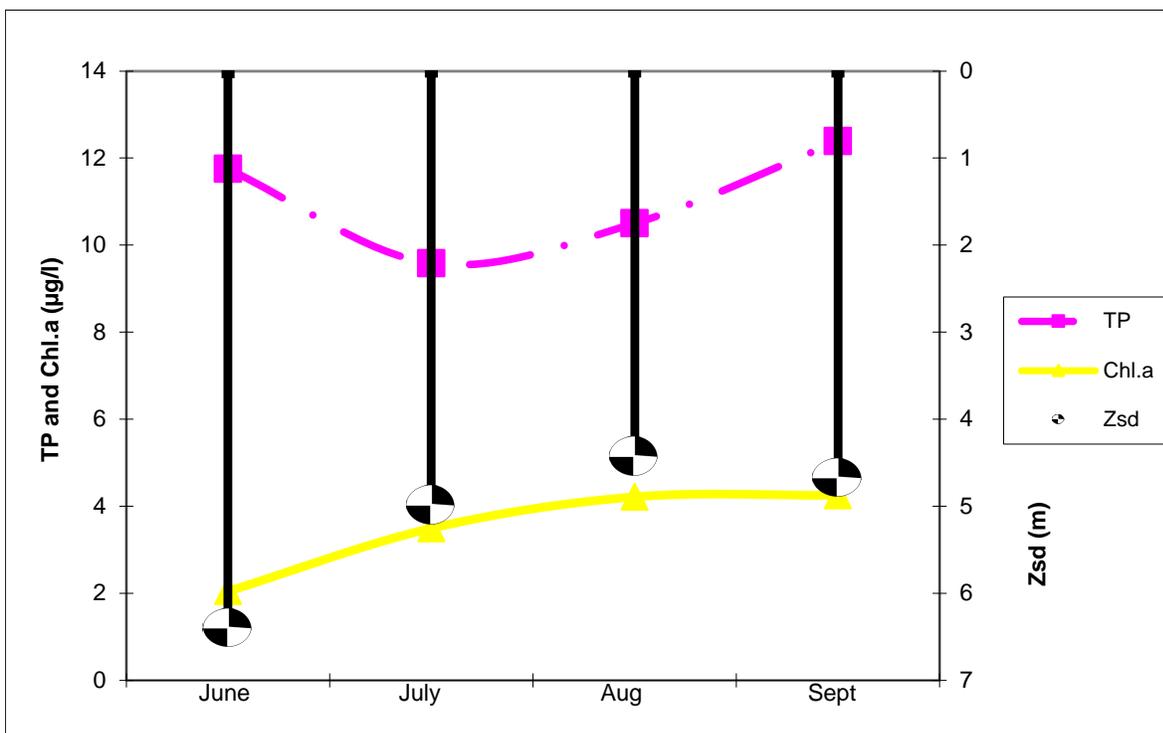
Aquatic Plant IDs-2014

None submitted for identification.

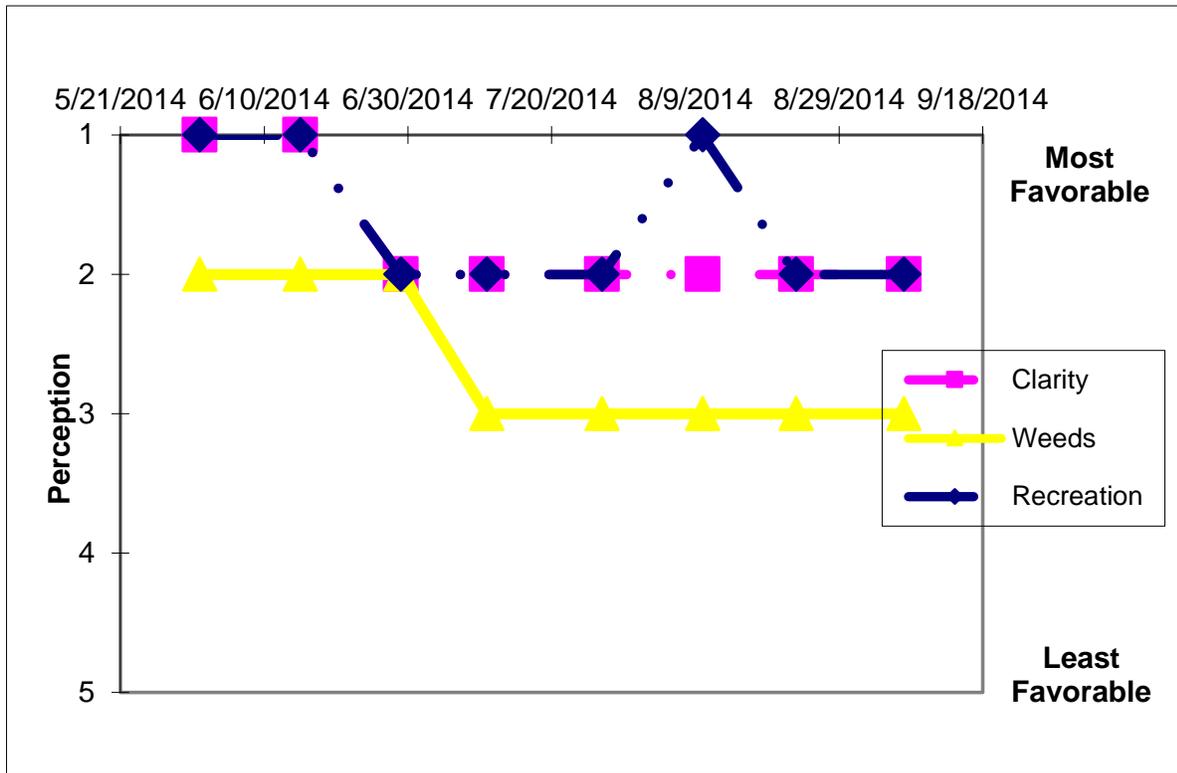
Time Series: Trophic Indicators, 2014



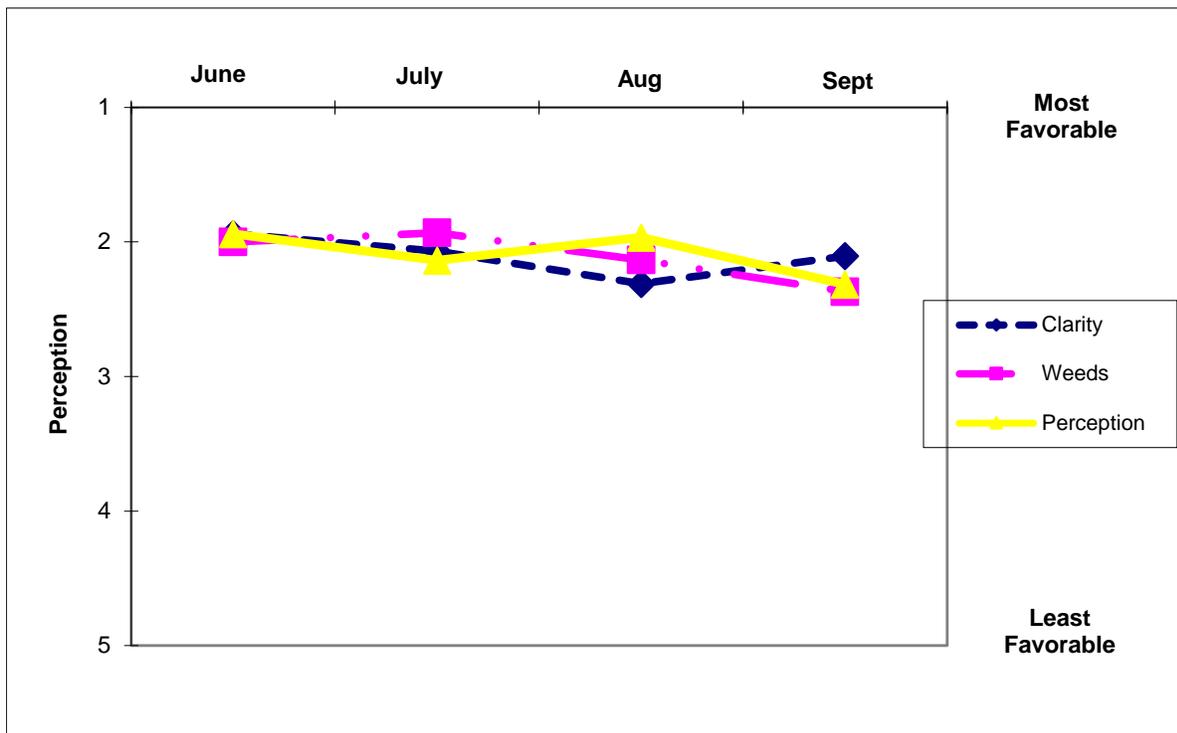
Time Series: Trophic Indicators, Typical Year (1988-2014)



