Volunteer Lake Assessment Program Individual Lake Reports

EMERSON POND, RINDGE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	528	**Max. Depth (m):**	5.2	**Flushing Rate (yr^{-1}):**	2.4
Surface Area (Ac.):	113	**Mean Depth (m):**	1.3	**P Retention Coef:**	0.74
Shore Length (m):	3,900	**Volume (m^3):**	509,000	**Elevation (ft):**	1167

TROPHIC CLASSIFICATION

Year	Trophic class
1982	EUTROPHIC
2002	MESOTROPHIC

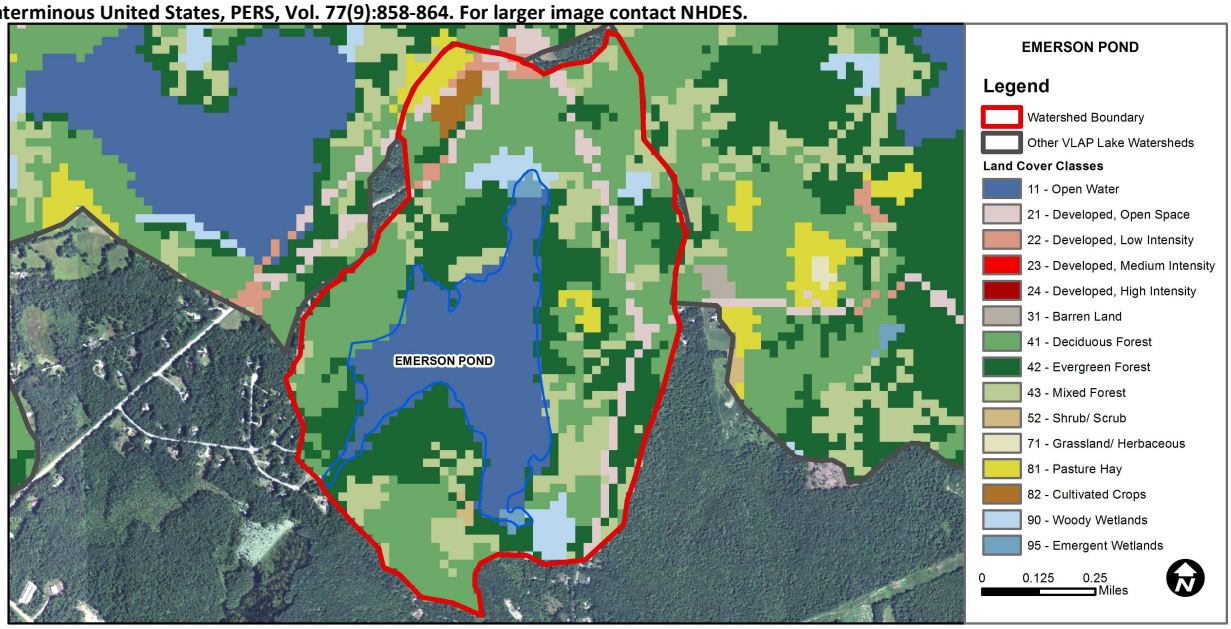
KNOWN EXOTIC SPECIES

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 satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	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.

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	19.6	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.45	Deciduous Forest	32.12	Pasture Hay	1.79
Developed-Low Intensity	0.92	Evergreen Forest	24.13	Cultivated Crops	1.06
Developed-Medium Intensity	0	Mixed Forest	11.61	Woody Wetlands	3.21
Developed-High Intensity	0	Shrub-Scrub	0.23	Emergent Wetlands	0.69

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

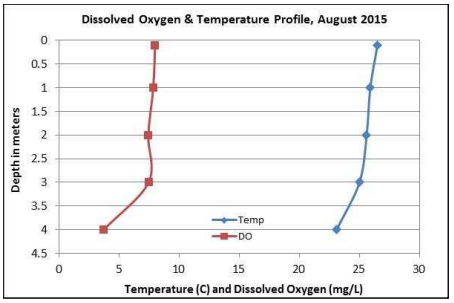
EMERSON POND, RINDGE

2015 DATA SUMMARY

RECOMMENDED ACTIONS: Increase monitoring frequency to once per month during the summer to better assess seasonal and historical water quality trends. Conduct spring chloride monitoring to assess impacts from the application of salt on roadways, parking lots and driveways during the winter. This can impact conductivity and chloride levels in the pond. Educate residents, road agents and winter maintenance companies on best practices associated with salt application and encourage local road agents to obtain a Voluntary NH Salt Applicator License through UNH Technology Transfer Center's Green SnowPro Certification program.

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

- **CHLOROPHYLL-A:** Chlorophyll levels were within a moderate range and slightly greater than the state median in August. Average chlorophyll levels remained stable from 2014 and historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer) and Hypolimnetic (lower water layer) conductivity levels remained slightly elevated and greater than the state median. Historical trend analysis indicates stable epilimnetic conductivity since monitoring began.
- **E. COLI:** Beach E. coli levels were very low and much less than the state standard of 88 cts/100 mL for public beaches.
- **TOTAL PHOSPHORUS:** Epilimnetic and Hypolimnetic phosphorus levels were within an average range and slightly less than the state median. Epilimnetic phosphorus increased slightly from 2014 and historical trend analysis indicates stable epilimnetic phosphorus since monitoring began.
- **TRANSPARENCY:** Transparency was good for the pond and the highest (best) measured since monitoring began. We hope to see this continue! Transparency was slightly better than the state median and historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Epilimnetic turbidity was average for most NH lakes and Hypolimnetic turbidity was slightly above average but within an average range for that station.
- **PH:** Epilimnetic and Hypolimnetic pH levels were less than the desirable range 6.5-8.0 units and slightly acidic. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.



Station Name	Table 1. 2015 Average Water Quality Data for EMERSON POND									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	4.1	4.90	24	92.0		10	3.38	3.90	1.05	6.11
Hypolimnion				91.9		11			1.48	6.18
Cathedral Beach					2					
Wozniak Beach					10					

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

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)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	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 show low variability.