Volunteer Lake Assessment Program Individual Lake Reports

NUTT POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	415	**Max. Depth (m):**	9.2	**Flushing Rate (yr^{-1}):**	3.1
Surface Area (Ac.):	16	**Mean Depth (m):**	4	**P Retention Coef:**	0.53
Shore Length (m):	950	**Volume (m^3):**	260,500	**Elevation (ft):**	237

TROPHIC CLASSIFICATION

Year	Trophic class
1981	EUTROPHIC
1995	MESOTROPHIC

KNOWN EXOTIC SPECIES

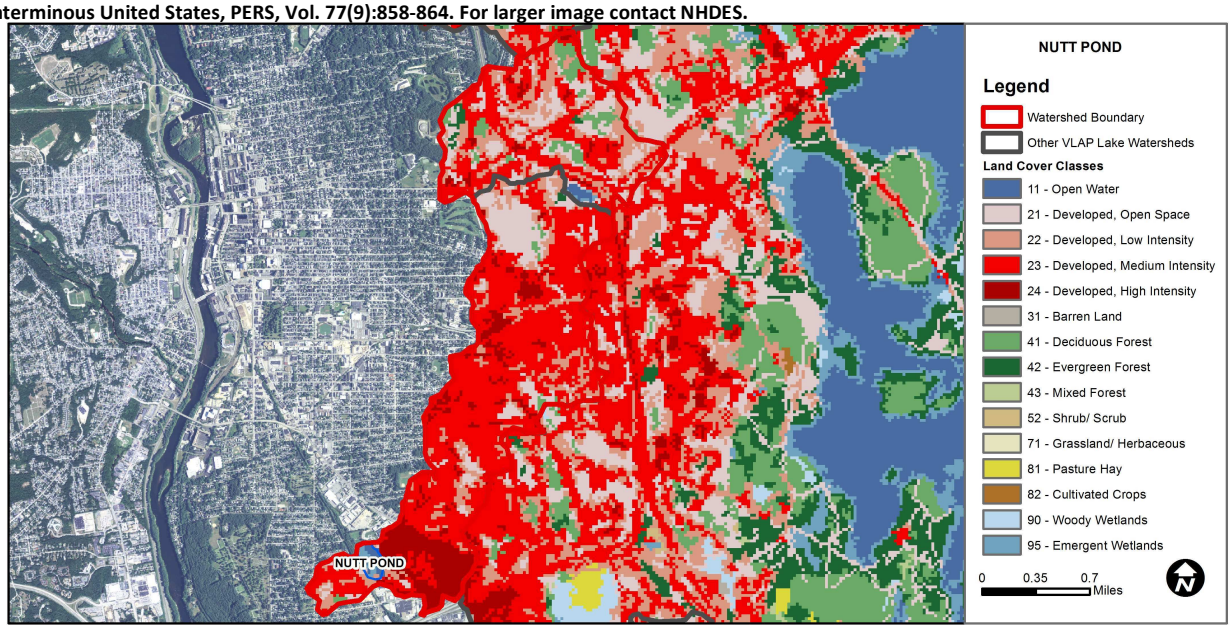
Brazilian Elodea

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	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Dissolved oxygen satura	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	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	0.8	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	14.4	Deciduous Forest	3.22	Pasture Hay	0
Developed-Low Intensity	18.4	Evergreen Forest	0.59	Cultivated Crops	0
Developed-Medium Intensity	50.9	Mixed Forest	0	Woody Wetlands	0.01
Developed-High Intensity	10.9	Shrub-Scrub	0	Emergent Wetlands	0.52

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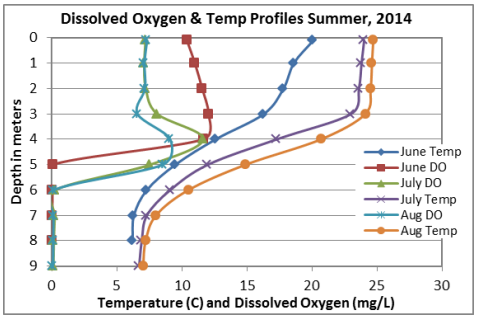
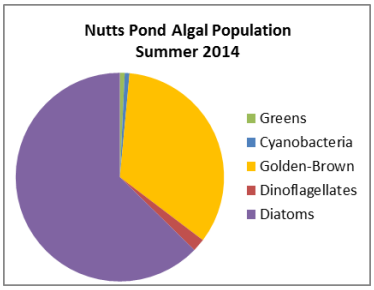
Nutts Pond, Manchester