Time Series: Lake Perception Indicators, 2014



Time Series: Lake Perception Indicators, Typical Year (1988-2014)



Appendix A- CSLAP Water Quality Sampling Results for Bradley Brook Reservoir

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
46	Bradley Brook L	6/25/1988	8.5	5.11	1.5	0.012	0.01				5	8.26	203		
46	Bradley Brook L	7/4/1988	8.5	6.71	1.5	0.009	0.01				6	8.13	206		
46	Bradley Brook L	7/10/1988	8.5	5.82	1.5	0.008	0.01				5	8.42	208		1.68
46	Bradley Brook L	7/17/1988	8.5	4.73	1.5	0.007	0.01				2	8.28	205		3.55
46	Bradley Brook L	7/24/1988	8.5	4.07	1.5	0.012	0.01				5	8.17	198		4.74
46	Bradley Brook L	7/31/1988	8.5	3.99	1.5	0.008	0.01				4	8.08	202		2.96
46	Bradley Brook L	8/7/1988	8.5	4.94	1.5	0.008	0.01				6	8.32	192		2.22
46	Bradley Brook L	8/14/1988	8.5	5.27	1.5	0.010	0.01				2	8.36	193		1.75
46	Bradley Brook L	8/21/1988	8.5	4.07	1.5	0.011					8	8.28	190		2.22
46	Bradley Brook L	8/28/1988	8.5	4.51	1.5	0.013	0.02				6	8.26	193		2.81
46	Bradley Brook L	9/5/1988	8.5	3.29	1.5	0.007	0.01				5	7.88	200		3.63
46	Bradley Brook L	6/25/1989	8.5	6.68	1.5	0.006	0.01				5	8.17	200		1.01
46	Bradley Brook L	7/9/1989	8.5	6.33	1.5	0.007					5	8.14	200		2.60
46	Bradley Brook L	7/23/1989	8.5	5.78	1.5	0.006	0.01				5	8.24	197		2.89
46	Bradley Brook L	8/6/1989	8.5	3.92	1.5	0.006					5	8.27	192		2.29
46	Bradley Brook L	8/20/1989	8.5	3.96	1.5	0.006	0.01				2	8.33	195		3.03
46	Bradley Brook L	9/3/1989	13.0	3.58	1.5	0.011					3	8.25	202		2.04
46	Bradley Brook L	9/10/1989	13.0	4.57	1.5	0.019	0.01				5	8.25	203		3.40
46	Bradley Brook L	7/22/1990	5.8	3.66	1.5	0.009					8	8.32	206		4.87
46	Bradley Brook L	7/29/1990	5.8	4.44	1.5	0.009	0.01				4	8.32	204		2.46
46	Bradley Brook L	8/12/1990	8.8	4.34	1.5	0.009					8	8.30	206		2.96
46	Bradley Brook L	8/19/1990	8.8	3.58	1.5	0.009	0.01				6	8.18	204		7.34
46	Bradley Brook L	8/26/1990	9.1	2.70	1.5	0.011					7	8.29	206		7.59
46	Bradley Brook L	9/3/1990	9.0	2.41	1.5	0.010	0.01				5	8.30	204		3.38
46	Bradley Brook L	9/9/1990	9.0	4.80	1.5	0.011					4	8.35	206		6.10
46	Bradley Brook L	9/16/1990	9.0	5.90	1.5	0.017	0.01				9	8.23	202		7.18
46	Bradley Brook L	6/23/1991	9.0	6.13	1.5	0.011	0.04				7	8.26	208		2.87
46	Bradley Brook L	7/7/1991	9.0	3.63	1.5	0.009					4	8.24	206		3.63
46	Bradley Brook L	7/21/1991	8.5	3.99	1.5		0.01				6	7.78	204		2.53
46	Bradley Brook L	7/28/1991	9.0	4.92	1.5	0.008					6	8.16	207		4.36
46	Bradley Brook L	8/11/1991	9.0	2.73	1.5	0.017	0.01				6	8.33	208		4.82
46	Bradley Brook L	8/25/1991	9.0	3.45	1.5	0.013					4	8.37	208		3.86
46	Bradley Brook L	9/2/1991	9.0	3.92	1.5	0.015	0.01				4	8.38	207		7.07
46	Bradley Brook L	9/8/1991	9.0	3.05	1.5	0.013					2	8.35	211		6.32
46	Bradley Brook R	6/14/1992	9.0	4.12	1.5	0.010	0.10				4	8.32	216		2.32
46	Bradley Brook R	6/28/1992	10.0	5.64	1.5	0.019	0.06				5	8.34	214		3.88
46	Bradley Brook R	7/12/1992	10.0	3.02	1.5	0.009	0.01				7	8.38	214		7.17
46	Bradley Brook R	7/26/1992	10.0	3.66	1.5	0.009	0.01				2	8.35	212		8.19
46	Bradley Brook R	8/2/1992	10.0	2.59	1.5	0.013					9	8.36	212		9.52
46	Bradley Brook R	8/8/1992	10.0	2.44	1.5	0.014	0.01				4	8.06	215		7.17
46	Bradley Brook R	9/1/1992	10.0	2.74	1.5	0.015					6	8.06	217		6.97
46	Bradley Brook R	9/6/1992	9.0	3.48	1.5	0.012	0.01				6	8.24	218		4.47
46	Bradley Brook R	6/27/1993	9.0	6.74	1.5	0.017					3	8.17	201		1.49
46	Bradley Brook R	7/5/1993	9.0	7.01	1.5	0.006	0.01				2	8.25	198		1.89
46	Bradley Brook R	7/11/1993	9.0	6.40	1.5	0.006					2	8.24	196		1.98
46	Bradley Brook R	7/25/1993	9.0	3.99	1.5	0.009					2	8.33	193		5.23
46	Bradley Brook R	8/8/1993	8.7	3.86	1.5	0.009					3	8.27	194		3.16
46	Bradley Brook R	8/22/1993	8.7	6.40	1.5	0.011					2	8.14	197		4.84
46	Bradley Brook R	9/5/1993	8.5	5.92	1.5	0.008	0.01				2	8.17	193		3.13
46	Bradley Brook R	7/13/1994	8.4	4.41	1.5	0.009					3	8.11	191		3.38
46	Bradley Brook R	7/25/1994		4.26	1.5	0.007					1	8.18	193		1.64
46	Bradley Brook R	8/8/1994		3.00	1.5	0.008	0.01				6	8.22	192		2.43
46	Bradley Brook R	8/15/1994		2.89	1.5	0.009					4	8.20	193		5.49
46	Bradley Brook R	8/28/1994		3.53	1.5	0.010	0.01				7	8.02	191		2.85
46	Bradley Brook R	9/6/1994		3.78	1.5	0.011					2	8.12	197		4.78
46	Bradley Brook R	9/11/1994		3.64	1.5	0.013	0.01				2	8.09	197		6.42
46	Bradley Brook R	9/28/1994		3.33	1.5	0.013					6	8.15	197		5.44
46	Bradley Brook R	7/24/1995	7.9	4.97	1.5	0.007					5				3.41
46	Bradley Brook R	8/7/1995	8.7	5.32	1.5	0.011					1	8.04	211		3.27
46	Bradley Brook R	8/21/1995		6.40		0.008					1	8.18	210		2.54
46	Bradley Brook R	9/11/1995	8.8	2.80	1.5	0.015					5	8.29	216		6.97
46	Bradley Brook R	7/7/1996	8.8	5.20	1.5	0.008	0.07				1	8.06	204		3.8

