



Volunteer Lake Assessment Program Individual Lake Reports

MILLEN POND, WASHINGTON, NH

MORPHOMETRIC DATA

| | | | | | |
|-----------------------|-------|---------------------------|-----------|-----------------------------------|------|
| Watershed Area (Ac.): | 832 | Max. Depth (m): | 12.6 | Flushing Rate (yr ⁻¹) | 0.7 |
| Surface Area (Ac.): | 156 | Mean Depth (m): | 5 | P Retention Coef: | 0.71 |
| Shore Length (m): | 5,000 | Volume (m ³): | 3,185,500 | Elevation (ft): | 1582 |

TROPHIC CLASSIFICATION

| Year | Trophic class |
|------|---------------|
| 1984 | OLIGOTROPIC |
| 1997 | OLIGOTROPIC |

KNOWN EXOTIC SPECIES

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The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

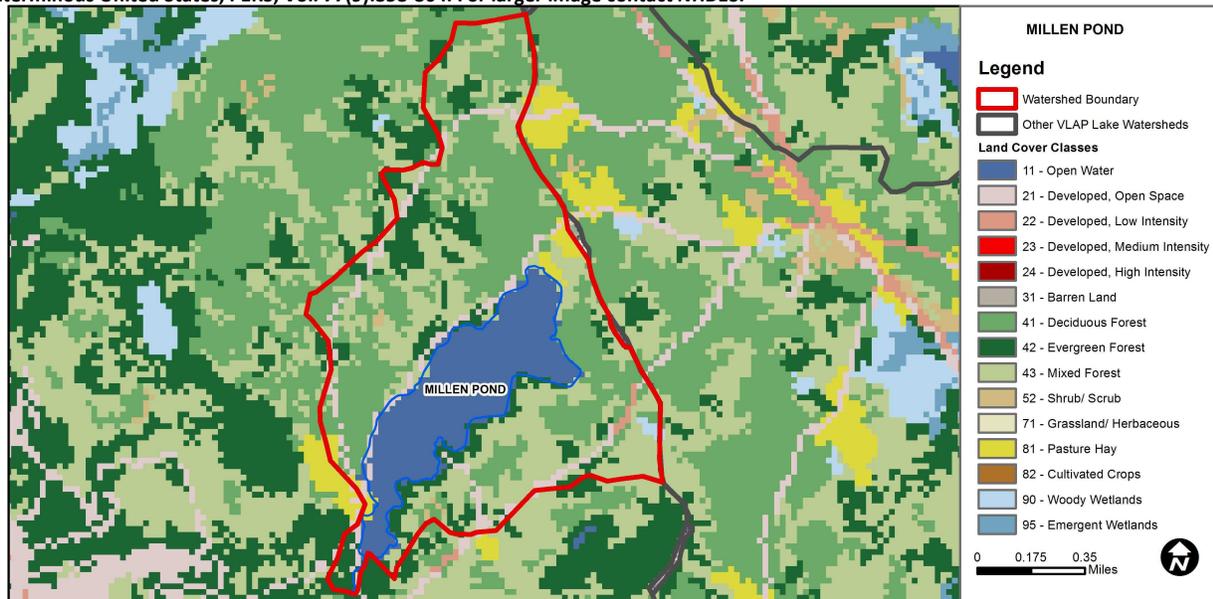
| Designated Use | Parameter | Category | Comments |
|----------------------------|--------------------|--------------|---|
| Aquatic Life | Phosphorus (Total) | Good | >/=5 samples and median is < threshold but > 1/2 threshold value. |
| | pH | Bad | >10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin. |
| | D.O. (mg/L) | Encouraging | < 10 samples and no exceedance of criteria. More data needed. |
| | D.O. (% sat) | Slightly Bad | >10% of samples exceed criteria by a small margin (minimum of 2 exceedances). |
| | Chlorophyll-a | Good | >/=5 samples and median is < threshold but > 1/2 threshold value. |
| Primary Contact Recreation | E. coli | Very Good | All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria. |
| | Chlorophyll-a | Very Good | At least 10 samples with 0 exceedances of criteria. |

