Volunteer Lake Assessment Program Individual Lake Reports

OSSIPEE LAKE, OSSIPEE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	209,595	**Max. Depth (m):**	18.5	**Flushing Rate (yr^{1})**	4.6
Surface Area (Ac.):	3092	**Mean Depth (m):**	8.5	**P Retention Coef:**	0.39
Shore Length (m):	17,100	**Volume (m^{3}):**	108,421,500	**Elevation (ft):**	406

TROPHIC CLASSIFICATION

Year	Trophic class
1987	OLIGOTROPHIC
2003	OLIGOTROPHIC

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

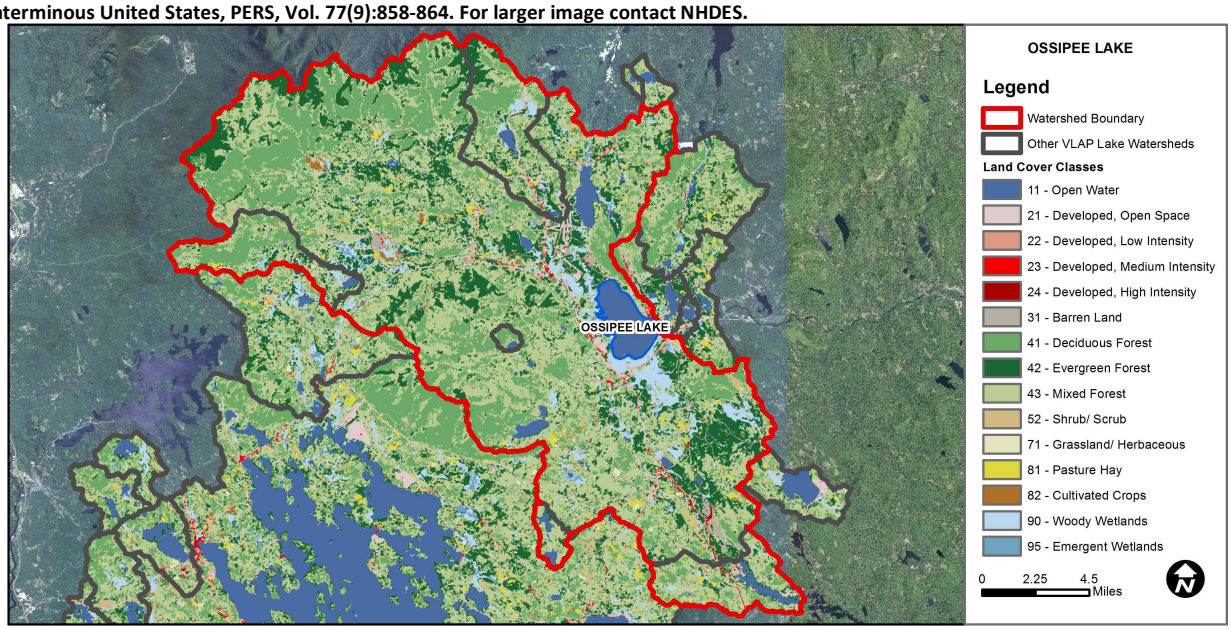
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	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.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

OSSIPEE LAKE - CAMP CODY FOR BOYS BEACH	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.
OSSIPEE LAKE - CAMP CALUMET BEACH	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.
OSSIPEE LAKE - OSSIPEE LAKE NATURAL AREA	Escherichia coli	Slightly Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. Exceedances are <2X criteria.
OSSIPEE LAKE - DEER COVE PB BEACH	Escherichia coli	No Data	No data for this parameter.

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	3.48	Barren Land	0.66	Grassland/Herbaceous	0.37
Developed-Open Space	2.87	Deciduous Forest	22.98	Pasture Hay	0.86
Developed-Low Intensity	0.75	Evergreen Forest	20.55	Cultivated Crops	0.51
Developed-Medium Intensity	0.25	Mixed Forest	38.67	Woody Wetlands	4.85
Developed-High Intensity	0.04	Shrub-Scrub	2.52	Emergent Wetlands	0.59

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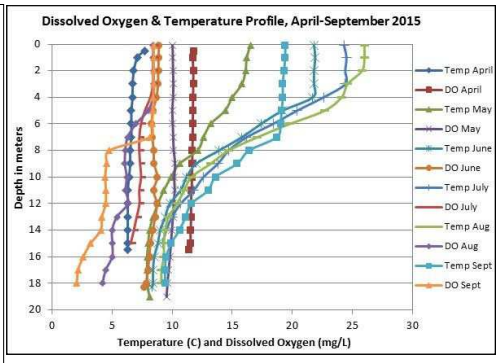
Ossipee Lake, Ossipee

2015 Data Summary

Recommended Actions: Ossipee Lake water quality is representative of Oligotrophic, or high quality water, conditions. Spring snow melt and high water levels likely contributed to the low clarity and slightly higher turbidity in April. The above average snowfall and sand/salt application to local roadways and driveways likely contributed to the elevated turbidity and low water clarity. Road agents should be encouraged to remove any sand accumulated along roadsides, and to clean culverts and catch basins after the winter months to prevent any sediment and debris from entering nearby streams and the lake. Stormwater runoff and boating activity may also impact lake clarity. Encourage shorefront property owners to implement stormwater best practices and maintain vegetated shoreline buffers. Educate boaters on best boating practices in shallow areas and near the shoreline. The DES fact sheet "WD-WMB-25 Impacts of Motorized Craft on New Hampshire's Waterbodies" is a great educational resource. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll levels fluctuated between 1.0 and 2.0 ug/L from April to September and remained within a low range. Average chlorophyll levels decreased from 2014 and were much less than the state median. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), metalimnetic (middle water layer), and hypolimnetic (lower water layer) conductivity and chloride levels remained stable and low and were approximately equal to the state median. Historical trend analysis indicates stable epilimnetic conductivity since monitoring began.
- **Total Phosphorus:** Epilimnetic, metalimnetic and hypolimnetic phosphorus levels remained stable and low from April to September. Average epilimnetic phosphorus decreased slightly from 2014 and was much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus levels since monitoring began.
- **Transparency:** Transparency (NVS) was lowest (worse) in April, August and September. High water levels and turbidity likely contributed to the lower April transparency and algal growth may have contributed to the lower values in August and September. Transparency was higher (better) in May, June and July. Average NVS transparency was good in 2015, improved from 2014 and was better than the state median. Historical trend analysis indicates highly variable NVS transparency since monitoring began. Transparency measured with the viewscope (VS) was also low in April but increased (improved) to a high range in May and remained within this range through September indicating viewscope transparency is a likely a better representation of actual conditions.
- **Turbidity:** Epilimnetic turbidity was slightly elevated in April and then decreased to an average range from May to September. Metalimnetic and hypolimnetic turbidities remained within a low to average range for those stations.
- **pH:** Epilimnetic pH was within the desirable range 6.5-8.0 units however metalimnetic and hypolimnetic pH levels fluctuated below the desirable range and were slightly acidic. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.



Station Name	Table 1. 2015 Average Water Quality Data for OSSIPEE LAKE								
	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	6.4	1.35	6	45.2	6	4.35	4.79	0.76	6.51
Metalimnion				41.8	6			0.82	6.11
Hypolimnion				41.9	7			0.83	6.07

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

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	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.