



Volunteer Lake Assessment Program Individual Lake Reports

DANFORTH POND, LOWER, FREEDOM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	11,776	Max. Depth (m):	16.8	Flushing Rate (yr ¹)	31.6
Surface Area (Ac.):	32	Mean Depth (m):	7.1	P Retention Coef:	0.07
Shore Length (m):	1,400	Volume (m ³):	918,500	Elevation (ft):	408

TROPHIC CLASSIFICATION

Year	Trophic class
1983	MESOTROPHIC
2001	MESOTROPHIC

KNOWN EXOTIC SPECIES

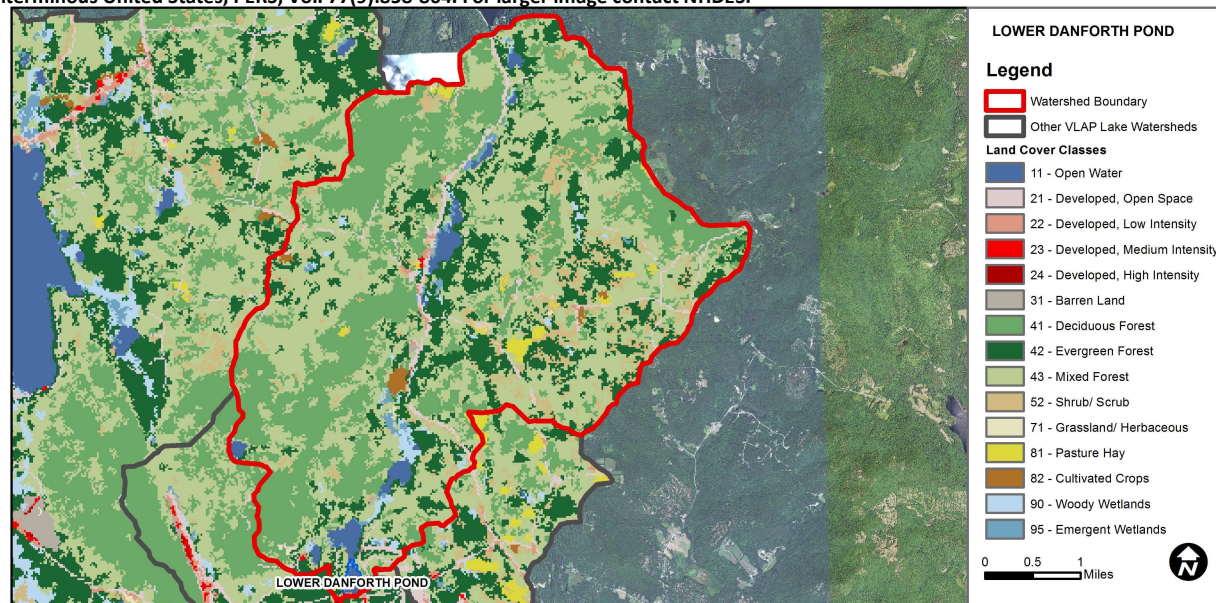
Variable Milfoil

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)	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	Good	There are at least 10 samples with one, but < 10% of samples, 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	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	2.09	Barren Land	0.1	Grassland/Herbaceous	0.08
Developed-Open Space	2.61	Deciduous Forest	29.82	Pasture Hay	0.85
Developed-Low Intensity	0.26	Evergreen Forest	16.21	Cultivated Crops	0.41
Developed-Medium Intensity	0.03	Mixed Forest	40.01	Woody Wetlands	1.18
Developed-High Intensity	0	Shrub-Scrub	5.62	Emergent Wetlands	0.74



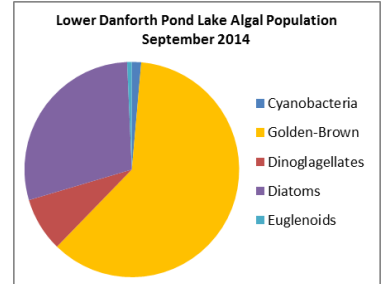
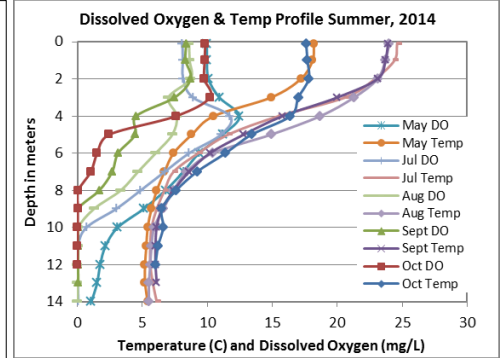
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

LOWER DANFORTH POND, FREEDOM

2014 DATA SUMMARY

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

- CHLOROPHYLL-A:** Chlorophyll levels were average in May and July, spiked to elevated levels in August, decreased to average levels in September, and then spiked to elevated levels again in October. Average chlorophyll levels were slightly elevated and greater than the state median, however decreased from 2013. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- CONDUCTIVITY/CHLORIDE:** Deep spot conductivity was average in May and then increased at each layer gradually as the summer progressed. Average epilimnetic conductivity and chloride was slightly greater than the state medians and historical trend analysis indicates stable epilimnetic conductivity since monitoring began.
- TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels remained between 6 and 9 ug/L from May through October. Average epilimnetic phosphorus decreased sharply from 2013 and was less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Metalimnetic phosphorus remained between 6 and 9 ug/L from May through September and then increased in October during fall turnover. Hypolimnetic phosphorus remained between 6 and 9 ug/L in May and July and then increased to elevated levels from August through October as dissolved oxygen levels decreased and phosphorus was released from bottom sediments as the summer progressed.
- TRANSPARENCY:** Transparency measured without the viewscope increased (improved) from below average levels in May and July to average levels in August and September, then decreased again in October. Average transparency was stable with 2013 and was less than the state median. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. Transparency measured with the viewscope (VS) was much better than that without and was better than the state median from May through October.
- TURBIDITY:** Epilimnetic turbidity was average in May and July, increased in August with the elevated algal growth, decreased in September with the decreased algal growth, and then increased again in October with the increased algal growth. Metalimnetic turbidity was low in May, increased in July likely due to a layer of algae, decrease in August likely due to the layer of algae migrating up to the Epilimnion, remained stable in September, and then increased in October with the elevated algal growth. Hypolimnetic turbidity was low in May and July and then elevated 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 in May and July and then decreased to less than desirable levels. Hypolimnetic pH levels were less than desirable. Historical trend analysis indicates stable epilimnetic pH since monitoring began.
- RECOMMENDED ACTIONS:** Epilimnetic phosphorus and chlorophyll levels decreased from the elevated levels in 2013, however chlorophyll levels remained above average for the pond. The excessive chlorophyll growth is fueled by excess nutrients from sources such as fertilizers, agriculture, stormwater runoff, and sediments. Work with lake and watershed residents to reduce excess phosphorus from getting into the pond. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource for property owners. Keep up the great work!



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)

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

Station Name	Table 1. 2014 Average Water Quality Data for LOWER DANFORTH 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	8.18	5.54	9	59.0	7	2.98	3.69	0.97	6.66
Metalimnion				65.4	8			1.45	6.30
Hypolimnion				87.3	16			8.84	6.31

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

