Volunteer Lake Assessment Program Individual Lake Reports

DEERING RESERVOIR, DEERING, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,816	**Max. Depth (m):**	11.3	**Flushing Rate (yr^{-1})**	1.3
Surface Area (Ac.):	315	**Mean Depth (m):**	3.5	**P Retention Coef:**	0.67
Shore Length (m):	8,850	**Volume (m^3):**	4,442,500	**Elevation (ft):**	921

TROPHIC CLASSIFICATION

Year	Trophic class
1980	MESOTROPHIC
1997	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

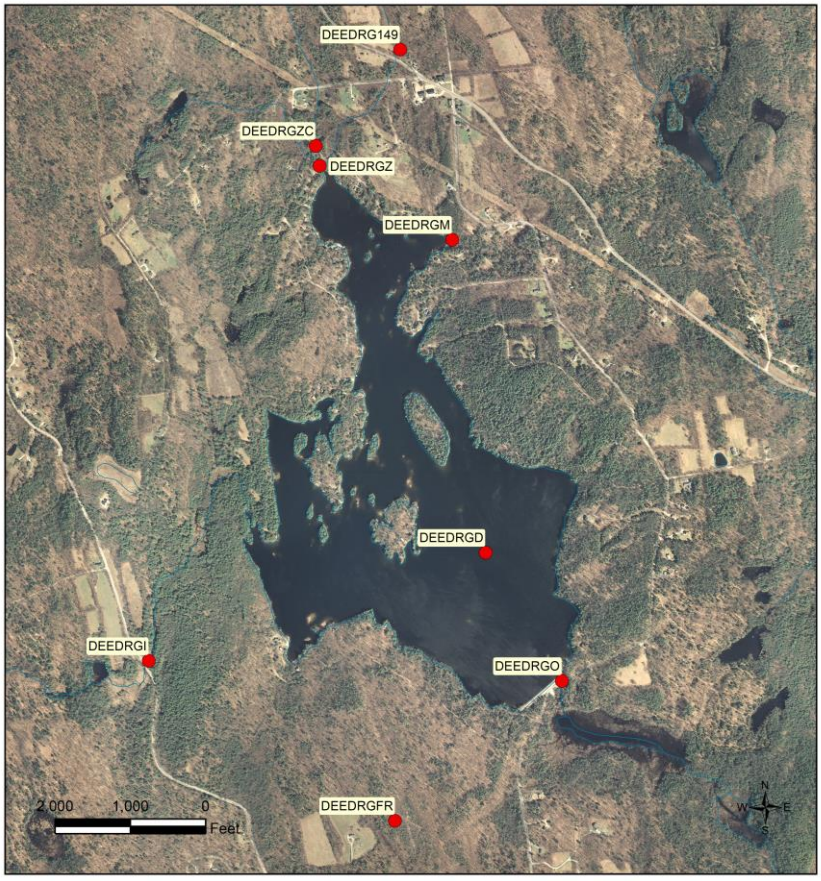
The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

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	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	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	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

DEERING RESERVOIR - HOPKINTON INDEPENDENT SCHOOL BEACH	Escherichia coli	No Data	No data for this parameter.
DEERING RESERVOIR - DEERING LAKE BEACH	Escherichia coli	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.

VLAP SAMPLE SITE MAP



DEERING RESERVOIR
DEERING
VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
DEEDRGD	DEEP SPOT
DEEDRGI	MAIN INLET
DEEDRGM	MORROTTA INLET
DEEDRGO	OUTLET
DEEDRGZ	ZOWSKI INLET
DEEDRG149	RTE 149 CULVERT
DEEDRGFR	FISHER ROAD CULVERT
DEEDRGZC	ZOSKI INLET CULVERT

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

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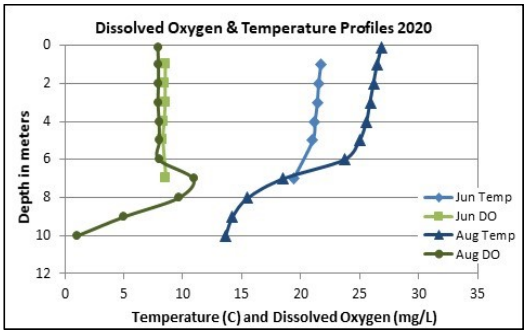
Deering Lake, Deering
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Lake quality remained representative of oligotrophic conditions and the stable water quality trends are a positive sign. Hypolimnetic and Main Inlet phosphorus levels have significantly decreased since monitoring began and we hope to see this continue. Morotta Inlet chloride levels have significantly increased since 2010 which is a concern. Watershed management efforts should focus on managing stormwater runoff, dirt/gravel road stabilization, and reduce application of road salt/sand during winter months. Encourage winter maintenance companies to obtain NH Voluntary Salt Applicator License through the Green SnowPro Certification Program. Encourage the town to conduct spring cleaning of roadside ditches and catch-basins to remove sand/salt that accumulated over winter. Educate shorefront property owner's on becoming certified LakeSmart through NHLAKES' lake-friendly living program www.nhlakes.org/lakesmart/. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was low in June and decreased in August. Average chlorophyll level remained stable with 2019 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates stable, yet variable, chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Outlet, and Zowski Inlet conductivity and/or chloride levels were slightly greater than the state medians, yet much less than a level of concern. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began. Main Inlet conductivity and chloride levels were slightly elevated indicating potential impacts from road salt. Morotta Inlet conductivity and chloride levels were elevated and chloride levels have significantly increased (worsened) since 2010.
- **Color:** Apparent color measured in the epilimnion indicates the water was clear with very little tea, or brown coloring, and was slightly darker in June.
- **Total Phosphorus:** Epilimnetic, Metalimnetic and Outlet phosphorus levels were stable and low from June to August. Average epilimnetic phosphorus level decreased slightly from 2019 and remained less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level was low in June and increased to a slightly elevated level in August however average phosphorus levels were within a low range for that station. Main Inlet phosphorus levels were slightly elevated in August and the turbidity of the sample was also elevated likely due to low flow conditions. Morotta and Zowski Inlet phosphorus levels fluctuated within a low to moderate range.
- **Transparency:** Transparency measured with (VS) and without the viewscope (NVS) was high (good) in June and increased (improved) in August. Average NVS transparency increased slightly from 2019 and was much higher (better) than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- **Turbidity:** Epilimnetic, Metalimnetic, Hypolimnetic, Morotta Inlet, Outlet, and Zowski Inlet turbidity levels fluctuated within a low range. Main Inlet turbidity level was elevated in August due to low flows and moderately colored water.
- **pH:** Epilimnetic, Metalimnetic, Morotta Inlet, Outlet, and Zowski Inlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Hypolimnetic and Main 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. 2020 Average Water Quality Data for DEERING RESERVOIR - DEERING									
	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	6.6	2.14	16	20	63.4	7	5.75	5.75	0.28	6.94
Metalimnion					63.9	7			0.34	6.86
Hypolimnion					62.2	12			0.55	6.08
Main Inlet			36		137.4	14			4.22	6.46
Morotta Inlet			103		174.8	15			0.76	6.72
Outlet			16		62.9	5			0.26	6.73
Zowski Inlet			16		78.6	10			0.39	6.80

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)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.