New Hampshire Department of Environmental Services

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,651	Max. Depth (m):	12.2	Flushing Rate (yr⁻¹)	0.6
Surface Area (Ac.):	210	Mean Depth (m):	7.4	P Retention Coef:	0.68
Shore Length (m):	4,800	Volume (m³):	6,310,500	Elevation (ft):	579

TROPHIC CLASSIFICATION

Year	Trophic class
1981	MESOTROPHIC
2000	OLIGOTROPHIC

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	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
	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	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

RUST POND - WOLFEBORO CAMP SCHOOL BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

VLAP SAMPLE SITE MAP

RUST POND
WOLFEBORO
VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
RUSWOLD	DEEP SPOT
RUSWOLN	NORTH END INLET
RUSWOLO	OUTLET
RUSWOLP	PERRY BROOK

Source: The data layers are derived from NHDES data and are under constant revision. NHDES is not responsible for the use or interpretation of this information. Not intended for legal use.NHDES Watershed Management Bureau   Date: 2/17/2021

RECOMMENDED ACTIONS: Great job sampling in 2020! Pond quality is representative of oligotrophic, or high quality, conditions and the improving water quality trends are encouraging. However, phosphorus levels increased above the threshold for oligotrophic lakes in 2020 likely due to drought conditions and the lack of flushing of nutrients out of the system. The higher phosphorus levels did not impact algal (chlorophyll) growth which is a good sign. North End Inlet conductivity and chloride levels decreased markedly from the elevated levels measured historically. This may reflect management activities upstream to reduce the use of road salt and/or dilution of salt concentration due to a beaver dam creating a ponded system instead of a flowing tributary system. The presence of the beaver dam and restricted flow of water into the pond may change flushing rate dynamics as the volume of water entering the pond has decreased. Consult an environmental engineer to discuss solutions to this issue if the association is concerned. Keep up the great work!

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

- **CHLOROPHYLL-A:** Chlorophyll level was within a low range in July and decreased in September. Average chlorophyll level decreased slightly from 2019 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), North End Inlet, Outlet, and Perry Brook conductivity and/or chloride levels remained greater than the state median, yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- **COLOR:** Apparent color measured in the epilimnion indicates the water was clear, with no tea or brown coloring present.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was low in July and increased to a slightly elevated level in September. Average epilimnetic phosphorus level increased sharply from 2019, was slightly less than the state median, and was slightly greater than the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus levels fluctuated within a moderate range. Hypolimnetic phosphorus level was slightly elevated in July and the turbidity of the sample was also slightly elevated. North End Inlet phosphorus level was within a low range for this station. Outlet and Perry Brook phosphorus levels were within a low range.
- **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was within an average range for the pond in July and increased (improved) slightly in September. Average NVS transparency increased slightly from 2019 and remained higher (better) than the state median. Historical trend analysis indicates stable NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency and likely a better measure of actual conditions.
- **TURBIDITY:** Epilimnetic, Metalimnetic, North End Inlet, Outlet, and Perry Brook turbidity levels fluctuated within a low range. Epilimnetic, Metalimnetic and Outlet turbidity levels were the lowest measured since 2000, and North End Inlet and Perry Brook turbidity levels were the lowest measured since monitoring began. Hypolimnetic turbidity level was slightly elevated in July.
- **PH:** Epilimnetic, Metalimnetic, Outlet, and Perry Brook pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. North End Inlet pH level was approximately equal to the low end of the desirable range. Hypolimnetic pH level was slightly acidic and less than desirable.

Station Name	Table 1. 2020 Average Water Quality Data for RUST POND - WOLFEBORO									
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
							NVS	VS		
Epilimnion	16.2	2.28	13	10	72.5	10	5.25	6.03	0.42	7.29
Metalimnion					73.2	11			0.46	6.82
Hypolimnion					79.2	17			1.64	6.12
North End Inlet			20		93.9	15			0.61	6.43
Outlet					73.2	7			0.40	7.01
Perry Brook			7		58.3	12			0.74	6.84

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

Historical Trend Epilimnetic Conductivity and pH

Historical Chlorophyll-a, Epilimnetic Phosphorus & Transparency Data