

SITE STATUS SUMMARY OF CONDITIONS

WATER CLARITY  6.3

TOTAL PHOSPHORUS  7.2

CHLOROPHYLL A  2.5

DISSOLVED OXYGEN 

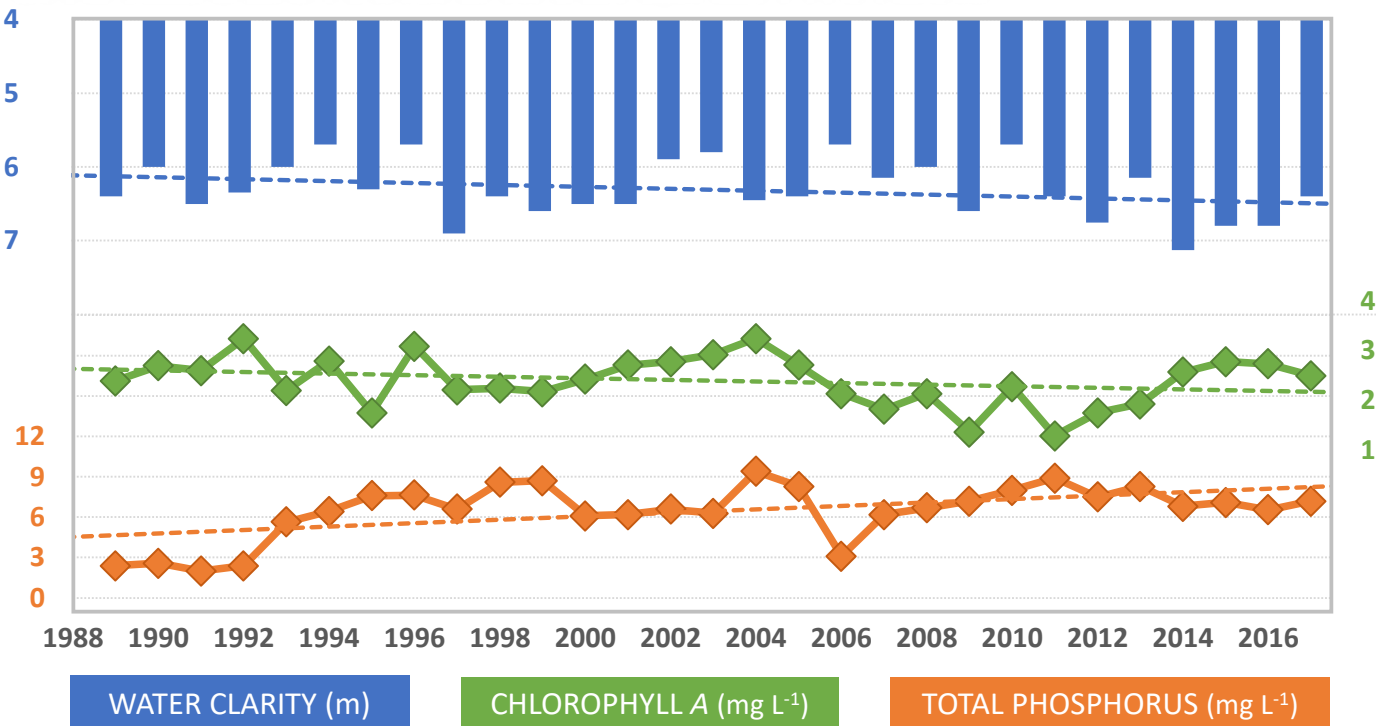
TROPHIC STATE **OLIGOTROPIC**

At site 1 North, water quality is generally excellent. Increasing water clarity and decreasing chlorophyll concentrations show improving water quality. However, increasing phosphorus indicates the danger of decreasing water quality, potentially leading to more plant growth and algal blooms.

CURRENT  poor  good  excellent  no data

TREND  degrading  improving  flat  too few data

SITE RESULTS ANNUAL WATER QUALITY PATTERNS



LAKE BASICS BACKGROUND INFO

|                     |                             |
|---------------------|-----------------------------|
| Site Depth          | 1 North – 24 feet           |
| Lake Max/Mean Depth | 41 feet / 13 feet           |
| Location            | Wakefield, NH (Carroll Co.) |
| Watershed Area      | 4.8 square miles            |
| Lake Area           | 538 acres                   |
| Shore Length        | 6.6 miles                   |
| Lake Volume         | 8.6 million cubic meters    |
| Flushing Rate       | 0.7 times per year          |
| Lake Elevation      | 572 feet                    |



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SITE STATUS SUMMARY OF CONDITIONS

