

Keoka Lake



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Keoka Lake was originally called Thomas Pond, after Thomas Chamberlain who supposedly hid under a rock along the shore when he was chased by Native Americans. The north-western side of the lake was settled in the late 1700s and soon became known as "The Flat". Today, the lake is enjoyed by boaters, anglers, swimmers and sight-seers.

Surface Area: 460 acres
Maximum Depth: 42 feet
Mean Depth: 25 feet
Volume: 10,569 acres/feet
Watershed : 3,808 acres
Elevation: 492 feet
Shorefront lots: 100

Water Quality:

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Phosphorus and chlorophyll concentrations in the surface waters are moderate in Keoka Lake. Consistently low dissolved oxygen values in the deeper waters continue to be a problem. In the late summer, it is common for the bottom half of the lake to have little or no oxygen. During this same time period, elevated phospho-



A misty view of Keoka Lake just after ice-out in the early Spring.

rus concentrations are also observed in the deeper waters. These conditions indicate that a process called **phosphorus recycling** may be occurring. Phosphorus recycling is very detrimental to water quality because it allows nutrients that are usually trapped in the sediment to be re-released into the water column. For these reasons, and past algal bloom on the lake, LEA rates Keoka Lake in the HIGH degree of concern category.

Fishing

Keoka Lake's gravel and boulder shoreline provides excellent habitat for both smallmouth and largemouth bass. Although brook trout is stocked annually, oxygen levels in the deep, cool water during August and September are often below levels needed to sustain a healthy trout population. Keoka also supports populations of yellow perch, chain pickerel, hornpout, smelt, eel, white sucker, minnows and pumpkinseed sunfish.



Largemouth Bass, MIF&W

| Town | Population | Registered Boats | Licensed anglers | % Anglers in population |
|-----------|------------|------------------|------------------|-------------------------|
| Waterford | 1,455 | 186 | 279 | 19% |

Sources: Maine Department of Inland Fisheries and Wildlife; 2000 Census

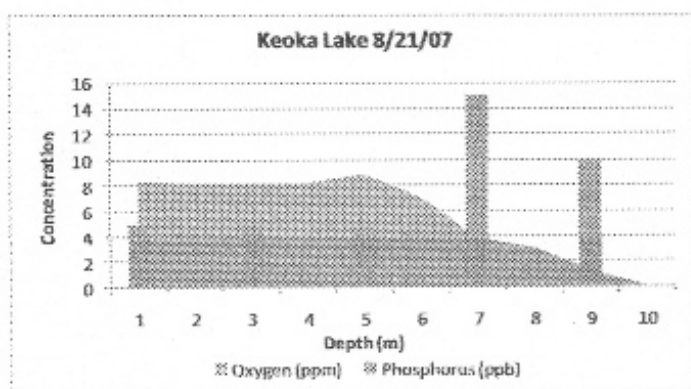
Water Quality Classification

While all lakes are sensitive to land use and activities within their watershed, the health and longevity of some lakes is more precarious than others. LEA classifies lakes into categories based on their overall health and susceptibility to algal blooms. Lakes in the *Average Degree of Concern* category are those lakes that are not currently showing water quality problems that are likely a result of human activity. The *Moderate Degree of Concern* category describes lakes where testing shows routine dissolved oxygen depletion, elevated phosphorus levels or a potential for phosphorus recycling. The *High Degree of Concern* category is reserved for those lakes that routinely show signs of phosphorus recycling, have a cold water fishery that is regularly impacted by oxygen depletion or have had algal blooms in the past.

The following criteria are used for reviewing transparency, phosphorus, chlorophyll and color data for each lake:

| Transparency (m) in meters | | Phosphorus (ppb) in parts per billion | | Chlorophyll A (ppb) in parts per billion | | Color (SPU) Standard Platinum Units | |
|-------------------------------|-----------|--|-----------|---|-----------|--|-----------|
| 10.0 + | excellent | less than 5.0 | low | less than 2.0 | low | less than 10.0 | low |
| 7.1 - 10.0 | good | 5.1 - 12.0 | moderate | 2.1 - 7.0 | moderate | 10.1 - 25.0 | moderate |
| 3.1 - 7.0 | moderate | 12.1 - 20.0 | high | 7.1 - 12.0 | high | 25.1 - 60.0 | high |
| less than 3.0 | poor | 20.1 + | very high | 12.1 + | very high | 60.1 + | very high |

Keoka Lake - The 2007 Secchi disk average of 6.4 meters was deeper than the long-term average of 6.0 meters. Dissolved oxygen depletion began to appear in the bottom waters of the pond in late June. As the summer continued, depletion progressed and consumed the bottom five meters of the water column. Phosphorus concentrations in the surface waters were moderate and averaged 7.1 ppb for the year, which is below the long term average of 8.1 ppb. Phosphorus concentrations below the thermocline averaged 12.5 ppb. Alkalinity was 7 ppm, just under the long term average of 8 ppm and pH was 6.8 for the year. 2007 chlorophyll concentrations were the same as the long-term average of 3.6 ppb. Average conductivity was 31 μ s, which is below the long term average of 40 μ s. Color was 17 SPU for the year, close to the long term average of 18 SPU. Because of low oxygen conditions and elevated phosphorus levels in the bottom waters, Keoka Lake is in the MODERATE/HIGH degree of concern category.



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|------------------------|----------------------|
| Surface Area: | 460 acres |
| Maximum Depth: | 42 feet |
| Mean Depth: | 25 feet |
| Volume: | 10,569 acres/feet |
| Watershed Area: | 3,808 acres |
| Flushing Rate: | 0.7 flushes per year |
| Elevation: | 492 feet |

Keoka Lake Quick Statistics
2007 Average Verses the Long Term Average:

Secchi: Better
 Chlorophyll: Similar
 Phosphorus: Better