Volunteer Lake Assessment Program Individual Lake Reports
BEARCAMP POND, SANDWICH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	7,680	Max. Depth (m):	9.2	Flushing Rate (yr¹)	8.5	
Surface Area (Ac.):	167	Mean Depth (m):	2.7	P Retention Coef:	0.46	
Shore Length (m):	4,200	Volume (m³):	1,769,500	Elevation (ft):	596	

TROPHIC CLASSIFICATION

Year	Trophic class
1982	MESOTROPHIC
1998	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)	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	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	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	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

BEARCAMP POND - TOWN BEACH	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	1.76	Barren Land	0	Grassland/Herbaceous	0.3
Developed-Open Space	0.92	Deciduous Forest	36.89	Pasture Hay	0.66
Developed-Low Intensity	0.01	Evergreen Forest	12.32	Cultivated Crops	0.36
Developed-Medium Intensity	0	Mixed Forest	39.88	Woody Wetlands	4.87
Developed-High Intensity	0	Shrub-Scrub	1.36	Emergent Wetlands	0.58

RECOMMENDED ACTIONS: Pond nutrient levels increased and water color darkened following significant rainfall in July indicating influence from wetland systems. This resulted in elevated algal growth (chlorophyll) and lower clarity (transparency). The increased frequency and intensity of storm events will continue to influence nutrient levels, color, algal growth, and clarity. Managing and reducing stormwater runoff from shoreline properties and the watershed is one way to help mitigate these impacts. DES' "NH Homeowner's Guide to Stormwater Management" and UNH Cooperative Extension's "Landscaping at the Water's Edge" are useful resources. Keep up the great work!

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

- **CHLOROPHYLL-A:** Chlorophyll level was low in June, remained stable in July, and then increased to an elevated level in August. Average chlorophyll level increased from 2018 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Inlet, Pre-Inlet, and Outlet conductivity and/or chloride levels remained very low and less than the state medians. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began.
- **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored in June, highly tea colored in July following significant rainfall a week prior to sampling, and then decreased to moderately tea colored in August.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was low in June, increased to slightly elevated level in July, and then decreased to a moderate level in August. Average epilimnetic phosphorus level increased from 2018 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates highly variable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level was moderate in June and decreased as the summer progressed. Hypolimnetic phosphorus level was low in June and July and moderate in August. Inlet, Pre-Inlet and Outlet phosphorus levels fluctuated within a low to moderate range for those stations.
- **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was average in June, decreased (worsened) to a low range in July following significant rainfall and darker water color, and then remained stable at a low level into August when algal growth was elevated. Average NVS transparency decreased (worsened) from 2018, was less than the state median, and was the lowest (worst) transparency measured since monitoring began. Historical trend analysis indicates highly variable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic, Metalimnetic and Hypolimnetic turbidity levels fluctuated within a low range for those stations. Inlet, Pre-Inlet and Outlet turbidity levels were low and decreased as the summer progressed.
- **PH:** Epilimnetic and Pre-Inlet pH levels were within the desirable range 6.5-8.0 units, however epilimnetic pH leve has historically fluctuated below the desirable range. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Metalimnetic and Hypolimnetic pH levels were slightly acidic and potentially critical to aquatic life. Inlet and Outlet pH levels were slightly less than desirable.

Temperature Profile, August 2019

BEARCAMP POND Annual Phytoplankton Population
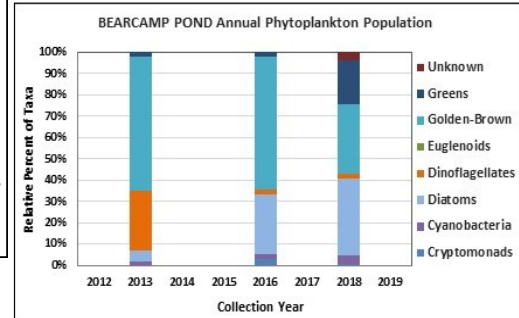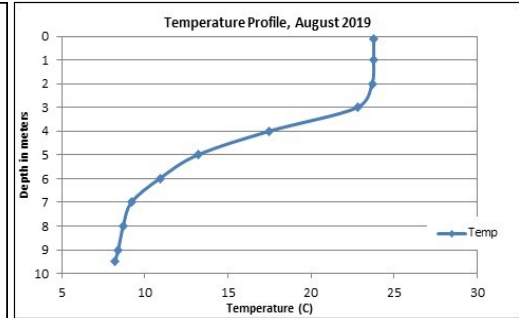
Station Name	Table 1. 2019 Average Water Quality Data for BEARCAMP POND - SANDWICH									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	Total P mg/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	4.7	5.77	3	93	20.8	13	2.10	2.65	0.89	6.54
Metalimnion					22.5	10			0.78	5.87
Hypolimnion					21.5	11			1.37	5.81
Inlet			3		25.0	14			0.83	6.27
Outlet					20.9	10			0.57	6.44
Pre-Inlet			3		24.7	12			0.66	6.76

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

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

Historical Trend Epilimnetic Conductivty and pH

Historical Chlorophyll-a, Epilimnetic Phosphorus & Transparency Data