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TCOLOR	pH	Cond25	Ca	Chl.a
46	Bradley Brook R	7/22/1996	8.8	3.70	1.5	0.008	0.01				5	8.11	197		8.4
46	Bradley Brook R	8/4/1996	8.8	3.00	1.5	0.010	0.01				1	8.36	203		7.4
46	Bradley Brook R	8/18/1996	8.8	4.60	1.5	0.011	0.01				5	8.42	198		3.1
46	Bradley Brook R	9/1/1996	8.7	4.82	1.5	0.010	0.01				1	8.08	196		1.62
46	Bradley Brook R	9/15/1996	9.0	3.58	1.5	0.010	0.01				5	7.96	200		4.8
46	Bradley Brook R	6/15/1997	8.4	7.70	1.5	0.010	0.14				20	8.05	206		2.71
46	Bradley Brook R	6/29/1997	8.4	7.85	1.5	0.009	0.06				5	7.90	203		3.29
46	Bradley Brook R	7/13/1997				0.010	0.05				5	8.00	204		2.16
46	Bradley Brook R	7/27/1997	8.8	6.25	1.5	0.013	0.01				5	8.13	203		2.73
46	Bradley Brook R	8/10/1997	8.8	4.65	1.5	0.009	0.01				6	8.12	203		2.82
46	Bradley Brook R	8/24/1997	8.7	2.85	1.5	0.016	0.01				6	7.85	206		4.46
46	Bradley Brook R	9/7/1997	8.7	4.27	1.5	0.013	0.01				4	7.94	209		4.25
46	Bradley Brook R	7/18/1998	8.7	6.80	1.5	0.008	0.01				1	8.18	194		1.64
46	Bradley Brook R	7/5/1998	8.5	6.15	1.5		0.01				2	8.00	193		2.01
46	Bradley Brook R	8/3/1998	8.8	6.10	1.5		0.01				1	8.19	197		13.50
46	Bradley Brook R	8/16/1998		6.16	1.5		0.01				3	8.24	194		2.26
46	Bradley Brook R	8/31/1998	8.8	5.89	1.5		0.01				6	8.16	198		2.73
46	Bradley Brook R	6/20/1999	8.8	3.69		0.012	0.01				7	8.04	211		1.27
46	Bradley Brook R	7/5/1999	8.7	3.60		0.009	0.01				6	7.88	206		5.10
46	Bradley Brook R	7/18/1999	8.2	4.73		0.009	0.01				3	8.23	207		3.42
46	Bradley Brook R	8/1/1999	7.8	5.73	1.5	0.008	0.01				5	8.00	203		2.11
46	Bradley Brook R	8/16/1999	8.3	3.93	1.5	0.008	0.01				5	8.03	209		7.65
46	Bradley Brook R	8/30/1999	8.5	4.15	1.5	0.013	0.01				7	8.09	215		2.92
46	Bradley Brook R	9/12/1999	8.8	3.45	1.5	0.014	0.01				6	7.86	214		8.80
46	Bradley Brook R	6/23/2000		3.75	1.5	0.012	0.16				7	7.67	211		1.68
46	Bradley Brook R	7/9/2000	8.8	4.20	1.5	0.014	0.13				4	7.36	215		4.01
46	Bradley Brook R	7/24/2000	8.8	2.65	1.5		0.05				4	7.22	214		8.70
46	Bradley Brook R	8/7/2000	8.8	2.55	1.5	0.012	0.01				3	6.78	218		5.55
46	Bradley Brook R	8/21/2000	7.9	3.58	1.5	0.009	0.01				7	8.16	216		2.80
46	Bradley Brook R	9/4/2000	8.8	6.15	1.5	0.007	0.01				6	7.97	215		2.65
46	Bradley Brook R	6/18/2001	8.5	4.39	1.5	0.012	0.01				7	8.13	104		7.20
46	Bradley Brook R	7/2/2001	8.8	3.45	1.5	0.010	0.06				5	8.14	208		5.20
46	Bradley Brook R	7/16/2001	8.2	2.90	1.5	0.009	0.01				3	8.01	210		6.95
46	Bradley Brook R	7/30/2001	8.8	3.53	1.5	0.014	0.04				2	8.63	205		6.60
46	Bradley Brook R	8/12/2001	8.6	3.09	1.5	0.011	0.01				5	8.52	206		5.95
46	Bradley Brook R	8/27/2001	8.5	2.01	1.5	0.020	0.01				2	8.12	201		13.60
46	Bradley Brook R	9/17/2001	8.5	4.48	1.5	0.015	0.01				7	7.73	211		5.80
46	Bradley Brook R	6/14/2011		9.00	1.5	0.007	0.16	0.06	0.18	58.12	25	7.12	205	30	0.40
46	Bradley Brook R	6/28/2011		8.80	1.5	0.008	0.23	0.06	0.30	84.05	25	7.17	211		0.80
46	Bradley Brook R	7/12/2011	8.5	7.10	1.5	0.015	0.09	0.03	0.34	48.46	22	7.39	193		1.10
46	Bradley Brook R	7/12/2011	grab	bloom											
46	Bradley Brook R	7/26/2011	8.8	5.85	1.5	0.008	0.08	0.02	0.26	67.57	19	7.45	195		2.10
46	Bradley Brook R	8/9/2011	8.7	5.20		0.009	0.03	0.03	0.37	88.73	28	7.09	193	29	2.60
46	Bradley Brook R	8/23/2011	9.0	4.90		0.013	0.03	0.05	0.34	55.16	10	7.31	195		1.10
46	Bradley Brook R	9/6/2011	9.0	7.80	1.5	0.014	0.02	0.03	0.38	60.78	28	7.00	179		1.00
46	Bradley Brook R	9/21/2011	9.0	7.60		0.014	0.02	0.03	0.25	38.81	22	7.28	198		0.40
46	Bradley Brook R	6/5/2012	8.5	7.00		0.009	0.11	0.05	0.22	53.78	17	7.13	171	34	0.10
46	Bradley Brook R	6/19/2012	8.8	5.95	1.5	0.010	0.01	0.04	0.22	46.33	11	7.25	163		0.90
46	Bradley Brook R	7/6/2012	8.9	6.75	1.5	0.008	0.01	0.03	0.21	57.37	21	7.45	197		0.50
46	Bradley Brook R	7/17/2012	8.8	5.90		0.009	0.01	0.03	0.38	90.13	20	7.63	216		2.20
46	Bradley Brook R	7/31/2012		6.10		0.010	0.01	0.01	0.21	46.95	8	7.77	182	31	0.60
46	Bradley Brook R	8/14/2012	8.6	7.80		0.015	0.01	0.03	0.45	67.73	11	7.02	182		1.00
46	Bradley Brook R	8/28/2012	8.5	4.90		0.012	0.01	0.02	0.24	44.75	14	6.73	170		2.20
46	Bradley Brook R	9/12/2012	8.7	8.70	1.5	0.014	0.01	0.04	0.30	48.53	5	7.46	180		0.70
46	Bradley Brook R	6/5/2012	8.5	7.00		0.009	0.11	0.05	0.22	53.78	17	7.13	171	34	0.10
46	Bradley Brook R	6/7/2013	8.5	4.90	1.5	0.009	0.13	0.03	0.36	87.52	9	7.96	215	34	3.80
46	Bradley Brook R	6/7/2013	8.5	4.90	1.5	0.009	0.13	0.03	0.36	87.52	9	7.96	215	34	3.80
46	Bradley Brook R	6/23/2013	9.0	7.10	1.5	0.010			0.34	76.89	14	7.55	192		0.80
46	Bradley Brook R	7/5/2013	8.5	5.05	1.5	0.012	0.03	0.03	0.26	49.69	20	7.69	190		1.20
46	Bradley Brook R	7/19/2013	8.5	6.95	1.5	0.012					19	7.76	198		0.70
46	Bradley Brook R	8/2/2013	8.5	6.00	1.5	0.010	0.01	0.03	0.26	58.82	17	7.63	184		2.10
46	Bradley Brook R	8/17/2013	7.9	6.08	1.5	0.014			0.41	66.01	23	7.23	194		3.70
46	Bradley Brook R	9/1/2013	9.0	6.45	1.5	0.018	0.01	0.02	0.32	40.26	21	7.30	196		2.40
46	Bradley Brook R	6/1/2014	8.6	8.30	1.5	0.009	0.16	0.05	0.38	92.84	12	7.16	212	28.7	0.80
46	Bradley Brook R	6/15/2014	8.3	8.00	1.5	0.007			0.47	145.01	2	7.28	227		2.30
46	Bradley Brook R	6/29/2014	8.5	7.15	1.5	0.007	0.06	0.06	0.35	119.48	6	7.05	192		1.20

