



Volunteer Lake Assessment Program Individual Lake Reports

STEVENS POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	445	Max. Depth (m):	5.2	Flushing Rate (yr ⁻¹):	4.9
Surface Area (Ac.):	15	Mean Depth (m):	2.8	P Retention Coef:	0.51
Shore Length (m):	1,075	Volume (m ³):	176,000	Elevation (ft):	315

TROPHIC CLASSIFICATION

Year	Trophic class
1981	EUTROPHIC
1997	EUTROPHIC

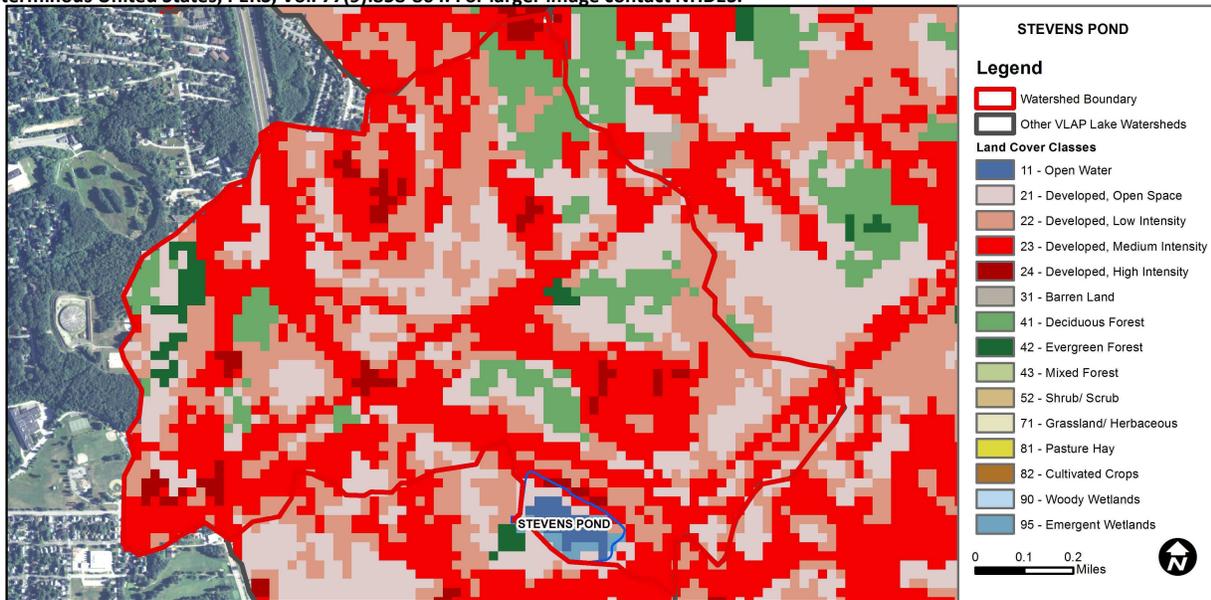
KNOWN EXOTIC SPECIES

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)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Bad	There are >10% of samples (minimum of 2), exceeding criteria with one or more samples considered large exceedance.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Bad	There are >10% of samples (minimum of 2), exceeding indicator with one or more samples considered large exceedance.

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	1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	20.7	Deciduous Forest	7.98	Pasture Hay	0
Developed-Low Intensity	26.3	Evergreen Forest	1.45	Cultivated Crops	0
Developed-Medium Intensity	38.4	Mixed Forest	0	Woody Wetlands	0
Developed-High Intensity	2.82	Shrub-Scrub	0	Emergent Wetlands	0.52



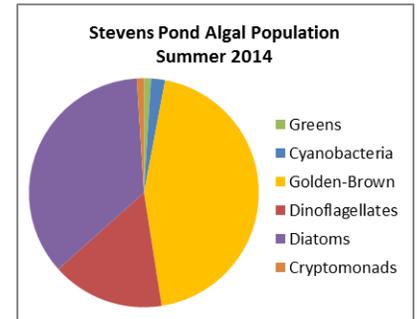
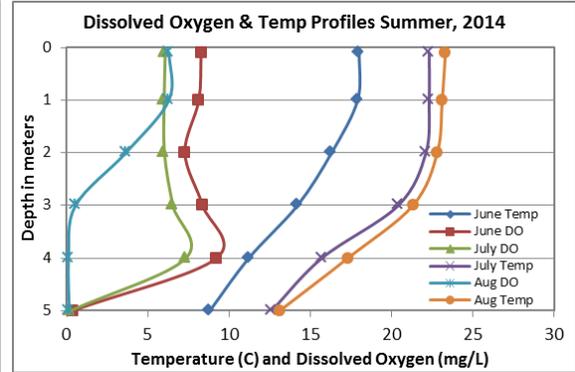
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STEVENS POND, MANCHESTER

2014 DATA SUMMARY

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

- CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated in June and July but decreased in August to less than the state median. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- CONDUCTIVITY/CHLORIDE:** Deep Spot and Outlet conductivity and chloride remained greatly elevated and much greater than the state medians. Epilimnetic (upper water layer) conductivity and chloride spiked in 2014 from lower levels measured between 2006 and 2013. Epilimnetic and Outlet chloride levels exceed the state chronic chloride standard and could be critical to aquatic life. Historical trend analysis indicates highly variable epilimnetic conductivity since monitoring began.
- TOTAL PHOSPHORUS:** Epilimnetic phosphorus was average in June, increased to elevated levels in July, and then decreased to average levels in August. Average epilimnetic phosphorus was the lowest measured since 2006, however remained greater than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Metalimnetic (middle water layer) phosphorus was low in June and slightly elevated in July and August. Hypolimnetic (lower water layer) phosphorus was low in June, spiked in July to greatly elevated levels, and decreased slightly in August. The depletion of dissolved oxygen in the hypolimnion causes phosphorus to be released from bottom sediments creating an internal load of phosphorus to the pond. Outlet phosphorus levels were correspondingly low in June and then slightly elevated in July and August.
- TRANSPARENCY:** Transparency was lower in June and July when algal growth was higher and then improved in August. Historical trend analysis indicates relatively stable transparency since monitoring began.
- TURBIDITY:** Turbidity was generally slightly elevated but stable throughout the summer at all stations except the Hypolimnion. Hypolimnetic turbidity was elevated in July and August due to the accumulation of organic compounds under anoxic conditions.
- pH:** Deep Spot and Outlet pH was within the desirable range of 6.5–8.0 units, however hypolimnetic pH has decreased below the desirable range in the past.
- RECOMMENDED ACTIONS:** Stevens Pond is an urban pond that receives a high pollutant load from the surrounding watershed. The elevated conductivity and chloride are a result of road salting practices, however epilimnetic conductivity had been improving and we hope that levels will decrease again in 2015. Keep up the great work!



Station Name	Table 1. 2014 Average Water Quality Data for STEVENS POND								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	30.9	6.13	327	1142.7	18	2.54	2.63	2.48	7.01
Metalimnion				1160.0	19			2.33	6.85
Hypolimnion				1764.0	77			9.50	6.77
Outlet			327	1134.3	28			2.55	6.84

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

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 highly variable.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.

