



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 ⁻¹)	1.3
Surface Area (Ac.):	291	Mean Depth (m):	4	P Retention Coef:	0.66
Shore Length (m):	5,100	Volume (m ³):	4,697,500	Elevation (ft):	583

TROPIC CLASSIFICATION

Year	Trophic class
1979	MESOTROPIC
1990	MESOTROPIC

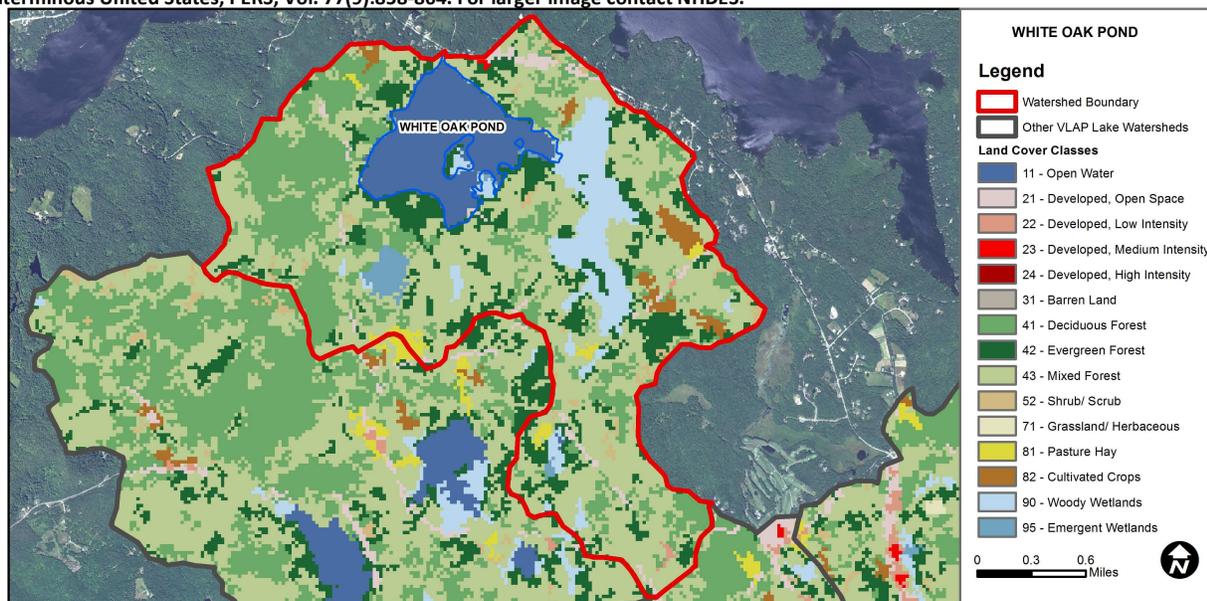
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 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	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	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	Encouraging	There are no geometric means or there are > 2 single samples but those samples are within 75% of the geometric means criteria. More data needed.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of 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.



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

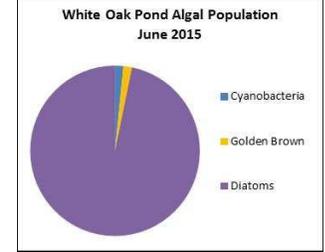
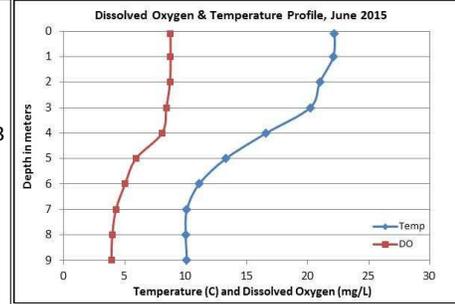
WHITE OAK POND, HOLDERNESS

2015 DATA SUMMARY

RECOMMENDED ACTIONS: Turbidity was elevated in #9 E Holderness Rd. Trib. suggesting stormwater runoff transports unstable sediments or flushes wetland systems rich in organic content to the tributary. Identify potential areas of stormwater runoff and install best practices to reduce runoff to the tributary. The data are collected under a road and roadside drainage and ditches often have sediment and organic matter build up that washes downstream during storm events. Encourage local road agents to remove any accumulation of sand from winter maintenance activities to reduce sediment transport. Conductivity and chloride at #3 Dump Trib. remain elevated suggesting potential impacts from nearby roadways or material deposited at the dump. Encourage local road agents and winter maintenance companies to obtain a Voluntary NH Salt Applicator License through UNH Technology Transfer Center's Green SnowPro Certification Program. Keep up the great work!

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

- **CHLOROPHYLL-A:** Chlorophyll levels were within a moderate range in June and August. The 2015 average chlorophyll level remained stable with 2014 and was slightly less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot, #2 Lamb Swamp Inlet, #3 Dump Inlet, #4 Outlet, and #6 Stone Bridge Inlet conductivity and chloride levels remained within an average range and were approximately equal to the state medians. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity since monitoring began. #3 Dump Trib. and #9 E Holderness Rd. Trib. conductivity and chloride were slightly elevated and greater than the state medians, particularly at #3 Dump Trib.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus remained stable and low from June to August. Average epilimnetic phosphorus increased slightly from 2014 but was less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus since monitoring began and we hope to see this continue! Metalimnetic (middle water layer) and hypolimnetic (lower water layer) phosphorus levels were moderate and remained stable from June to August. #2 Lamb Swamp Inlet, #3 Dump Inlet and Trib., #4 Outlet, and #9 E Holderness Rd. Trib. phosphorus levels were within average ranges for those stations. Dump Trib. and Outlet phosphorus levels were slightly higher in June following a significant storm event but remained within an average range. #6 Stone Bridge Inlet phosphorus levels were elevated in June following the significant storm event and then decreased to low levels in August.
- **TRANSPARENCY:** Transparency (NVS and VS) was lower in June following the significant storm event and increased (improved) to a good level in August. Average NVS transparency was stable with 2014 and was slightly better than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic turbidity was stable and low from June to August. Metalimnetic turbidity was slightly above average on each sampling event suggesting a layer of algae at that depth. Hypolimnetic turbidity was low in June and then elevated in August likely due to the accumulation of organic compounds as the summer progresses. #3 Dump Trib. turbidity was slightly above average in August due to stagnant conditions. #9 E Holderness Rd. Trib. turbidity was slightly elevated on each sampling event following significant storm events.
- **pH:** Epilimnetic and #3 Dump Trib. pH levels fluctuated below the desirable range in August. Metalimnetic, hypolimnetic and #2 Lamb Swamp Inlet pH levels were also less than desirable. All other tributary station pH levels were within the desirable range.



Station Name	Table 1. 2015 Average Water Quality Data for WHITE OAK 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	7.6	4.25	7	49.9	8	3.88	4.19	0.71	6.56
Metalimnion				53.0	13			1.77	6.22
Hypolimnion				56.0	13			2.86	6.13
#2 Lamb Swamp Inlet			8	46.5	11			0.68	5.77
#3 Dump Inlet			7	45.8	12			1.22	6.76
#3 Dump Trib.			54	237.0	18			0.84	6.52
#4 Outlet (Dam)				52.5	9			0.89	6.84
#6 Stone Bridge Inlet			7	48.5	17			0.83	6.61
#9 E Holderness Rd Trib.			24	130.4	17			2.67	6.51

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/m³
- 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	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.