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
46	Bradley Brook R	7/11/2014	7.5	5.60	1.5	0.008			0.36	101.43	5	7.40	199		2.10
46	Bradley Brook R	7/27/2014	8.5	6.20	1.5	0.007	0.01	0.03	0.27	83.66	2	7.09	192	26.2	2.80
46	Bradley Brook R	8/10/2014	8.3	7.50	1.5	0.007			0.29	94.47	6	7.25	194		2.30
46	Bradley Brook R	8/23/2014	9.2	5.60	1.5	0.010	0.01	0.01	0.25	55.44	5	7.29	198		3.00
46	Bradley Brook R	9/7/2014	8.4	6.50	1.5	0.008			0.24	63.85	6	6.96	191		2.50
46	Bradley Brook R	7/5/1993	9.0		7.0	0.012									
46	Bradley Brook R	7/25/1993	9.0		7.0	0.012									
46	Bradley Brook R	8/22/1993	8.7		7.0	0.010									
46	Bradley Brook R	7/25/1994				0.019									
46	Bradley Brook R	8/15/1994				0.029									
46	Bradley Brook R	9/6/1994				0.033									
46	Bradley Brook R	9/28/1994				0.027									
46	Bradley Brook R	7/22/1996			7.0	0.012									
46	Bradley Brook R	8/21/1996	8.8		7.0	0.011									
46	Bradley Brook R	9/1/1996			7.0	0.014									
46	Bradley Brook R	9/15/1996			7.5	0.009									
46	Bradley Brook R	6/29/1997				0.014									
46	Bradley Brook R	8/10/1997				0.016									
46	Bradley Brook R	9/7/1997				0.022									
46	Bradley Brook R	7/18/1998				0.012									
46	Bradley Brook R	8/16/1998				0.016									
46	Bradley Brook R	6/14/2011				0.010		0.07							
46	Bradley Brook R	7/12/2011				0.009		0.05							
46	Bradley Brook R	8/9/2011				0.009		0.14							
46	Bradley Brook R	9/6/2011				0.010		0.07							
46	Bradley Brook R	6/5/2012				0.015		0.03							
46	Bradley Brook R	7/6/2012			7.4	0.007		0.01							
46	Bradley Brook R	7/31/2012				0.013		0.02							
46	Bradley Brook R	8/28/2012				0.019		0.03							
46	Bradley Brook R	6/7/2013			8.0	0.010		0.05							
46	Bradley Brook R	7/5/2013			8.0	0.012		0.07							
46	Bradley Brook R	8/2/2013			8.4	0.011		0.02							
46	Bradley Brook R	9/1/2013			7.5	0.015		0.02							
46	Bradley Brook R	6/1/2014			7.0	0.006		0.05							
46	Bradley Brook R	6/15/2014			7.0	0.007									
46	Bradley Brook R	6/29/2014			7.0	0.008		0.08							
46	Bradley Brook R	7/11/2014			7.0	0.009									
46	Bradley Brook R	7/27/2014			7.0	0.003		0.16							
46	Bradley Brook R	8/10/2014			7.0	0.007									
46	Bradley Brook R	8/23/2014			7.5	0.010		0.01							
46	Bradley Brook R	9/7/2014			7.0	0.008									

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
46	Bradley Brook L	6/25/1988	epi	21	22																
46	Bradley Brook L	7/4/1988	epi	20	20																
46	Bradley Brook L	7/10/1988	epi	25	25																
46	Bradley Brook L	7/17/1988	epi	22	23																
46	Bradley Brook L	7/24/1988	epi	17	12																
46	Bradley Brook L	7/31/1988	epi	21	24																
46	Bradley Brook L	8/7/1988	epi	23	26																
46	Bradley Brook L	8/14/1988	epi	26	27																
46	Bradley Brook L	8/21/1988	epi	18	23																
46	Bradley Brook L	8/28/1988	epi	27	23																
46	Bradley Brook L	9/5/1988	epi	15	19																
46	Bradley Brook L	6/25/1989	epi	25	23																
46	Bradley Brook L	7/9/1989	epi	18	26																
46	Bradley Brook L	7/23/1989	epi	21	24																
46	Bradley Brook L	8/6/1989	epi	25	25																
46	Bradley Brook L	8/20/1989	epi	18	22																
46	Bradley Brook L	9/3/1989	epi	15	20																
46	Bradley Brook L	9/10/1989	epi	25	22																
46	Bradley Brook L	7/22/1990	epi	23	23																
46	Bradley Brook L	7/29/1990	epi	25	26																

LN	Num	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB		
46		Bradley Brook L	8/12/1990	epi	26	23																		
46		Bradley Brook L	8/19/1990	epi	15	22																		
46		Bradley Brook L	8/26/1990	epi	25	22																		
46		Bradley Brook L	9/3/1990	epi	16	22																		
46		Bradley Brook L	9/9/1990	epi	10	18																		
46		Bradley Brook L	9/16/1990	epi	12	19																		
46		Bradley Brook L	6/23/1991	epi	21	22																		
46		Bradley Brook L	7/7/1991	epi	24	23																		
46		Bradley Brook L	7/21/1991	epi	29	25																		
46		Bradley Brook L	7/28/1991	epi	20	23																		
46		Bradley Brook L	8/11/1991	epi	16	20																		
46		Bradley Brook L	8/25/1991	epi	21	24																		
46		Bradley Brook L	9/2/1991	epi	18	22																		
46		Bradley Brook L	9/8/1991	epi	20	21																		
46		Bradley Brook R	6/14/1992	epi	25	22	2	2	2	6														
46		Bradley Brook R	6/28/1992	epi	22	19	4	1	2	15														
46		Bradley Brook R	7/12/1992	epi	28	20	3	2	2	145														
46		Bradley Brook R	7/26/1992	epi	17	20	2	1	3	15														
46		Bradley Brook R	8/2/1992	epi	25	20	3	1	2	6														
46		Bradley Brook R	8/8/1992	epi	19	20	3	1	2	45														
46		Bradley Brook R	9/1/1992	epi	15	19	2	1	1	5														
46		Bradley Brook R	9/6/1992	epi	12	17	2	1	2	56														
46		Bradley Brook R	6/27/1993	epi	20	19	2	2	2	15														
46		Bradley Brook R	7/5/1993	epi	25	22	2	2	2	6														
46		Bradley Brook R	7/11/1993	epi	23	24	2	1	3	0														
46		Bradley Brook R	7/25/1993	epi	28	22	3	2	3	4														
46		Bradley Brook R	8/8/1993	epi	18	20	3	2	2	35														
46		Bradley Brook R	8/22/1993	epi	16	20																		
46		Bradley Brook R	9/5/1993	epi	19	23	2	2	2	5														
46		Bradley Brook R	7/13/1994	epi	26	25	2	2	3															
46		Bradley Brook R	7/25/1994	epi	28	25	2	2	2															
46		Bradley Brook R	8/8/1994	epi	19	23	3	2	2															
46		Bradley Brook R	8/15/1994	epi	14	20	2	2	2	5														
46		Bradley Brook R	8/28/1994	epi	22	21	2	2	2															
46		Bradley Brook R	9/6/1994	epi	14	19	2	2	2	5														
46		Bradley Brook R	9/11/1994	epi	15		2	2	4	5														
46		Bradley Brook R	9/28/1994	epi	14		2	2	3	5														
46		Bradley Brook R	7/24/1995	epi	23	25	2	2	1															
46		Bradley Brook R	8/7/1995	epi	24	27	2	2	1															
46		Bradley Brook R	8/21/1995	epi	30	26	2	2	1															
46		Bradley Brook R	9/11/1995	epi	15	20	3	3	3	12														
46		Bradley Brook R	7/7/1996	epi	24	22	2	2	2															
46		Bradley Brook R	7/22/1996	epi	24	22	3	2	3															
46		Bradley Brook R	8/4/1996	epi	23	24	2	2	2														I	
46		Bradley Brook R	8/18/1996	epi	24	23	2	2	2														D	
46		Bradley Brook R	9/1/1996	epi	27	24	2	3	2														D	
46		Bradley Brook R	9/15/1996	epi	14	20	2	3	2	5														
46		Bradley Brook R	6/15/1997	epi	12	20	1	2	1														F	
46		Bradley Brook R	6/29/1997	epi	22	23	2	2	1														F	
46		Bradley Brook R	7/13/1997	epi																			I	
46		Bradley Brook R	7/27/1997	epi	28	25	1	2	1														EF	
46		Bradley Brook R	8/10/1997	epi	20	24	3	2	2															
46		Bradley Brook R	8/24/1997	epi	18	21	3	3	3														F	
46		Bradley Brook R	9/7/1997	epi	19	20	2	2	3	5														
46		Bradley Brook R	7/18/1998	epi	17	25	2	1	1															
46		Bradley Brook R	7/5/1998	epi	23	24	1	1	1															
46		Bradley Brook R	8/3/1998	epi	16	24	2	1	1															
46		Bradley Brook R	8/16/1998	epi	23	24	2	1	1															
46		Bradley Brook R	8/31/1998	epi	17	22	2	3	2															
46		Bradley Brook R	6/20/1999	epi	19	23	3	2	3	2														
46		Bradley Brook R	7/5/1999	epi	24	26	2	2	3															

