Volunteer Lake Assessment Program Individual Lake Reports

CHAPMAN POND, SULLIVAN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	704	**Max. Depth (m):**	5.2	**Flushing Rate (yr^1)**	8.9
Surface Area (Ac.):	20	**Mean Depth (m):**	2.2	**P Retention Coef:**	0.48
Shore Length (m):	1,300	**Volume (m^3):**	177,500	**Elevation (ft):**	1330

TROPHIC CLASSIFICATION

Year	Trophic class
1986	MESOTROPHIC

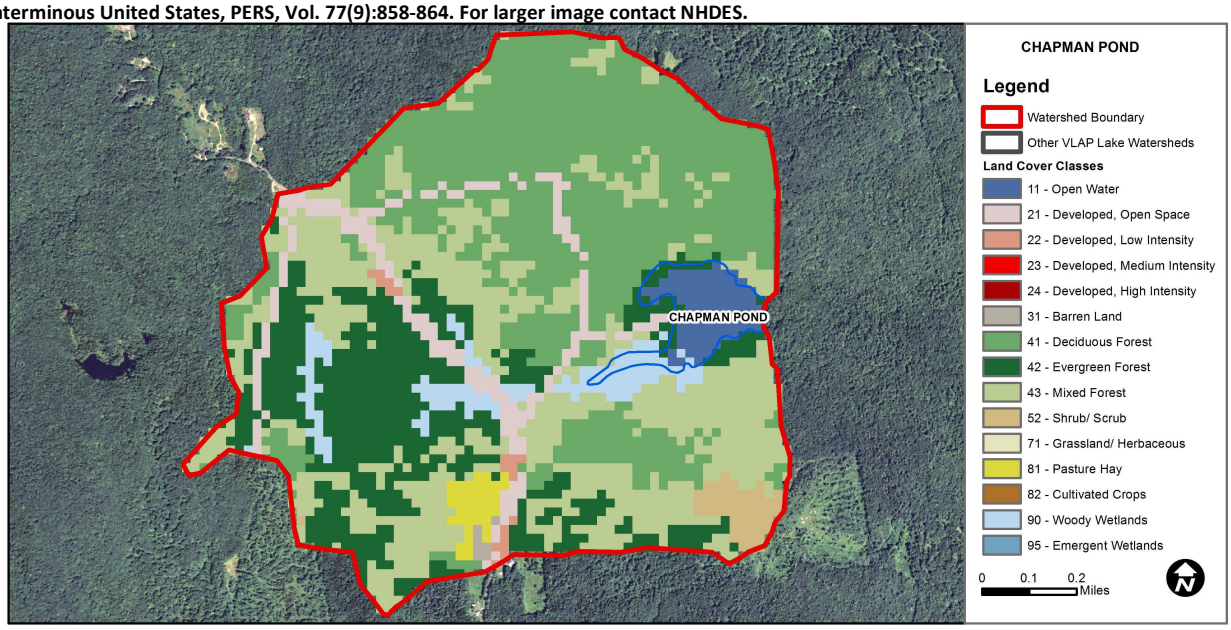
KNOWN EXOTIC SPECIES

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)	Cautionary	The calculated median is fewer than 5 samples but > indicator and the chlorophyll a indicator is okay. More data needed.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Cautionary	The calculated median is fewer than 5 samples but > indicator. More data needed.
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	Encouraging	There are < 10 samples with 0 exceedances of indicator. More data needed.

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	2.9	Barren Land	0.23	Grassland/Herbaceous	0
Developed-Open Space	5.86	Deciduous Forest	34.99	Pasture Hay	1.29
Developed-Low Intensity	0.61	Evergreen Forest	19.52	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	28.45	Woody Wetlands	4.29
Developed-High Intensity	0	Shrub-Scrub	1.71	Emergent Wetlands	0

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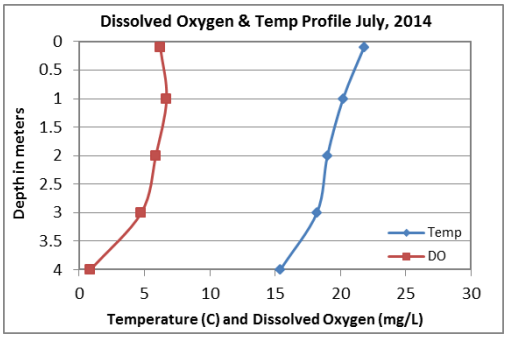
Chapman Pond, Sullivan

