



Volunteer Lake Assessment Program Individual Lake Reports

BAPTIST POND, SPRINGFIELD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,664	Max. Depth (m):	7.5	Flushing Rate (yr ⁻¹):	3.7
Surface Area (Ac.):	99	Mean Depth (m):	2.4	P Retention Coef:	0.56
Shore Length (m):	2,900	Volume (m ³):	972,500	Elevation (ft):	1266

TROPHIC CLASSIFICATION

Year	Trophic class
1980	MESOTROPHIC
1996	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

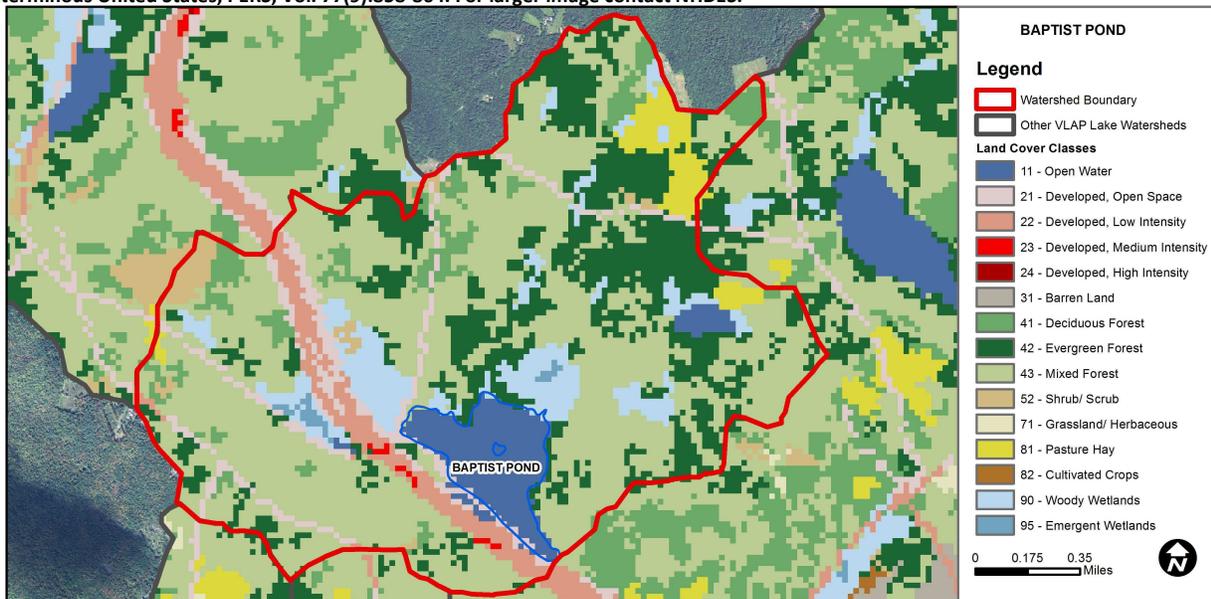
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen saturation	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BAPTIST POND - CAMP SUNAPEE	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
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WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.89	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.96	Deciduous Forest	4.94	Pasture Hay	2.88
Developed-Low Intensity	3.73	Evergreen Forest	20.83	Cultivated Crops	0
Developed-Medium Intensity	0.2	Mixed Forest	47.11	Woody Wetlands	7.42
Developed-High Intensity	0	Shrub-Scrub	1.51	Emergent Wetlands	0.44



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

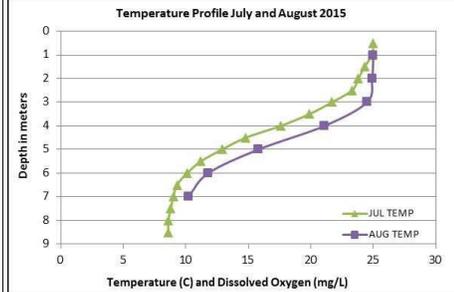
BAPTIST POND, SPRINGFIELD

2015 DATA SUMMARY

RECOMMENDED ACTIONS: Hypolimnion samples were collected at 6 meters in July and August and we recommend maintaining hypolimnetic sample collection at 6 or 7 meters. As temperature profiles indicate, 5 meters is not truly the hypolimnion, so the deeper samples are more representative of hypolimnetic conditions. The data indicate a potential source of internal phosphorus loading which can fuel algal growth. This highlights the importance of limiting phosphorus inputs from the surrounding watershed particularly from stormwater runoff. Work with NHDES, NHDOT and watershed residents to discuss stormwater management options around the pond. Keep up the great work!

OBSERVATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated in June, decreased to average levels in July, and then increased to slightly elevated levels in August. The 2015 average chlorophyll level decreased from the elevated level measured in 2014 however remained slightly greater than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- CONDUCTIVITY/CHLORIDE:** Deep Spot, Outlet and Stoney Brook Inlet conductivity levels remained elevated in 2015 and were much greater than the state median. Conductivity levels in McAlvin tributary were low to average and increased from McAlvin Pond to McAlvin Brook, which sits downstream of agricultural activities, and then decreased from McAlvin Brook to McAlvin Inlet as it enters the pond. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) phosphorus with moderate variability between years.
- E. COLI:** Station A and Station B did not contain any bacteria in the samples.
- TOTAL PHOSPHORUS:** Epilimnetic phosphorus was average in June and then decreased to low levels in July and August. Average epilimnetic phosphorus decreased slightly from 2014 and was less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus due to the elevated 2006 level. Hypolimnetic (lower water layer) phosphorus was average in June, increased to elevated levels in July and then decreased slightly in August. The elevated July phosphorus may have been caused by a layer of algae at that depth as algal cells contain phosphorus and/or phosphorus may be released from bottom sediments when dissolved oxygen levels decreased below 1.0 mg/L. McAlvin Pond in Lake, Outlet and Stoney Brook Inlet phosphorus levels were low to average. McAlvin Brook phosphorus levels were elevated in June due to low flow conditions and increased in July as low flow conditions continued and the sample contained moderate color and sediment content. McAlvin Inlet phosphorus was average in June and increased to elevated levels in July potentially due to sediment in the sample.
- TRANSPARENCY:** Transparency increased (improved) from June to July as algal growth decreased, and then decreased (worsened) from July to August as algal growth increased. Average transparency improved from 2014 but was less than (worse than) the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years. Transparency measured with the viewscope (VS) was generally much better than without (NVS) and likely a better representation of conditions.
- TURBIDITY:** Epilimnetic, McAlvin Inlet, McAlvin Pond in Lake, and Outlet turbidities were low on each sampling event. Hypolimnetic turbidity was slightly elevated in July and August. A layer of algae may have contributed to the July turbidity, however samples were collected at a slightly deeper depth and may reflect the formation and accumulation of organic compounds in hypolimnetic waters when dissolved oxygen levels decrease below 1.0 mg/L. McAlvin Brook turbidity was slightly elevated in June potentially due to higher color content of the water and then increased to elevated levels in August and high color and sediment were noted in the sample during low flow conditions.
- pH:** Deep spot and tributary pH levels were generally less than the desirable range 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

- Chloride:** > 230 mg/L (chronic)
- E. coli:** > 88 cts/100 mL – public beach
- E. coli:** > 406 cts/100 mL – surface waters
- Turbidity:** > 10 NTU above natural level
- pH:** between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

- Alkalinity:** 4.9 mg/L
- Chlorophyll-a:** 4.58 mg/m³
- Conductivity:** 40.0 uS/cm
- Chloride:** 4 mg/L
- Total Phosphorus:** 12 ug/L
- Transparency:** 3.2 m
- pH:** 6.6

Station Name	Table 1. 2015 Average Water Quality Data for BAPTIST POND								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	6.8	6.73	142.2		9	2.52	3.13	0.99	6.37
Hypolimnion			152.0		18			3.75	6.13
McAlvin Brook			54.7		44			3.45	6.53
McAlvin Inlet			25.3		25			0.81	5.90
McAlvin Pond In Lake			20.5		12			0.87	6.27
Outlet			145.7		8			1.03	6.48
Station A				0					
Station B				0					
Stoney Brook Inlet			285.8		15			2.29	6.15

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.