LN	PN	Date	Site	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
46	Bradley Brook R	7/18/1999	epi	28	26	2	2	1													
46	Bradley Brook R	8/1/1999	epi	28	26		2	2													
46	Bradley Brook R	8/16/1999	epi		22	2	2	3													
46	Bradley Brook R	8/30/1999	epi	21	23	2	2	1													
46	Bradley Brook R	9/12/1999	epi	21	22	2	2	2													
46	Bradley Brook R	6/23/2000	epi	24	23	3	3	3	123												
46	Bradley Brook R	7/9/2000	epi	20	21	2	2	2	3												
46	Bradley Brook R	7/24/2000	epi	21	22	3	2	3	3												
46	Bradley Brook R	8/7/2000	epi	22	23	3	2	3	1												
46	Bradley Brook R	8/21/2000	epi	21	23	3	3	3	1												
46	Bradley Brook R	9/4/2000	epi	18	22	2	2	2	5												
46	Bradley Brook R	6/18/2001	epi	17	22	2	2	2													
46	Bradley Brook R	7/2/2001	epi	15	19	3	2	3	15												
46	Bradley Brook R	7/16/2001	epi	18	21	3	2	3	1												
46	Bradley Brook R	7/30/2001	epi	23	24	2	2	2													
46	Bradley Brook R	8/12/2001	epi	24	27	2	2	2													
46	Bradley Brook R	8/27/2001	epi	24	23	3	3	3	1												
46	Bradley Brook R	9/17/2001	epi	13	19	2	2	2													
46	Bradley Brook R	6/14/2011	epi	14	20	1	2	2	0	0	0	6.80	1.30								
46	Bradley Brook R	6/28/2011	epi	21	22	2	2	2	0	0	0	8.30	1.30	0.15							
46	Bradley Brook R	7/12/2011	epi	23	24	2	2	2	0	4	0	11.90	1.50								
46	Bradley Brook R	7/12/2011	bloom																		
46	Bradley Brook R	7/26/2011	epi	23	26	2	2	2	0	4	4	18.80	0.94	0.54	<0.500	<0.1					
46	Bradley Brook R	7/26/2011	bloom																		
46	Bradley Brook R	8/9/2011	epi	20	24	2	2	2	0	0	0	11.20	1.60								
46	Bradley Brook R	8/23/2011	epi	18	22	2	3	2	0	0	0	13.10	1.70								
46	Bradley Brook R	9/6/2011	epi	14	21	2	3	2	0	0	0	11.10	0.90								
46	Bradley Brook R	9/21/2011	epi	17	18	2	3	2	0	0	0	7.70	1.60								
46	Bradley Brook R	6/5/2012	epi	15	19	2	2	2	5			0.40	0.40	<0.30	<0.417		1.00	0.51			
46	Bradley Brook R	6/19/2012	epi	20	21	2	2	2	0	4	4	1.80	0.40	<0.30	<0.417		1.57	0.48			
46	Bradley Brook R	7/6/2012	epi	24	25	2	2	2	0	4	4	0.10	0.20	<0.30	<0.423		7.04	0.22			
46	Bradley Brook R	7/17/2012	epi	30	26	2	2	2	0	0	4	2.20	0.10	<0.30	<0.328		3.00	1.90			
46	Bradley Brook R	7/31/2012	epi	27	25	2	2	2	0	0	0	1.40	0.30	<0.30	<0.537		1.18	0.60			
46	Bradley Brook R	8/14/2012	epi	20	24	2	2	2	0	0	0	1.70	0.20	0.34	<0.552		2.14	1.37			
46	Bradley Brook R	8/28/2012	epi	25	24	2	2	2	0	0	0	1.00	0.20	0.31	<0.551		1.32	0.57			
46	Bradley Brook R	9/12/2012	epi	19	21	2	3	2	8	0	0	38.00	0.20	0.44	<3.205		0.35	0.35			
46	Bradley Brook R	9/12/2012	bloom											1.23	<2.681		216.50	36.25			
46	Bradley Brook L	6/7/2013	epi	18	18	1	2	3	8	4		1.70	1.10	<0.30	<0.670		1.10	0.00	I		
46	Bradley Brook L	6/23/2013	epi	24	22	2	2	2	0	4	4	1.10	0.40	<0.30	<0.370		0.20	0.00	I	H	
46	Bradley Brook L	7/5/2013	epi	28	26	1	2	2	0	4	0	2.20	0.80	<0.30	<0.510		1.00	0.00	H	H	
46	Bradley Brook L	7/19/2013	epi	32	29	1	2	2	8	7	7	1.60	0.60	<0.30	<0.910		0.50	0.00			
46	Bradley Brook L	8/2/2013	epi	37	25	2	2	2	8	7	0	4.40	0.50	1.78	<0.400		1.00	0.20	I		
46	Bradley Brook L	8/17/2013	epi	20	22	2	3	2	0	0	0	0.40	0.50	0.51	<0.510		0.40	0.00	I	I	
46	Bradley Brook L	9/1/2013	epi	23	25	3	3	3	25	5	0	5.30	0.60	<0.30	<0.570		0.70	0.00	D	I	
46	Bradley Brook L	9/14/2013	epi	12	20	2	3	3	15	0	0	3.40	0.50	0.51	<0.100		0.30	0.00	I	I	
46	Bradley Brook L	6/1/2014	epi	23	19	1	2	1	0	0	0	0.3	0.5	<0.37	<0.09	<0.001	0.00	0.00	I	I	
46	Bradley Brook L	6/15/2014	epi	17	20	1	2	1	0	0	0	0.1	0.1	<0.61	<0.17	<0.001	0.50	0.00	I	I	
46	Bradley Brook L	6/29/2014	epi	25	24	2	2	2	0	0	5	1.2	0.2	<0.48	<0.48	<0.002	0.40	0.00	I	I	
46	Bradley Brook L	7/11/2014	epi	19	24	2	3	2	1	5	0	2.6	0.1	<0.40	<0.21	<0.003	0.30	0.00	I	I	
46	Bradley Brook L	7/27/2014	epi	22	25	2	3	2	0	0	0	2.3	0.2	<0.31	<0.24	<0.002	0.80	0.10	I	I	
46	Bradley Brook L	8/10/2014	epi	19	24	2	3	1	0	0	0	0.7	1.1	<0.28	<0.05	<0.001	0.20	0.00	I	I	
46	Bradley Brook L	8/23/2014	epi	18	22	2	3	2	25	0	0	2.5	0.1	<0.26	<0.10	<0.002	0.20	0.00	I	I	
46	Bradley Brook L	9/7/2014	epi	17	23	2	3	2	0	0	0	2.8	0.10	<0.64	<0.03	<0.001	0.00	0.00	I	I	
46	Bradley Brook R	7/5/1993	hypo	25	16																
46	Bradley Brook R	7/25/1993	hypo	28	22																
46	Bradley Brook R	6/7/2013	hypo		15																
46	Bradley Brook R	7/5/2013	hypo		18																
46	Bradley Brook R	8/2/2013	hypo		25																
46	Bradley Brook R	9/1/2013	hypo		23																
46	Bradley Brook R	6/1/2014	hypo		19																
46	Bradley Brook R	6/15/2014	hypo		21																

