



Volunteer Lake Assessment Program Individual Lake Reports

WILLAND POND, SOMERSWORTH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	288	Max. Depth (m):	11.2	Flushing Rate (yr ⁻¹)	0.3
Surface Area (Ac.):	86	Mean Depth (m):	4.7	P Retention Coef:	0.84
Shore Length (m):	2,700	Volume (m ³):	1,627,000	Elevation (ft):	182

TROPIC CLASSIFICATION

Year	Trophic class
1987	MESOTROPHIC

KNOWN EXOTIC SPECIES

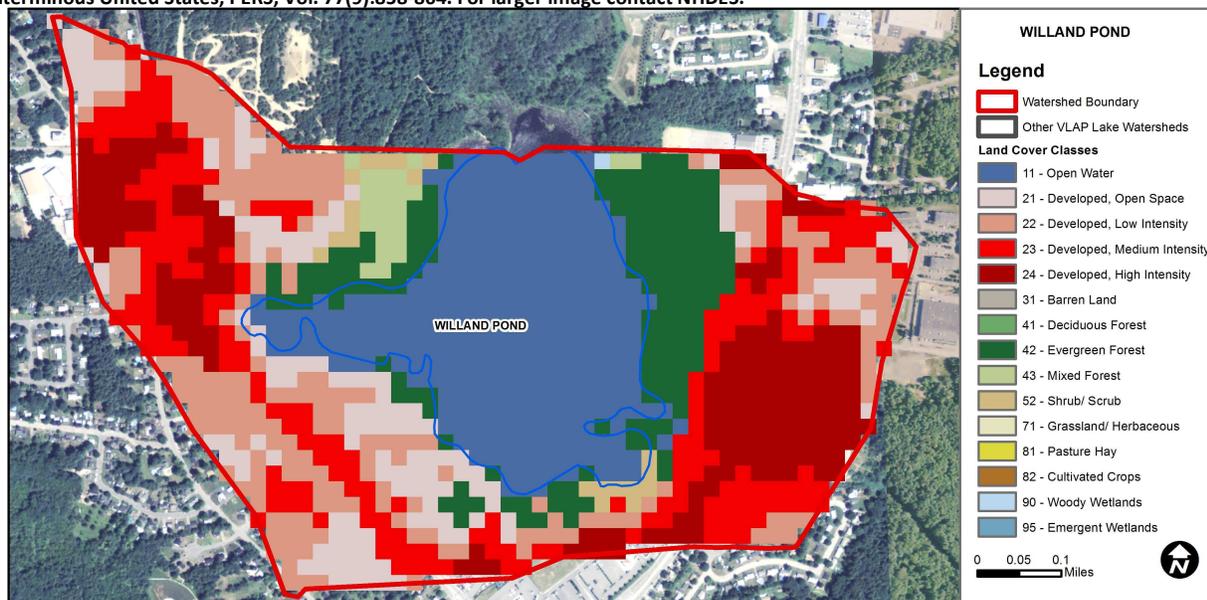
Variable Milfoil

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	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Bad	There are >10% of samples (minimum of 2), exceeding criteria with one or more samples considered large exceedance.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
Primary Contact Recreation	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, 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.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	24.2	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	10.9	Deciduous Forest	0	Pasture Hay	0
Developed-Low Intensity	17.6	Evergreen Forest	11.88	Cultivated Crops	0
Developed-Medium Intensity	16.1	Mixed Forest	1.81	Woody Wetlands	0.08
Developed-High Intensity	14.8	Shrub-Scrub	1.57	Emergent Wetlands	0



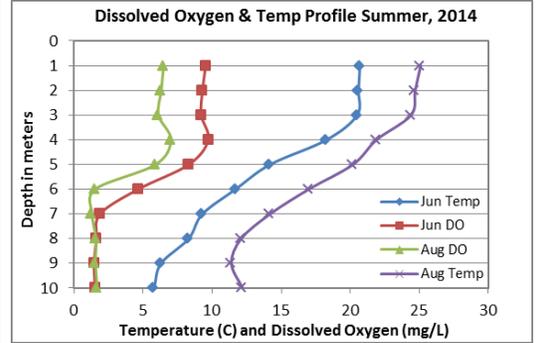
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

WILLAND POND, DOVER/SOMERSWORTH

2014 DATA SUMMARY

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were low in June, increased in July and then decreased to low levels in August. The 2014 average chlorophyll level was less than the state median and the lowest measured since monitoring began!
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot conductivity and chloride levels remained elevated and much greater than the state median. Visual inspection of historical data indicates slightly increasing epilimnetic (upper water layer) conductivity.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic conductivity decreased from June to August and remained at low levels. The 2014 average epilimnetic phosphorus was less than the state median and the lowest measured since monitoring began. Metalimnetic (middle water layer) phosphorus levels also remained low throughout the summer and the 2014 average was the lowest measured since monitoring began. Hypolimnetic (lower water layer) phosphorus levels were within an average range for lakes and the 2014 average was the lowest measured since monitoring began. We hope to see this continue!
- ◆ **TRANSPARENCY:** Transparency was good in June when algal growth was low, decreased (worsened) slightly in July with the increased algal growth, and then improved (increased) in August when algal growth decreased. The 2014 average transparency was better than the state median and the best measured since monitoring began. We hope to see this continue!
- ◆ **TURBIDITY:** Epilimnetic and metalimnetic turbidities increased slightly in July with the increased algal growth, but average turbidity was low. Hypolimnetic turbidity increased as the summer progressed with the accumulation of organic compounds in the hypolimnion as the summer progressed and dissolved oxygen levels were depleted.
- ◆ **pH:** Epilimnetic and metalimnetic pH levels were within the desirable range 6.5-8.0 units, however hypolimnetic pH was much less than desirable.
- ◆ **RECOMMENDED ACTIONS:** Maintain current water level management strategies as water quality has improved. We hope to see this continue and water quality trends stabilize in the near future. Maintain current monitoring activities to track trends and keep up the great work!



Station Name	Table 1. 2014 Average Water Quality Data for WILLAND 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	3.77	2.81	43	239.7	7	5.24	5.41	0.87	6.58
Metalimnion				239.3	9			0.84	6.64
Hypolimnion				235.7	16			2.50	5.93

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

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	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.

