Volunteer Lake Assessment Program Individual Lake Reports

MARTIN MEADOW POND, LANCASTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	960	**Max. Depth (m):**	9.1	**Flushing Rate (yr^{1})**	0.9
Surface Area (Ac.):	118	**Mean Depth (m):**	4.1	**P Retention Coef:**	0.71
Shore Length (m):	3,200	**Volume (m^3):**	1,954,000	**Elevation (ft):**	1068

TROPHIC CLASSIFICATION

Year	Trophic class
1994	MESOTROPHIC
2008	MESOTROPHIC

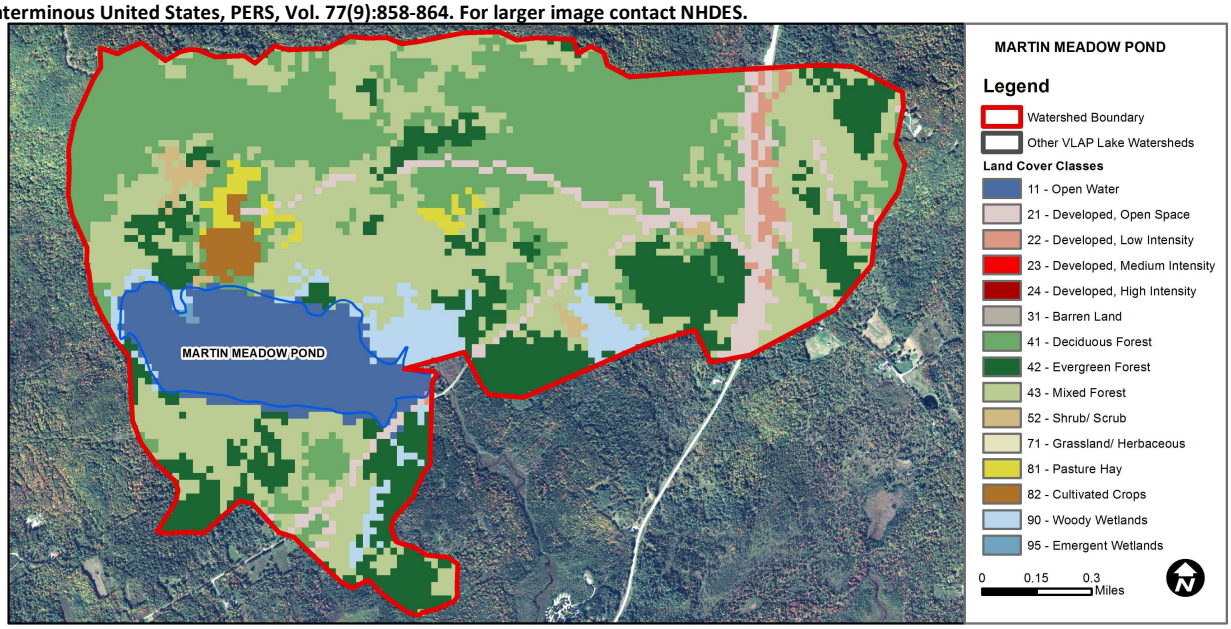
KNOWN EXOTIC SPECIES

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)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	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.
	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	9.7	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.96	Deciduous Forest	29.52	Pasture Hay	1.17
Developed-Low Intensity	1.06	Evergreen Forest	15.78	Cultivated Crops	1.04
Developed-Medium Intensity	0	Mixed Forest	31.87	Woody Wetlands	4.02
Developed-High Intensity	0	Shrub-Scrub	0.87	Emergent Wetlands	0.08

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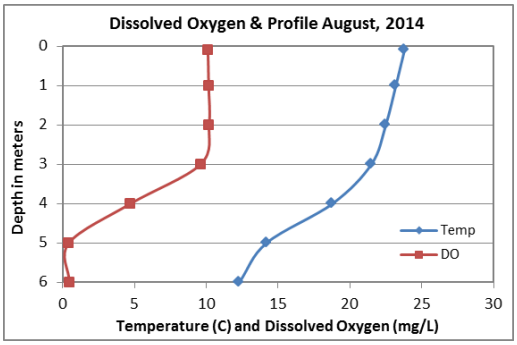
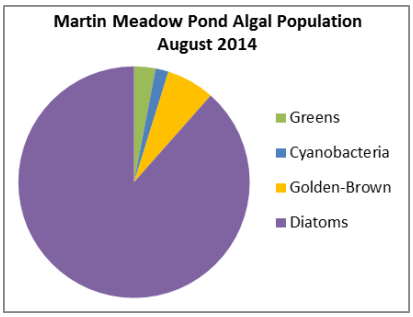
Martin Meadow Pond, Lancaster

