

## SITE STATUS SUMMARY OF CONDITIONS

2.1 **WATER CLARITY**

**TROPHIC STATE EUTROPHIC**

15.9 **TOTAL PHOSPHORUS**

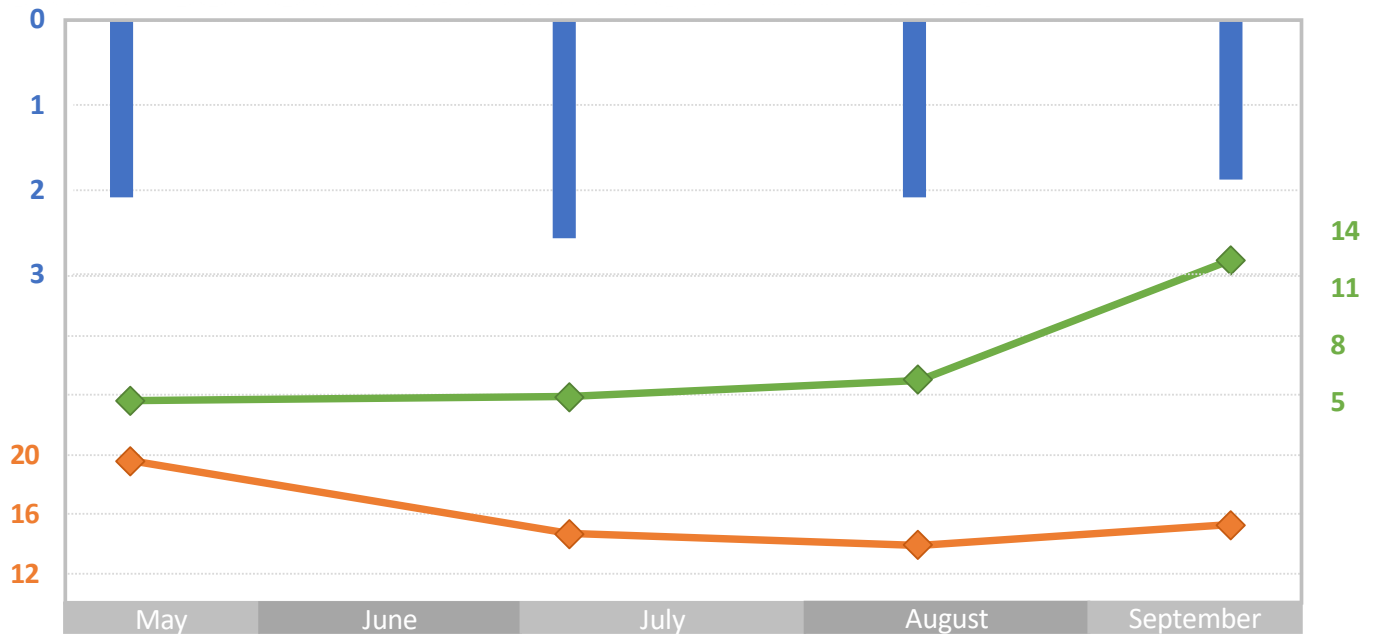
At site 1 Deep, water quality is generally poor. "While standard oxygen tests were not conducted due to the lack of the formation of distinct deep layer, oxygen profiles measurements revealed low oxygen at the lake bottom in July and August." changes fast – indicates problems

7.3 **CHLOROPHYLL A**

**DISSOLVED OXYGEN**

**TREND** degrading improving flat too few data **CURRENT** poor good excellent no data

## SITE RESULTS SEASONAL WATER QUALITY PATTERNS



WATER CLARITY (m)

CHLOROPHYLL A (mg L<sup>-1</sup>)

TOTAL PHOSPHORUS (mg L<sup>-1</sup>)

## LAKE BASICS BACKGROUND INFO

Site Depth **1 Deep – 17 feet**  
 Lake Max/Mean Depth 17 feet / 7.9 feet  
 Location Wakefield, NH (Carroll Co.)  
 Watershed Area 5.9 square miles  
 Lake Area 190 acres  
 Shore Length 7.4 miles  
 Lake Volume not available  
 Flushing Rate 5.4 times per year  
 Lake Elevation 564 feet



**LOW DISSOLVED OXYGEN** at 1 Deep indicates susceptibility to internal phosphorus loading, which could increase the amount of phosphorus available to stimulate plant and algal growth.

**INVASIVES** are present (water variable milfoil) and is currently being treated.

**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.

## WATER QUALITY REVIEW

## LEARN MORE ABOUT LAKE HEALTH

**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.

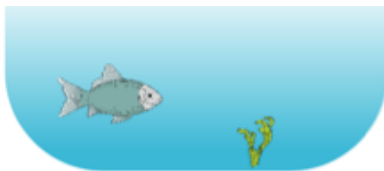
**CHLOROPHYLL A** A green pigment found in plants and algae, it is used to estimate algal biomass. Algal growth is promoted by phosphorus, increasing chlorophyll.

**PHOSPHORUS** A key nutrient that stimulates algal blooms and excessive plant growth, particularly for invasive species.

**DISSOLVED OXYGEN** Low dissolved oxygen can kill or stress organisms and release phosphorus from sediments, further degrading water quality.

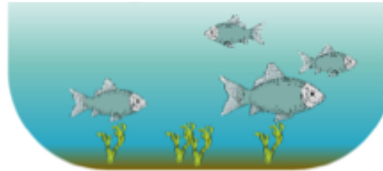
**LAKE TROPHIC STATE** is generally broken into three categories

### OLIGOTROPHIC



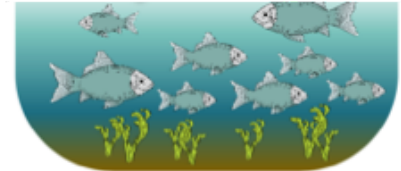
DEEP
LOW
LOW
HIGH THROUGHOUT WATER COLUMN
MINIMAL PLANTS

### MESOTROPHIC



REDUCED
MODERATE
MODERATE
OCCASIONALLY LOW IN BOTTOM WATERS
MODERATE PLANTS

### EUTROPHIC



SHALLOW
HIGH
HIGH
FREQUENTLY LOW IN BOTTOM WATERS
ABUNDANT PLANTS

**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.

