

2009 Water Testing Report

Lakes Environmental Association



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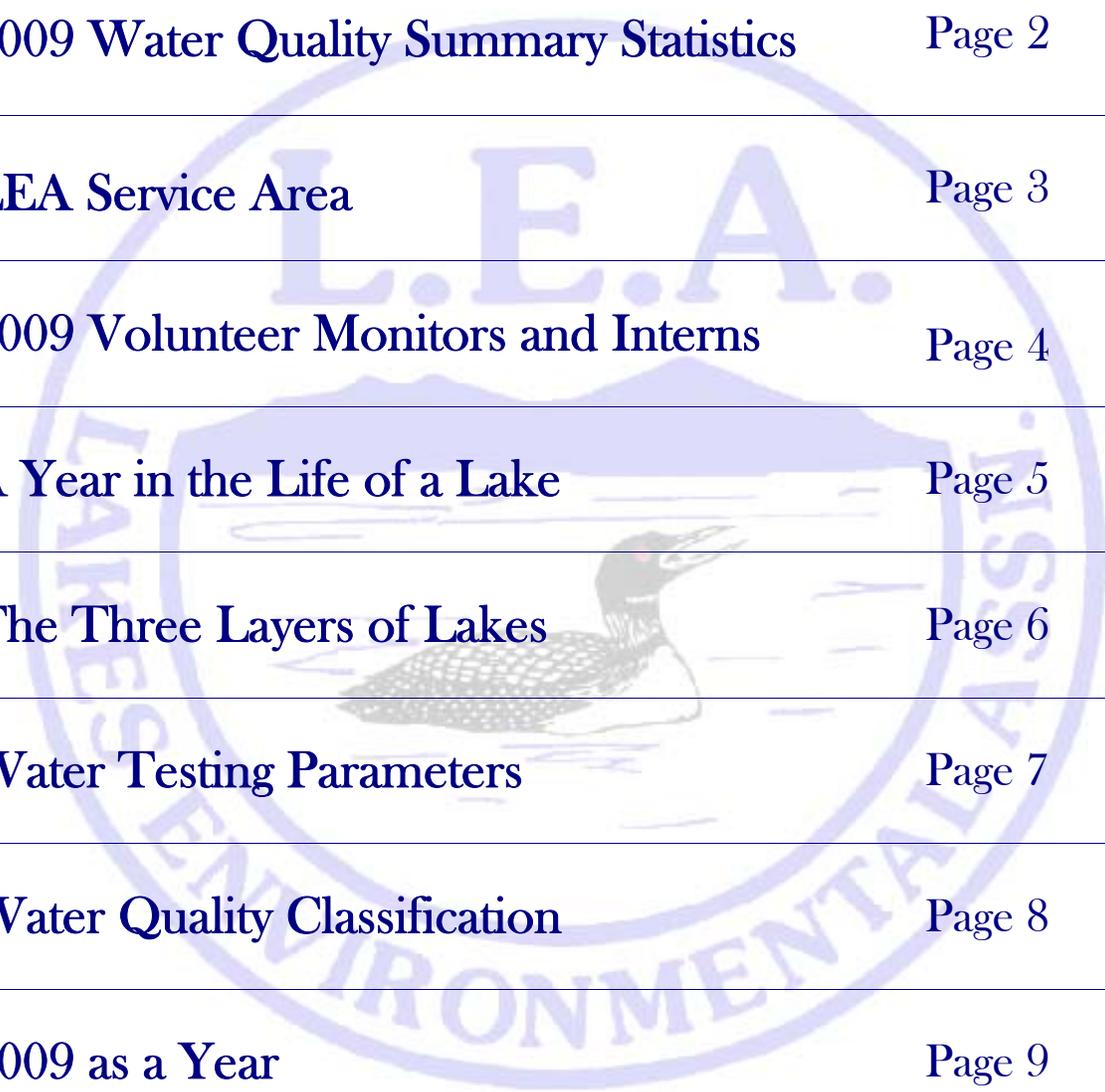
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Please join LEA!

If you swim, boat, fish or simply believe Maine wouldn't be Maine without clear, clean lakes and ponds, please join the Lakes Environmental Association and protect Maine's lakes now and for future generations. Our lakes face serious threats, from erosion to invasive plants. Since 1970, LEA has worked to protect the lakes and ponds of Western Maine through water quality testing, watershed education and outreach programs.

37 lakes tested

LEA protects water quality by helping landowners avoid problems such as erosion and by testing the waters of 37 lakes in Western Maine with help from volunteers and support from the Towns of Bridgton, Denmark, Harrison, Naples, Sweden and Waterford.

LEA leads the milfoil battle

Invasive aquatic plants, such as milfoil, are not native to Maine waters. Once they invade a lake or stream, they:

- Spread rapidly and kill beneficial native plants.
- Form dense mats of vegetation, making it difficult to swim, fish or boat.
- Alter native fish habitats
- Lower waterfront property values.

Watershed education

LEA offers environmental education programs to local schools, reaching roughly 500 students annually. Many more people enjoy nature at LEA's Holt Pond Preserve and others join in the Caplan Series of nature pro-

Landowner and Municipal Assistance

LEA provides free technical assistance to watershed residents interested in preventing erosion on their property. This service, called the "Clean Lake Check Up" helps educate citizens about simple erosion control techniques and existing land use regulations. LEA also works with municipalities on comprehensive planning, natural resources inventories and ordinance development.



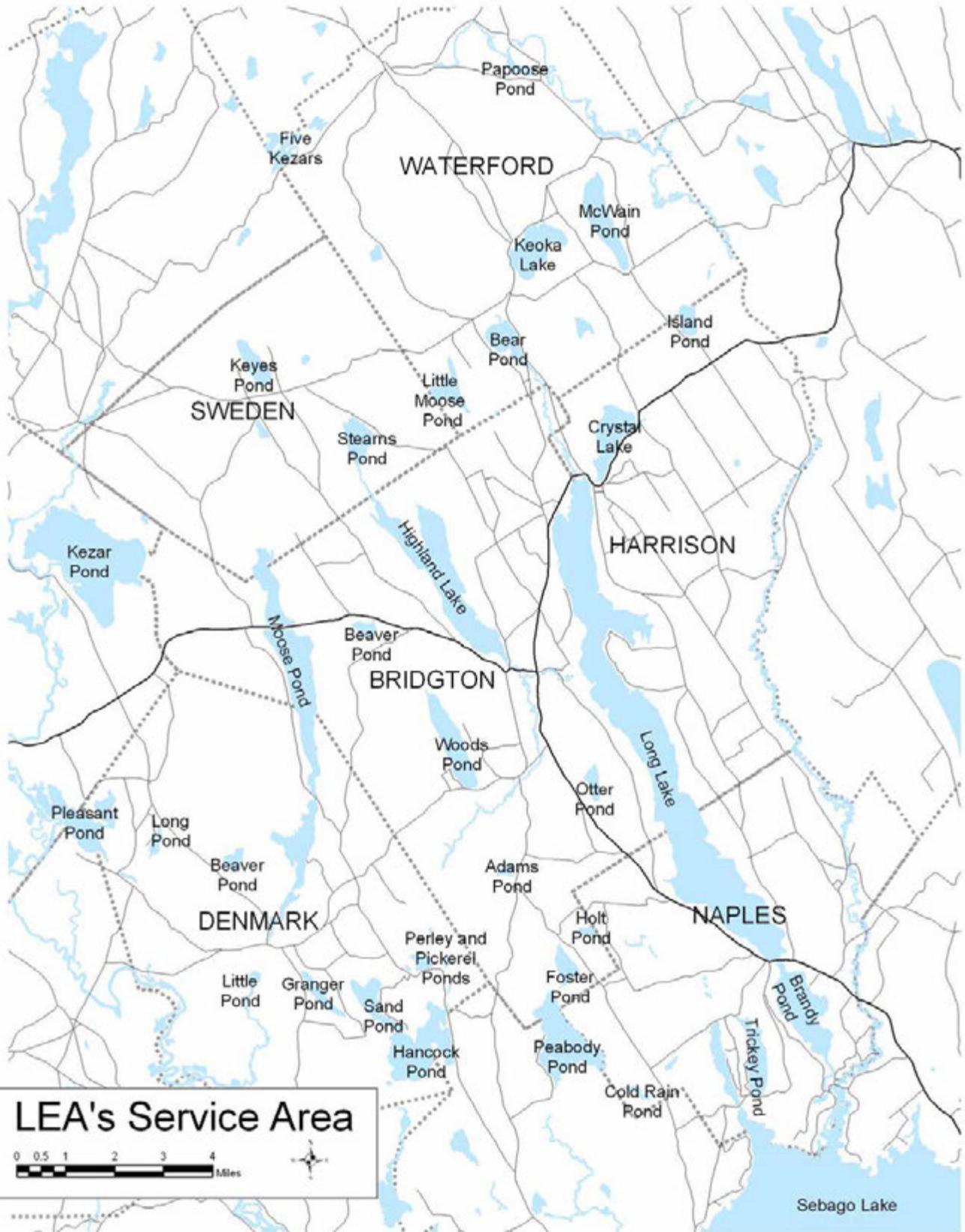
Thousands of students have learned about watersheds on LEA's "Hey You!" cruises.

You can become an LEA member with a donation of any amount. Just mail a check to LEA, 230 Main St., Bridgton, ME 04009 or join online at www.mainelakes.org.

2009 water quality at a glance

Lake	Surface Area (acres)	Watershed Area (acres)	Max. Depth (ft)	Av. Secchi (m)	Av. Color (SPU)	Av. Chl-A (ppb)	Av. Phos. (ppb)	Av. PH	Degree of Concern
ADAMS POND	43	196	51	7.0	11	3.5	8.5	6.8	High
BACK POND	62	584	33	6.4	15	2.0	6.6	6.7	Avg/Mod
BEAR POND	250	5,331	72	4.9	19	4.3	10.3	6.7	Avg/Mod
BEAVER P. (Bridgton)	69	1,648	35	4.9	31	3.6	9.5	6.7	High
BEAVER P. (Denmark)	80	1,288	8	2.5	20	3.1	10.0	6.7	Average
BRANDY POND	733	2,300	44	6.2	16	2.6	7.4	6.7	Mod/High
COLD RAIN POND	36	505	36	4.5	26	5.0	10.0	6.6	High
CRYSTAL LAKE	446	5,345	65	4.9	22	2.9	9.1	6.6	High
FOSTER POND	149	1,090	28	7.5	11	2.2	7.0	6.7	Average
GRANGER POND	125	642	28	7.5	12	2.4	9.5	6.7	High
HANCOCK POND	858	2,222	59	7.0	14	2.8	5.4	6.8	Mod/High
HIGHLAND LAKE	1,295	5,101	50	6.3	12	3.0	6.1	6.7	High
HOLT POND	41	2,118	10	3.0	50	2.4	12.0	6.4	Average
ISLAND POND	115	1,128	48	5.3	18	3.1	8.0	6.7	Mod/High
JEWETT POND	43	638	41	4.3	38	4.2	12.0	6.3	High
KEOKA LAKE	460	3,808	42	5.5	21	4.9	10.0	6.8	Mod/High
KEYES POND	191	1,213	42	6.0	19	3.9	8.0	6.7	Mod/High
KEZAR POND	1,851	10,779	12	3.2	25	3.9	18.0	6.4	Average
LITTLE MOOSE POND	195	1,184	43	7.2	12	3.0	5.9	6.6	Mod/High
LITTLE POND	33	633	13	4.2	15	2.5	7.0	6.5	Avg/Mod
LONG LAKE	4,935	33,871	59	5.9	17	2.8	7.3	6.7	High
LONG POND	44	217	20	5.9	10	3.7	8.0	6.6	Average
McWAIN POND	445	2,505	42	5.8	20	2.7	7.4	6.6	Mod/High
MIDDLE POND	72	231	50	5.0	22	2.4	7.9	6.5	High
MOOSE POND (Main)	1295	7,258	70	6.6	14	3.1	6.0	6.7	High
MOOSE POND (North)	323	10,462	20	4.8	31	3.3	6.0	6.7	Moderate
MUD POND	45	1,661	35	3.6	44	4.7	15.0	6.2	Moderate
OTTER POND	90	814	21	3.7	55	3.8	10.0	6.6	Moderate
PAPOOSE POND	70	192	15	3.2	30	4.2	17.0	6.4	Mod/High
PEABODY POND	740	2,522	64	6.8	12	2.9	6.8	6.7	Mod/High
PERLEY POND	68	293	27	4.3	33	2.7	7.0	6.4	Moderate
PICKEREL POND	17	290	18	5.1	30	2.4	6.0	6.4	Average
PLEASANT POND	604	4,624	11	2.5	55	5.5	19.0	6.2	Moderate
SAND POND	256	1,394	49	6.1	17	3.2	8.9	6.7	High
SEBAGO LAKE	29,526	122,551	326	9.3	10	1.1	5.2	6.7	Average
STEARNS POND	248	4,116	48	4.6	24	3.6	10.6	6.6	Mod/High
TRICKEY POND	315	555	59	10.1	5	2.0	5.0	6.8	Moderate
WOODS POND	462	3,229	29	4.3	37	2.9	9.6	6.4	Average