2014 Data Summary

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

- **Chlorophyll-a:** A chlorophyll sample was collected in 2014 however a laboratory error occurred and the sample was not analyzed. We apologize for the inconvenience. Visual analysis of historical data indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot, Outlet and nearshore station conductivity levels were slightly elevated and greater than the state median. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity since monitoring began.
- **E. coli:** Nearshore station E. coli levels were low and much less than the state standard for surface waters of 406 cts/100 mL.
- **Total Phosphorus:** Epilimnetic phosphorus level was low, remained stable from 2013 and was less than the state median. Historical trend analysis indicates stable epilimnetic phosphorus since monitoring began. Hypolimnetic (lower water layer) phosphorus level was slightly greater than the epilimnion, however remained at a relatively low level and was within an average range for that station. Nearshore station phosphorus levels were low.
- **Transparency:** Transparency improved from that measured in 2013 however remained lower than the state median. This may have been a result of lower water levels due to a breach in the dam. Historical trend analysis indicates highly variable transparency since monitoring began.
- **Turbidity:** Deep spot, Outlet and nearshore station turbidities were within average ranges for those stations.
- **pH:** Epilimnetic and hypolimnetic pH levels were within the desirable range of 6.5-8.0 units. However, hypolimnetic pH has fluctuated below the desirable range in the past. Historical trend analysis indicates stable epilimnetic pH since monitoring began.
- **Recommended Actions:** Increase monitoring frequency, typically once per month in June, July and August, to better assess seasonal and historical water quality trends and decrease the variability of the data. The association is working with partners to manage the dam and water level and we commend you for the work you have done. Maintaining a consistent water level as well as flow from the pond is important to maintain stable water quality trends and to better understand the different factors affecting water quality in the pond. Keep up the great work!





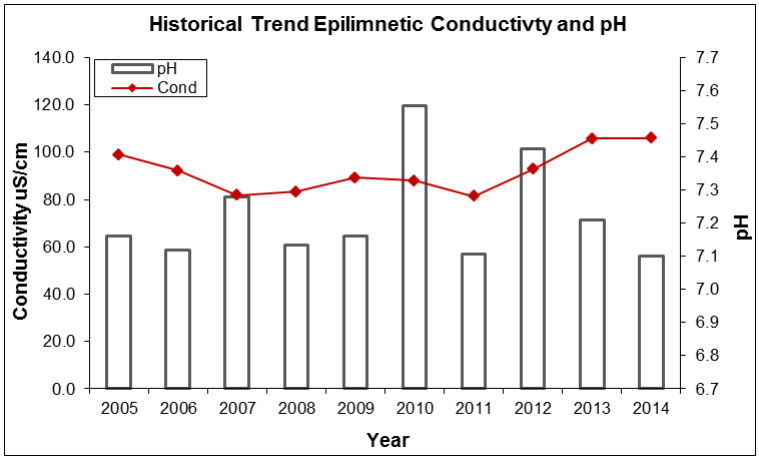
Station Name	Table 1. 2014 Average Water Quality Data for MARTIN MEADOW POND								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	14.2	N/A	106.0		9	2.45	2.60	0.96	7.10
Hypolimnion			111.0		13			1.60	6.53
Mccarten			107.5	10	5			0.75	7.30
Outlet			108.0		7			1.01	7.29
Weeks			108.0	10	7			0.84	7.33
Whithed			107.0	10	7			0.78	7.30

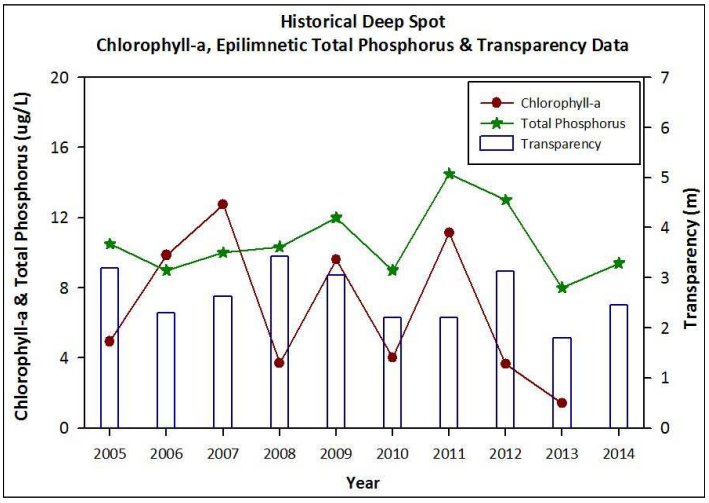
NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

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	N/A	Ten consecutive years of data necessary for analysis.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.





This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact VLAP at (603) 271-2658 or sara.steiner@des.nh.gov