2014 Data Summary

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

- **Chlorophyll-a:** Chlorophyll levels were elevated above 15.0 ug/L in June indicating a spring algal bloom had occurred. Diatoms were the dominant algae in the June phytoplankton sample. Chlorophyll levels decreased in July and remained stable through August. 2014 average chlorophyll levels were much greater than the state median and were the highest measured since 2007. However, historical trend analysis indicates significantly decreasing (improving) chlorophyll since monitoring began. We hope to see this continue!
- **Conductivity/Chloride:** Deep spot and tributary conductivity and chloride remained elevated and much greater than the state medians. Epilimnion, Inlet and Outlet chloride levels exceeded the state chronic chloride standard. Historical trend analysis indicates highly variable epilimnetic (upper water layer) conductivity since monitoring began.
- **Total Phosphorus:** Epilimnetic phosphorus remained low throughout the summer, was equal to the state median, and was the lowest measured since monitoring began. Metalimnetic (middle water layer) phosphorus increased steadily as the summer progressed, and hypolimnetic (lower water layer) phosphorus was greatly elevated on each sampling event, however average phosphorus levels were the lowest measured since monitoring began. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus since monitoring began and we hope to see this continue! Inlet phosphorus levels were slightly above average in July and August due to low flow conditions and Outlet phosphorus levels remained low on each sampling event and once again were the lowest average phosphorus levels since monitoring began.
- **Transparency:** Transparency was poor (low) in June due to the algal bloom and improved in July and August. Average transparency was much less than the state median and was the worst measured since 2004. Historical trend analysis indicates highly variable transparency since monitoring began.
- **Turbidity:** Epilimnetic and metalimnetic turbidities were higher in June due to the algal bloom, decreased in July and August but remained above average for most lakes. Hypolimnetic turbidity was greatly elevated on each sampling event due to the accumulation of organic compounds in hypolimnetic waters under anoxic conditions. Inlet turbidity was low on each sampling event and Outlet turbidity was elevated in June due to the algal bloom.
- **pH:** Epilimnetic and metalimnetic pH were sufficient to support aquatic life, however pH levels decreased below the desirable range of 6.5—8.0 units in the hypolimnion. Historical trend analysis indicates stable epilimnetic pH since monitoring began.
- **Recommended Actions:** Nutts Pond is surrounded by a highly urbanized watershed with corresponding poor water quality. However, the improving and chlorophyll-a and phosphorus levels are a positive sign and reflect management activities in the watershed. We hope to see this improved water quality continue. Keep up the great work!

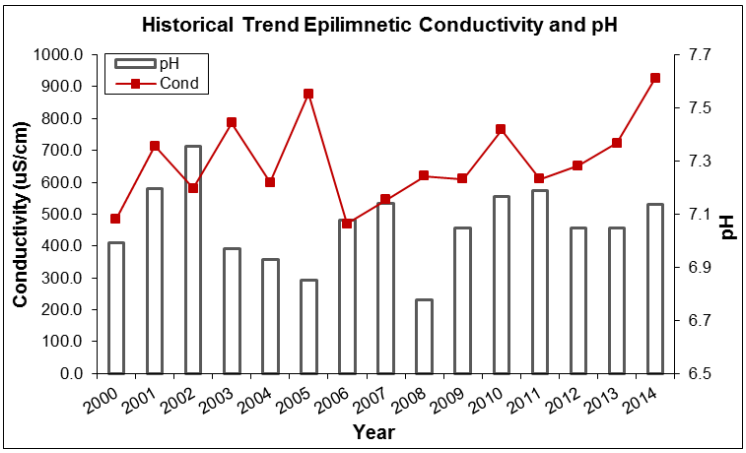
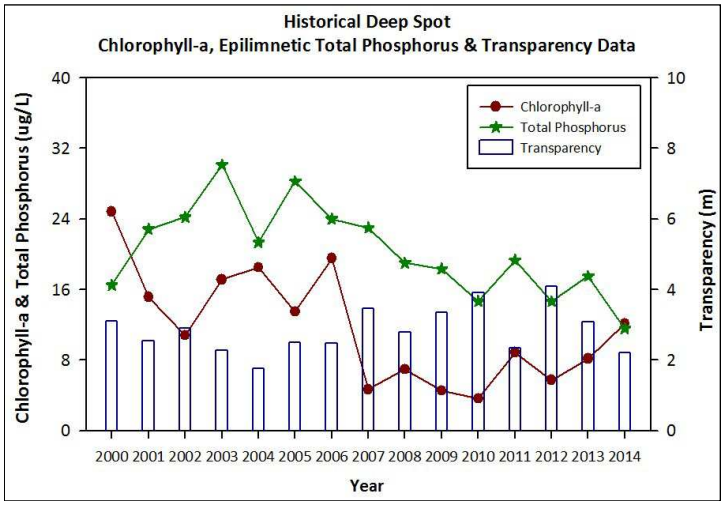




Station Name	Table 1. 2014 Average Water Quality Data for NUTT POND								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	18.2	12.14	360	926.7	12	2.21	2.08	2.38	7.14
Metalimnion				1863.0	17			3.89	6.72
Hypolimnion				1984.3	61			106.3	6.38
Inlet			360	1301.0	20			0.93	6.96
Outlet			350	1226.3	12			2.19	7.12

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/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	Stable	Trend not significant; data highly variable.	Chlorophyll-a	Improving	Data significantly decreasing.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.