



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

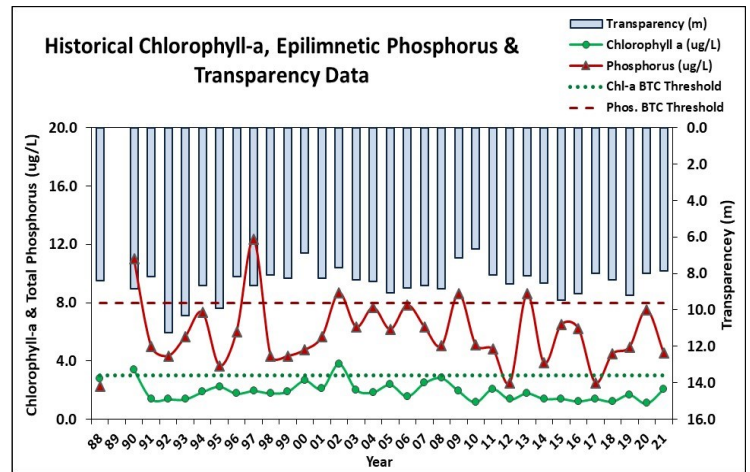
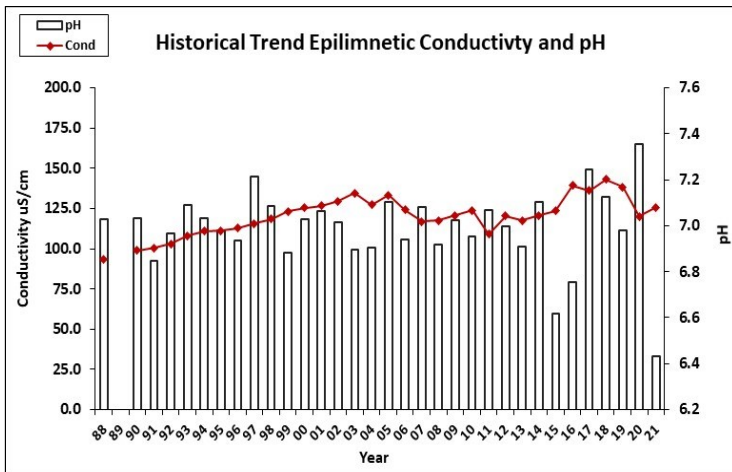
SPOFFORD LAKE, CHESTERFIELD

2021 DATA SUMMARY

RECOMMENDED ACTIONS: Great job sampling in 2021! Lake water quality is representative of oligotrophic, or high quality conditions. However, the lake experienced benthic mats of cyanobacteria in 2020. Continue to observe the lake for any signs of cyanobacteria and report to NHDES' Harmful Algal Bloom Program. Conduct monthly phytoplankton sampling to track shifts in algal population dynamics. While the record rainfall amounts in 2021 appear to have helped flush nutrients out of the lake system, several tributaries continue to experience elevated nutrient levels following storm events. Assess areas prone to stormwater runoff and implement stormwater best practices to divert or infiltrate stormwater prior to reaching tributaries and the lake. Partner with Soak Up the Rain NH to start identifying and implementing stormwater best practices in the watershed. Encourage shoreline property owners to be certified LakeSmart through NH LAKES lake-friendly living program. Chloride levels have significantly increased in the lake and some tributaries. Encourage local road agents and winter maintenance companies to obtain Green SnowPro certification. Continue to evaluate monitoring program to better assess watershed conditions and implement recommendations of the management plan. Keep up the great work!

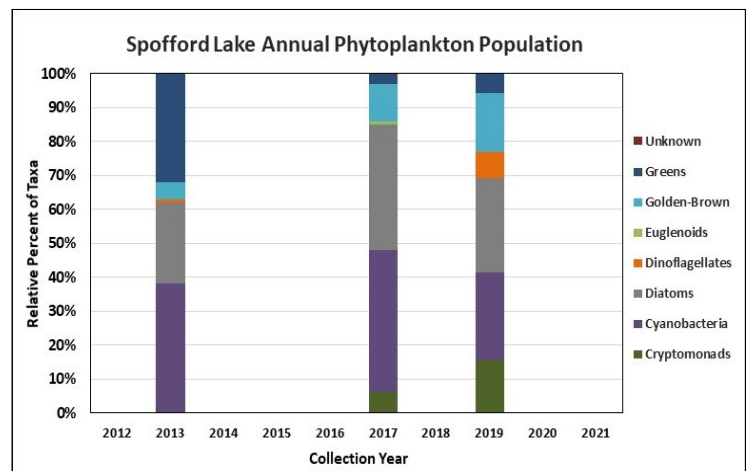
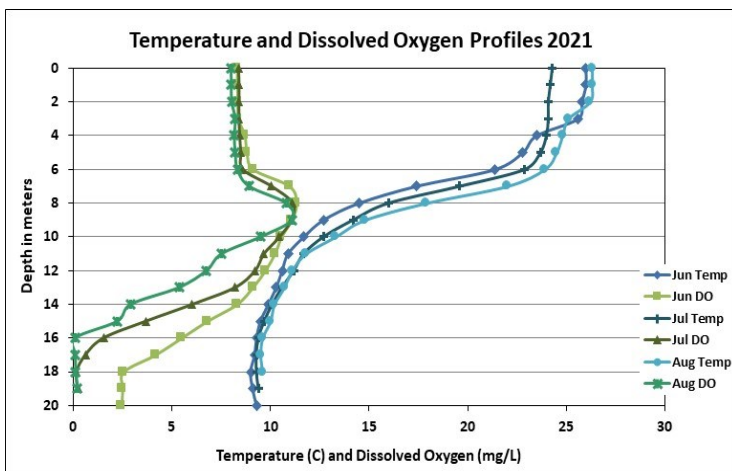
HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Stable
		Phosphorus (epilimnion)	Stable