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
46	Bradley Brook R	6/29/2014	hypo		21															
46	Bradley Brook R	7/11/2014	hypo		21															
46	Bradley Brook R	7/27/2014	hypo		23															
46	Bradley Brook R	8/10/2014	hypo		23															
46	Bradley Brook R	8/23/2014	hypo		21															
46	Bradley Brook R	9/7/2014	hypo		22															

Legend Information

<i>Indicator</i>	<i>Description</i>	<i>Detection Limit</i>	<i>Standard (S) / Criteria (C)</i>
General Information			
Lnum	lake number (unique to CSLAP)		
Lname	name of lake (as it appears in the Gazetteer of NYS Lakes)		
Date	sampling date		
Field Parameters			
Zbot	lake depth at sampling point, meters (m)		
Zsd	Secchi disk transparency or clarity	0.1m	1.2m (C)
Zsamp	water sample depth (m) (epi = epilimnion, hypo = hypolimnion)	0.1m	none
Tair	air temperature (C)	-10C	none
TH20	water temperature (C)	-10C	none
Laboratory Parameters			
Tot.P	total phosphorus (mg/l)	0.003 mg/l	0.020 mg/l (C)
NOx	nitrate + nitrite (mg/l)	0.01 mg/l	10 mg/l NO3 (S), 2 mg/l NO2 (S)
NH4	total ammonia (mg/l)	0.01 mg/l	2 mg/l NH4 (S)
TN	total nitrogen (mg/l)	0.01 mg/l	none
TN/TP	nitrogen to phosphorus (molar) ratio, = (TKN + NOx)*2.2/TP		none
TCOLOR	true (filtered) color (ptu, platinum color units)	1 ptu	none
pH	powers of hydrogen (S.U., standard pH units)	0.1 S.U.	6.5, 8.5 S.U. (S)
Cond25	specific conductance, corrected to 25C (umho/cm)	1 umho/cm	none
Ca	calcium (mg/l)	1 mg/l	none
Chl.a	chlorophyll a (ug/l)	0.01 ug/l	none
Fe	iron (mg/l)	0.1 mg/l	1.0 mg/l (S)
Mn	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
As	arsenic (ug/l)	1 ug/l	10 ug/l (S)
AQ-PC	Phycocyanin (aquafior) (unitless)	1 unit	none
AQ-Chl	Chlorophyll a (aquafior) (ug/l)	1 ug/l	none
MC-LR	Microcystis-LR (ug/l)	0.01 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
Ana	Anatoxin-a (ug/l)	0.3 ug/l	none
Cyl	Cylindrospermopsis (ug/l)	0.1 ug/l	none
Lake Assessment			
QA	water quality assessment; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
QB	aquatic plant assessment; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other		
QF, QG	Health and safety issues today (QF) and past week (QG); 0 = none, 1 = taste/odor, 2 = GI illness humans/animals, 3 = swimmers itch, 4 = algae blooms, 5 = dead fish, 6 = unusual animals, 7 = other		
HAB form, Shore HAB	HAB evaluation; A=spilled paint, B=pea soup, C=streaks, D=green dots, E=bubbling scum, F=green/brown tint, G=duckweed, H=other, I=no bloom		

Appendix B: Priority Waterbody Listing for Bradley Brook Reservoir

Bradley Brook Reservoir (0602-0111)

NoKnownImpct

Waterbody Location Information

Revised: 07/08/2009

Water Index No: SR- 44-80-P154
Hydro Unit Code: 02050102/020 **Str Class:** B
Waterbody Type: Lake(R) (Mesotrophic) **Reg/County:** 7/Madison Co. (27)
Waterbody Size: 139.2 Acres **Quad Map:** WEST EATON (J-18-4)
Seg Description: entire lake

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: ---
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Water Quality Sampling

Bradley Brook reservoir has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1988 and continuing through 2001. An Interpretive Summary report of the findings of this sampling was published in 2002. These data indicate that the lake continues to be best characterized as mesotrophic, or moderately productive, despite slightly higher productivity in more recent years. Phosphorus levels in the lake only rarely exceed the state guidance values indicating impacted/stressed recreational uses. Corresponding transparency measurements routinely exceed the recommended minimum for swimming beaches. Measurements of pH are occasionally high but typically fall within the state water quality range of 6.5 to 8.5. The lake water is weakly colored, and color does not appear to limit lake clarity. (DEC/DOW, BWAM/CSLAP, September 2002)

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 very favorable. The recreational suitability of the lake is described most frequently as "excellent." The lake itself is most often described as "not quite crystal clear," an assessment that is consistent with measured water quality characteristics. Assessments have noted that aquatic plants typically grow to the lake surface, but are not frequently cited as impacting recreational uses. (DEC/DOW, BWAM/CSLAP, September

2002)

Lake Uses

This lake waterbody is designated class B, suitable for use as a public bathing beach and for general recreation use and aquatic life support, but not for drinking 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.

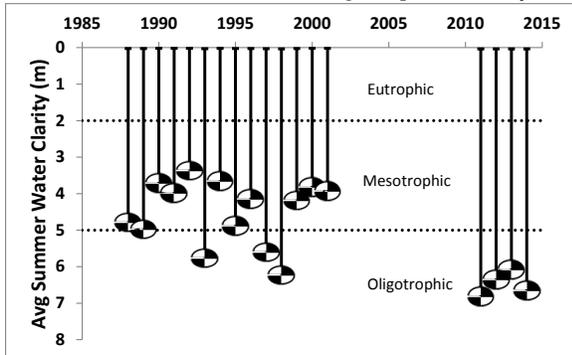
Segment Description

This segment includes the total area of the entire lake.

Appendix C – Long Term Trends: Bradley Brook Reservoir

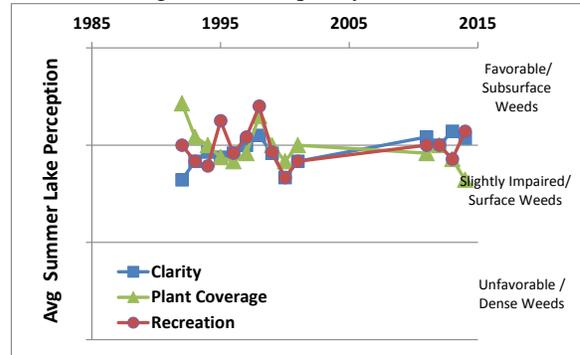
Long Term Trends: Water Clarity

- Clarity much higher in last four years
- Most readings typical of *mesoligotrophic* lakes, but more like *oligotrophic* last 4 yrs



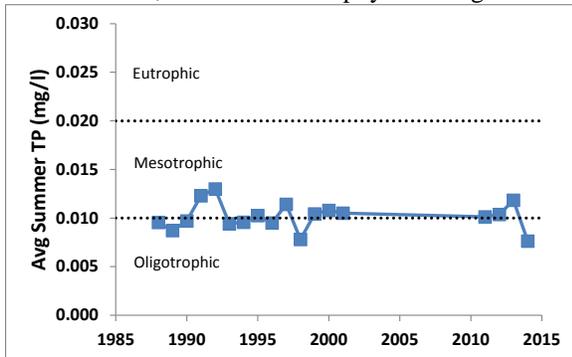
Long Term Trends: Lake Perception

- More favorable with higher clarity last 4 yrs
- Recreational perception only linked to changes in water quality when blooms occur



