Volunteer Lake Assessment Program Individual Lake Reports

HOUSTON POND, CHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,453	**Max. Depth (m):**	2.6	**Flushing Rate (yr^1)**	32.5
Surface Area (Ac.):	20	**Mean Depth (m):**	1.2	**P Retention Coef:**	0.4
Shore Length (m):	2,100	**Volume (m^3):**	94,000	**Elevation (ft):**	390

TROPHIC CLASSIFICATION

Year	Trophic class
2000	EUTROPHIC

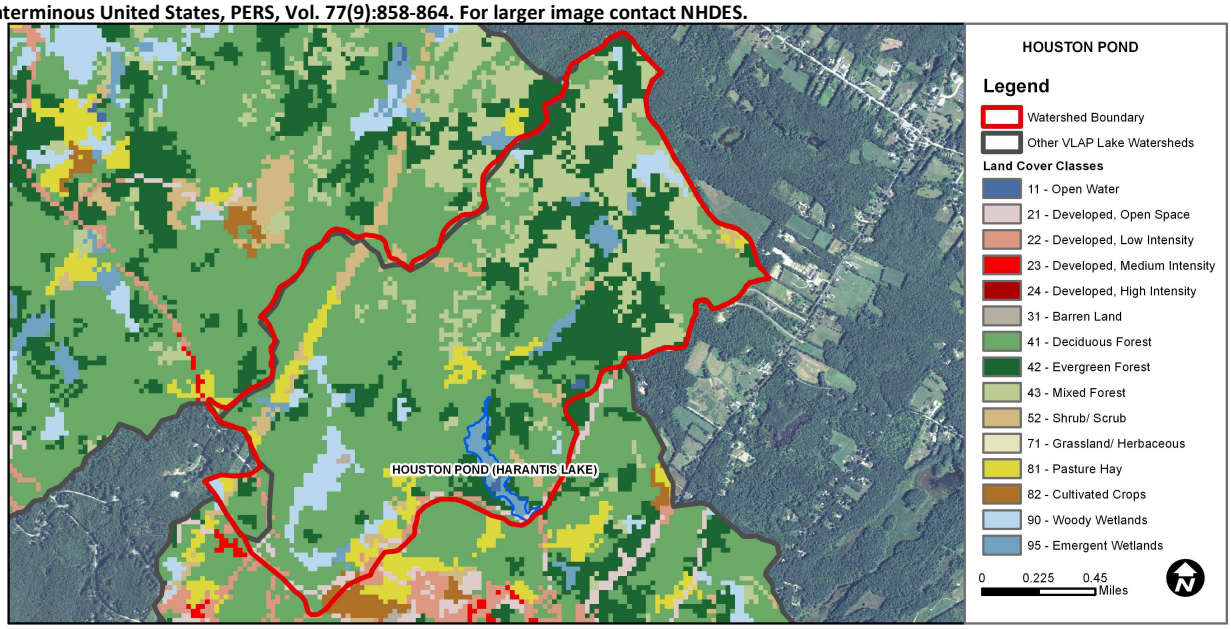
KNOWN EXOTIC SPECIES

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	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	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	Slightly Bad	There are >10% of samples (minimum of 2), exceeding 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.



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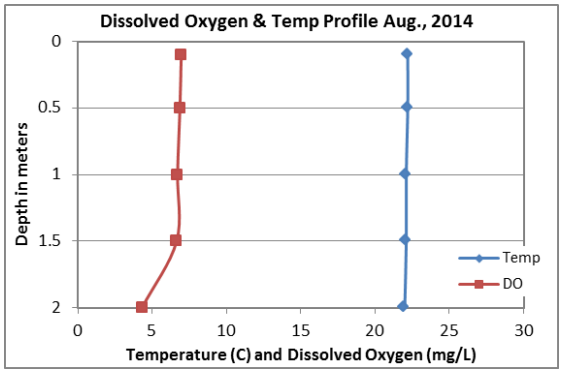
Harantis Lake (Houston Pond), Chester

