



Volunteer Lake Assessment Program Individual Lake Reports

PERKINS POND, SUNAPEE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	704	Max. Depth (m):	3	Flushing Rate (yr ⁻¹)	1.3
Surface Area (Ac.):	157	Mean Depth (m):	1.4	P Retention Coef:	0.83
Shore Length (m):	3,900	Volume (m ³):	877,000	Elevation (ft):	1082

TROPHIC CLASSIFICATION

Year	Trophic class
1986	OLIGOTROPIC
2003	MESOTROPIC

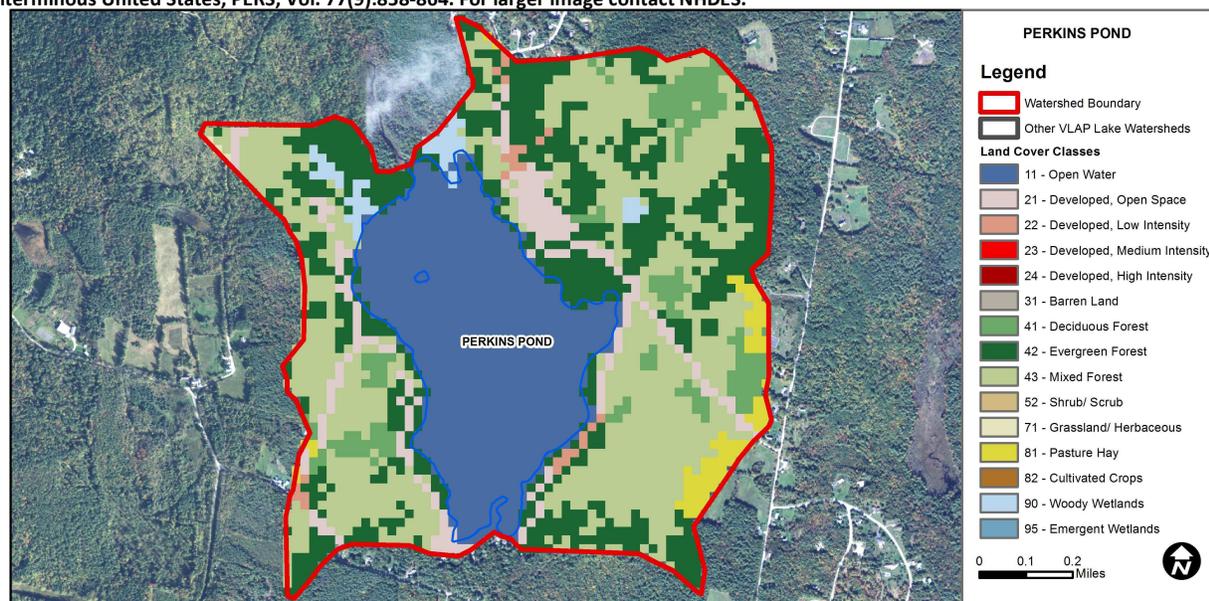
KNOWN EXOTIC SPECIES

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 saturation	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Bad	The calculated median is from 5 or more samples and is > 2X indicator
Primary Contact Recreation	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of 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	24.8	Barren Land	0	Grassland/Herbaceous	0.1
Developed-Open Space	6.47	Deciduous Forest	5.65	Pasture Hay	2.53
Developed-Low Intensity	0.92	Evergreen Forest	24.64	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	33.43	Woody Wetlands	1.71
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

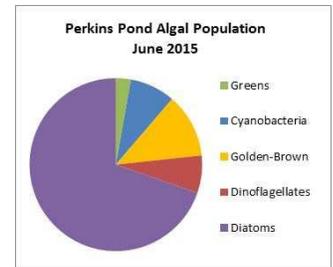
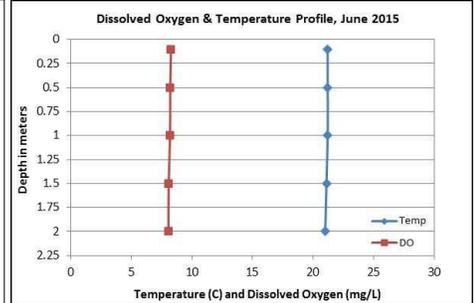
PERKINS POND, SUNAPEE

2015 DATA SUMMARY

RECOMMENDED ACTIONS: The elevated and fluctuating chlorophyll and phosphorus levels in the lake are concerning. The shallow depth of the pond lends itself to potential negative impacts from boating activities. Boating activities could disturb bottom sediments in shallow areas. These sediments contain phosphorus which could feed algal growth. The increased frequency and intensity of storm events and resulting stormwater runoff could also contribute nutrients and sediments to the pond. Educate boaters on best boating practices in shallow areas. DES' fact sheet WD-WMB-25 "Impacts of Motorized Watercraft on New Hampshire's Waterbodies" is a great resource as well as the "N.H. Homeowner's Guide to Stormwater Management". The increasing conductivity may be the result of winter road salt applications. Encourage local road agents and winter maintenance companies to obtain a Voluntary NH Salt Applicator License through UNH Technology Transfer Center's Green SnowPro Certification program. Keep up the great work!

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

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated on each sampling event, increased from 2014, and much greater than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Inlet and Outlet conductivity levels remained slightly greater than the state median in 2015. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began. In particular, conductivity has increased steadily in the pond since 2011.
- **E. COLI:** Burma Rd. E. coli levels were much less than the state standards for public beaches (88 cts/100 mL) and surface waters (406 cts/100 mL).
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly elevated and increased slightly from June to August. Average epilimnetic phosphorus increased from 2014 and was slightly greater than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus since monitoring began. Inlet phosphorus levels were low in June and July. Outlet phosphorus levels were slightly elevated in July and sediment was noted in the sample which likely contributed to the elevated phosphorus.
- **TRANSPARENCY:** Transparency was decreased (worsened) as the summer progressed, and was the lowest (worst) transparency measured since monitoring began. The elevated algal growth likely contributed to the decreased transparency. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Epilimnetic and Outlet turbidities were slightly elevated on each sampling event. The elevated algal growth likely impacted epilimnetic turbidity and Outlet turbidity in June and August. Outlet turbidity was elevated in July due to high amounts of sediment in the sample.
- **pH:** Epilimnetic, Inlet and Outlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.



Station Name	Table 1. 2015 Average Water Quality Data for PERKINS POND									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	7.9	9.54	13	77.8		13	1.80	1.84	2.87	6.72
Burma Rd					3					
Inlet				68.9		7			0.50	6.62
Outlet				59.2		14			2.86	6.45

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

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

