Volunteer Lake Assessment Program Individual Lake Reports

BLAISDELL LAKE, SUTTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	448	**Max. Depth (m):**	13.1	**Flushing Rate (yr^{-1}):**	0.3
Surface Area (Ac.):	158	**Mean Depth (m):**	5.4	**P Retention Coef:**	0.85
Shore Length (m):	4,700	**Volume (m^3):**	3,479,500	**Elevation (ft):**	827

TROPHIC CLASSIFICATION

Year	Trophic class
1990	OLIGOTROPHIC
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

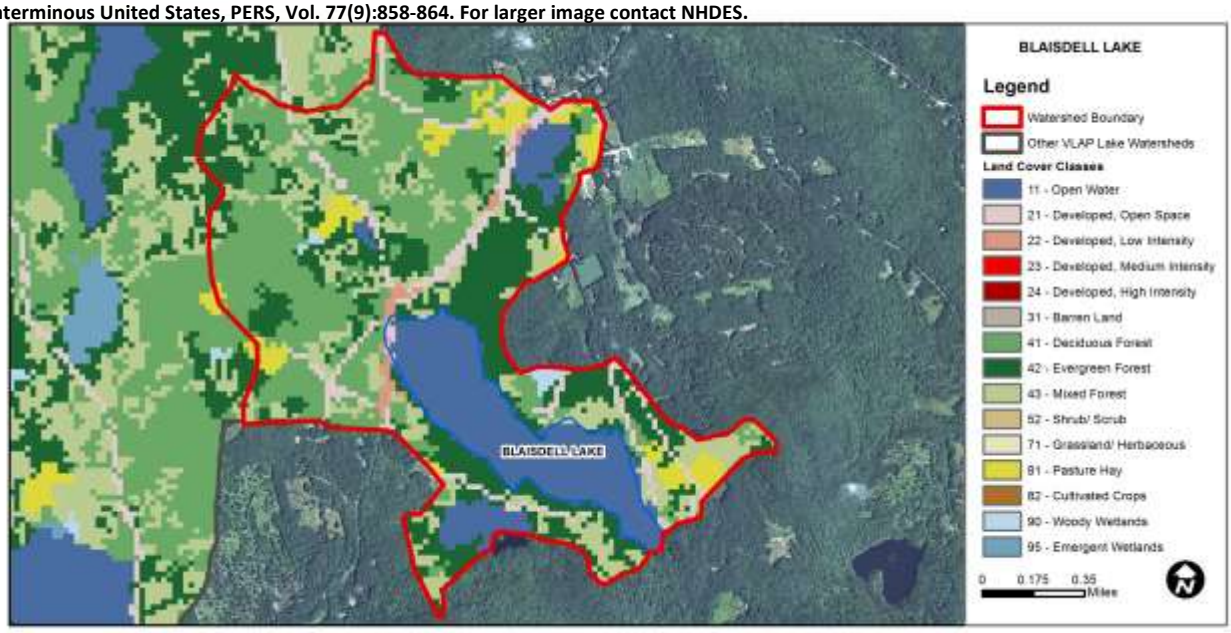
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	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	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

BLAISDELL LAKE - CAMP WABASSO 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	17.9	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	6.52	Deciduous Forest	27.53	Pasture Hay	5.02
Developed-Low Intensity	1.15	Evergreen Forest	25.92	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	15.65	Woody Wetlands	0.49
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0

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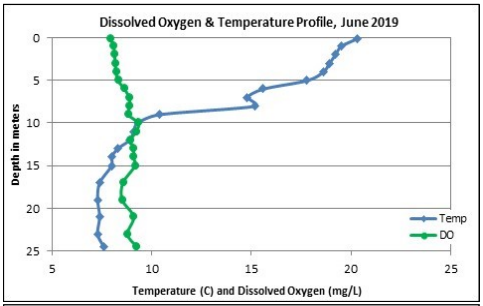
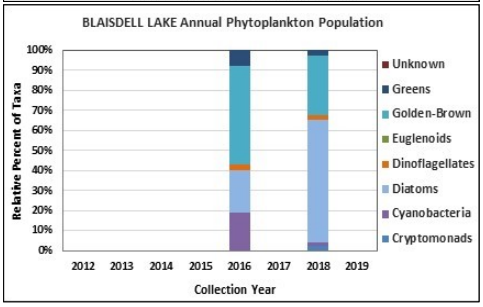
Blaisdell Lake, Sutton
2019 Data Summary

