Volunteer Lake Assessment Program Individual Lake Reports

COUNTRY POND, KINGSTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	10,432	**Max. Depth (m):**	9.4	**Flushing Rate (yr^{-1})**	6.1
Surface Area (Ac.):	255	**Mean Depth (m):**	3	**P Retention Coef:**	0.48
Shore Length (m):	7,700	**Volume (m^3):**	3,159,000	**Elevation (ft):**	115

TROPHIC CLASSIFICATION

Year	Trophic class
1985	MESOTROPHIC
2002	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

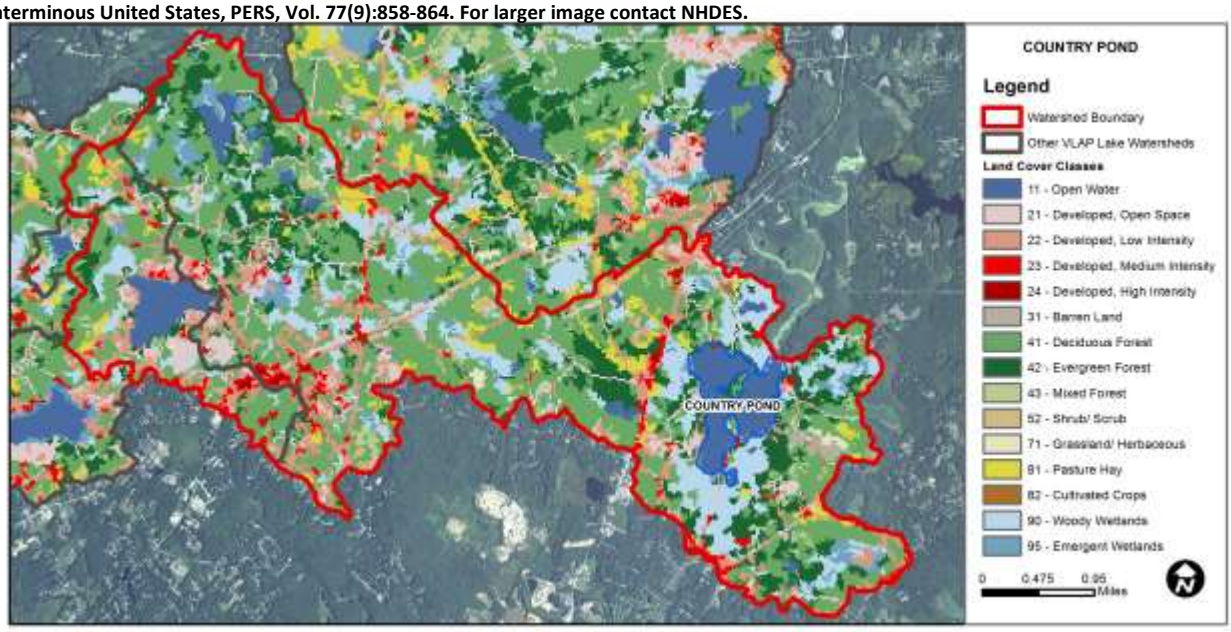
Designated Use	Parameter	Category	Comments
Aquatic Life	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; 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.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	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.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

COUNTRY POND - TASKER DAY CAMP BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
COUNTRY POND - LONE TREE SCOUT RESV. BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
COUNTRY POND - TOWN BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
COUNTRY POND - TASKER DAY CAMP BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
COUNTRY POND - LONE TREE SCOUT RESV. BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
COUNTRY POND - TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

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	6.83	Barren Land	0.31	Grassland/Herbaceous	0.29
Developed-Open Space	6.43	Deciduous Forest	37.74	Pasture Hay	3.15
Developed-Low Intensity	9.87	Evergreen Forest	14.06	Cultivated Crops	0.17
Developed-Medium Intensity	2.94	Mixed Forest	1.5	Woody Wetlands	12.72
Developed-High Intensity	0.24	Shrub-Scrub	0.85	Emergent Wetlands	2.74

