1 DEEP

LAKE BASICS  BACKGROUND INFO

Site Depth  1 Deep – 16 feet
Lake Max/Mean Depth  16 feet / 9 feet
Location  Wakefield & Effingham, NH  Parsonsfield, ME
Watershed Area  6.1 square miles
Lake Area  968 acres
Shore Length  5.3 miles
Lake Volume  11.3 million cubic meters
Flushing Rate  1.0 times per year
Lake Elevation  480 feet
Lake Province is currently **MESOTROPHIC**, but is teetering on the edge of becoming **EUTROPHIC**.

The lake is often subject to **WIND-INDUCED MIXING** leading to resuspension of **SEDIMENTS** and **PHOSPHORUS**.

Blooms of **CYANOBACTERIA** have occurred periodically in recent years.

**WATERSHED RESTORATION EFFORTS** by the Acton Wakefield Watersheds Alliance began in 2008 to help improve water quality. Work will be ongoing to achieve water quality goals.

Province Lake has its own **WATERSHED MANAGEMENT PLAN**

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**WATER QUALITY REVIEW**

**LAKE PRODUCTIVITY** is determined by multiple factors, including:

- **WATER CLARITY**: Water clarity is used as an indirect measure of algal productivity, but is also influenced by suspended sediments and dissolved color.
- **PHOSPHORUS**: A key nutrient that stimulates algal blooms and excessive plant growth, particularly for invasive species.
- **CHLOROPHYLL A**: A green pigment found in plants and algae, it is used to estimate algal biomass. Algal growth is promoted by phosphorus, increasing chlorophyll.
- **DISSOLVED OXYGEN**: Low dissolved oxygen can kill or stress organisms and release phosphorus from sediments, further degrading water quality.

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**LAKE TROPHIC STATE** is generally broken into three categories:

- **OLIGOTROPHIC**
  - Deep
  - Low
  - Low
  - High throughout water column
  - Minimal plants

- **MESOTROPHIC**
  - Reduced
  - Moderate
  - Moderate
  - Occasionally low in bottom waters
  - Moderate plants

- **EUTROPHIC**
  - Shallow
  - High
  - High
  - Frequently low in bottom waters
  - Abundant plants

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**LAKE AGING** is both natural and accelerated by human activities.

Lakes **NATURALLY** age or become more productive over thousands of years. In recent geologic time, humans have enhanced the rate of nutrient enrichment and lake productivity, speeding up this natural process to tens or hundreds of years.

**HUMANS** introduce excess phosphorus enters the lake in eroding sediment, groundwater (e.g. aging septic systems), or stormwater runoff, which contains fertilizers, detergents, or other phosphorus-based products. Algal blooms and uncontrolled sediment erosion along the shoreline can decrease water clarity, which can reduce shoreline property values.