# Volunteer Lake Assessment Program Individual Lake Reports

## CANOBIE LAKE, WINDHAM, NH

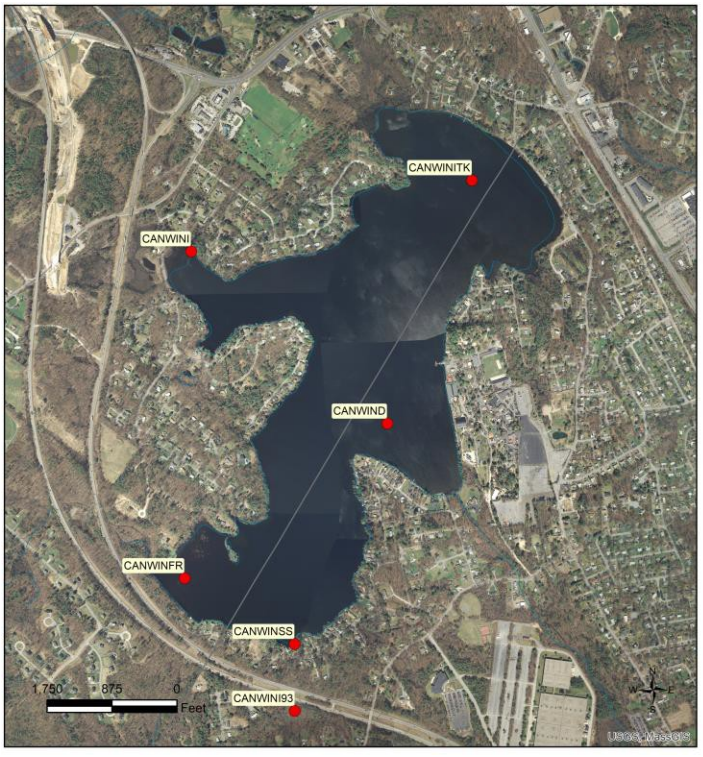
**MORPHOMETRIC DATA** | **TROPHIC CLASSIFICATION** | **KNOWN EXOTIC SPECIES**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Watershed Area (Ac.):** | 1,408 | **Max. Depth (m):** | 15.2 | **Flushing Rate (yr$^{1}$)** | 0.3 | **Year** | **Trophic class** | |
| **Surface Area (Ac.):** | 373 | **Mean Depth (m):** | 5.5 | **P Retention Coef:** | 0.83 | 1987 | MESOTROPHIC | |
| **Shore Length (m):** | 8,400 | **Volume (m$^3$):** | 8,379,000 | **Elevation (ft):** | 219 | 2000 | OLIGOTROPHIC | |

**The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of New Hampshire waters, and are based on data collected from 2010- 2019. Detailed waterbody assessment and report card information can be found at NHDES' Water Quality Assessment Website.**

| 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 | Cautionary | Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter. |
| | Oxygen, Dissolved | Bad | Data periodically exceed water quality standards or thresholds for this parameter by a large margin. |
| | 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 | 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 | Very Good | All sampling data meet water quality standards or thresholds for this parameter. |

**VLAP SAMPLE STATION MAP: This map depicts the location of routine sampling stations discussed on page two of the report.**




CANOBIE LAKE
WINDHAM
VOLUNTEER LAKE ASSESSMENT PROGRAM

| STATIONID | STATION NAME |
|---|---|
| CANWIND | DEEP SPOT |
| CANWINI | INLET |
| CANWINSS | SOUTH SHORE DRAINAGE |
| CANWINFR | FROG ROCK |
| CANWINITK | INTAKE |
| CANWINI93 | I93 DETENTION BASIN |

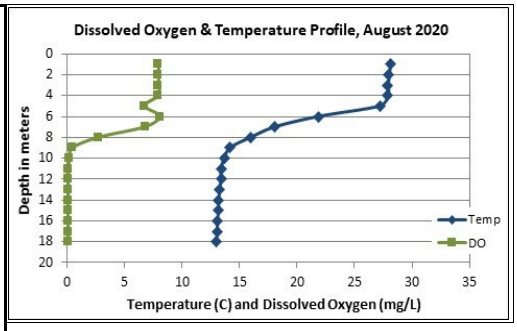
Source: The data layers are derived from NHDES data and are under constant revision. NHDES is not responsible for the use or interpretation of this information. Not intended for legal use NHDES Watershed Management Bureau Date: 2/17/2021

# Volunteer Lake Assessment Program Individual Lake Reports
# Canobie Lake, Salem/Windham
# 2020 Data Summary

**Recommended Actions:** Great job sampling in 2020! Lake quality remains representative of oligotrophic, or high quality, conditions. The improving chlorophyll and lake clarity (transparency) trends are encouraging. Dissolved oxygen levels are depleted in the hypolimnion by August and could result in phosphorus release from bottom sediments. This could fuel late season algal/cyanobacteria growth. Keep an eye out for any blooms or surface scums and report them to NHDES' Harmful Algal Bloom Program. Chloride and conductivity levels remain elevated but we hope to see some improvement in the future due to local efforts to address the problem. Continue enhanced chloride/conductivity monitoring to help assess future changes. Educate shorefront property owner's on becoming certified LakeSmart through NH LAKES' LakeSmart 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, increased 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), Stations 02, 04, 05, Frog Rock, and Intake conductivity and chloride levels remained elevated and much greater than the state medians. Nearshore conductivity levels were slightly higher in June than at the deep spot in August. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color measured in the epilimnion indicates the water is clear with very little tea, or brown, coloring.
- **Total Phosphorus:** Epilimnetic phosphorus level was within a low range, decreased slightly from 2019, was less than the state median, and was approximately equal to the threshold for oligotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level was within a moderate range. Hypolimnetic phosphorus level was slightly elevated and may be indicative of phosphorus release from bottom sediments under anoxic (low dissolved oxygen) conditions as depicted by the dissolved oxygen and temperature profile.
- **Transparency:** Transparency measured without the viewscope (NVS) was high (good) in August, remained stable with 2019, and was higher (better) than the state median. Historical trend analysis indicates significantly increasing (improving) NVS transparency since monitoring began. Viewscope (VS) transparency was much higher than NVS transparency and likely a better measure of actual conditions.
- **Turbidity:** Epilimnetic and Metalimnetic turbidity levels remained low. Hypolimnetic turbidity level was slightly elevated for that station.
- **pH:** Epilimnetic, Metalimnetic and Hypolimnetic pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began.




**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)

**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

| Station Name | Table 1. 2020 Average Water Quality Data for CANOBIE LAKE - WINDHAM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | 25.6 | 2.44 | 82 | 20 | 353.8 | 8 | 5.25 | 7.00 | 0.23 | 7.28 |
| Metalimnion | | | | | 304.0 | 11 | | | 0.40 | 7.04 |
| Hypolimnion | | | | | 297.0 | 18 | | | 1.18 | 6.77 |
| 02 Cove | | | 91 | | 385.6 | | | | | |
| Station 04 | | | 86 | | 383.0 | | | | | |
| Station 05 | | | 78 | | 384.6 | | | | | |
| Frog Rock | | | 90 | | 380.0 | | | | | |
| Intake | | | 87 | | 390.3 | | | | | |

## 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) | Stable | Trend not significant; data show low variability. |