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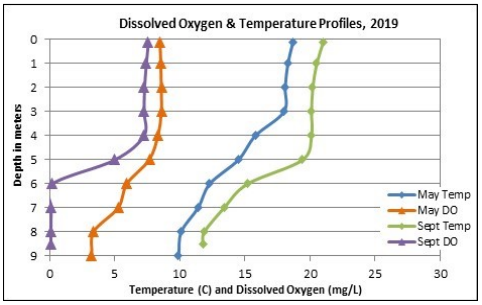
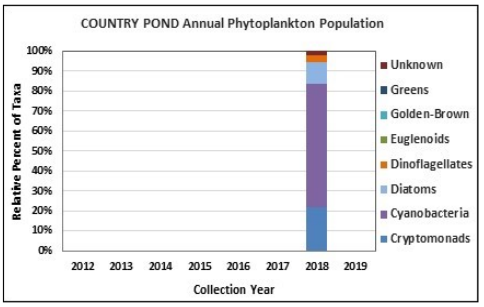
Country Pond, Newton
2019 Data Summary

Recommended Actions: Great job collecting monthly water quality data from May through September! This will help to build a baseline data set for the pond to assess seasonal variations in water quality and develop long term water quality trends. Based upon data collected historically, phosphorus, chlorophyll, transparency (clarity), and pH levels were better than measured in the past, however hypolimnetic phosphorus levels indicate the potential release of phosphorus from bottom sediments to the pond which could be readily available for algae/cyanobacteria uptake. Keep an eye out for any cyanobacteria surface scums or blooms and notify DES immediately. Also, conductivity levels are higher than measured in the past. The use of road salt in the winter has caused increases in conductivity and chloride levels in surface waters. Encourage local road agents and private winter maintenance companies to obtain Voluntary NH Salt Applicator License through UNH Technology Transfer Center's Green SnowPro Certification Program. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll levels were stable and low from May through July, increased in August, and then decreased in September. Average chlorophyll level increased slightly from 2018 and was less than the state median and the threshold for mesotrophic lakes.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Northwest Inlet, Outlet, and South Inlet conductivity and chloride levels were elevated and much greater than the state medians. Visual inspection of historical data indicates epilimnetic conductivity levels have increased greatly since 2006.
- **Color:** Apparent color measured in the epilimnion indicates the water was highly tea colored, or dark brown.
- **Total Phosphorus:** Epilimnetic phosphorus level was slightly elevated in May and June, decreased to a low level in July, and then increased in August and September. Average epilimnetic phosphorus level increased from 2018 and was greater than the state median and the threshold for mesotrophic lakes. Metalimnetic phosphorus levels increased from moderate to slightly elevated as the summer progressed. Hypolimnetic phosphorus levels were elevated and increased as the summer progressed likely due to the release of phosphorus from bottom sediments under anoxic (no dissolved oxygen) conditions, a process called internal loading. Northwest Inlet and South Inlet phosphorus levels were within an average range for that station and decreased as the summer progressed. Outlet phosphorus levels were within a moderate range and stable.
- **Turbidity:** Epilimnetic turbidity levels were slightly above average in August when algal growth was highest. Metalimnetic turbidity level was elevated in August likely due to a layer of algae/cyanobacteria at this depth. Hypolimnetic turbidity levels were elevated from July through September and lab data noted colored water indicating formation of organic compounds under anoxic conditions. South Inlet turbidity levels were slightly elevated in June. Northwest Inlet and Outlet turbidity levels fluctuated within an average range and were highest in August.
- **pH:** Epilimnetic, Metalimnetic, Hypolimnetic, Northwest Inlet, Outlet, and South Inlet pH levels were within the desirable range 6.5-8.0 units.





Station Name	Table 1. 2019 Average Water Quality Data for COUNTRY POND - KINGSTON									
	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	16.3	3.17	49	110	208.4	15	2.06	2.87	1.10	7.03
Metalimnion					208.3	15			3.80	6.59
Hypolimnion					207.4	30			9.76	6.52
Northwest Inlet			50		213.4	15			1.13	6.90
Outlet			52		206.6	13			0.98	6.96
South Inlet			51		212.0	15			1.49	6.98

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	N/A	Ten consecutive years of data necessary for analysis.	Chlorophyll-a	N/A	Ten consecutive years of data necessary for analysis.
pH (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.	Transparency	N/A	Ten consecutive years of data necessary for analysis.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.