



## Volunteer Lake Assessment Program Individual Lake Reports

### FOREST LAKE, WHITEFIELD, NH

#### MORPHOMETRIC DATA

Watershed Area (Ac.):	1,250	Max. Depth (m):	6.4	Flushing Rate (yr <sup>-1</sup> )	1
Surface Area (Ac.):	192	Mean Depth (m):	3	P Retention Coef:	0.75
Shore Length (m):	3,500	Volume (m <sup>3</sup> ):	2,318,000	Elevation (ft):	1106

#### TROPHIC CLASSIFICATION

Year	Trophic class
1990	MESOTROPHIC
2005	MESOTROPHIC

#### KNOWN EXOTIC SPECIES


The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen saturation	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

#### BEACH PRIMARY CONTACT ASSESSMENT STATUS

FOREST LAKE - FOREST LAKE STATE PARK	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
--------------------------------------	------------------	------	---

#### 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	17.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	3.91	Deciduous Forest	34.75	Pasture Hay	0
Developed-Low Intensity	0.1	Evergreen Forest	13.03	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	26.84	Woody Wetlands	1.6
Developed-High Intensity	0	Shrub-Scrub	0.94	Emergent Wetlands	0.23



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

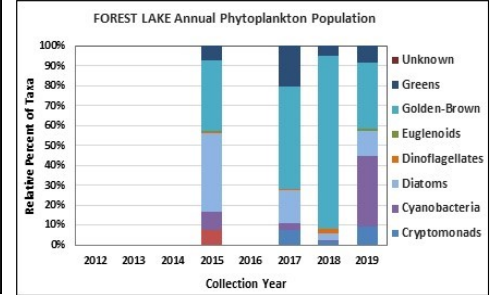
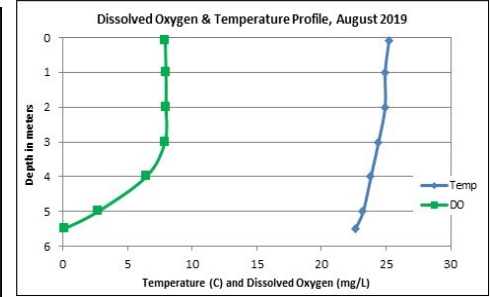
## FOREST LAKE, WHITEFIELD

### 2019 DATA SUMMARY

**RECOMMENDED ACTIONS:** Lake quality is generally representative of mesotrophic, or average quality conditions, indicating the lake is supportive of a variety of uses. The declining lake clarity (transparency) may be related to high volume storm events flushing wetland systems rich in organic acids that cause water to become highly colored and therefore less clear, as well as transporting sediments due to erosion. Continue to conduct color analyses on deep spot samples to evaluate changes in water color and transparency over time. State Beach Brook continues to exhibit elevated phosphorus and turbidity levels likely due to wetland and beaver influences upstream. Consider converting the state beach to a perched beach to prevent erosion of beach sand into the lake. DES Fact Sheet WD-WB-18 "Perching Beaches to Lessen Impacts to Lake Quality" and UNH Cooperative Extension's "Landscaping at the Water's Edge" are great resources. Consider increased monitoring frequency to once per month during the summer to better assess seasonal and annual variations in water quality.

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was moderate in August, decreased slightly from 2018, was greater than the state median, and was approximately equal to the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Newt Cottage, North Inlet, Northwest Inlet, and Outlet conductivity and/or chloride levels were low and approximately equal to the state medians. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began. State Beach Brook conductivity levels were slightly elevated, however chloride levels remained low.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was lightly to moderate tea colored, or brown.
- ◆ **E. COLI:** State Beach, Sundman Cottage and West Side Cove E. coli levels were very low and much less than the state standard for public beaches and surface waters. State Beach Brook E. coli levels were higher compared with the other stations, yet remained much less than the state standard for surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic, Newt Cottage, North Inlet, Northwest Inlet, and Outlet phosphorus levels were within a low range. Epilimnetic phosphorus level decreased from 2018 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. State Beach Brook phosphorus levels were elevated and the turbidity of the sample was also elevated, however levels were not unusual for this station.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was good and within an average range for the lake. NVS transparency increased (improved) from 2018 and was slightly higher (better) than the state median. However, historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. Viewscape transparency (VS) was much higher (better) than NVS transparency and likely a better measure of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic, New Cottage, North Inlet, Northwest Inlet, and Outlet turbidity levels were within a low to average range for those stations. State Beach Brook turbidity level was elevated.
- ◆ **PH:** Epilimnetic, Newt Cottage, North Inlet, Northwest Inlet, Outlet, and State Beach Brook pH levels were within the desirable range 6.5-8.0 units. However, epilimnetic pH levels have historically fluctuated below the desirable range. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began.



Station Name	Table 1. 2019 Average Water Quality Data for FOREST LAKE - DALTON										
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	E. coli mpn/100ml	Total P mg/l	Trans. m		Turb. ntu	pH
								NVS	VS		
Epilimnion	9.2	5.00	5	45	44.1	7	3.46	4.29	0.74	6.99	
Newt Cottage			5		44.5	6			0.48	6.86	
North Inlet					44.1	6			0.62	7.12	
Northwest Inlet			5		43.9	6			0.56	7.07	
Outlet					45.6	6			0.61	7.16	
State Beach						3					
State Beach Brook			9		105.6	102	31			5.03	6.95
Sundman Cottage						1					
West Side Cove						1					

**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:** 4.5 mg/L

**Chlorophyll-a:** 4.39 ug/L

**Conductivity:** 42.3 uS/cm

**Chloride:** 5 mg/L

**Total Phosphorus:** 11 ug/L

**Transparency:** 3.3 m

**pH:** 6.6

### 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 moderately variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.