2014 Data Summary

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

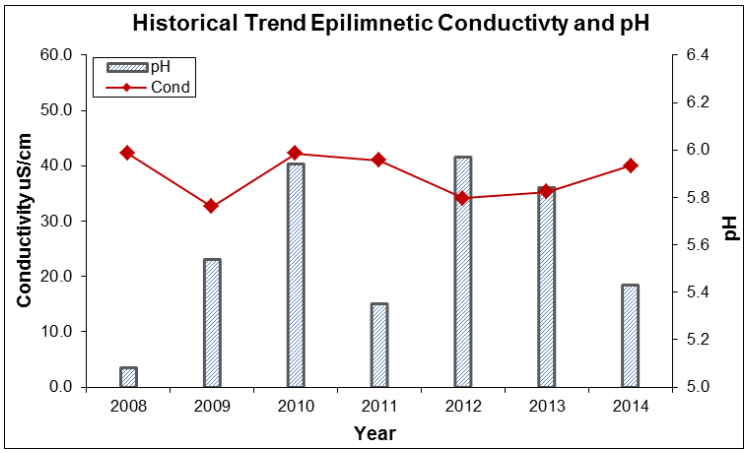
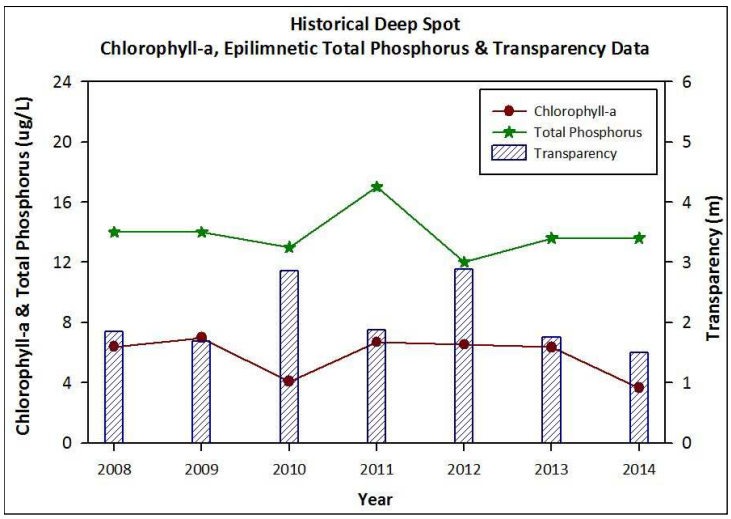
- **Chlorophyll-a:** Chlorophyll levels were within an average range in July and slightly less than the state median. Visual inspection of historical data indicates stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), hypolimnetic (lower water layer) and Outlet conductivity levels were average and approximately equal to the state median. Wegman Inlet conductivity levels were low. Visual inspection of historical data indicates relatively stable epilimnetic conductivity since monitoring began.
- **E. coli:** Cove E. coli levels were much less than the state standard of 406 cts/100 mL for surface waters, and less than the state standard of 88 cts/100 mL for public beaches.
- **Total Phosphorus:** Epilimnetic phosphorus was slightly above average and greater than the state median. A recent storm event may have contributed to the slightly elevated level, however visual inspection of historical data indicates stable epilimnetic phosphorus since monitoring began. Hypolimnetic phosphorus was the lowest measured since monitoring began. Outlet phosphorus was in a low to average range, and Wegman Inlet phosphorus was low.
- **Transparency:** Transparency was low in July and much less (worse) than the state median, and was the lowest measured since monitoring began. Recent storm events and associated stormwater runoff and high water levels may have contributed to the lower transparency. Visual inspection of historical data indicates variable transparency since monitoring began.
- **Turbidity:** Epilimnetic, hypolimnetic and Outlet turbidities were elevated in July and were the highest measured since monitoring began. Algal growth, as measured by chlorophyll-a, was not elevated suggesting another cause of elevated turbidity such as dissolved organic acids. Wegman Inlet turbidity was low.
- **pH:** pH levels were low at all stations and less than the desirable range 6.5-8.0 units. Visual inspection of historical data indicates variable epilimnetic pH since monitoring began.
- **Recommended Actions:** Increase monitoring frequency to once per month during the summer, typically June, July and August. This will allow better assessment of seasonal and historical water quality trends. The decreased transparency and slightly elevated epilimentic phosphorus may have been a result of recent rain events prior to sampling. Stormwater runoff from these events may have transported excess sediments and nutrients to the pond. Also noted were high water levels suggesting low or no flow from the Outlet potentially caused by beaver activity. Higher water levels and lack of flushing could also contribute to elevated phosphorus or turbidity. Keep an eye on potential beaver activity preventing flushing of the pond.



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)

Station Name	Table 1. 2014 Average Water Quality Data for CHAPMAN 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	1.10	3.65	40.0		14	1.50	1.75	3.65	5.43
Hypolimnion			46.2		12			3.37	5.52
Cove				40					
Outlet			42.1		10			2.04	5.52
Wegman Inlet			18.2		3			0.27	5.42

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

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	N/A	Ten consecutive years of data necessary for analysis.	Chlorophyll-a	N/A	Ten consecutive years of data necessary for analysis.
pH (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.	Transparency	N/A	Ten consecutive years of data necessary for analysis.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.