Volunteer Lake Assessment Program Individual Lake Reports

TUREE POND, BOW, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,953	**Max. Depth (m):**	3	**Flushing Rate (yr^{-1}):**	9.5
Surface Area (Ac.):	47	**Mean Depth (m):**	1.9	**P Retention Coef:**	0.49
Shore Length (m):	1,800	**Volume (m^3):**	357,000	**Elevation (ft):**	328

TROPHIC CLASSIFICATION

Year	Trophic class
1989	EUTROPHIC

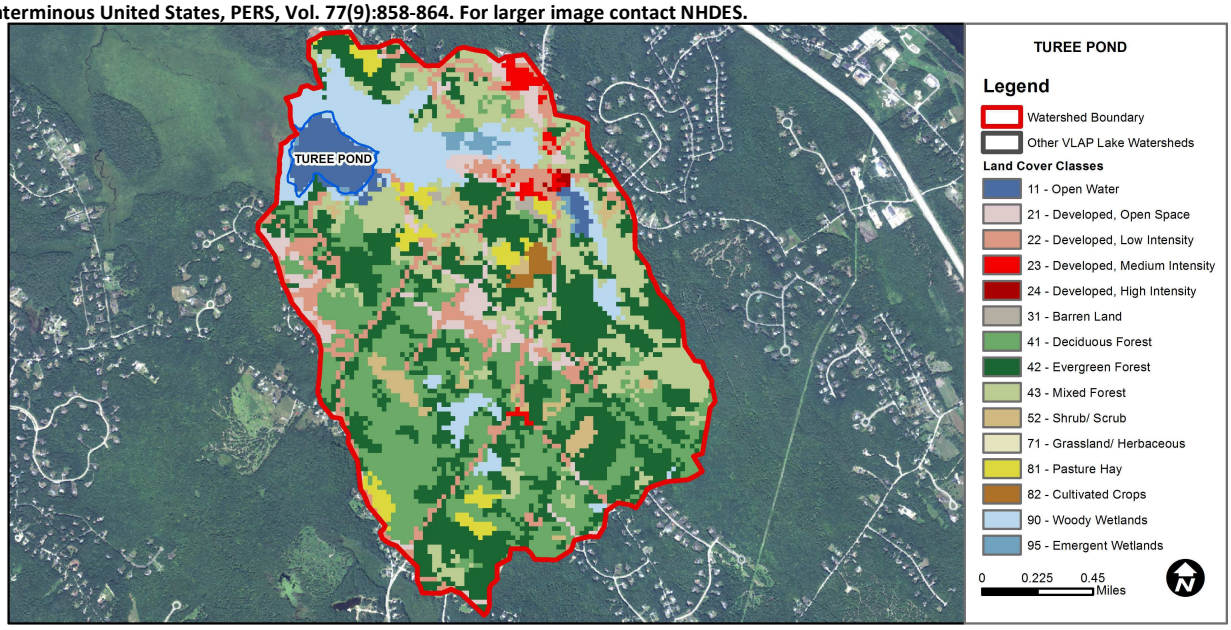
KNOWN EXOTIC SPECIES

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)	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	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Encouraging	There are no geometric means or there are > 2 single samples but those samples are within 75% of the geometric means criteria. 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	3.29	Barren Land	0.29	Grassland/Herbaceous	0
Developed-Open Space	4.64	Deciduous Forest	22.25	Pasture Hay	2.66
Developed-Low Intensity	8.39	Evergreen Forest	27.92	Cultivated Crops	0.58
Developed-Medium Intensity	1.14	Mixed Forest	15.64	Woody Wetlands	9.78
Developed-High Intensity	0.13	Shrub-Scrub	2.5	Emergent Wetlands	0.78

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2014 Data Summary

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

- **Chlorophyll-a:** Chlorophyll levels were slightly greater than the state median and remained stable from June to July. Visual inspection of historical data indicates chlorophyll levels have increased (worsened) gradually increased since 2007 and this corresponds with an increase in phosphorus levels in the pond.
- **Conductivity/Chloride:** Epilimnetic (deep spot) conductivity and chloride levels were elevated and much greater than the state medians. Visual inspection of historical data indicates relatively stable epilimnetic conductivity since monitoring began.
- **Total Phosphorus:** Deep spot phosphorus levels were slightly elevated in June and decreased to average levels in July. Average phosphorus levels were greater than the state median and visual inspection of historical data indicates deep spot phosphorus levels have gradually increased (worsened) since 2007.
- **Transparency:** Transparency improved in 2014 from a gradual decline since 2007 and remained fairly stable from June to July. Visual inspection of historical data indicate a gradually decreasing (worsening) transparency since 2007 and this corresponds with the increase in algal growth.
- **Turbidity:** Turbidity was stable from June to July but slightly above average for the pond. This was likely a result of algal growth.
- **pH:** Deep spot pH levels were within the desirable range 6.5—8.0 units however have decreased below desirable in the past. Visual inspection of historical data indicates relatively stable epilimnetic pH since monitoring began.
- **Recommended Actions:** Water quality has declined since monitoring was initiated again in 2007. The increased frequency and intensity of storm events has likely contributed to the decline in water quality. This highlights the importance of managing stormwater runoff from pond and watershed properties. Educate homeowners on installing stormwater best management practices to capture and infiltrate stormwater runoff before it reaches streams and storm drains. Utilize only phosphate free fertilizers when necessary. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource.

Station Name	Table 1. 2014 Average Water Quality Data for TUREE 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	9.9	6.35	51	217.0	19	1.69	1.75	1.62	6.76

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	N/A	Ten consecutive years of data necessary for analysis.	Chlorophyll-a	N/A	Ten consecutive years of data necessary for analysis.
pH (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.	Transparency	N/A	Ten consecutive years of data necessary for analysis.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.