Note: Secchi disk readings, color, chlorophyll-a, phosphorus and pH are yearly averages from epilimnetic surface cores.



LEA's Service Area

0 0.5 1 2 3 4 Miles



LEA would not be able to test the 37 lakes and ponds of this area without strong support from our surrounding community. Every year, we rely on volunteer monitors, lakefront landowners, summer interns and financial support from the Towns of Bridgton, Denmark, Harrison, Naples, Sweden, and Waterford to continue to collect and analyze lake water quality. **Thank you for all your help!**

2009 Volunteer Monitors and Lake Partners

Harold Arthur	Richard LaRose	Blake Schindler
Richard and Andy Buck	Long Lake Marina	Jane Seeds
Camp Tapawingo	Bob Mahanor	Carolyn Stanhope
Steve Cavicci	Bob Mercier	Foster & Marcella Shibles
Janet Coulter	Richard and Daphne Meyer	Arthur and Jean Schilling
Ken Forde	Earl Morse	Linda Shane
Jean Forshay	Naples Marina	Bob Simmons
Bill Grady	Papoose Pond Campground	Don & Pat Sutherland
Nelson Gouterman	Barry & Donna Patrie	Bob & Ellen Tompkins
Bill & Nancy Hanger	Nancy Pike	Larry and Jan Tuck
Janet Healey	Jean Preis	Shirley Verhoorn
Dick Johnson	Carol and Stan Rothenberg	Camp Wigwam
Kokosing	Don Rung	Rich & Nancy Worthington

2009 Water testing interns

Matt Barnett	Amy Tragert	Conrad Ward
Kristy Garcia		Marguerite Wiser



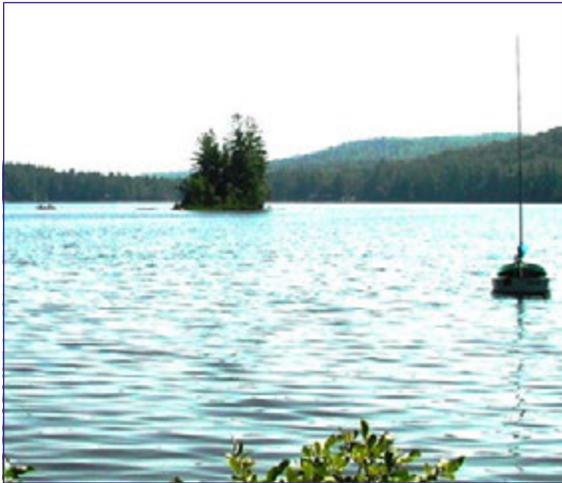
A year in the life of a lake

Winter is a quiet time. Ice blocks out the sunlight and also prevents oxygen from being replenished in lake waters because there is no wind mixing. With little light below the ice and gradually diminishing oxygen levels, plants stop growing. Most animals greatly slow their metabolism or go into hibernation.



Spring is a period of rejuvenation for the lake. After the ice melts, all of the water is nearly the same temperature from top to bottom. During this period, strong winds can thoroughly mix the water column allowing for oxygen to be replenished throughout the entire lake.

This period is called spring turnover. Heavy rains, combined with snow melt and saturated soils are a big concern in the spring. Water-logged soils are very prone to erosion and can contribute a significant amount of phosphorus to the lake. Every soil particle that reaches the lake has phosphorus attached to it.



Summer arrives and deeper lakes will gradually stratify into a warm top layer and a cold bottom layer, separated by a thermocline zone where temperature and oxygen levels change rapidly. The upper, warm layers are constantly mixed by winds, which “blend in” oxygen. The cold, bottom waters are essentially cut off from oxygen at the onset of stratification. Cold water fish, such as trout and landlocked salmon, need this thermal layering to survive in the warm summer months and they also need a healthy supply of oxygen in these deep waters to grow and reproduce.

Fall comes and so do the cooler winds that chill the warm upper waters until the temperature differential weakens and stratification breaks down. As in Spring, strong winds cause the lake to turn over, which allows oxygen to be replenished throughout the water column.



The three layers of lakes

The critical element for understanding lake health is phosphorus. It's the link between what goes on in the watershed and what happens in the lake. Activities that cause erosion and sedimentation allow phosphorus from the land to be transported to the lake water.

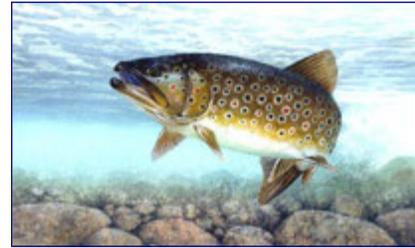
Phosphorus is a naturally occurring nutrient that's abundant on land but quite scarce in lake waters. Algae populations are typically limited by phosphorus concentrations in the water. But when more phosphorus comes into a lake, the added nutrients spur increases in algae growth.

More algae growth causes the water to be less clear. Too much algae will also use up the oxygen in the bottom of the lake. When algae die they drift to the lake bottom and are decomposed by bacteria in a process that consumes the limited oxygen supply. If deep water oxygen levels get too low, cold water fish are unable to grow or reproduce.

If there's no oxygen available at the bottom of a lake, another detrimental process called phosphorus recycling can occur. Phosphorus from sediments on the bottom become re-suspended in the water column. That doubles the lake's nutrient problem, since phosphorus is now coming from watershed as well as the lake itself.

Lake
Depth

0-30
feet



Brook Trout

Epilimnion

The warm upper waters are sunlit, wind-mixed and oxygen rich.



Landlocked salmon

30-36
feet

Metalimnion

This layer in the water column, also known as the thermocline, acts as a thermal barrier that prevents the interchange of nutrients between the warm upper waters and the cold bottom waters.



Lake trout, also known as togue

Below
36
feet

Hypolimnion

In the cold water at the bottom of lakes, food for most creatures is in short supply, and the reduced temperatures and light penetration prevent plants from growing.

Water Quality Testing Parameters

LEA's testing program is based on parameters that provide a comprehensive indication of overall lake health. Tests are done for transparency, temperature, oxygen, phosphorus, chlorophyll, color, conductivity, pH, and alkalinity.

Transparency is a measure of clarity and is done using a Secchi disk. An 8 inch round disk divided into black and white quarters is lowered into the water until it can no longer be seen. The depth at which it disappears is recorded in meters. Transparency is affected by the color of the water and the presence of algae and suspended sediments.

Temperature is measured at one-meter intervals from the surface to the bottom of the lake. This sampling profile shows thermal stratification in the lake. Lakes deep enough to stratify will divide into three distinct layers: the epilimnion, metalimnion, and hypolimnion. The epilimnion is comprised of the warm surface waters. The hypolimnion is made up of the deep, colder waters. The metalimnion, also known as the thermocline, is a thin transition zone of rapidly decreasing temperature between the upper and lower layers. Temperature is recorded in degrees Celsius.

Phosphorus is a nutrient that is usually present in only small concentrations in the water column. It is needed by algae for growth and reproduction and can therefore give an indication of the potential for an algal bloom. Algal blooms caused by excess phosphorus loading can deplete dissolved oxygen levels in deep water. Phosphorus is measured in parts per billion (ppb).

Dissolved oxygen is also measured at one-meter intervals from the surface to the bottom of the lake. Over the course of the summer, oxygen is depleted in the bottom waters through the process of decomposition of organic matter like dead algae. When there is excessive decomposition, all available oxygen is used up and coldwater fisheries are threatened. If dissolved oxygen concentrations are significantly depleted in bottom waters, a condition occurs which allows phosphorus to be released into the water column from bottom sediments. This is called phosphorus recycling and can cause increased algal growth to further deplete lake oxygen levels. During the fall, cooler temperatures and winds cause the lake to de-stratify and oxygen is replenished in the deep waters as the lake "turns over" and mixes. The same mixing of waters occurs in the early spring right after ice-out. Dissolved oxygen is measured in parts per million (ppm).

Chlorophyll-A is a pigment found in algae. Chlorophyll sampling in a lake gives a measure of the amount of algae present in the water column. Chlorophyll concentrations are measured in parts per billion (ppb).

Conductivity measures the ability of water to carry electrical current. Pollutants in the water will generally increase lake conductivity. Fishery biologists will often use measurements of conductivity to calculate fish yield estimates. Conductivity is measured in micro Siemens (μ S).

Color is a measure of tannic or humic acids in the water. These usually originate in upstream bogs from organic decomposition. Chlorophyll results are more important on lakes that are highly colored because phosphorus and transparency results in those lakes are less accurate. Color is measured in Standard Platinum Units (SPU).

pH is important in determining the plant and animal species living in a lake because it reflects how acidic or basic the water is. pH is a measurement of the instantaneous free hydrogen ion

concentration in a water sample. Bogs or highly colored lakes tend to be more acidic (have a lower pH).

Alkalinity is a measure of the amount of calcium carbonate in the water and it reflects the ability of the water to buffer pH changes. In Maine lakes, alkalinity generally ranges from 4 - 20 parts per million (ppm). A higher alkalinity indicates that a lake will be able to withstand the effects of acid rain longer than lakes with lower alkalinity. If acidic precipitation is affecting a lake, a reduction in alkalinity will occur before a drop in pH.