WATER CLARITY



6.7

TOTAL PHOSPHORUS



8.1

CHLOROPHYLL A



2.6

DISSOLVED OXYGEN



3.3

TROPHIC STATE

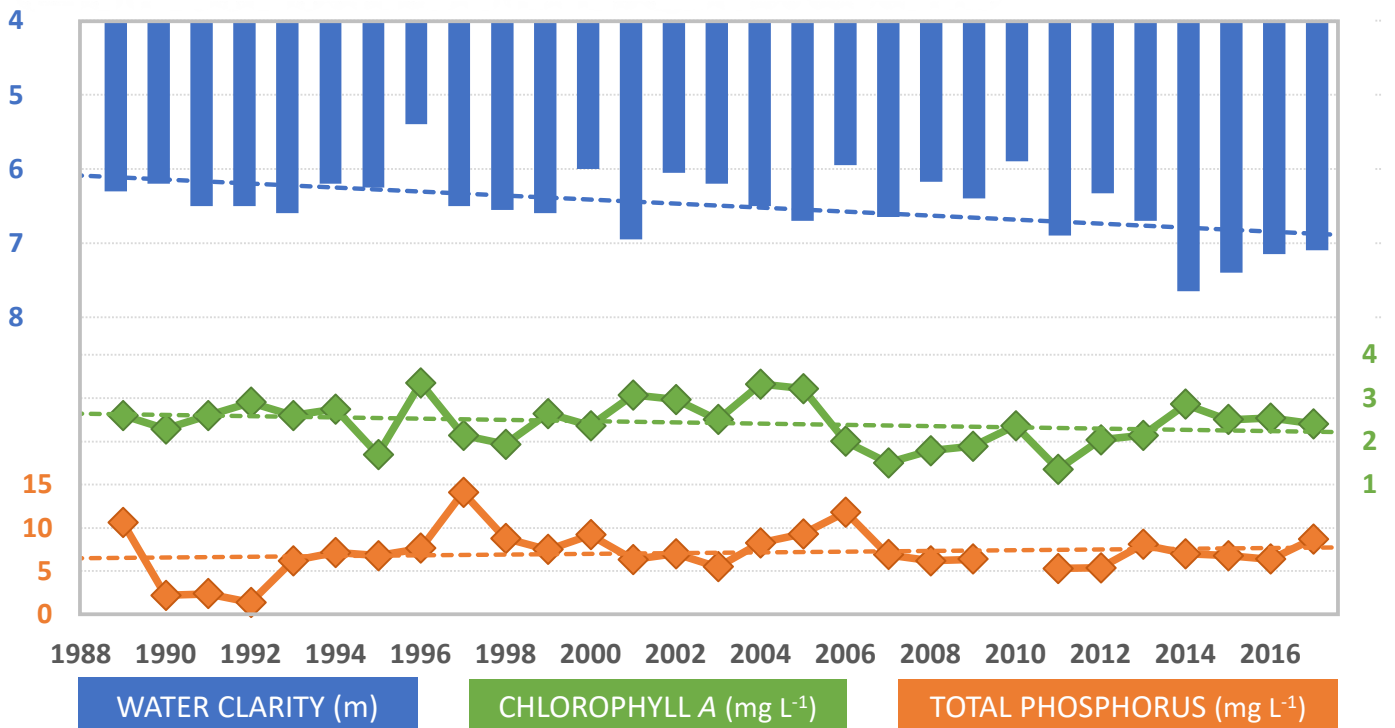
OLIGOTROPIC

At site 2 South, increasing water clarity and decreasing chlorophyll concentrations show improving water quality. However, increasing phosphorus could potentially lead to more plant growth and algal blooms. This trend could be amplified by low dissolved oxygen, which could lead to internal loading.

CURRENT ■ poor ■ good ■ excellent ■ no data

TREND degrading improving flat too few data

SITE RESULTS ANNUAL WATER QUALITY PATTERNS



LAKE BASICS BACKGROUND INFO

|                     |                             |
|---------------------|-----------------------------|
| Site Depth          | 2 South – 41 feet           |
| Lake Max/Mean Depth | 41 feet / 13 feet           |
| Location            | Wakefield, NH (Carroll Co.) |
| Watershed Area      | 4.8 square miles            |
| Lake Area           | 538 acres                   |
| Shore Length        | 6.6 miles                   |
| Lake Volume         | 8.6 million cubic meters    |
| Flushing Rate       | 0.7 times per year          |
| Lake Elevation      | 572 feet                    |



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**LOW DISSOLVED OXYGEN** at 2 South indicates susceptibility to internal phosphorus loading, which could increase the amount of phosphorus available to stimulate plant and algal growth.

**WATER CLARITY** and **CHLOROPHYLL A** long-term trends are improving in spite of increasing **PHOSPHORUS**. Why? Water quality can also vary due to rainfall, temperature, lake color, fish, etc.

**INVASIVES** are not currently present. A **LAKE HOST** program inspects boats to prevent introduction.

**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.

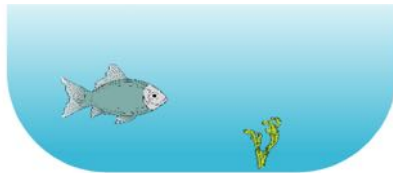
**CHLOROPHYLL A** A green pigment found in plants and algae, it is used to estimate algal biomass. Algal growth is promoted by phosphorus, increasing chlorophyll.

**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

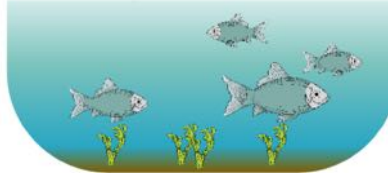
LOW

LOW

HIGH THROUGHOUT  
WATER COLUMN

MINIMAL PLANTS

### MESOTROPHIC



REDUCED

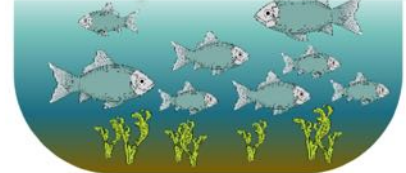
MODERATE

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.



Extension



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Lake  
Association