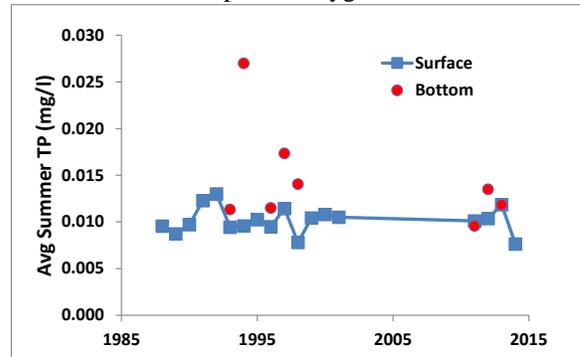
Long Term Trends: Phosphorus

- No long term trend but lower in 2014
- Most readings typical of *mesoligotrophic* lakes, similar to chlorophyll readings



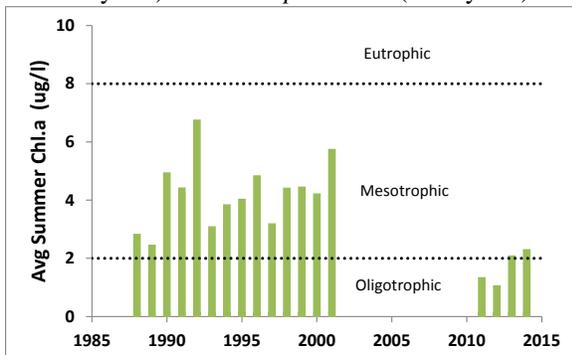
Long Term Trends: Bottom Phosphorus

- Bottom readings similar to surface TP
- Suggests that thermal layers are weak or only limited deepwater oxygen deficits



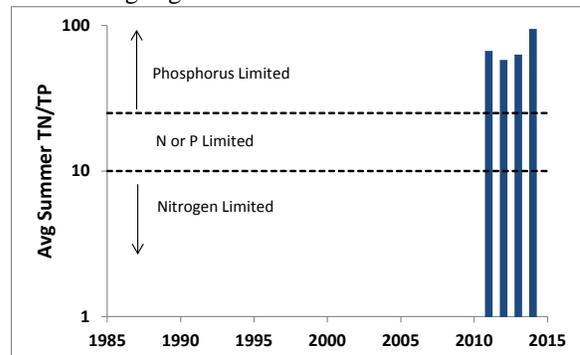
Long Term Trends: Chlorophyll a

- Much lower readings last four years
- Most readings typical of *oligotrophic* (last 4 years) to *mesotrophic* lakes (most years)



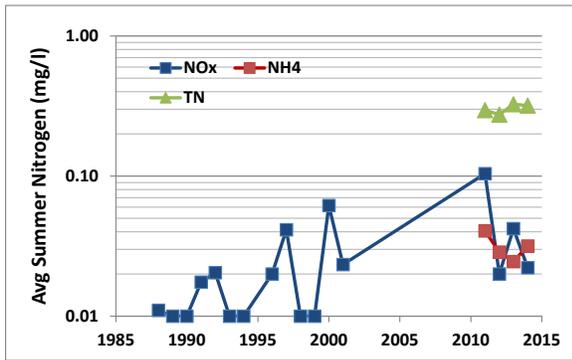
Long Term Trends: N:P Ratio

- Not enough data to evaluate trends
- Most readings indicate phosphorus limits algae growth



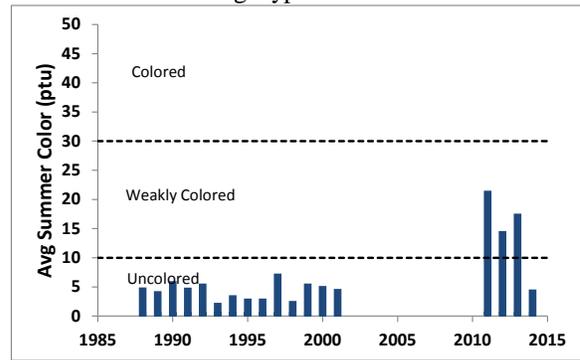
Long Term Trends: Nitrogen

- No trends apparent in NO_x readings
- Low nitrate, ammonia and total nitrogen



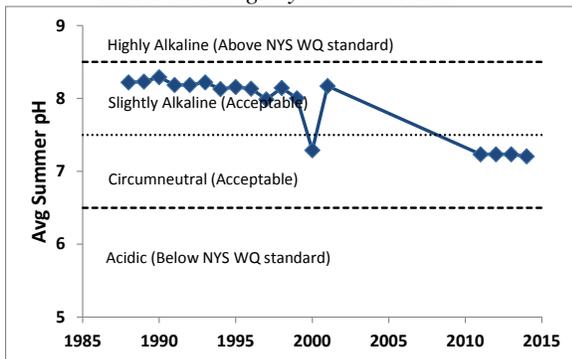
Long Term Trends: Color

- Much higher color readings in last four years; may be due to lab change in 2002
- Most readings typical of *uncolored* lakes



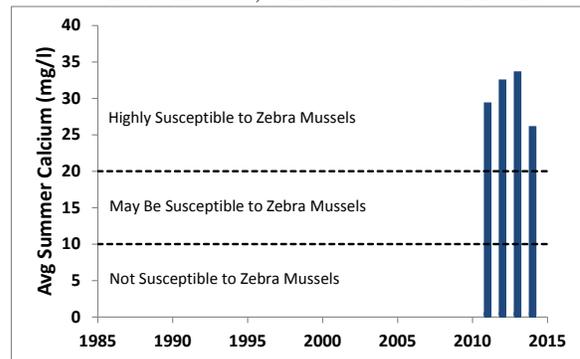
Long Term Trends: pH

- pH much lower in last four years
- Most readings now typical of *circumneutral* rather than *slightly alkaline* lakes



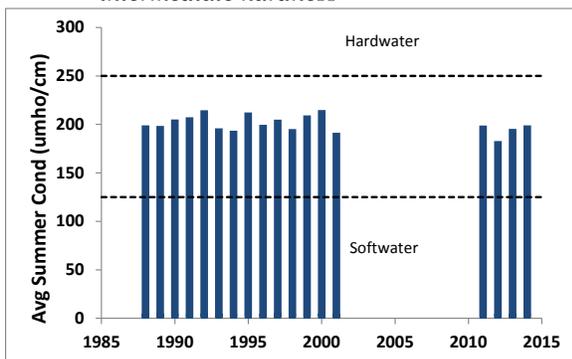
Long Term Trends: Calcium

- Not enough data to evaluate trends
- Most readings indicate high susceptibility to zebra mussels, which haven't been found



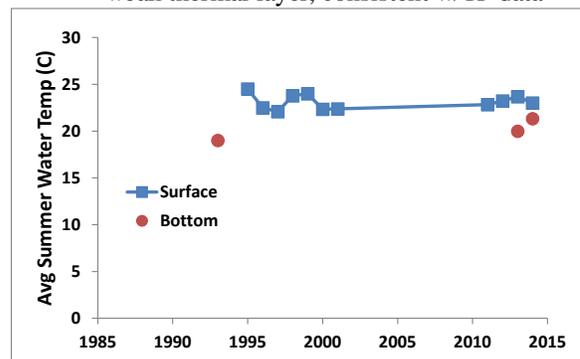
Long Term Trends: Conductivity

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



Long Term Trends: Water Temperature

- No trends apparent
- Deepwater temperature readings indicate weak thermal layer, consistent w/TP data



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 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.