Water Quality Classification

While all lakes are sensitive to land use and activities within their watershed, the health and longevity of some lakes is more precarious than others. LEA classifies lakes into categories based on their overall health and susceptibility to algal blooms. Lakes in the *Average Degree of Concern* category are those lakes that are not currently showing water quality problems that are likely a result of human activity. The *Moderate Degree of Concern* category describes lakes where testing shows routine dissolved oxygen depletion, elevated phosphorus levels or a potential for phosphorus recycling. The *High Degree of Concern* category is reserved for those lakes that routinely show signs of phosphorus recycling, have a cold water fishery that is regularly impacted by oxygen depletion or have had algal blooms in the past.

The following criteria are used for reviewing transparency, phosphorus, chlorophyll and color data for each lake:

<u>Transparency (m)</u> <u>in meters</u>		<u>Phosphorus (ppb)</u> <u>in parts per billion</u>		<u>Chlorophyll-A (ppb)</u> <u>in parts per billion</u>		<u>Color (SPU)</u> <u>Standard Platinum Units</u>	
10.0 +	excellent	less than 5.0	low	less than 2.0	low	less than 10.0	low
7.1 - 10.0	good	5.1 - 12.0	moderate	2.1 - 7.0	moderate	10.1 - 25.0	moderate
3.1 - 7.0	moderate	12.1 - 20.0	high	7.1 - 12.0	high	25.1 - 60.0	high
less than 3.0	poor	20.1 +	very high	12.1 +	very high	60.1 +	very high



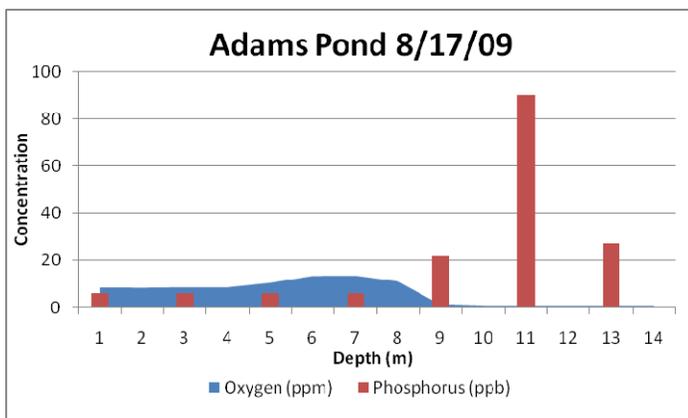
An intern pours off a sample from a deep water grab to be analyzed later for phosphorus concentration.

2009 as a Year

Overall, 2009 was not a good year for most of the lakes LEA samples. This was not a complete surprise considering the unusually warm spring followed by the wettest summer on record for Portland – over 3 inches more rain than the previous wettest summer! The “gully washers” were also more frequent than normal. Intense storms which produced more than 3 inches of rain during a 24 hour period were recorded in June, July and August this past summer. These types of storms cause a large amount of erosion within the watershed and they fill our lakes and ponds with sediment and nutrients. This in turn reduces clarity and increases phosphorus and algal populations. Looking at all the lakes we test on the whole, nearly 2/3rds showed a decline in water clarity. More than half had higher levels of phosphorus. Chlorophyll, which is a measure of the amount of green pigment found in algae is the hardest to correlate because it is influenced by water temperature, turbidity and sunlight as well as the amount of biologically available phosphorus. Chlorophyll levels were split down the middle with about half the lakes we test showing better results than normal and the other half showing worse results.

Individual Lake Summaries:

Adams Pond – The average Secchi disk reading of 7.0 meters was less deep than the long-term average of 7.2 meters. Again this year, low oxygen conditions were observed in late May and continued in the bottom four to five meters of the water column throughout the remainder of the sampling season. Phosphorus concentrations from the surface waters averaged 8.5 ppb for the season, which is higher than the long-term average of 6.6. In the waters below the thermocline, phosphorus concentrations dramatically increased to high levels and averaged 46.3 ppb. These conditions have been observed in previous years and are indicative of phosphorus recycling. Alkalinity averaged 10 ppm and pH averaged 6.8 for the year. Both readings were close to their long-term averages. Chlorophyll averaged 3.5 ppb, which was above the long-term average of 2.5 ppb. Average conductivity of 31 μ s was lower than the long-term average of 38 μ s. Average color was 11 SPU, which is the same as the long-term average. Dissolved oxygen depletion and elevated phosphorus levels in the bottom waters are frequently observed in Adams Pond. For these reasons, the pond remains in the **HIGH** degree of concern category.

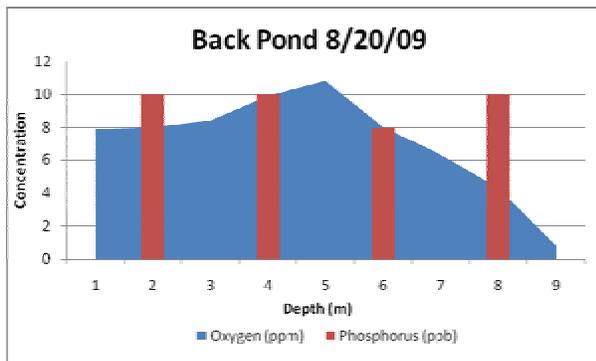


Surface Area:	43 acres
Maximum Depth:	51 feet
Mean Depth:	27 feet
Volume:	955 acres/feet
Watershed Area:	196 acres
Flushing Rate:	0.54 flushes per year
Elevation:	640 feet

Adams Pond Quick Statistics 2009 Average Verses the Long Term Average:

Secchi : Worse
Chlorophyll: Worse
Phosphorus: Worse

Back Pond - The 2009 average Secchi disk reading of 6.4 meters was deeper than the long-term average of 6.2 meters. Mild dissolved oxygen depletion occurred again in the bottom 2 meters of the water column beginning in July. Phosphorus concentrations in the surface waters averaged 6.6 ppb, which was higher than the long-term average of 6.2 ppb. Phosphorus levels below the thermocline were moderate and averaged 9.0 ppb. Average alkalinity was 9 ppm, above the long term average of 8 ppm and pH was the same as the long term average of 6.7. Chlorophyll concentrations were the same as the long term average of 2.0 ppb. Conductivity was 17 μ s, under the long term average of 22 μ s. Average color of 15 SPU was the same as the long-term average. Overall water quality appears stable on the pond. Back Pond remains in the AVERAGE/MODERATE degree of concern category.

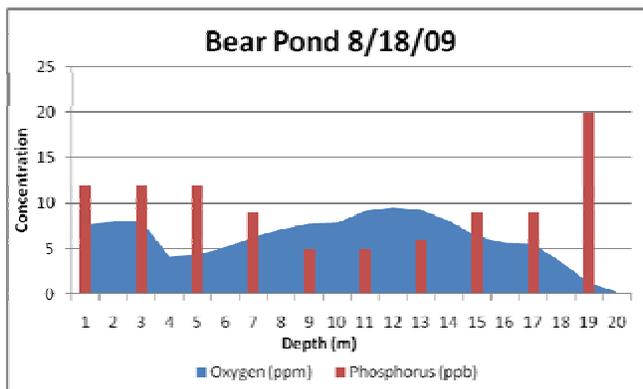


Surface Area: 62 acres
Maximum Depth: 33 feet
Watershed Area: 584 acres
Elevation: 572 feet

**Back Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Better
 Chlorophyll: Similar
 Phosphorus: Worse

Bear Pond - The 2009 Secchi disk average of 4.9 meters was less deep than the long-term average of 5.7. Oxygen depletion first appeared in the pond in late July and continued throughout the rest of the sampling season in the bottom 3 to 4 meters of the water column. During the height of oxygen depletion, there was still ample cold and well oxygenated water available for cold water fish. Phosphorus concentrations in the upper waters averaged 10.3 ppb, which is higher than the long-term average of 9.1 ppb. Phosphorus levels in the bottom waters of the pond were moderate and averaged 9.4 ppb. Alkalinity was the same as the long term average of 8 ppm and pH was 6.7 for the year, which is below the long term average of 6.8. Chlorophyll levels were moderate at 4.3 ppb, which is higher than the long-term average of 3.7. Average color was the same as the long term average of 19 SPU. Average conductivity was 25 μ s, which was lower than the long-term average of 36 μ s. Bear Pond again maintained a good volume of well-oxygenated, cold water below the thermocline. These conditions are needed to support a cold-water fishery. Bear Pond remains in the AVERAGE/MODERATE degree of concern category.

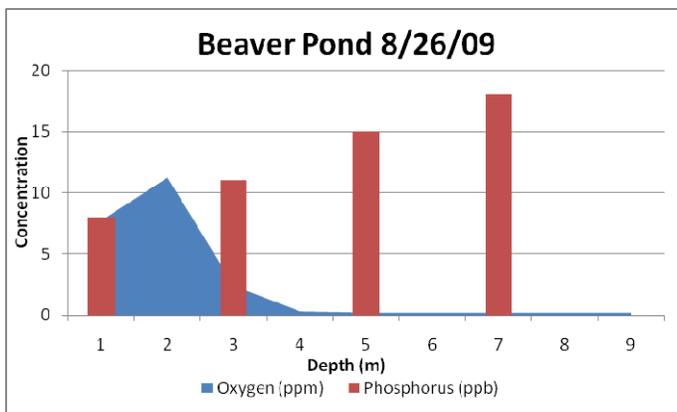


Surface Area: 250 acres
Maximum Depth: 72 feet
Mean Depth: 34 feet
Volume: 7,978 acres/feet
Watershed Area: 5,331 acres
Flushing Rate: 2.3 flushes per year
Elevation: 375 feet

**Bear Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Worse

Beaver Pond (Bridgton) – The 2009 average Secchi disk reading of 4.9 meters was below the long-term average of 5.1. Oxygen depletion was pronounced again this year. The bottom half of the pond was extremely depleted from July through September. This is very similar to the conditions of the last few years. Phosphorus concentrations above the thermocline averaged 9.5 ppb, which was above than the long-term average of 9.3. In deeper waters, phosphorus concentrations were moderate to high, with an average of 14.7 ppb. Alkalinity was 10 ppm, which is above the long term average of 8 ppm. pH data was the same as the long term average of 6.7. Chlorophyll averaged 3.6 ppb for the year, which was lower than the long-term average of 4.7 ppb. Average conductivity of 42 μ s was lower than the long-term average of 49 μ s. Color was 31 SPU, which is above the long-term average of 26 SPU. Due to heavy oxygen depletion in the bottom waters and evidence of phosphorus recycling, Beaver Pond remains in the **HIGH** degree of concern category.



Surface Area: 69 acres
Maximum Depth: 35 feet
Watershed Area: 1,648 acres
Flushing Rate: 3.7 flushes per year
Elevation: 473 feet

**Beaver Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Worse

Beaver Pond (Denmark) – This year’s Secchi disk reading was 2.5 meters, however, the disk hit the bottom of the pond. The long-term Secchi average is 2.7 meters. The shallow water column remained well oxygenated again this season. Phosphorus levels in the surface waters were 10 ppb, which is below the long term average of 16.1 ppb. Alkalinity was 9 ppm, which is just above the long term average of 8. Chlorophyll concentrations were low at 3.1 ppb, which is slightly higher than the long-term average of 2.9 ppb. Conductivity was 17 μ s, which is under the long term average of 22 μ s. pH was 6.7, which is below the long term average of 6.9. Average color was 20 SPU, which is above the long term average of 18 SPU. Beaver Pond remains in the **AVERAGE** degree of concern category.

