



## Volunteer Lake Assessment Program Individual Lake Reports

### PLEASANT LAKE, NEW LONDON, NH

#### MORPHOMETRIC DATA

Watershed Area (Ac.):	7,488	Max. Depth (m):	28.6	Flushing Rate (yr <sup>-1</sup> )	0.7
Surface Area (Ac.):	606	Mean Depth (m):	10.5	P Retention Coef:	0.6
Shore Length (m):	7,200	Volume (m <sup>3</sup> ):	25,761,000	Elevation (ft):	805

#### TROPIC CLASSIFICATION

Year	Trophic class
1979	OLIGOTROPIC
1993	OLIGOTROPIC

#### 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.

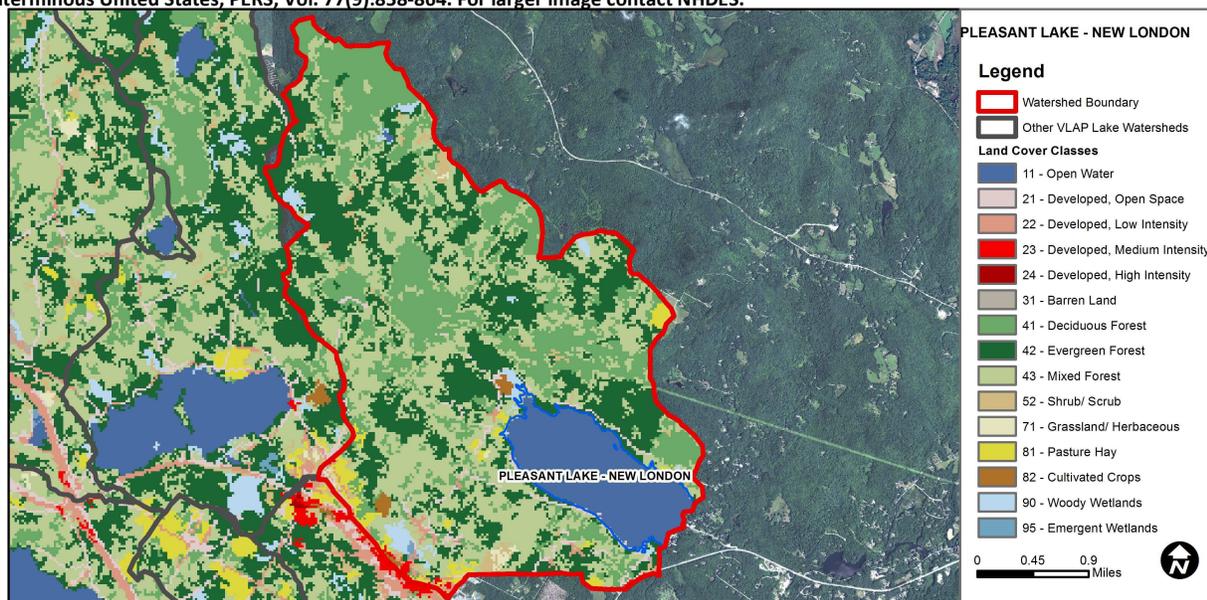
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	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	No Data	No Data for this parameter.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

#### BEACH PRIMARY CONTACT ASSESSMENT STATUS

PLEASANT LAKE - ELKINS BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
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#### 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	9.6	Barren Land	0.02	Grassland/Herbaceous	0.29
Developed-Open Space	1.79	Deciduous Forest	22.5	Pasture Hay	1.91
Developed-Low Intensity	0.76	Evergreen Forest	26.98	Cultivated Crops	0.42
Developed-Medium Intensity	0.34	Mixed Forest	32.34	Woody Wetlands	1.49
Developed-High Intensity	0	Shrub-Scrub	1.5	Emergent Wetlands	0.09



