

SITE STATUS SUMMARY OF CONDITIONS

5.8  **WATER CLARITY**

6.7  **TOTAL PHOSPHORUS**

2.5  **CHLOROPHYLL A**

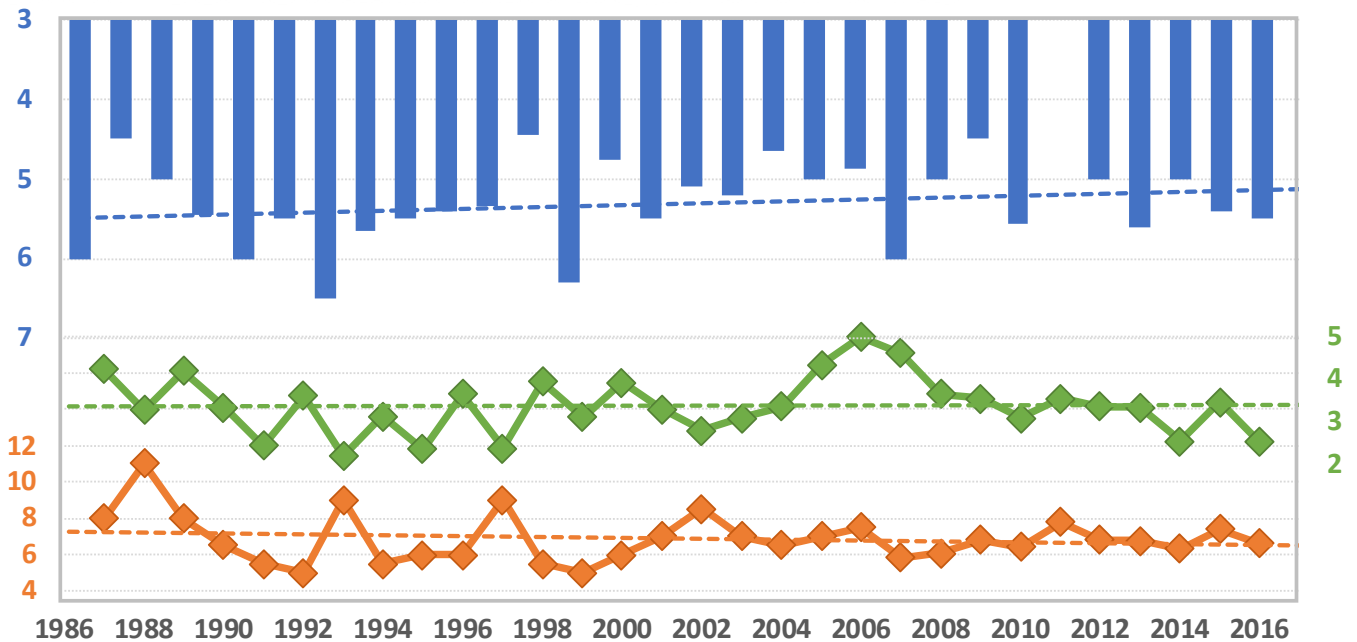
0.2  **DISSOLVED OXYGEN**

**TROPHIC STATE** **OLIGOTROPHIC**

At site 1 Deep, water quality is generally good. While decreasing phosphorus concentrations show improving water quality, water clarity is decreasing. Very low dissolved oxygen in the deep layer reveals potential for to internal phosphorus loading, which could result in degraded water quality.

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

SITE RESULTS ANNUAL 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 – 56 feet
Lake Max/Mean Depth	56 feet / 12 feet
Location	Wakefield, NH (Carroll Co.)
Watershed Area	12.2 square miles
Lake Area	593 acres
Shore Length	12.2 miles
Lake Volume	8.5 million cubic meters
Flushing Rate	2.2 times per year
Lake Elevation	582 feet



# PINE RIVER POND 2016 LAKE STATUS AND FUTURE CONCERNS

**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.

**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.

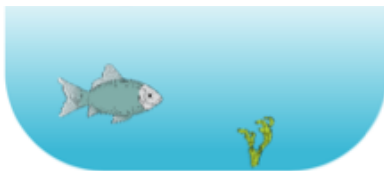
**CHLOROPHYLL A** A green pigment found in plants and algae, it is used to estimate algal biomass. Algal growth is promoted by phosphorus, increasing chlorophyll.

**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

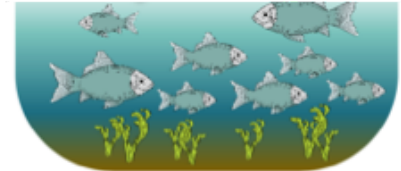
MODERATE

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.