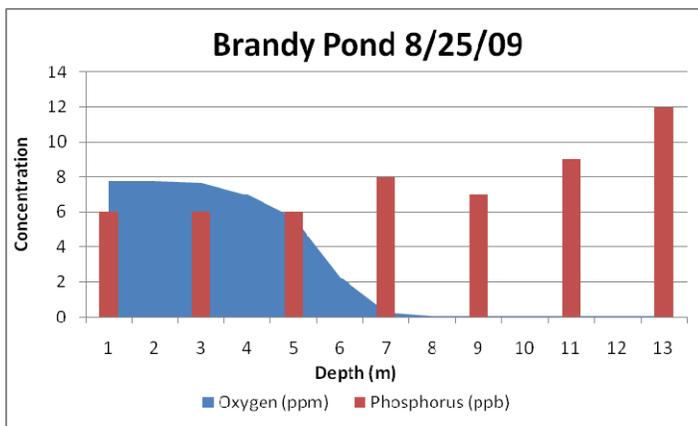


Surface Area: 80 acres
Maximum Depth: 10 feet
Watershed Area: 1,288 acres
Elevation: 397 feet

**Beaver Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Hit Bottom
 Chlorophyll: Worse
 Phosphorus: Better

Brandy Pond - The 2009 Secchi disk average of 6.2 meters was less deep than the long-term average of 6.5 meters for the pond. Dissolved oxygen concentrations began declining at depth in late June and levels continued to decrease in the deeper waters throughout the testing season. Phosphorus concentrations in the surface waters averaged 7.4 ppb, which is above the long-term average of 6.5. Phosphorus levels below the thermocline were moderate and averaged 8.4 ppb. Alkalinity was 9 ppm, and pH was 6.7, both close to their respective long term averages. Average conductivity was 35 μ s, which is below the long term average of 46 μ s and color was 16 SPU, which is the same as the long term average. Chlorophyll levels were moderate and averaged 2.6 ppb, which is above the long-term average of 2.4 ppb. Due to the limited volume of cold, well-oxygenated water, suitable habitat for trout and landlocked salmon was again diminished for much of the summer. Because of the restricted fishery habitat and the substantial amount of development within the watershed, Brandy Pond remains in the MODERATE/HIGH degree of concern category.



Surface Area:	733 acres
Maximum Depth:	44 feet
Mean Depth:	16 feet
Volume:	11,789 acres/feet
Watershed Area:	2,300 acres
Flushing Rate:	10 flushes per year
Elevation:	267 feet

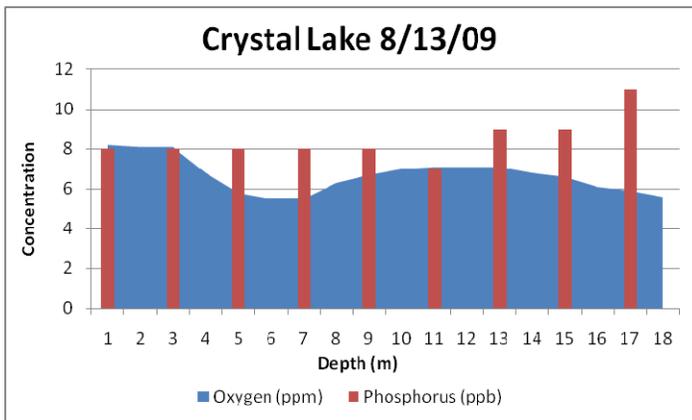
Brandy Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Worse

Cold Rain Pond - The 2009 Secchi disk average of 4.5 meters was less deep than the long-term average of 4.8 meters. Again, dissolved oxygen depletion was observed throughout the entire sampling season but became more severe as the summer continued. Surface water phosphorus concentrations were 10.0 ppb, which is below the long term average of 10.5 ppb. Alkalinity was 8 ppm, which is below the long term average of 7 ppm. pH was the 6.6 for the year, which is below the long term average of 6.7. Chlorophyll was moderate at 5 ppb, which is above the long-term average of 3.9 ppb. Conductivity averaged 25 μ s, which is just under the long term average of 26 μ s. Average color was 26 SPU for the year, which is above the long term average of 23 SPU. Due to strong dissolved oxygen depletion, Cold Rain Pond remains in the HIGH degree of concern category.

Cold Rain Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Better

Surface Area:	36 acres
Maximum Depth:	36 feet
Mean Depth:	13 feet
Volume:	469 acres/feet
Watershed Area:	505 acres
Flushing Rate:	1.9 flushes per year
Elevation:	505 feet

Crystal Lake - The 2009 Secchi disk average of 4.9 meters was considerably less deep than the long-term average of 6.0 meters. Mild oxygen depletion was observed in the bottom waters of the lake starting in late July and continuing through the rest of the summer. Phosphorus concentrations in the surface waters averaged 9.1 ppb, which is above the long term average of 7.6 ppb. Phosphorus concentrations in the deeper waters averaged 9.0 ppb. Alkalinity was 8 ppm, which is the same as the long-term average. pH was 6.6 for the year, which is below the long term average of 6.8. Conductivity was 38 μ s, which is below the long term average of 50 μ s and average color was 22 SPU, which is slightly above the long term average of 20 SPU. Chlorophyll averaged 2.9 ppm, which was slightly above the long-term average of 2.8 ppm. Crystal Lake's deep, well-oxygenated water column is good for the lake's cold water fishery, however consistently declining water clarity readings are a major concern. For this reason, the lake is in the **HIGH** degree of concern category.



Surface Area: 446 acres
Maximum Depth: 65 feet
Mean Depth: 33 feet
Volume: 14,253 acres/feet
Watershed Area: 5,345 acres
Flushing Rate: 0.65 flushes per year
Elevation: 294 feet

Crystal Lake Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Worse

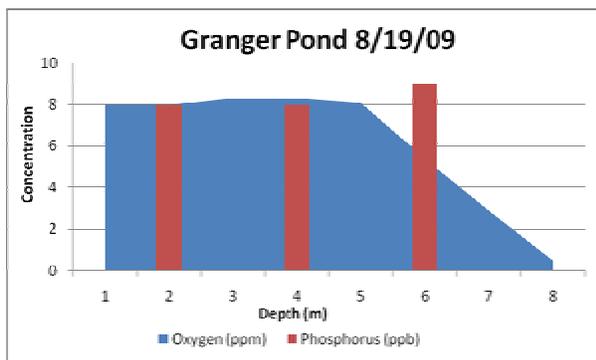
Foster Pond - The 2009 Secchi disk average of 7.5 meters was deeper than the long-term average of 6.9 meters. The water column remained well oxygenated throughout entire testing season. Phosphorus concentrations in the surface waters averaged 7.0 ppb for the year, which is below the long-term average of 7.2 ppb. Alkalinity was 7 ppm, which is above the long term average of 6 ppm. Average chlorophyll was the same as the long term average of 2.2 ppb. Average conductivity was 16 μ s, which is under the long term average of 20 μ s. Color was the same as the long term average of 11 SPU and pH was 6.7, which is below the long term average of 6.8. Foster Pond continues to exhibit good water quality conditions. It remains in the **AVERAGE** degree of concern category.



Surface Area: 149 acres
Maximum Depth: 28 feet
Mean Depth: 17 feet
Volume: 2,382 acres/feet
Watershed Area: 1,090 acres
Flushing Rate: 0.93 flushes per year
Elevation: 470 feet

Foster Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Better
 Chlorophyll: Similar
 Phosphorus: Better

Granger Pond – The 2009 Secchi disk average of 7.5 meters was considerably deeper than the long-term average of 6.6 meters. Dissolved oxygen depletion was observed in the bottom 1 to 2 meters of the water column from July through early September. Surface water phosphorus concentrations were moderate and averaged 9.5 ppb, which is above long-term average of 8.1 ppb. 2009 alkalinity of 7 ppm was just above the long term average of 6 ppm. Color averaged 12 SPU, which was below the long term average of 13 SPU and pH averaged 6.7, which is the same as the long term average. Chlorophyll readings averaged 2.4 ppb, which is below the long-term average of 3.3 ppb. Conductivity averaged 18 μ s, which was below the long-term average of 25 μ s. The low chlorophyll and excellent clarity recorded this past year once again reflect good water quality on the pond. However, because of recent algae blooms on Granger 2007 and 20008, it still remains in the **HIGH** degree of concern category.

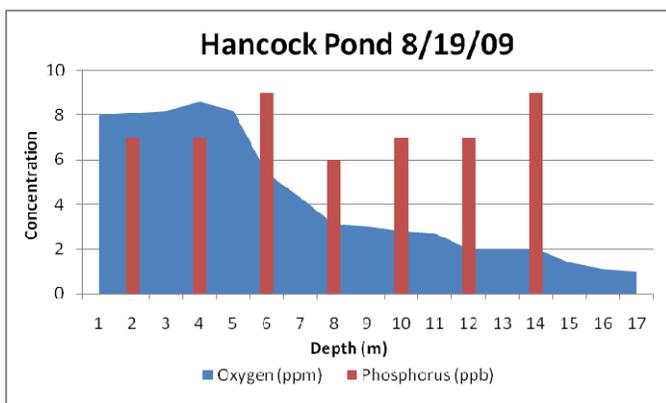


Surface Area: 125 acres
Maximum Depth: 28 feet
Watershed Area: 642 acres
Elevation: 525 feet

**Granger Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Better
 Chlorophyll: Better
 Phosphorus: Worse

Hancock Pond – Secchi disk readings averaged 7.0 meters for 2009, which was slightly less deep than the long-term average of 7.1 meters. Oxygen depletion occurred in the bottom waters of the pond starting in July and expanded up the water column to within 6 meters of the surface by September. Phosphorus concentrations were moderate in the upper waters, averaging 5.4 ppb, which is below the long term average of 5.8 ppb. Concentrations in the deeper waters averaged 7.6 ppb. Alkalinity was 7 ppm, which is above the long-term average of 6 ppm. Color and pH were the same as their respective long term averages of 14 SPU and 6.8. Chlorophyll readings were moderate, averaging 2.8 ppb for the year, which is under the long-term average of 3.0 ppb. Dissolved oxygen depletion in the bottom waters is impacting and limiting the pond’s substantial cold water fishery. For this reason, the pond is in the **MODERATE/HIGH** degree of concern category.

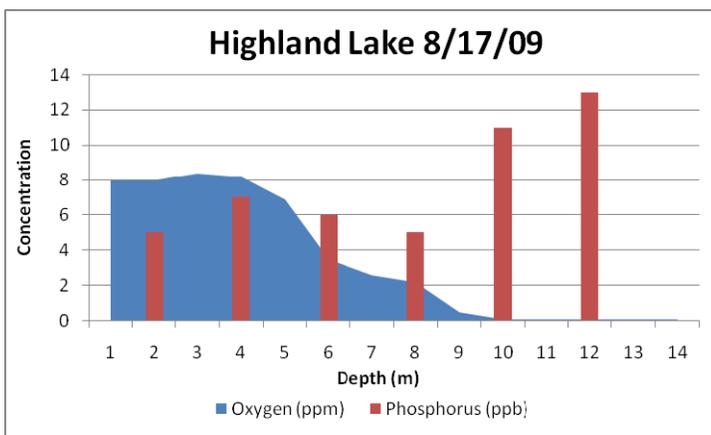


Surface Area: 858 acres
Maximum Depth: 59 feet
Watershed Area: 2,222 acres
Elevation: 502 feet

**Hancock Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Better

Highland Lake - The 2009 Secchi disk average of 6.3 meters was less deep than the long-term average of 6.6 meters. By late June, dissolved oxygen depletion was occurring in the bottom waters of the lake. As the summer continued, the depletion expanded up the water column from the bottom and increased in severity. Phosphorus concentrations in the surface waters were moderate and averaged 6.1 ppb, which is lower than the long-term average 6.7. Below the thermocline, the average phosphorus concentration was 8.4 ppb. Alkalinity was 8 ppm, which is above the long-term average of 7 ppm. Color was 12 SPU, which is under the long term average of 15 and pH was the same as the long term average of 6.7. Chlorophyll readings averaged 3.0 ppb, which was just above the long-term average of 2.9 ppb. Conductivity was 28 μ s, which is below the long-term average of 33 μ s. Due to pronounced dissolved oxygen depletion and past water quality conditions, Highland Lake remains in the **HIGH** degree of concern category.



