Volunteer Lake Assessment Program Individual Lake Reports

LEAVITT BAY, OSSIPEE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	227,357	**Max. Depth (m):**	12.8	**Flushing Rate (yr^{1})**	221
Surface Area (Ac.):	176	**Mean Depth (m):**	3.4	**P Retention Coef:**	-0.01
Shore Length (m):	4,800	**Volume (m^{3}):**	2,429,000	**Elevation (ft):**	406

TROPHIC CLASSIFICATION

Year	Trophic class
1987	MESOTROPHIC
2003	OLIGOTROPHIC

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

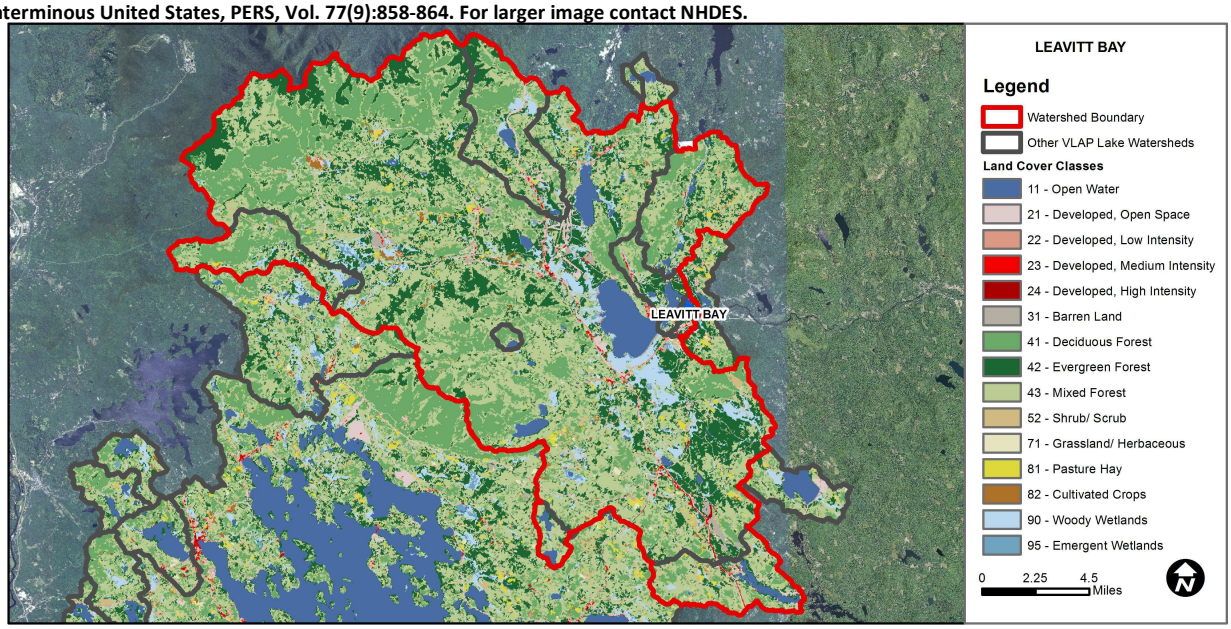
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	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	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BROAD BAY - CAMP ROBIN HOOD 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.
LEAVITT BAY - CAMP MARIST 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.
BROAD BAY - CAMP HUCKINS BEACH	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.

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	3.64	Barren Land	0.64	Grassland/Herbaceous	0.36
Developed-Open Space	2.95	Deciduous Forest	23.25	Pasture Hay	0.85
Developed-Low Intensity	0.77	Evergreen Forest	20.38	Cultivated Crops	0.5
Developed-Medium Intensity	0.25	Mixed Forest	38.4	Woody Wetlands	4.65
Developed-High Intensity	0.04	Shrub-Scrub	2.67	Emergent Wetlands	0.6

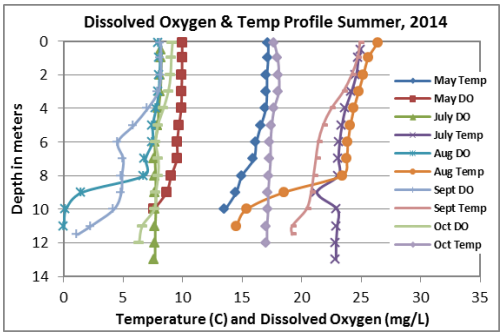
Volunteer Lake Assessment Program Individual Lake Reports

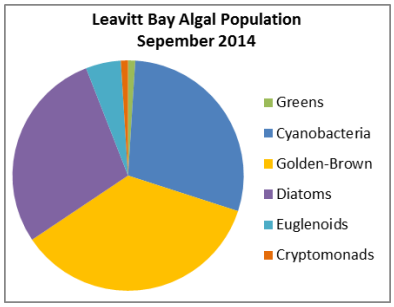
Leavitt Bay, Ossipee

2014 Data Summary

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

- **Chlorophyll-a:** Chlorophyll levels increased slightly from June through August, decreased in September, and then increased again in October. Chlorophyll levels remained low and were less than the state median. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot conductivity and chloride levels remained low and approximately equal to the state medians. Historical trend analysis indicates stable epilimnetic conductivity since monitoring began.
- **Total Phosphorus:** Epilimnetic and Metalimnetic phosphorus levels were generally 5 ug/L or less from May through October. Average epilimnetic phosphorus decreased sharply from 2013 and was much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus since monitoring began.
- **Transparency:** Transparency measured without the viewscope (NVS) was lower than average in May due to wind and wave conditions, and in August potentially due to recent storm event and/or peak algal growth. NVS transparency was above average (good) in July, September and October, and the 2014 average transparency improved slightly from 2013 and was approximately equal to the state median. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. Transparency measured with the viewscope (VS) was lower in May, August and October however remained better than the state median, and was higher (good) in July and September. VS transparency is likely a better representation of actual conditions.
- **Turbidity:** Epilimnetic turbidity was slightly above average in 2014. Metalimnetic turbidity was average from May through September and then increased in September likely due to a layer of algae. Hypolimnetic turbidity was low in May and July and then increased to elevated levels from August through October due to the accumulation of organic compounds in hypolimnetic waters as the summer progressed.
- **pH:** Epilimnetic and Metalimnetic pH levels were within the desirable range 6.5-8.0 units, however hypolimnetic pH was less than desirable from July through September. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **Recommended Actions:** Water quality improved from 2013, however transparency has significantly decreased since monitoring began. The worsening transparency trend may be a result of an increase in suspended sediments from stormwater runoff, boating activity, and weather conditions. Transparency measured with the viewscope was generally better than that without. Continue collecting viewscope data to better assess transparency. The development of a watershed management plan in underway; keep up the great work!





Station Name	Table 1. 2014 Average Water Quality Data for LEAVITT BAY								
	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	5.40	2.27	6	42.9	4	3.28	4.31	0.85	6.71
Metalimnion				43.1	5			0.93	6.57
Hypolimnion				43.6	6			1.46	6.42

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 show low variability.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.