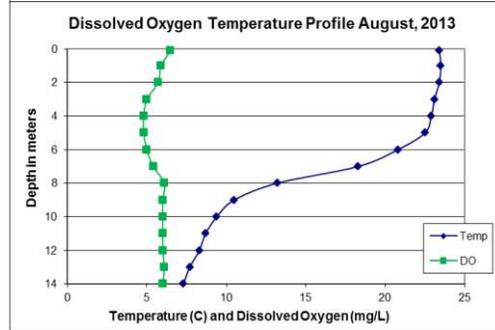
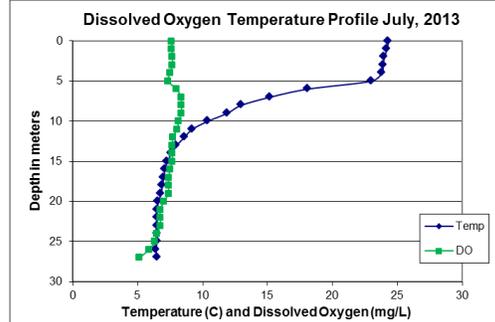
# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## PLEASANT LAKE, NEW LONDON, NH

### 2013 DATA SUMMARY

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

- 🔥 **CHLOROPHYLL-A:** Chlorophyll levels were low throughout the summer and less than the state median. Historical trend analysis indicates relatively stable chlorophyll with high variability between years.
- 🔥 **CONDUCTIVITY/CHLORIDE:** Deep spot conductivity was low throughout the summer and approximately equal to the state median. Historical trend analysis indicates stable epilimnetic conductivity with low variability between years. Tributary conductivity levels were slightly above normal in April likely due to spring snowmelt. Conductivity levels in PL7A, C and D were elevated and much greater than the state median.
- 🔥 **E. COLI:** E. coli levels were well below state standard for public beaches and surface waters.
- 🔥 **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low and well below the state median. Historical trend analysis indicates stable epilimnetic phosphorus with low variability between years. Phosphorus levels in Chandler Brook (PL2) were elevated in April. Phosphorus levels in Turtle Cove PL5 were slightly elevated in June and August.
- 🔥 **TRANSPARENCY:** Transparency remained relatively stable throughout the summer and was much deeper utilizing the viewscope. Historical trend analysis indicates non-viewscope transparency significantly decreasing (worsening) since monitoring began.
- 🔥 **TURBIDITY:** Epilimnetic turbidity was elevated in June likely due to stormwater runoff from significant storm events. Metalimnetic turbidity was elevated in June and July likely due to layers of algae. Turbidity was elevated at PL5 in June likely due to stormwater runoff, and also at site PL8 due to bottom sediment.
- 🔥 **pH:** Deep spot and tributary pH tends to be lower than desirable range 6.5 – 8.0 units.
- 🔥 **DISSOLVED OXYGEN:** Dissolved oxygen levels typically decrease in the hypolimnion as the summer progresses.
- 🔥 **RECOMMENDED ACTIONS:** Conduct chloride sampling at stations PL7 A, C and D to identify what proportion of the elevated conductivity is attributed to chlorides. There continues to be a worsening transparency trend and potentially due to stormwater runoff and suspended sediments, however transparency measured with the viewscope is often much deeper than without. Epilimnetic turbidity was elevated after significant June storm events and indicates the likelihood of stormwater erosion in the watershed. Identify potential areas of erosion and implement best management practices to reduce sedimentation during storm events. DES' "Homeowner's Guide to Stormwater Management" is a good resource. Several new stations were added on Red and White Brooks to assess any impacts from a new agricultural operation. Keep up the great work!



Station	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	NVS	VS	ntu	
Chandler Brook				53.9		10			0.80	6.53
Epilimnion	4.73	2.19		43.7		6	5.32	6.69	1.02	6.47
Metalimnion				44.3		6			1.64	6.28
Hypolimnion				44.8		6			0.73	6.18
Outlet				44.4		5			1.43	6.56
PL 4A				59.2		9			0.83	6.29
PL 5A				25.4		5			1.05	6.17
PL 7 Red Brook				43.9		6			0.47	6.75
PL 7A				194.5		8			0.80	6.14
PL 8			5	48.1		7			3.00	6.73
PL 4B				64.7		6			0.98	5.89
PL 7C				215.8		11			0.72	6.13
PL 7D				272.2		12			0.78	6.15
PL 5 Turtle Cove				43.7	10	10			1.28	6.61
PL 4 White Brook				44.3		6			0.82	6.66

**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

#### HISTORICAL WATER QUALITY TREND ANALYSIS

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