Surface Area:	1,334 acres
Maximum Depth:	50 feet
Mean Depth:	20 feet
Volume:	44,030 acres/feet
Watershed Area:	5,178 acres
Flushing Rate:	0.94 flushes per year
Elevation:	426 feet

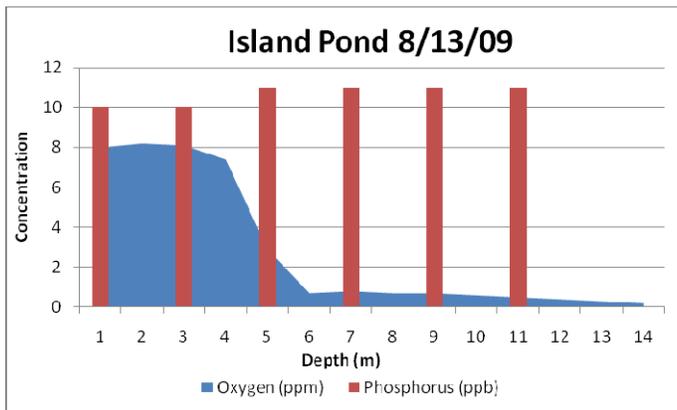
Highland Lake Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Better

Holt Pond - The 2009 Secchi disk reading of 3.0 meters was the same as the long-term average. Dissolved oxygen depletion was observed in the bottom 2 meters of the shallow water column. Phosphorus concentrations were 12 ppb, which is lower than the long-term average of 13.3 ppb. Alkalinity and pH were the same as their respective long term average of 9 ppm and 6.4. Chlorophyll was 2.4 ppb, which is below the long-term average of 4.0 ppb for the pond. Conductivity was 31 μ s, under the long term average of 38 μ s and color was the same as the long term average of 50 SPU. Holt Pond's large watershed, shallow depth and surrounding wetlands are likely accountable for much of the pond's water quality characteristics. Holt Pond remains in the **AVERAGE** degree of concern category.

Holt Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Similar
 Chlorophyll: Better
 Phosphorus: Better

Surface Area:	41 acres
Maximum Depth:	10 feet
Mean Depth:	7 feet
Watershed Area:	2,118 acres
Flushing Rate:	46 flushes per year
Elevation:	455 feet

Island Pond - The 2009 Secchi disk average of 5.3 meters was less than the long-term average of 6.0. Dissolved oxygen depletion first appeared in early June near the bottom and intensified and expanded upward as the season continued. This past year's level of oxygen depletion was worse than most years. Phosphorus levels in the surface waters averaged 8.0 ppb, which is higher than the long-term average of 7.1 ppb. Phosphorus levels below the thermocline averaged 11.0 ppb. Alkalinity was 9 ppm, which is above the long-term average of 7. pH was the same as the long term average of 6.7. Conductivity averaged 31 μ s, which was lower than the long term average of 41 μ s. Chlorophyll averaged 3.1 ppb, which is slightly lower than the long-term average of 3.2 ppb. Color was the same as the long term average of 18 SPU. Because of low oxygen conditions and periodically elevated phosphorus levels in the bottom waters, Island Pond is in the MODERATE/HIGH degree of concern category.

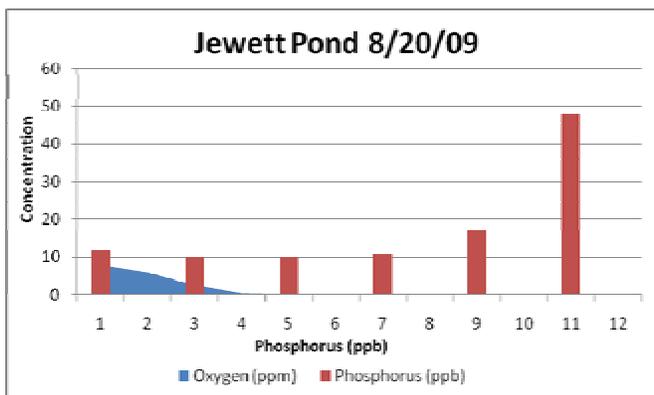


Surface Area: 115 acres
Maximum Depth: 48 feet
Mean Depth: 16 feet
Volume: 1,626 acres/feet
Watershed Area: 1,128 acres
Flushing Rate: 1.3 flushes per year
Elevation: 448 feet

**Island Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Worse

Jewett Pond - The 2009 Secchi disk average of 4.3 meters was the same as the long-term average. Dissolved oxygen depletion was observed in the bottom waters all season but the extent and intensity of the depletion increased as the summer progressed. Phosphorus concentrations above the thermocline averaged 12 ppb, which is higher than the long-term average of 9.8 ppb. Phosphorus concentrations below the thermocline were high and averaged 19.2 ppb. Average alkalinity was 8 ppm, which is above the long term average of 6 ppm. Chlorophyll levels averaged 4.2 ppb, which is lower than the long-term average of 5.0 ppb. Average conductivity was 21 μ s, below the long term average of 24 μ s and average color was 38 SPU, which was above the long term average of 34 SPU. Average pH was 6.3, which is below the long term average of 6.5. The low oxygen and high phosphorus conditions in the deeper waters are indicative of phosphorus recycling. For this reason, Jewett Pond remains in the HIGH degree of concern category.

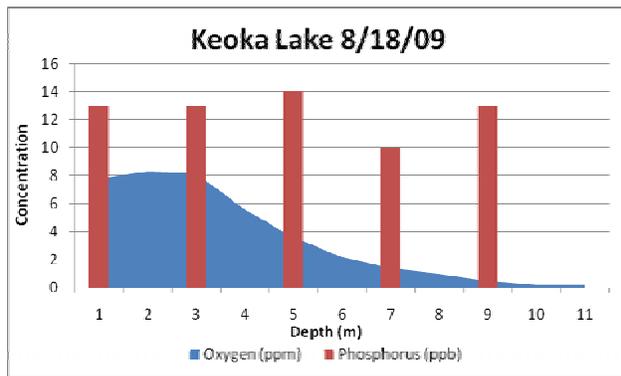


Surface Area: 43 acres
Maximum Depth: 41 feet
Watershed Area: 638 acres
Elevation: 580 feet

**Jewett Pond Quick Statistics
 2009 Average Verses the Long Term Average:**

Secchi : Similar
 Chlorophyll: Better
 Phosphorus: Worse

Keoka Lake - The 2009 Secchi disk average of 5.5 meters was less deep than the long-term average of 5.9 meters. Dissolved oxygen depletion began to appear in the bottom waters of the pond in late June. As the summer continued, depletion progressed and consumed the bottom 6 to 7 meters of the water column. Phosphorus concentrations in the surface waters were moderate and averaged 10.0 ppb for the year, which is above the long term average of 8.2 ppb. Phosphorus concentrations below the thermocline averaged 12.3 ppb. Alkalinity was 9 ppm, which is below the long term average of 8 ppm and pH was the same as the long term average of 6.8. Average chlorophyll was 4.9 ppb, which is above the long-term average of 3.7. Average conductivity was 28 μ s, which is below the long term average of 38 μ s. Color was 21 SPU for the year, which is above the long term average of 18 SPU. Because of low oxygen conditions and periodically elevated phosphorus levels in the bottom waters, Keoka Lake is in the MODERATE/HIGH degree of concern category.

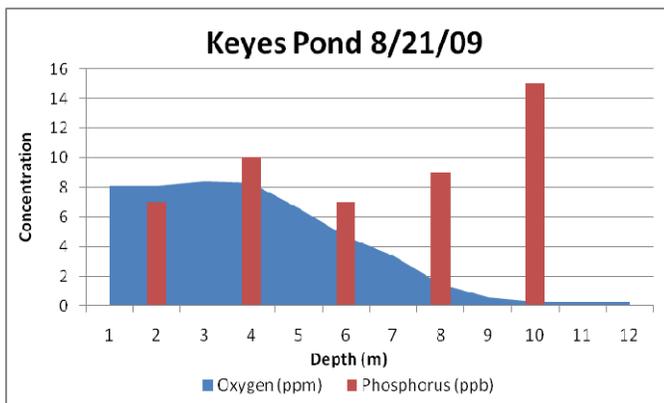


Surface Area:	460 acres
Maximum Depth:	42 feet
Mean Depth:	25 feet
Volume:	10,569 acres/feet
Watershed Area:	3,808 acres
Flushing Rate:	0.7 flushes per year
Elevation:	492 feet

Keoka Lake Quick Statistics
2009 Average Verses the Long Term Average:

Secchi : Worse
Chlorophyll: Worse
Phosphorus: Worse

Keyes Pond - The 2009 Secchi disk average of 6.0 meters was slightly less deep than the long-term average of 6.1. Mild dissolved oxygen depletion was first observed in the bottom waters of the pond in July and as the season progressed, depletion became more severe and expanded up the water column. Phosphorus concentrations in the surface waters were moderate and averaged 8.0 ppb, which is above the long-term average of 7.3 ppb. In waters below the thermocline, phosphorus concentrations averaged 10.3 ppb. Alkalinity was 8 ppm, which is above the long term average of 7 ppm and pH was the same as the long term average of 6.7. Chlorophyll was 3.9 ppb which is above the long-term average of 3.3 ppb. Average conductivity was 37 μ s, which is below the long term average of 43 μ s and average color was 19 SPU, which is above the long term average of 15 SPU. Because of low oxygen conditions and periodic elevated phosphorus levels in the bottom waters, Keyes Pond is in the MODERATE/HIGH degree of concern category.



