



## Volunteer Lake Assessment Program Individual Lake Reports

### WHITE OAK POND, HOLDERNESS, NH

#### MORPHOMETRIC DATA

Watershed Area (Ac.):	3,008	Max. Depth (m):	10.7	Flushing Rate (yr <sup>-1</sup> )	1.3
Surface Area (Ac.):	291	Mean Depth (m):	4	P Retention Coef:	0.66
Shore Length (m):	5,100	Volume (m <sup>3</sup> ):	4,697,500	Elevation (ft):	583

#### TROPIC CLASSIFICATION

Year	Trophic class
1979	MESOTROPIC
1990	MESOTROPIC

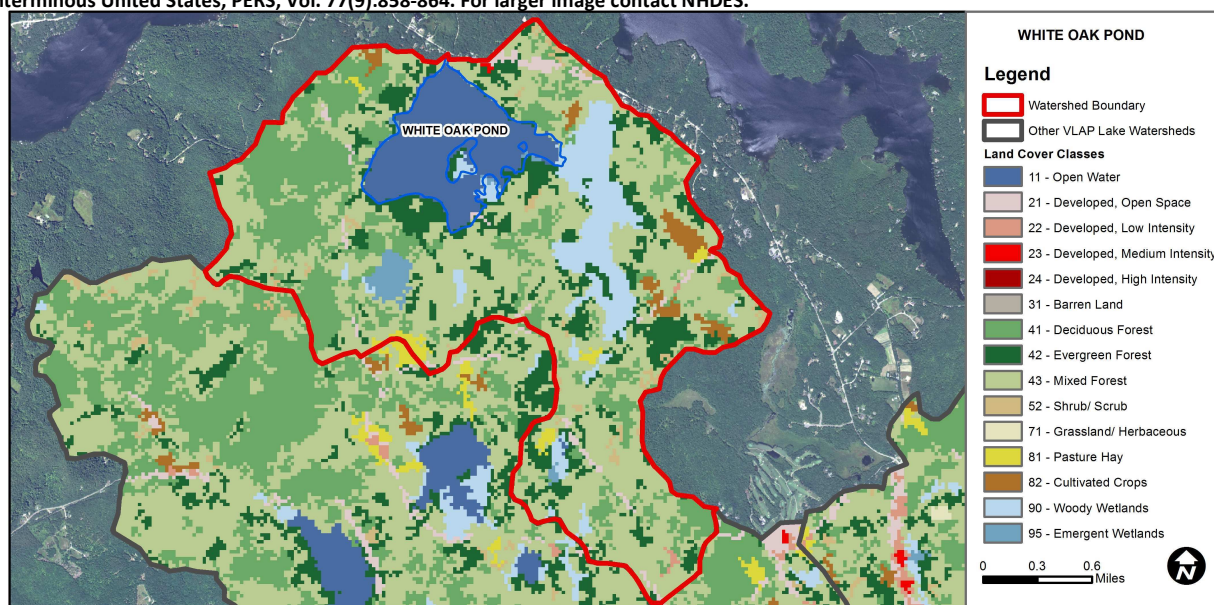
#### KNOWN EXOTIC SPECIES


The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Encouraging	>2 samples exist that are > 75% of geometric mean criteria, but not enough samples to calculate geometric mean. No single sample exceedances. More data needed.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

#### 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	9.79	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	1.52	Deciduous Forest	19.95	Pasture Hay	0.9
Developed-Low Intensity	0.14	Evergreen Forest	13.33	Cultivated Crops	1.7
Developed-Medium Intensity	0.04	Mixed Forest	42.43	Woody Wetlands	7.71
Developed-High Intensity	0	Shrub-Scrub	1.26	Emergent Wetlands	1.3



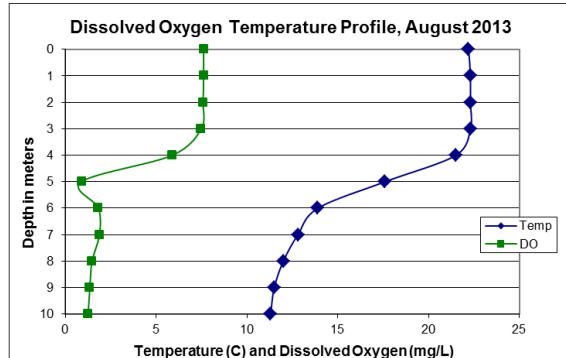
# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## WHITE OAK POND, HOLDERNESS, NH

### 2013 DATA SUMMARY

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

- 🔥 **CHLOROPHYLL-A:** Chlorophyll levels increased gradually from June to August, however were much less than the state median, and the lowest measured since monitoring began. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- 🔥 **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary #2, 3, 4, and 6 conductivity levels were relatively low and slightly greater than the state median. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began. Tributaries #3 and #9 conductivity levels were elevated.
- 🔥 **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were low and much less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus with low variability between years. Metalimnetic and hypolimnetic phosphorus were slightly higher than epilimnetic however were still relatively low. Phosphorus levels in #2 and #3 Dump Inlet were slightly elevated likely due to wetland systems. #9 East Holderness Trib phosphorus levels were average for that station.
- 🔥 **TRANSPARENCY:** Transparency was normal for the pond and slightly better than the state median. Historical trend analysis indicates stable transparency with low variability between years.
- 🔥 **TURBIDITY:** #3 Dump Inlet turbidity was elevated in June following significant rainfall, and #3 Dump Trib was elevated in July following significant rainfall. Metalimnetic turbidity was slightly elevated on each sampling event and increased gradually from June to August potentially due to a layer of algae. Hypolimnetic turbidity was elevated on each sampling event potentially due to the release of organic compounds from bottom sediments.
- 🔥 **pH:** pH levels were within the desirable range of 6.5 - 8.0 units, however deep spot pH levels have been lower than desirable in the past.
- 🔥 **RECOMMENDED ACTIONS:** Conduct chloride monitoring at all stations to help identify source of increasing epilimnetic conductivity. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff. Educate lake and watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "Homeowner's Guide to Stormwater Management".



**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:** 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<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

Station Name	Alk.	Chlor-a	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	ug/l	NVS	VS	ntu	
#2 Lamb Swamp Inlet			54.1	20			0.68	6.42
#3 Dump Inlet			54.5	16			1.26	6.82
#3 Dump Trib			257.4	10			3.30	7.21
#4 Outlet (Dam)			52.6	6			0.55	7.03
#6 Stone Bridge Inlet			52.4	8			0.68	6.98
#9 E Holderness Rd Trib			85.1	14			1.37	6.77
Epilimnion	6.97	1.32	55.0	6	3.33	3.90	0.67	7.02
Metalimnion			52.0	10			1.84	6.59
Hypolimnion			61.1	13			4.34	6.83

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data highly variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Degrading	Data significantly increasing.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