DISSOLVED OXYGEN AND PHYTOPLANKTON

(Note: Information may not be collected annually)





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2021 DATA SUMMARY

OBSERVATIONS (Refer to Table 1, Table 2 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was within a low range in June, increased slightly in July, and remained stable in August. Average chlorophyll level increased slightly from 2020 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:** Deep spot, Galka Cove, LaChance, Moose Hollow, Namushaug, Outlet, and Wares Grove Inlet conductivity and chloride levels were slightly elevated and greater than the state medians. Historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity levels since monitoring began. Camp Spofford, Clarkdale Pipe and Shield Inlet conductivity and chloride levels were particularly elevated in June. Rt. 63 #3 and Seamans Inlet conductivity and chloride levels were elevated and chloride levels exceeded the state chronic chloride standard.
- ◆ **COLOR:** Epilimnetic color fluctuated within a clear range, with little to no tea, or brown, coloring.
- ◆ **E. COLI:** All Beach and Nearshore station E. coli levels were low and less than the state standard for public beaches. Camp Spofford, Clarkdale Pipe, Moose Hollow, Seamans, Shield, and Wares Grove Inlet E. coli levels were less than the state standard for surface waters. LaChance Inlet and Rt. 63 #3 Inlet E. coli levels were elevated and exceeded the state standard for surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels fluctuated within a low range and were lowest in July. Average epilimnetic phosphorus level decreased from 2020 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates stable, yet variable, epilimnetic phosphorus levels since monitoring began. Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) phosphorus levels were slightly elevated and increased gradually as the summer progressed. Camp Spofford, Seamans, Shield, and Rt. 63 #3 Inlet phosphorus levels were elevated in June. Clarkdale Pipe phosphorus levels fluctuated within an average range for that station. Galka Cove and Moose Hollow phosphorus levels were moderate. LaChance Inlet phosphorus levels were elevated. Namushaug, Outlet and Wares Grove Inlet phosphorus levels were low.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was high (good) in June, decreased (worsened) in July following record rainfall amounts, and then increased in August. Average NVS transparency remained stable with 2020 and was higher (better) than the state median. Historical trend analysis indicates stable NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic turbidity level was slightly elevated in June. Metalimnetic turbidity level was slightly elevated in August likely due to a layer of algae or fallout of particulates from prior storm events. Hypolimnetic turbidity level was slightly elevated in August likely due to formation and accumulation of organic compounds under anoxic conditions. Camp Spofford, Outlet and Rt. 63 #3 Inlet turbidity levels were elevated in June. Clarkdale Pipe and LaChance Inlet turbidity levels were elevated on each sampling event. Galka Cove, Shield and Wares Grove Inlet turbidity levels were low. Moose Hollow and Seamans Inlet turbidity levels were slightly elevated in June and August.
- ◆ **PH:** Epilimnetic pH level fluctuated below the desirable range 6.5-8.0 units in July and August following record rainfall amounts. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Metalimnetic, Camp Spofford, Clarkdale Pipe, Outlet, Moose Hollow, Rt. 63 #3, Seamans, and Shield Inlet pH levels fluctuated within the desirable range. Hypolimnetic, Galka Cove, LaChance, Namushaug, and Wares Grove Inlet pH levels were slightly acidic and less than desirable.

Station Name	Table 1. 2021 Average Water Quality Data for SPOFFORD LAKE - CHESTERFIELD										
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	E. coli (mpn/100mL)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
								NVS	VS		
Epilimnion	9.9	2.06	35	17	125.7		5	7.88	8.21	0.89	6.43
Metalimnion			36		130.2		11			0.61	6.93
Hypolimnion			36		133.4		22			1.77	6.13
Camp Spofford Inlet			71		241.6	113	42			2.11	6.54
Clarkdale Pipe			67		242.7	387	26			9.96	6.49
Galka Cove			40		135.6		15			0.48	5.70
LaChance Inlet			19		107.3	770	111			6.64	6.06
Moose Hollow Inlet			32		144.7	46	31			2.93	6.75
Namushaug Inlet			26		100.2		3			0.40	5.68
Outlet			40		136.4	5	7			1.34	6.59
Rt 63 #3 Inlet			292		976.0	821	31			4.94	7.01
Seamans Inlet			291		925.0	166	43			2.58	6.85
Shield Inlet			58		204.9	24	16			1.78	6.74
Wares Grove Inlet			48		167.9	108	11			0.86	6.38

Station Name	Table 2. 2021 Average Beach and Nearshore E. coli Data
	E. coli (mpn/100mL)
B+K Beach	10
867 Rt. 63	0
875 Rt. 63	0
Boat Launch	0
Clarkdale Beach	0
Family Rec Beach	1
Island NW	16
Island SW	3
Yacht Club Beach	3

NH Median Values

Median values 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. Water quality violation if thresholds exceeded.

Chloride: > 230 mg/L (chronic) **Turbidity:** > 10 NTU above natural

E. coli: > 88 cts/100 mL (beach)

E. coli: > 406 cts/100 mL (surface waters)

pH: between 6.5-8.0 (unless naturally occurring)