Surface Area:	191 acres
Maximum Depth:	42 feet
Mean Depth:	17 feet
Volume:	3,333 acres/feet
Watershed Area:	1,213 acres
Flushing Rate:	0.8 flushes per year
Elevation:	508 feet

Keyes Pond Quick Statistics
2009 Average Verses the Long Term Average:

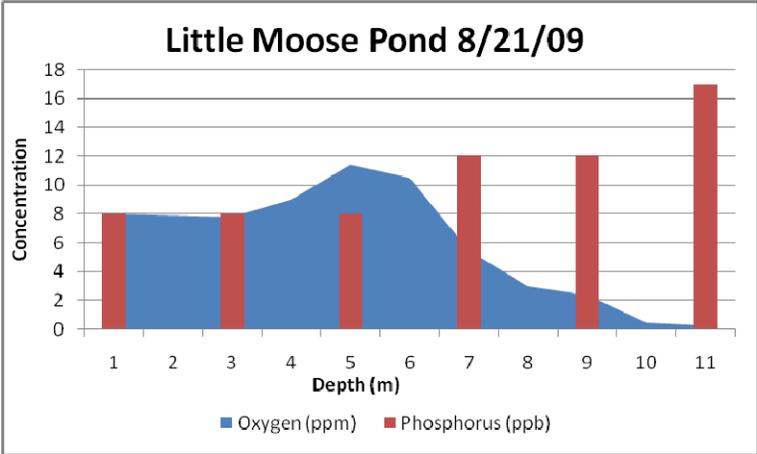
Secchi : Worse
Chlorophyll: Worse
Phosphorus: Worse

Kezar Pond - The 2009 Secchi disk reading of 3.2 meters was deeper than the long-term average of 2.8. Mild oxygen depletion was observed in the bottom meter of Kezar's shallow water column during August sampling. Phosphorus concentrations were high at 18 ppb and above the long term average of 15.2 ppb. Alkalinity was again the same as the long term average of 8 ppb. pH was 6.4, which is below the long term average of 6.7. Chlorophyll levels were moderate at 3.9 ppb, which is slightly below the long-term average of 4.1 ppb. Conductivity was 31 μ s, which is just over the long term average of 30 μ s and color was 25 SPU, which is well under the long term average of 38 SPU. High phosphorus values in Kezar Pond are most likely a result of the pond's large watershed combined with riverine input. Kezar Pond remains in the AVERAGE degree of concern category.

Kezar Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Better
 Chlorophyll: Better
 Phosphorus: Worse

Surface Area: 1,851 acres
Maximum Depth: 12 feet
Watershed Area: 10,779 acres
Elevation: 369 feet

Little Moose Pond - The 2009 Secchi disk average of 7.2 meters was less deep than the long-term average of 7.4 meters. Dissolved oxygen depletion was first observed in the bottom waters during June sampling. As the season continued, the depletion became more severe and expanded up the water column. Average phosphorus concentrations in the surface waters were moderate and the same as the long term average of 5.9 ppb. Phosphorus levels below the thermocline averaged 13.7 ppb. Alkalinity was 7 ppm, which is above the long term average of 6 ppm. pH readings average 6.6, which is under the long term average of 6.7. Chlorophyll levels averaged 3.0 ppb, which is above the long-term average of 2.4 ppb. Conductivity was 17 μ s, which is below the long term average of 24 μ s and color was 12 SPU, which is just above the long term average of 11 SPU. Because of oxygen depletion and periodically elevated phosphorus values at depth, Little Moose remains in the MODERATE /HIGH degree of concern category.



Surface Area: 195 acres
Maximum Depth: 43 feet
Mean Depth: 22 feet
Volume: 4,010 acres/feet
Watershed Area: 1,184 acres
Flushing Rate: 0.6 flushes per year
Elevation: 545 feet

Little Moose Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Similar

Little Pond – Even though the Secchi disk reading of 4.2 meters hit the bottom, it was still deeper than the long-term average of 4.0 meters. Oxygen depletion was again observed in the last meter of the water column. Phosphorus concentrations were moderate at 7 ppb, which is below the long-term average of 11 ppb. Alkalinity was 8ppm, which is below the long term average of 9 ppm. pH was 6.5, which is below the long term average of 6.6. Chlorophyll levels were 2.5 ppb, which is below the long-term average of 5.5 ppb. Conductivity was 30 μ s, under the long term average of 38 μ s and color was 15 SPU, which is below the long term color average of 21 SPU. Water quality conditions in Little Pond appear stable. Little Pond remains in the AVERAGE/MODERATE degree of concern category.

Little Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Better
 Chlorophyll: Better
 Phosphorus: Better

Surface Area: 33 acres
Maximum Depth: 13 feet
Watershed Area: 633 acres
Elevation: 360 feet

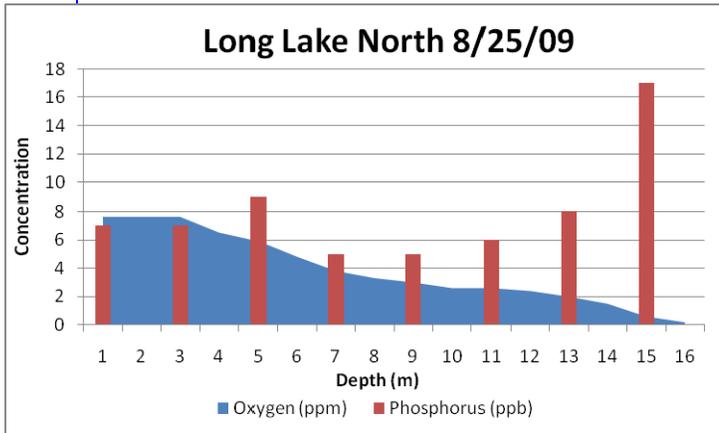
Long Lake – Although phosphorus and chlorophyll concentrations are moderate in Long Lake, consistent and pronounced dissolved oxygen depletion in the deeper waters is negatively affecting the lake’s cold-water fishery. During seasons with a late fall turnover, these low oxygen conditions are prolonged, making the problem even more severe. For this reason, Long Lake remains in the HIGH degree of concern category.

North Basin – The 2009 Secchi disk average of 5.7 meters was less deep than the long-term average of 6.2 ppm. Dissolved oxygen depletion occurred again this year, starting in late June in the bottom waters and increasing in severity as the summer continued. During August and September, oxygen and temperature data showed no suitable habitat for most cold water fish species. Phosphorus concentrations in the surface waters averaged 7.8 ppb, which is above the long-term average of 7.5 ppb. Phosphorus levels below the thermocline were moderate and averaged 8.3 ppb. Alkalinity was 9ppm which is above the long term average of 8 ppm. Conductivity was 33 μ s, which is under the long-term average of 47 μ s and pH was 6.7, which is under the long term average of 6.8. Chlorophyll was 2.9 ppb, which is just below the long-term average of 3.0 ppb. Average color was 16 SPU, which is just below the long-term average of 17 SPU.

Middle Basin – The 2009 disk average of 6.0 meters was less deep than the long-term average of 6.2 meters. Dissolved oxygen depletion was first observed in the bottom waters in late June. The depletion expanded up the water column as the season continued. Suitable habitat for cold water fish was absent from the middle basin’s water column for most of the summer. Phosphorus concentrations in the surface waters averaged 7.5 ppb, which is above the long-term average of 6.7 ppb. Phosphorus concentrations below the thermocline were much lower than usual and averaged 4.5 ppb. Alkalinity was 9 ppm, which is above the long term average of 8 ppm and pH was the same as the long term average of 6.7. Chlorophyll was 2.5 ppb, which is lower than the long term average of 2.9 ppb. Conductivity was 35 μ s, which is under the long-term average of 46 μ s and color was 18 SPU, just above the long-term average of 17.

South Basin – The 2009 Secchi disk average of 5.9 meters was less deep than the long-term average of 6.4 meters. Dissolved oxygen depletion was first observed in July and continued throughout the rest of the testing season. During August and September, oxygen and temperature data showed no suitable habitat for most cold water fish species. Phosphorus concentrations in the

upper waters were moderate and averaged 6.5 ppb, which is below the long term average of 6.8 ppb. Phosphorus concentrations below the thermocline were moderate and averaged 5.6 ppb. Alkalinity was 9 ppm, which is above the long term average of 8.0 ppm and pH was 6.7, which is under the long term average of 6.8. Chlorophyll was the same as the long-term average of 2.9 ppb. Conductivity averaged 37 μ s, which is under the long term average of 47 μ s and color was the same as the long term average of 17 SPU.



Surface Area:	4,935 acres
Maximum Depth:	59 feet
Mean Depth:	34 feet
Volume:	165,500 acres/feet
Watershed Area:	33,871 acres
Flushing Rate:	0.94 flushes per year
Elevation:	267 feet

**Long Lake (all basins) Quick Statistics
2009 Average Verses the Long Term Average:**

Secchi : Worse
Chlorophyll: Better
Phosphorus: Worse

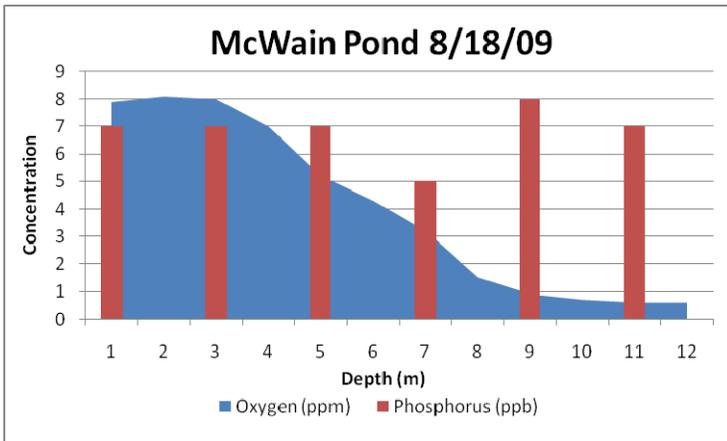
Long Pond - The 2009 Secchi disk average of 5.9 meters was deeper than the long term average of 5.4. The water column remained well oxygenated all year. Phosphorus values were moderate in the surface waters at 8 ppb, which is just above the long-term average of 7.9. Alkalinity was 7 ppm, which is above the long term average of 5 ppm and conductivity was 23 μ s, which is just over the long term average of 22 μ s. Chlorophyll levels were 3.7 ppb, which is above the long-term average of 2.8 ppb. Color was 10 SPU, slightly under the long term average of 12 SPU. pH was 6.6, which is under the long term average of 6.7. Because of Long Pond's well oxygenated water column, moderate phosphorus levels and overall stability it remains in the AVERAGE degree of concern category.

**Long Pond Quick Statistics
2009 Average Verses the Long Term Average:**

Secchi : Better
Chlorophyll: Worse
Phosphorus: Worse

Surface Area:	44 acres
Maximum Depth:	20 feet
Watershed Area:	217 acres
Elevation:	401 feet

McWain Pond - The 2009 Secchi disk average of 5.8 meters was slightly less deep than the long-term average of 6.0 meters for the pond. Dissolved oxygen depletion was first observed in the bottom waters in early July. Depletion continued and expanded up the water column for the rest of the summer. Phosphorus concentrations in the surface waters averaged 7.4 ppb, which is less than the long term average of 7.6 ppb. Below the thermocline, phosphorus concentrations were moderate at 6.8 ppb. Alkalinity was 7 ppm, which is above the long term average of 6 ppm and pH was 6.6, which is below the long term average of 6.7. Chlorophyll concentrations were moderate at 2.7 ppb, which is lower than the long-term average of 3.2 ppb. Conductivity was 23 μ s, which is under the long term average of 29 μ s and color was 20 SPU for the year, which is over the long term average of 17 SPU. Because of dissolved oxygen depletion in the bottom waters, McWain Pond remains in the MODERATE/HIGH degree of concern category.

