Volunteer Lake Assessment Program Individual Lake Reports

KOLELEMOOK LAKE, SPRINGFIELD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	610	**Max. Depth (m):**	6.7	**Flushing Rate (yr^{-1}):**	0.9
Surface Area (Ac.):	99	**Mean Depth (m):**	4.1	**P Retention Coef:**	0.71
Shore Length (m):	2,900	**Volume (m^3):**	1,623,000	**Elevation (ft):**	1387

TROPHIC CLASSIFICATION

Year	Trophic class
1980	OLIGOTROPHIC
1996	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

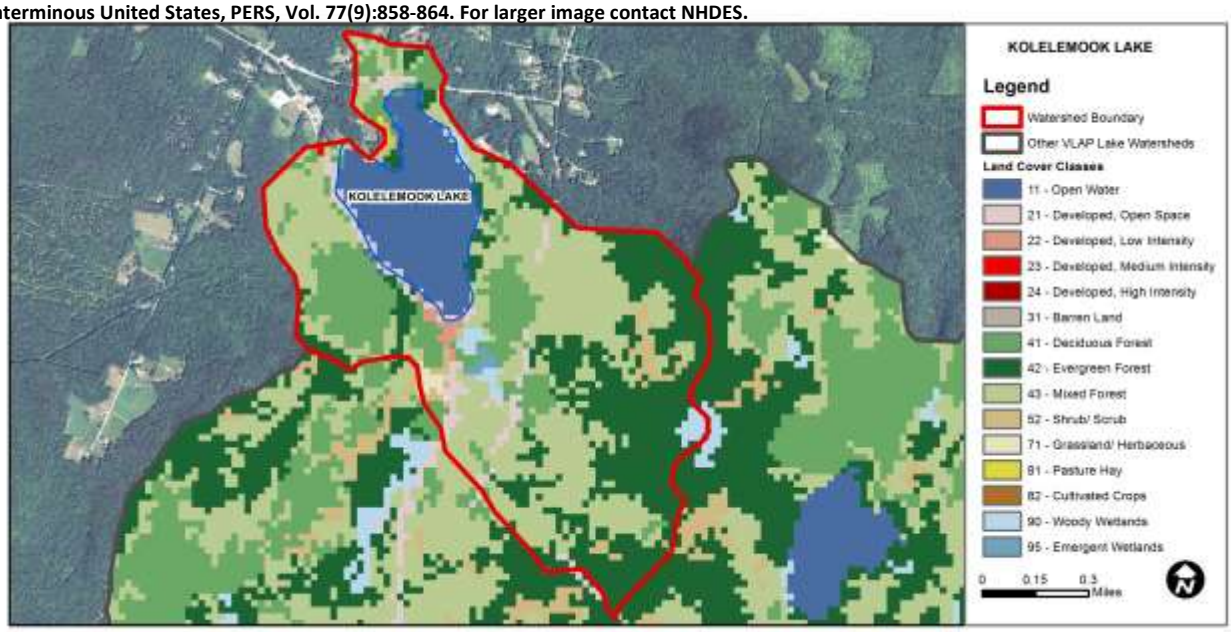
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved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

KOLEMOOK LAKE - TOWN BEACH	Escherichia coli	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	13.7	Barren Land	0	Grassland/Herbaceous	0.47
Developed-Open Space	3.88	Deciduous Forest	14.7	Pasture Hay	0.2
Developed-Low Intensity	0.64	Evergreen Forest	26.33	Cultivated Crops	0
Developed-Medium Intensity	0.07	Mixed Forest	35.94	Woody Wetlands	1.58
Developed-High Intensity	0	Shrub-Scrub	2.16	Emergent Wetlands	0.34

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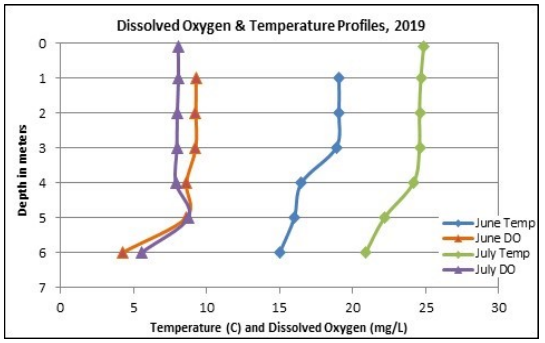
Kolelemook Lake, Springfield
2019 Data Summary

Recommended Actions: Lake quality remained representative of oligotrophic, or high quality, conditions and the improving water quality trends are a great sign. While conductivity has significantly increased in the lake since monitoring began, it appears to have stabilized since 2010. Consider development of a watershed management plan to protect high quality waters. For more information, contact the DES Watershed Assistance Section. The improved pH levels since 2016 are also positive and may indicate the slow recovery of surface waters from historical impacts of acid precipitation. For more information on the recovery of NH surface waters 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 levels fluctuated within a low range and were highest in June and September. Average chlorophyll level remained stable with 2018 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) and Hypolimnetic (lower water layer) conductivity levels remained slightly greater than the state median and were lowest in June and highest in July. Epilimnetic and Hypolimnetic chloride levels were greater than the state median, yet much less than the state chronic chloride standard. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began, however levels appear to have stabilized since 2010.
- **Color:** Apparent color measured in the epilimnion indicates the lake water was clear with no tea coloring in June and became slightly darker as the summer progressed.
- **Total Phosphorus:** Epilimnetic and Hypolimnetic phosphorus levels fluctuated within a low range from June through September. Average epilimnetic phosphorus level decreased from 2018 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was high (good) throughout the summer and fluctuated between 5.5 and 6.5 meters. Average NVS transparency increased slightly from 2018 and was much higher (better) than the state median. Historical trend analysis indicates significantly increasing (improving) transparency since monitoring began.
- **Turbidity:** Epilimnetic and Hypolimnetic turbidity levels fluctuated within a low range from June through August and increased in September following a storm event prior to sampling.
- **pH:** Epilimnetic and Hypolimnetic pH levels were within the desirable range 6.5-8.0 units and have remained more neutral since 2016. Historical trend analysis indicates stable pH levels since monitoring began.



Station Name	Table 1. 2019 Average Water Quality Data for KOLELEMOOK LAKE - SPRINGFIELD									
	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	8.2	2.21	22	20	84.8	6	6.00	6.15	0.66	7.22
Hypolimnion			25	15	85.2	6			0.74	7.21

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	Improving	Data significantly increasing.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.