BEACH PRIMARY CONTACT ASSESSMENT STATUS

| | | | |
|--------------------------|---------|-----|---|
| MILLEN POND - TOWN BEACH | E. coli | Bad | >/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria. |
|--------------------------|---------|-----|---|

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 | 19.5 | Barren Land | 0 | Grassland/Herbaceous | 0 |
| Developed-Open Space | 5.73 | Deciduous Forest | 32.21 | Pasture Hay | 1.71 |
| Developed-Low Intensity | 0.33 | Evergreen Forest | 12 | Cultivated Crops | 0 |
| Developed-Medium Intensity | 0 | Mixed Forest | 27.86 | Woody Wetlands | 0.27 |
| Developed-High Intensity | 0 | Shrub-Scrub | 0.3 | Emergent Wetlands | 0 |



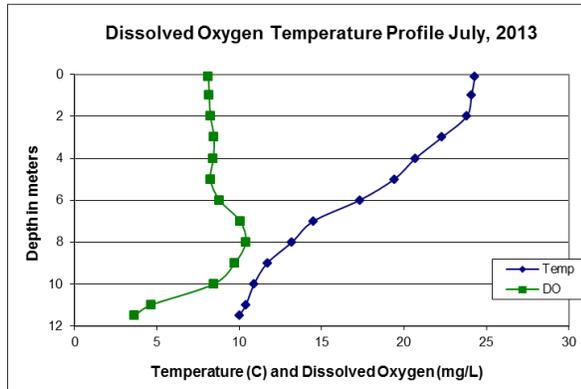
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

MILLEN POND, WASHINGTON, NH

2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels were relatively low throughout the summer and below the state median. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- ♣ **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity were low and below the state median. Historical trend analysis indicates epilimnetic conductivity is highly variable between years. Visual inspection indicates epilimnetic conductivity has decreased since 2005.
- ♣ **TOTAL PHOSPHORUS:** Deep spot and Inlet phosphorus levels were low throughout the summer and below the state median. Outlet phosphorus levels were slightly elevated in August. Historical trend analysis indicates relatively stable epilimnetic phosphorus with high variability between years.
- ♣ **TRANSPARENCY:** Transparency was low in July likely due to the significant storm events prior to sampling. Transparency measured with the viewscope was much greater than without and is likely a more accurate representation of lake transparency. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- ♣ **TURBIDITY:** Epilimnetic turbidity was slightly higher in July likely due to significant storm events prior to sampling. Outlet turbidity was elevated in July and August.
- ♣ **PH:** pH levels were less than desirable at all stations throughout the summer.
- ♣ **RECOMMENDED ACTIONS:** Epilimnetic phosphorus, chlorophyll and transparency have become more variable since about 2005. This may be due to the increase in high intensity and high volume storm events since that time. Educate lake and watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "Homeowner's Guide to Stormwater Management". Recent action of the Society for the Protection of NH Forests, with assistance from the lake association, conserved over 300 acres of land in the watershed. This is great news, keep up the great work!



| Station | Alk. | Chlor-a | Cond. | Total P | Trans. | | Turb. | pH |
|------------------|------|---------|-------|---------|--------|------|-------|------|
| | mg/l | ug/l | uS/cm | ug/l | m | | ntu | |
| | | | | | NVS | VS | | |
| Epilimnion | 1.87 | 3.09 | 28.5 | 6 | 4.42 | 6.06 | 0.90 | 6.32 |
| Metalimnion | | | 29.6 | 5 | | | 0.86 | 6.30 |
| Hypolimnion | | | 32.2 | 8 | | | 0.67 | 5.96 |
| Inlet | | | 26.0 | 4 | | | 0.80 | 6.07 |
| Outlet In Stream | | | 31.8 | 10 | | | 1.85 | 6.27 |

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: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

| Parameter | Trend | Explanation | Parameter | Trend | Explanation |
|--------------|--------|--|-------------------------|--------|--|
| pH | Stable | Trend not significant; data highly variable. | Chlorophyll-a | Stable | Trend not significant; data moderately variable. |
| Conductivity | Stable | Trend not significant; data highly variable. | Transparency | Stable | Trend not significant; data moderately variable. |
| | | | Phosphorus (epilimnion) | Stable | Trend not significant; data highly variable. |