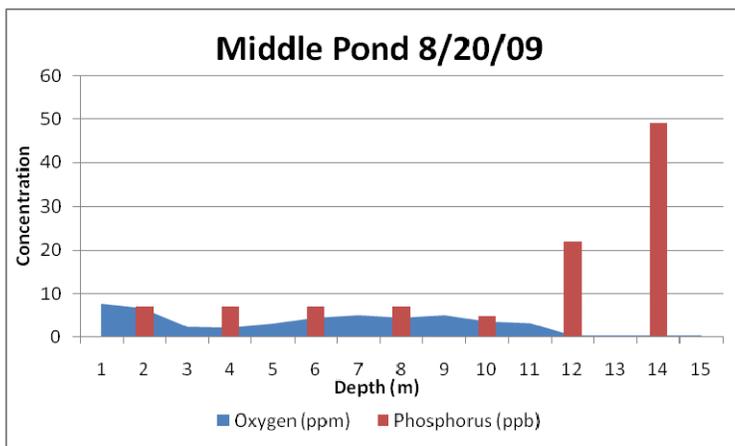


Surface Area: 445 acres
Maximum Depth: 42 feet
Mean Depth: 23 feet
Volume: 9,756 acres/feet
Watershed Area: 2,505 acres
Flushing Rate: 0.5 flushes per year
Elevation: 533 feet

McWain Pond Quick Statistics
 2009 Average Verses the Long Term Average:

Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Better

Middle Pond - The 2009 Secchi disk average of 5.0 meters was less deep than the long-term average of 5.2 meters. Dissolved oxygen depletion was first observed in early June in the deeper waters of the pond. The depletion expanded up the water column and increased in severity as the season continued, impacting all but the top 3 to 4 metres of the water column. Phosphorus concentrations in the surface waters were moderate and averaged 7.9 ppb, which was below the long-term average of 8.2 ppb. Phosphorus concentrations below the thermocline were moderate to high, averaging 25.3 ppb. Alkalinity was 8 ppm, which is above the long term average of 6 ppm and pH was 6.5, which is below the long term average of 6.6. Chlorophyll concentrations were moderate and averaged 2.4 ppb, which is under the long-term average of 3.9 ppb. Conductivity was 19 μ s, which is just under the long term average of 20 μ s and color was 22 SPU for the year, which is under the long term average of 25 SPU. Although there is little development in the watershed, pronounced oxygen depletion and the potential for phosphorus recycling are real concerns for the pond. For this reason, Middle Pond remains in the HIGH degree of concern category.

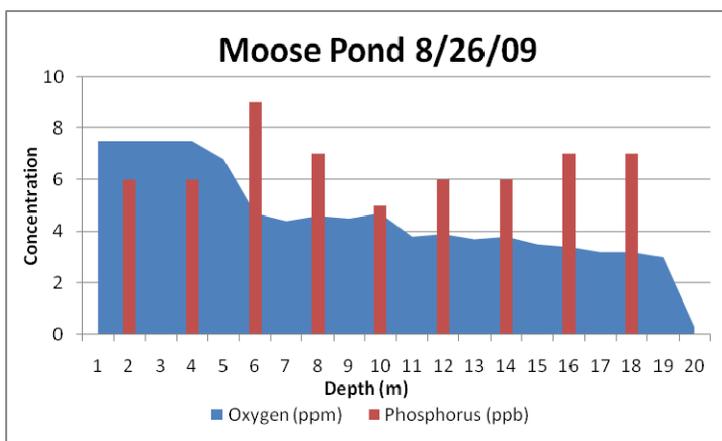


Surface Area: 72 acres
Maximum Depth: 50 feet
Watershed Area: 231 acres
Elevation: 572 feet

Middle Pond Quick Statistics
 2009 Average Verses the Long Term Average:

Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Better

Moose Pond (Main Basin) – The 2009 Secchi disk average of 6.6 meters was less deep than the long-term average of 7.4 meters for the main basin. Dissolved oxygen depletion first appeared in early August in the bottom waters of the pond. The depletion increased for the rest of the summer, impacting the bottom 13 meters by September. Phosphorus concentrations in the upper waters were the same as the long-term average of 6.0 ppb. Phosphorus concentrations below the thermocline were moderate and averaged 6.7 ppb. Color was the same at the long term average of 14 SPU. pH was 6.7 for the year, which is below the long term average of 6.8. Chlorophyll averaged 3.1 ppb, which is just above the long-term average of 3.0 ppb. Conductivity averaged 31 μ s, which is below the long term average of 38 μ s and 2009 alkalinity was 8 ppm, which is above the long term average of 7ppm. Dissolved oxygen depletion was again severe in September and continues to limit the amount of suitable habitat for cold-water fish in the pond. For this reason, the main basin of Moose Pond is in the **HIGH** degree of concern category.



Surface Area:	1,617 acres
Maximum Depth:	70 feet
Mean Depth:	20 feet
Volume:	30,722 acres/feet
Watershed Area:	11,170 acres
Flushing Rate:	3.69 flushes per year
Elevation:	418 feet

**Moose Pond (Main Basin) Quick Statistics
2009 Average Verses the Long Term Average:**

Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Similar

Moose Pond (North Basin)- The 2009 Secchi disk average of 4.8 meters was less deep than the long-term average of 5.1. Dissolved oxygen depletion was observed in the bottom 4 meters of the water column during August sampling. Phosphorus concentrations in the surface waters were moderate at 6 ppb, which is below the long term average of 9.4 ppb. Alkalinity was 9 ppm, which is above the long term average of 8 ppm and color was 31 SPU, which is above the long term average of 20 SPU. Chlorophyll levels were moderate at 3.3 ppb, which is below the long term average of 3.9 ppb. Conductivity was 25 μ s, which is under the long term average of 32 μ s . pH was the same as the long term average of 6.7. Due to periodic dissolved oxygen depletion in the bottom waters, the north basin remains in the **MODERATE** degree of concern category.

Mud Pond – The 2009 Secchi disk average of 3.6 was deeper than the long-term average of 3.4 meters. Dissolved oxygen depletion was again very pronounced this year. Low oxygen conditions limited most aquatic life to within 2 to 3 meters of the surface for much of the summer. Phosphorus was 15 ppb, which is above the long-term average of 11.8 ppb on the pond. Alkalinity was 8 ppm, which is above the long term average of 5 ppm and pH was 6.2, which is below the long term average of 6.3. Chlorophyll levels were moderate and averaged 4.7 ppb, which is under the long-term average of 5.4 ppb. Conductivity was 16 μ s, which is below the long term average of 18 μ s and average color was 44 SPU which is just below to the long term average of 45 SPU. Water quality conditions in Mud Pond are most likely a result of the pond’s large surrounding wetland complex. For this reason, the pond is in the **MODERATE** degree of concern category.

Mud Pond Quick Statistics
2009 Average Verses the Long Term Average:

Secchi : Better
 Chlorophyll: Better
 Phosphorus: Worse

Surface Area: 45 acres
Maximum Depth: 35 feet
Watershed Area: 1,661 acres
Elevation: 572 feet

Otter Pond - The 2009 Secchi disk average of 3.7 meters was slightly deeper than the long-term average of 3.5 meters. Oxygen depletion was observed in the last 4 meters of the water column during August sampling. Surface water phosphorus concentrations were moderate at 10.0 ppb, which is below the long term average of 12.0 ppb. Alkalinity and pH were the same as their long term averages of 9 and 6.6, respectively. Chlorophyll levels were moderate at 3.8 ppb, which is less than the long-term average of 5.2 ppb. Conductivity was 38 μ s, which is under the long term average of 41 μ s and color was 55 SPU, which is close to the long term average of 54 SPU. Due to periodic elevated phosphorus levels and dissolved oxygen depletion, Otter Pond remains in the MODERATE degree of concern category.



Surface Area: 90 acres
Maximum Depth: 21 feet
Mean Depth: 10 feet
Volume: 814 acres/feet
Watershed Area: 790 acres
Flushing Rate: 0.7 flushes per year
Elevation: 392 feet

Otter Pond Quick Statistics
2009 Average Verses the Long Term Average:

Secchi : Better
 Chlorophyll: Better
 Phosphorus: Better

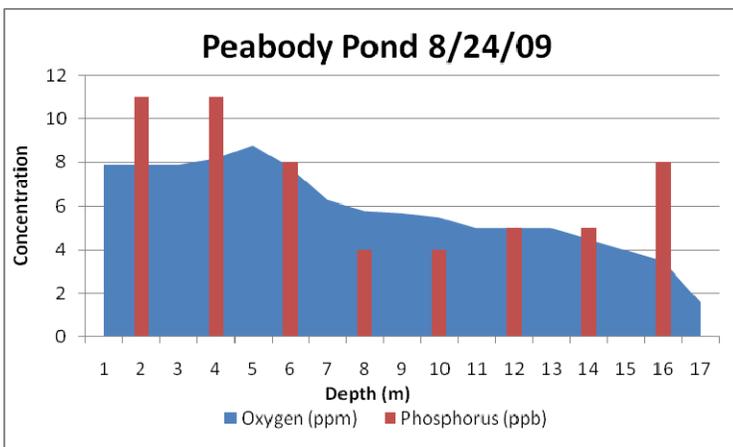
Papoose Pond - The 2009 Secchi disk average of 3.2 meters was less deep than the long-term average of 3.5 meters for the pond. Dissolved oxygen depletion was recorded in the bottom 1 to 2 meters of the water column during most sampling events. Phosphorus concentrations were high at 17.0 ppb, which is above the long-term average of 14.1 ppb. Alkalinity was 8 ppm, which is above the long term average of 7 ppm. pH was 6.4, which is below the long term average of 6.6. Chlorophyll was 4.2 ppb, which is below the long term average of 6.5 ppb. Conductivity was 22 μ s, which is below the long term average of 34 μ s and color was 30 SPU, which is just below the long term average of 31 SPU. Due to high phosphorus concentrations and substantial shorefront development, Papoose Pond is in the MODERATE/HIGH degree of concern category.

Papoose Pond Quick Statistics
2009 Average Verses the Long Term Average:

Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Worse

Surface Area: 70 acres
Maximum Depth: 15 feet
Watershed Area: 192 acres
Elevation: 490 feet

Peabody Pond - The 2009 Secchi disk average of 6.8 meters was less deep than the long-term average of 7.3 meters. Dissolved oxygen depletion was recorded in the bottom waters during August and September sampling. During late September, there was little to no suitable habitat for coldwater fish species such as salmon and trout. Phosphorus levels in the surface waters were moderate and averaged 6.8 ppb, which is above the long-term average of 5.9 ppb. Phosphorus concentrations below the thermocline were moderate, averaging 5.7 ppb. Alkalinity was 7 ppm, which is above the long term average of 6 ppm and pH was the same as the long term average of 6.7. Chlorophyll levels were moderate at 2.9 ppb, which is just above the long-term average of 2.8 ppb. Conductivity was again 18 μ s, which is below the long term average of 24 μ s and color was 12 SPU, which is just below the long term average of 13 SPU. Although water quality conditions are fairly good in Peabody Pond, low oxygen conditions limit habitat for the pond's good cold water fishery most years. For this reason, Peabody Pond is in the MODERATE/HIGH degree of concern category.



