



Volunteer Lake Assessment Program Individual Lake Reports

CHALK POND, NEWBURY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	339	Max. Depth (m):	3.6	Flushing Rate (yr ⁻¹):	4.6
Surface Area (Ac.):	21	Mean Depth (m):	2	P Retention Coef:	0.56
Shore Length (m):	1,600	Volume (m ³):	166,500	Elevation (ft):	1252

TROPHIC CLASSIFICATION

Year	Trophic class
1986	OLIGOTROPHIC
2006	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

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 this 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 satura	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.
	Chlorophyll-a	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
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.

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	8.56	Barren Land	0	Grassland/Herbaceous	0.47
Developed-Open Space	2.67	Deciduous Forest	40.51	Pasture Hay	0
Developed-Low Intensity	1.02	Evergreen Forest	12.09	Cultivated Crops	3.3
Developed-Medium Intensity	0	Mixed Forest	31.79	Woody Wetlands	0
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

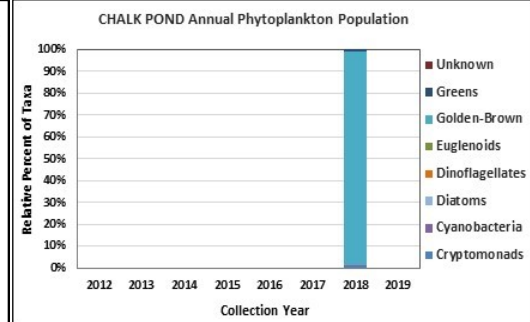
CHALK POND, NEWBURY

2019 DATA SUMMARY

RECOMMENDED ACTIONS: Pond nutrient levels are generally representative of oligotrophic conditions, however pond chlorophyll levels are generally greater than expected for oligotrophic lakes. This highlights the importance of minimizing watershed nutrient loads from stormwater runoff, erosion of steep slopes and dirt/gravel roads, and septic systems. The increasing conductivity levels suggest impacts from winter de-icing materials and/or the use of calcium chloride to control dust on dirt roads. Encourage local winter maintenance companies to obtain NH Voluntary Salt Applicator Licenses through UNH Technology Transfer Center's Green SnowPro Certification program. Continue to monitor chloride levels to build a baseline data set. Pond pH levels have remained higher since 2016 suggesting the pond is recovering from the historical impacts of acid precipitation. For more information on how New Hampshire's waters are recovering see the NHDES "Acid Rain Status and Trends" report. Keep up the great work!

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was slightly elevated in July, and then decreased to a low level in August. Average chlorophyll level increased from 2018, was approximately equal to the state median, and was greater than the threshold for oligotrophic lakes. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Main Beach, Outlet, and South Beach conductivity and/or chloride levels were slightly greater than the state medians, yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Inlet conductivity and chloride levels were low and much less than the state medians.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water fluctuated between clear and lightly tea colored, or light brown conditions.
- ◆ **E. COLI:** South Beach E. coli levels were very low and much less than the state standard for public beaches.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were stable and low in July and then decreased slightly in August. Average epilimnetic phosphorus level decreased slightly from 2018 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level was within a low range in mid-July. Inlet phosphorus levels were low in early July and increased in mid-July likely due to organic matter in the sample. Main Beach and Outlet phosphorus levels fluctuated within a low range.
- ◆ **TRANSPARENCY:** Transparency was lowest in June due to wave action, and then increased (improved) as the summer progressed and the Secchi disk was visible on the pond bottom in August. Average transparency remained stable with 2018 and was approximately equal to the state median. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began, however this is likely a reflection of water level changes and not an actual decline in clarity.
- ◆ **TURBIDITY:** Epilimnetic and Hypolimnetic turbidity levels were slightly elevated in July when algal growth was highest. Inlet turbidity levels were also elevated in July and organic matter was noted in the samples. Main Beach, Outlet and South Beach turbidity levels fluctuated within a low to moderate range for those stations.
- ◆ **pH:** Epilimnetic, Hypolimnetic, Main Beach, Outlet, and South Beach 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 stable epilimnetic pH levels since monitoring began. Inlet pH levels were slightly less than desirable.



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)

Station Name	Table 1. 2019 Average Water Quality Data for CHALK POND - NEWBURY									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	E. coli #/100ml	Total P mg/l	Trans. m	Turb. ntu	pH
								NVS		
Epilimnion	4.1	4.65	13	20	60.8	7	3.20	1.01	6.72	
Hypolimnion			15		59.6	8		1.52	6.75	
Inlet			3		18.7	7		2.48	6.42	
Main Beach			13		61.0	6		1.04	6.76	
Outlet			14		60.8	8		0.88	6.66	
South Beach			15		59.6	1	8	1.10	6.69	

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	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data highly 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.

