Volunteer Lake Assessment Program Individual Lake Reports
COBBETTS POND, WINDHAM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,048	Max. Depth (m):	19.2	Flushing Rate (yr^1)	0.4
Surface Area (Ac.):	345	Mean Depth (m):	5.2	P Retention Coef:	0.8
Shore Length (m):	7,400	Volume (m³):	7,208,000	Elevation (ft):	177

TROPHIC CLASSIFICATION

Year	Trophic class
1986	MESOTROPHIC
2003	EUTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

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

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

BEACH PRIMARY CONTACT ASSESSMENT STATUS

COBBETTS POND - DUNKAN BEACH	Escherichia coli	No Data	No data for this parameter.
COBBETTS POND - TOWN BEACH	Escherichia coli	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.
COBBETTS POND - TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

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	19.5	Barren Land	0.34	Grassland/Herbaceous	0
Developed-Open Space	14.9	Deciduous Forest	31.57	Pasture Hay	1.44
Developed-Low Intensity	15	Evergreen Forest	7.92	Cultivated Crops	0
Developed-Medium Intensity	7.25	Mixed Forest	0.22	Woody Wetlands	0.14
Developed-High Intensity	0.27	Shrub-Scrub	0.22	Emergent Wetlands	0.9

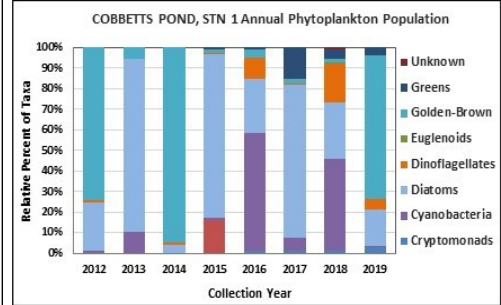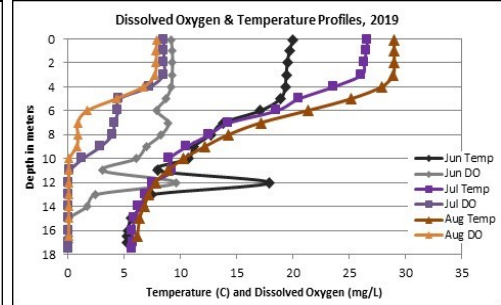# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
COBBETTS POND, STN. 1, WINDHAM
2019 DATA SUMMARY

RECOMMENDED ACTIONS: Station 1 algal growth (chlorophyll) has generally remained within a lower range since 2016 and we hope to see this continue. Tributaries generally experienced elevated phosphorus and turbidity levels during dry conditions and low flows. Collect samples only if there's enough flow to obtain samples free of sediment/organic matter. Tributary and pond conductivity and chloride levels are concerning. Continue enhanced conductivity and chloride monitoring program to better understand what sites contribute higher salt loads. Consider developing a management plan addressing chloride as a significant pollutant in the watershed as this could help identify and quantify different sources contributing to the load such as septic systems and water softeners. Keep up the great work!

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

- **CHLOROPHYLL-A:** Chlorophyll level was slightly elevated in June, decreased to a low level in July, and increased slightly in August. Average chlorophyll level increased slightly from 2018, was less than the state median, and was approximately equal to the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels remained elevated and much greater than the state medians. Average chloride levels decreased at all stations from that measured in 2018 which was a positive sign. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity levels since monitoring began, particularly since 2015.
- **COLOR:** Apparent color measured in the epilimnion indicates the water was borderline clear to lightly tea colored, or light brown.
- **E. COLI:** Town Beach E. coli levels exceeded the state standard for public beaches in late July.
- **TOTAL PHOSPHORUS:** Epilimnetic and Hypolimnetic (lower water layer) phosphorus levels were within a moderate range and stable from June to August. Average epilimnetic phosphorus level increased slightly from 2018 and was slightly greater than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly increasing (worsening) epilimnetic phosphorus levels since monitoring began. Metalimnetic (middle water layer) phosphorus level was also within a moderate range, but slightly elevated in June. Monson Inlet, Mueller Stream, and Town Beach phosphorus levels fluctuated within average ranges for those stations. Outlet phosphorus levels were slightly elevated in early and late July. Fossa Rd. Inlet and Horseshoe Rd. phosphorus levels were greatly elevated in late July during low flows and samples were noted to contain sediment and organic matter.
- **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in June and then increased (improved) as the summer progressed. Average NVS transparency remained stable with 2018 and was approximately equal to the state median. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. Viewscope transparency was higher (better) than NVS transparency and a better measure of actual conditions.
- **TURBIDITY:** Epilimnetic, Metalimnetic and Hypolimnetic turbidity levels were within low to moderate ranges for those stations and remained stable from June to August. Monson Inlet and Mueller Stream turbidity levels were within average ranges for those stations. Fossa Rd. Inlet, Horseshoe Rd. and Outlet turbidity levels were elevated in late July during low flows and samples contained sediment/organic matter. Town Beach turbidity level was slightly elevated in early July.
- **PH:** Deep spot and tributary pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began.

Dissolved Oxygen & Temperature Profiles, 2019

COBBETTS POND, STN 1 Annual Phytoplankton Population

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

Station Name	Table 1. 2019 Average Water Quality Data for COBBETTS POND, STN. 1 - WINDHAM										
	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	32.6	3.84	101	23	401.0		12	3.20	4.14	0.84	7.41
Metalimnion			104		415.3		15			1.48	7.06
Hypolimnion			104		426.5		14			1.94	6.83
Fossa Rd. Inlet			138		515.0		42			3.04	6.85
Horseshoe Rd.			47		226.4		131			18.62	6.88
Monson Inlet			135		406.0		27			1.14	7.01
Mueller Stream			80		309.0		12			2.06	6.93
Outlet			100		405.7		20			2.44	6.96
Town Beach					366.3	159	16			2.19	7.56

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 show low variability.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Worsening	Data significantly increasing.

Historical Trend Epilimnetic Conductivty and pH

Historical Chlorophyll-a, Epilimnetic Phosphorus & Transparency Data