Surface Area:	740 acres
Maximum Depth:	64 feet
Mean Depth:	45 feet
Volume:	24,510 acres/feet
Watershed Area:	2,522 acres
Flushing Rate:	0.3 flushes per year
Elevation:	460 feet

Peabody Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Worse

Perley Pond - The 2009 Secchi disk average of 4.3 meters was less deep than the long-term average of 4.7 meters. Dissolved oxygen depletion was observed in the bottom half of the water column during July and August sampling. Phosphorus concentrations in the surface waters was 7.0 ppb, which is below the long-term average of 9.7 ppb. Alkalinity was again 7 ppm, which is over the long term average of 5 ppm and pH was the same as the long term average of 6.4. Chlorophyll was 2.7 ppb for the year, which is below the long-term average of 5.0 ppb. Conductivity was 22 μ s, which is under the long term average of 30 μ s and color was 33 SPU, which is above the long term average of 30 SPU. Due to oxygen depletion in the bottom waters, Perley Pond remains in the MODERATE degree of concern category.

Perley Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Better

Surface Area:	68 acres
Maximum Depth:	27 feet
Watershed Area:	293 acres
Elevation:	521 feet

Pickerel Pond – The 2009 Secchi disk reading of 5.1 was slightly below the long-term average of 5.2 meters. Dissolved oxygen depletion was observed in the bottom meter of the water column during late August sampling. Phosphorus concentrations in the surface waters were 6.0 ppb, which is above the long-term average of 5.5 ppb. Alkalinity was again the same as the long term average of 6 ppm. pH was the same as the long term average of 6.4. Chlorophyll concentrations were 2.4 ppb, which is below the long-term average of 2.6 ppb. Conductivity was 21 μ s, which is under the long term average of 27 μ s and color was 30 SPU, which is above the long term average of 23 SPU. Water quality conditions appear fairly stable in Pickerel Pond. For this reason it remains in the **AVERAGE** degree of concern category.



Surface Area: 17 acres
Maximum Depth: 18 feet
Watershed Area: 290 acres
Elevation: 515 feet

Pickerel Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Worse

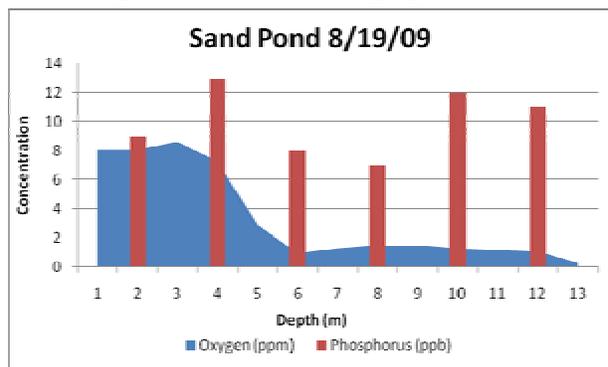
Pleasant Pond – The 2009 Secchi disk reading of 2.5 meters was slightly less deep than the long-term average of 2.7 meters. Dissolved oxygen depletion was observed in the bottom 3 meters of the shallow water column during August sampling. Phosphorus concentrations in the surface waters were high at 19.0 ppb, which is still below the long term average of 19.3 ppb. Conductivity was 30 μ s, which is just below the long term average of 31 μ s. pH was 6.2, which is below the long term average of 6.5. Chlorophyll levels were moderate at 5.5 ppb, which is above the long-term average of 5.2 ppb. Alkalinity was 5 ppm, which is below the long term average of 7 ppm and color was 55 SPU, which is below the long term average of 59 SPU. High phosphorus levels in Pleasant Pond are probably due largely to riverine input from the Saco. Because of the naturally high color in the pond, there is less light penetration into the water column. This characteristic helps limit the amount of algae present during periods of elevated phosphorus. Pleasant Pond is in the **MODERATE** degree of concern category.



Surface Area: 604 acres
Maximum Depth: 11 feet
Watershed Area: 4,624 acres
Elevation: 362 feet

Pleasant Pond Quick Statistics
2009 Average Verses the Long Term Average:
 Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Better

Sand Pond - The 2009 Secchi disk average of 6.1 meters was less deep than the long-term average of 6.5 meters. Dissolved oxygen depletion first appeared in late June and continued throughout the rest of the testing season. Through August and September, the bottom 8-9 meters of the water column had extremely low oxygen levels. Phosphorus concentrations in the surface waters averaged 8.9 ppb, which is above the long-term average of 8.2 ppb. Phosphorus levels below the thermocline averaged 10.2 ppb. Alkalinity was 7 ppm, which is above the long term average of 6 and pH was the same as the long term average of 6.7. Chlorophyll readings were moderate at 3.2 ppb, which is just below the long-term average of 3.3 ppb. Conductivity was 22 μ s, which is below the long term average of 29 μ s and color was the same as the long term average of 17 SPU. Low oxygen conditions are reducing cold water fish habitat and periodic elevated phosphorus concentrations at depth are indicative of phosphorus recycling. For this reason, Sand Pond is in the **HIGH** degree of concern category.

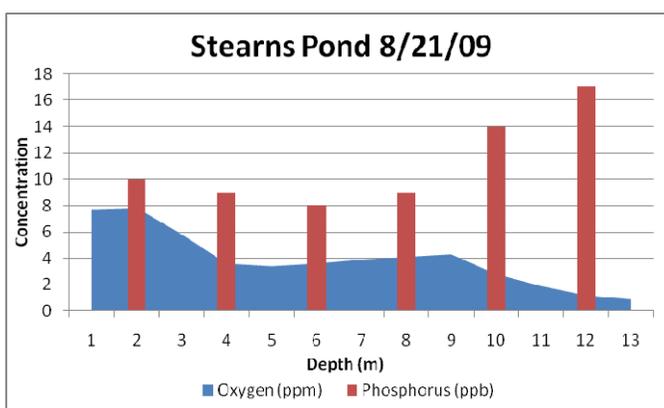


Surface Area: 256 acres
Maximum Depth: 49 feet
Watershed Area: 1394 acres
Elevation: 502 feet

Sand Pond Quick Statistics
2009 Average Verses the Long Term Average:

Secchi : Worse
 Chlorophyll: Better
 Phosphorus: Worse

Stearns Pond - The 2009 Secchi disk average of 4.6 meters was less deep than the long-term average of 5.2 meters. Dissolved oxygen depletion first appeared in the bottom of the water column in late June. The extent and severity of the depletion increased as the summer continued. Phosphorus concentrations in the surface waters averaged 10.6 ppb, which is above the long term average of 8.7 ppb. In the deeper waters below the thermocline, phosphorus concentrations averaged 11.4 ppb. Alkalinity was the same as the long term average of 7 ppm and pH was 6.6, which is below the long term average of 6.7. Chlorophyll was 3.6ppb, which is above the long-term average of 3.2 ppb. Color was 24 SPU, which is just below the long term average of 25 SPU and conductivity was again 23 μ s, which is below the long term average of 31 μ s. Due to oxygen depletion and elevated phosphorus concentrations at depth, Stearns Pond remains in the **MODERATE/HIGH** degree of concern category.

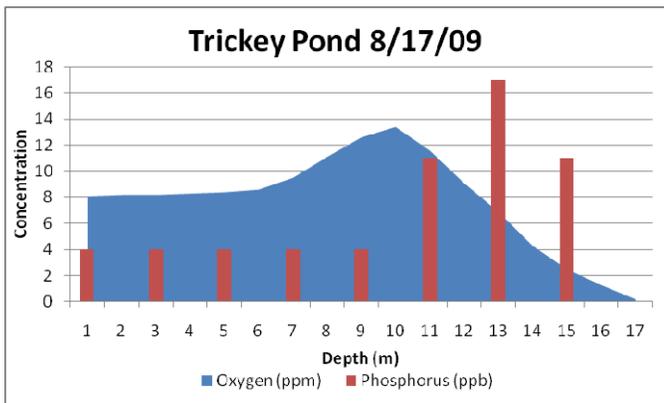


Surface Area: 248 acres
Maximum Depth: 48 feet
Mean Depth: 27 feet
Volume: 6,585 acres/feet
Watershed Area: 4,116 acres
Flushing Rate: 1.6 flushes per year
Elevation: 444 feet

Stearns Pond Quick Statistics
2009 Average Verses the Long Term Average:

Secchi : Worse
 Chlorophyll: Worse
 Phosphorus: Worse

Trickey Pond – The 2009 Secchi disk average was the same as the long-term average of 10.1 meters. Dissolved oxygen depletion was recorded in the bottom to 2 to 3 meters of the pond during late August and September sampling. During this period, there was around 4 meters of cold and well-oxygenated water available for cold water fish habitat. Phosphorus concentrations in the surface waters were moderate and averaged 5.0 ppb, which is below the long-term average of 5.4 ppb. Phosphorus concentrations in the waters below the thermocline averaged 13.0 ppb. Alkalinity was again 8 ppm, which is above the long term average of 7 ppm and pH was the same as the long term average of 6.8. Chlorophyll levels were low at 2.0 ppb, which is still above the long term average of 1.6 ppb. Conductivity was 35 μ s, which is under the long term average of 38 μ s and color was 5 SPU, which is under the long term average of 8 SPU. To help maintain Trickey Pond’s water quality and cold water fishery, the pond remains in the MODERATE degree of concern category.

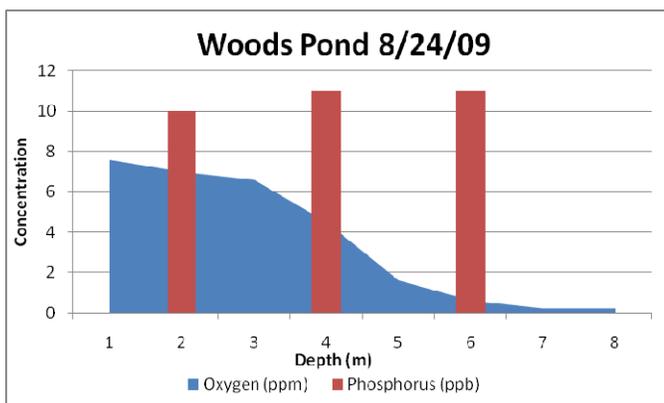


Surface Area:	315 acres
Maximum Depth:	57 feet
Mean Depth:	34 feet
Volume:	10,108 acres/feet
Watershed Area:	555 acres
Flushing Rate:	0.1 flushes per year
Elevation:	360 feet

**Trickey Pond Quick Statistics
2009 Average Verses the Long Term Average:**

Secchi : Similar
Chlorophyll: Worse
Phosphorus: Better

Woods Pond – The 2009 Secchi disk average of 4.3 meters was less deep than the long-term average of 5.0 meters. Dissolved oxygen depletion first appeared in the bottom waters of the pond in early July but reached its peak intensity in late August. Phosphorus concentrations in the surface waters averaged 9.6 ppb, which is above the long-term average of 8.0 ppb. Alkalinity was 7 ppm, which is above the long term average of 6 ppm and pH was 6.4, which is below the long term average of 6.6. Chlorophyll readings averaged 2.9 ppb, which is under the long-term average of 3.1 ppb. Conductivity was 19 μ s, which is below the long term average of 26 μ s and color was 37 SPU for the year, which is over the long term average of 32 SPU. Water quality in Woods Pond appears fairly stable with only mild oxygen depletion affecting the very bottom waters in some years. The pond remains in the AVERAGE degree of concern category.



Surface Area:	462 acres
Maximum Depth:	29 feet
Mean Depth:	17.5 feet
Volume:	17,890 acres/feet
Watershed Area:	3,329 acres
Flushing Rate:	0.77 flushes per year
Elevation:	456 feet

**Woods Pond Quick Statistics
2009 Average Verses the Long Term Average:**

Secchi : Worse
Chlorophyll: Better
Phosphorus: Worse