2014 Data Summary

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

- **Chlorophyll-a:** Chlorophyll levels remained elevated and much greater than the state median in 2014. Chlorophyll levels have generally remained at a higher concentration (greater than 10.0 ug/L) since 2007. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnion and Outlet conductivity levels were slightly greater than the state median and Beaver Inlet conductivity levels were approximately equal to the state median. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began.
- **Total Phosphorus:** Epilimnetic total phosphorus levels were slightly elevated and greater than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus since monitoring began, however levels have remained fairly stable since 2003 with the exception of the spike in 2010. Beaver Inlet phosphorus levels were elevated and the highest measured since monitoring began, and the turbidity was also elevated. A recent storm event may have contributed to the elevated phosphorus levels. Outlet phosphorus levels were within an average range for that station.
- **Transparency:** Transparency was good and the best measured since monitoring began. The Secchi disk was almost visible on the pond bottom despite the elevated algal growth. Historical trend analysis indicates highly variable transparency since monitoring began.
- **Turbidity:** Epilimnetic and Outlet turbidities were slightly elevated likely due to algal growth and low water levels. Beaver Inlet turbidity was elevated potentially due to a recent storm event and low flow conditions.
- **pH:** Epilimnetic pH was within the desirable range 6.5-8.0 units however has been less than desirable in the past. Historical trend analysis indicates highly variable epilimnetic pH since monitoring began.
- **Recommended Actions:** The increasing conductivity trend is likely a result of winter de-icing activities. Add chloride monitoring to better assess the cause of the increased conductivity. Increase monitoring frequency, typically once per month in June, July and August, to better assess seasonal and historical water quality trends and decrease variability of the data.



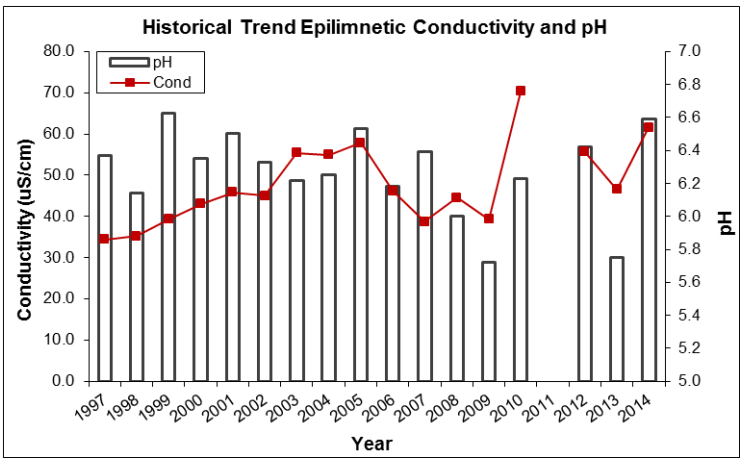
Station Name	Table 1. 2014 Average Water Quality Data for HARANTIS LAKE							
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
					NVS	VS		
Epilimnion	6.30	11.31	62.2	20	2.40	2.25	2.45	6.54
Beaver Inlet			31.9	29			1.81	6.23
Dam Outlet			63.0	18			2.33	6.47

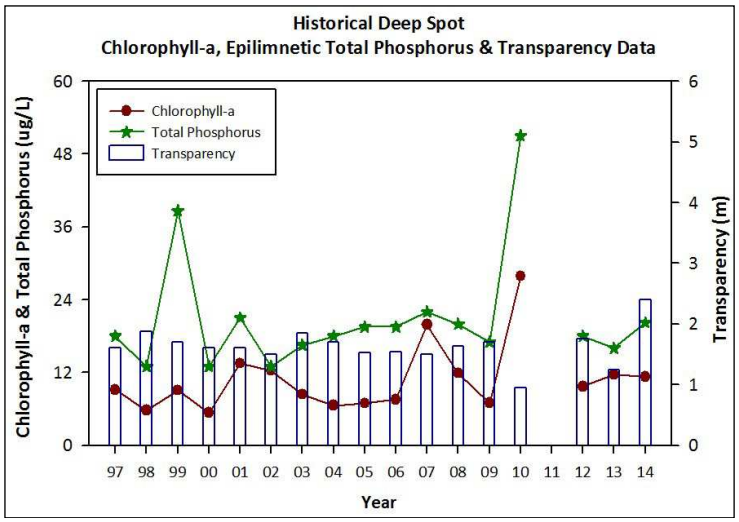
NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

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	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.





This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact VLAP at (603) 271-2658 or sara.steiner@des.nh.gov