Recommended Actions: Water quality remained representative of oligotrophic or high quality conditions. The improving phosphorus levels are a great sign and we hope to see this continue. Brown Inlet, Russell Pond and Russell Inlet experienced elevated results on one or more sampling events in August that resulted in data being invalidated. If there is not sufficient flow please do not collect a sample. Also, the data suggest there could be influence from beaver and/or wetland systems. It is recommended to bracket the tributary system to try and identify any source of nutrient pollution. Russell Inlet and Pond conductivity and chloride levels are higher than desirable. Encourage local winter maintenance companies to become certified salt applicators through UNH Technology Transfer Center's Green SnowPro program. More information can be found at ww.t2.unh.edu/road-salt-reduction. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was low in August and increased slightly in September. 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 highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot, Bum Carter Cove, Outlet, and Sheep Dip Inlet conductivity and chloride levels were slightly greater than the state medians, yet less than a level of concern. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity levels since monitoring began. Billing Inlet, Billing Pond, Brown Inlet, and North Shore Trib. conductivity and chloride levels were generally low and approximately equal to the state medians. Russel Inlet and Pond conductivity and chloride levels remained slightly elevated and greater than the state medians.
- **Color:** Apparent color measured in the epilimnion indicates the lake water was lightly tea colored, or light brown.
- **Total Phosphorus:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels were stable and low. Average epilimnetic phosphorus level decreased from 2018 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Hypolimnetic (lower water layer) phosphorus level fluctuated within a moderate range. Billings Inlet and Pond, Bum Carter Cove, North Shore Trib., Outlet, and Russell Inlet phosphorus levels fluctuated within low to moderate ranges for those stations. Brown Inlet and Russell Pond phosphorus levels were elevated in August potentially due to low flow conditions and/or organic matter and sediment in the samples.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in August due to wind and wave conditions, but increased (improved) significantly in September. Average NVS transparency decreased slightly from 2018 and was higher (better) than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- **Turbidity:** Epilimnetic, Metalimnetic, Billings Inlet and Pond, Bum Carter Cove, and Sheep Dip Inlet turbidity levels were within a low to average range for those stations. Hypolimnetic turbidity level was elevated in September and the sample was noted to contain high levels of organic matter. North Shore Trib. and Outlet turbidity levels were slightly elevated in May. Brown Inlet, Russell Inlet and Pond turbidity levels were elevated in August during low flow conditions and samples were noted to contain varying levels of sediment and/or organic matter.
- **pH:** Epilimnetic, Metalimnetic, Billings Inlet and Pond, Brown Inlet, North Shore Trib., Outlet, Russell Inlet and Pond, and Sheep Dip Inlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH levels since monitoring began. Hypolimnetic and Bum Carter Cove pH levels were slightly less than desirable.





Station Name	Table 1. 2019 Average Water Quality Data for BLAISDELL LAKE - SUTTON									
	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	9.6	3.12	12	35	63.4	4	5.28	6.19	0.62	7.08
Metalimnion					61.2	6			0.54	6.73
Hypolimnion					65.1	12			4.66	6.30
Billings Inlet			9		40.3	6			1.06	6.63
Billings Pond			11		43.8	10			0.79	6.74
Brown Inlet			3		37.5	21			1.52	7.12
Bum Carter Cove			17		61.9	12			0.88	6.45
North Shore Trib.			4		31.9	7			1.83	6.76
Outlet			13		57.9	6			0.91	7.05
Russell Inlet			35		125.5	11			1.88	6.88
Russell Pond			45		166.3	25			3.51	7.19
Sheep Dip Inlet			9		64.7	9			0.91	7.13

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