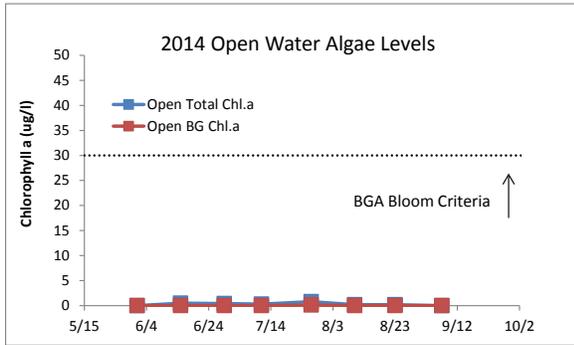


Figure D1:
2013 Open Water Total and BGA Chl.a

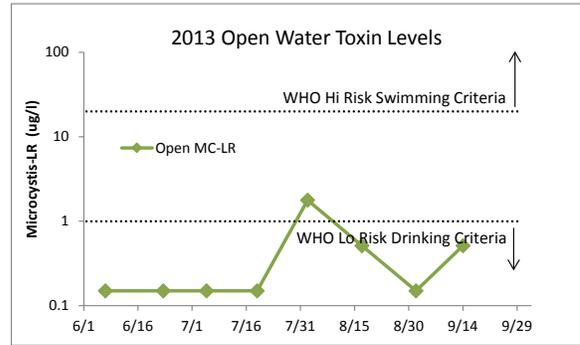


Figure D2:
2013 Open Water Microcystin-LR



Figure D3:
2013 Shoreline Total and BGA Chl.a

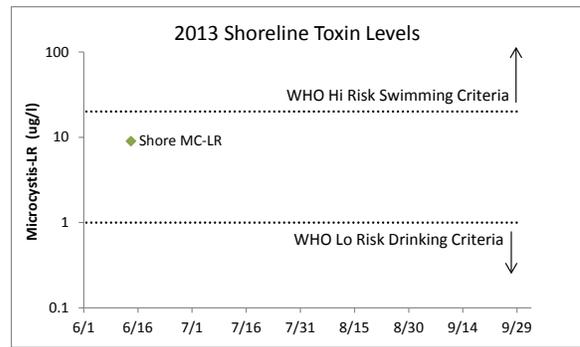


Figure D4:
2013 Shoreline Microcystin-LR

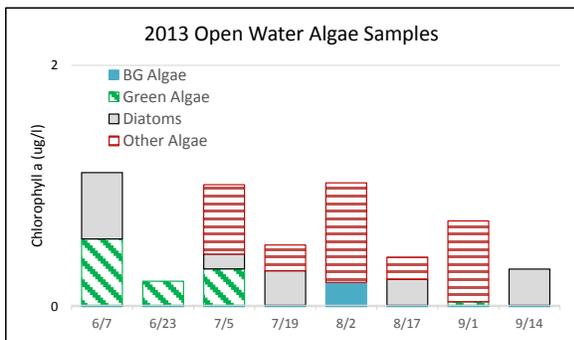


Figure D5:
2013 Open Water Algae Types

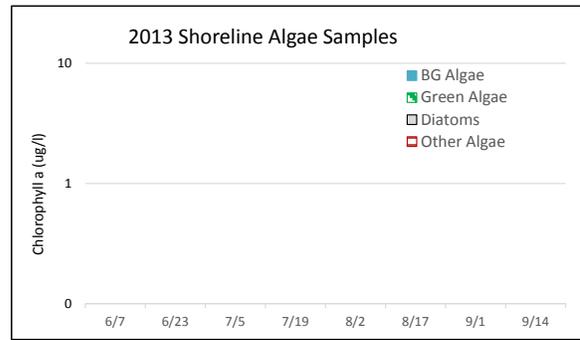


Figure D6:
2013 Shoreline Algae Types

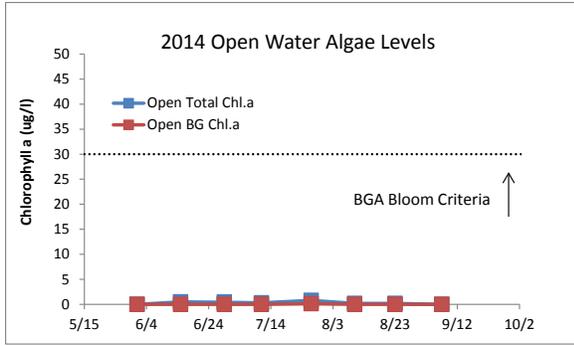


Figure D7:
2014 Open Water Total and BGA Chl.a

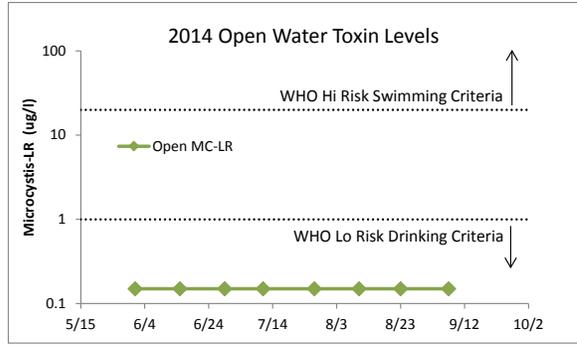


Figure D8:
2014 Open Water Microcystin-LR



Figure D9:
2014 Shoreline Total and BGA Chl.a

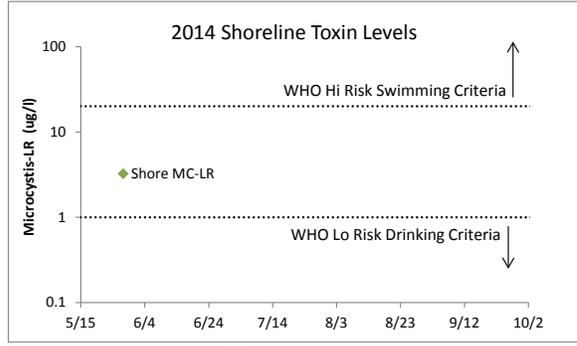


Figure D10:
2014 Shoreline Microcystin-LR

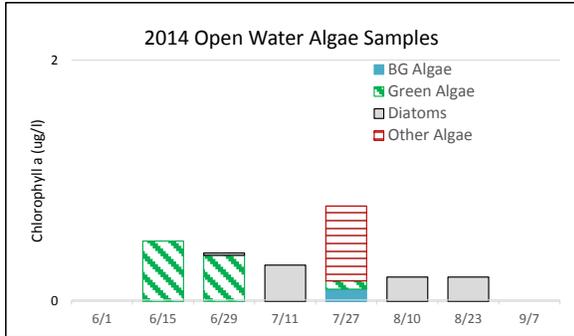


Figure D11:
2013 Open Water Algae Types

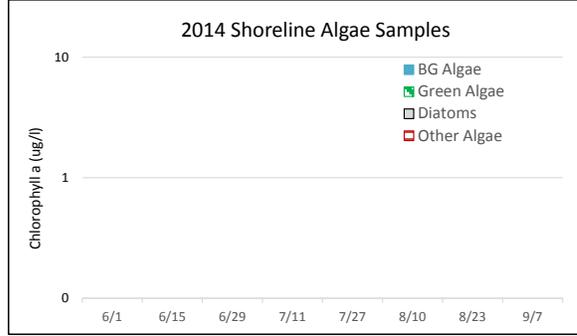


Figure D12:
2014 Shoreline Algae Types

Appendix E: AIS Species in Madison County

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

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

Aquatic Invasive Species – Madison County			
Waterbody	Kingdom	Common name	Scientific name
Bradley Brook Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Bradley Brook Reservoir	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Cazenovia Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Cazenovia Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Cazenovia Lake	Plant	Starry stonewort	<i>Nitellopsis obtusa</i>
Cazenovia Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Craine Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
DeRuyter Reservoir	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
DeRuyter Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
DeRuyter Reservoir	Plant	Banded mystery snail	<i>Viviparus georgianus</i>
Earlville Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Eaton Brook Reservoir	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Eaton Reservoir	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Eaton Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Eaton Reservoir	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Gorton Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Hatch Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Hatch Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Hatch Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lake Moraine	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lake Moraine	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lebanon Reservoir	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lebanon Reservoir	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Leland Pond	Animal	Zebra mussel	<i>Dreissena polymorpha</i>

Waterbody	Kingdom	Common name	Scientific name
Leland Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Leland Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Lower Leland Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Lower Leland Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Madison Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Mud Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Mud Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Oneida Lake	Plant	Water chestnut	<i>Trapa natans</i>
Stoney Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Tuscarora Lake	Animal	Zebra mussel	<i>Dreissena polymorpha</i>
Tuscarora Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Tuscarora Lake	Plant	Brittle naiad	<i>Najas minor</i>
Tuscarora Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Unadilla River near Leonardsville	Animal	Asian Clam	<i>Corbicula fluminea</i>
Upper Leland Pond	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Upper Leland Pond	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>

Appendix F: Watershed and Land Use Map for Bradley Brook Reservoir

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.

