Sources and Explanation of Data Presented in the Summary

The sources of the data listed, or the methodologies of calculating that data are outlined below. Also, generalized explanations in layman's terms are provided for the data to assist the reader in understanding a particular lake or pond of interest.

LAKE
The name of the lake, pond, or reservoir, as listed in the DES Environmental Monitoring Database (EMD). Alternate names may be used locally for a lake.

TOWN
The municipality in which the largest part of the water body is located, from the EMD.

STATION NAME
The station name as listed in the EMD. In general, the deep spot of each lake is sampled but some lakes have multiple stations.

COUNTY
The county in which the water body (or largest portion) is located.

AREA
The surface area of the lake to the nearest 0.01 acre, from the EMD.

ZMAX
The maximum depth, to the nearest 0.1 foot, from the EMD.

DATE
The date the summer field survey was conducted.

pH
A measure of the hydrogen ions in the water or, in general terms, the acidity. New Hampshire lakes historically have had pH values in the mid to upper sixes in most cases. As the pH decreases to between 5 and 6, many fish and other aquatic organisms become stressed, and some disappear. Little or no fish life remains when the pH falls much below 5.

Category	pH (units)
Acidified	< 5
Critical	5.0 – 5.4
Endangered	5.5 – 6.0
Satisfactory	6.0 – 8.0

ANC
Acid neutralizing capacity (ANC) or alkalinity measures the buffering capacity of a lake to neutralize acid inputs. New Hampshire has naturally low ANC waters because of a granitic bedrock. The median ANC for New Hampshire's lakes is only 4.9 mg/L.

Sensivity Category	ANC (mg/L)
Acidified	<=0
Highly Sensitive	>0 – 2.5
Sensitive	>2.5 – 10
Satisfactory	>10

BTTM DO

A measure of the dissolved oxygen concentration at the deepest point in the lake during the summer. Adequate dissolved oxygen is important for the ongoing survival of fish populations, especially cold-water species such as trout and salmon. A full understanding of the significance of a given bottom dissolved oxygen level to a lake and its trophic status is possible only if information on water temperature, thermal stratification and lake and hypolimnetic volumes are known (see item # 1 in the trophic classification system table on page 6). The bottom dissolved oxygen criteria is not used in the trophic classification of lakes with no hypolimnions (the bottom layer of a thermally stratified lake). Temperature data is not presented in this report.

CHL-A

Chlorophyll-a is a measure of the phytoplankton or floating algal biomass (abundance) found in lakes and ponds.

Category	Chlorophyll-a (mg/m^3)
Excellent	< 4
Satisfactory	4 – 8
More than desirable	8 - 16
Nuisance Amounts	>16

COLOR

A visual measure of the color of water. This color is generally caused by decaying organic matter and by naturally occurring metals in soils, such as iron and manganese. A highly colored lake generally has extensive wetlands along the shore or within the watershed, and often a mucky bottom. Color by itself does not indicate the quality of a particular waterbody.

Apparent Color	Units
Clear	0-25
Light tea-colored	25-40
Tea-colored	40-80
Dark tea colored	>80

COND
Conductivity is a measure of the ability of water to conduct an electric current. It is determined primarily by the number of ion particles present. The soft waters of New Hampshire traditionally have low conductivity values. Specific categories of good and bad levels cannot be constructed for conductivity because variations in watershed geology can result in natural fluctuations in conductivity. However, values in New Hampshire lakes exceeding 100 µmoles/cm generally indicate cultural (man-made) sources of ions, such as salted highways and runoff from urbanized areas.

PLANTS
A measure of the abundance of rooted (usually) aquatic plants in a lake. Aquatic plants are a natural component and vital link to a healthy and diverse aquatic ecosystem. When aquatic plants interfere with man's activities, the plants are quickly designated "weeds". Complete eradication of native weeds is not recommended! Plant abundance in a lake is subjectively evaluated using the following terms in order of relative abundance.

Abundance	Description
Sparse	Few emergent plants observed: submerged plants not obvious.
Scattered	Several small patches or 1 or 2 large patches or much of shoreline with a sparsely growing plant; submerged plants not obvious.
Scattered/Common	Intermediate between Scattered and Common.
Common	Plants around most of the shoreline but not a problem to navigation or several large patches of plants.
Common/Abundant	Intermediate between Common and Abundant.
Abundant	Plants around entire shoreline and with thick patches in some areas.
Very Abundant	At least ½ of the surface area with emergent plants or submerged plants thick throughout the lake; navigation and swimming impaired.

SECCHI

A measure of water clarity or a measure of the distance one can see into the water. This depth is variable with weather conditions, suspended matter (usually algae) in the water and the eyesight of the observer. A 20 centimeter black and white disk (Secchi Disk) is lowered into the water on a calibrated chain to estimate this depth.

Category	Transparency (FT)
Poor	<4
Good	4 – 15
Excellentl	>15

TP

Total phosphorus, or a measure of all the phosphorus forms present in the water, including both inorganic and organic forms. Phosphorus is the limiting plant nutrient in New Hampshire lakes. Its concentration determines the amount of plant growth possible, which directly relates to trophic state and the perceived aesthetics of the lake. Values less than 0.010 mg/L generally indicate oligotrophic waters, values greater than 0.020 mg/L indicate eutrophic waters, while mesotrophic conditions exist between these two values (see description of **TROPHIC CLASS** on p. 5). Excessive amounts of total phosphorus may impair the aesthetics and recreational use of a water body by causing increased rooted plant growth and obnoxious blooms of algae.

Category	TP (mg/L)
Low (good)	.001 - .010
Average	.011 - .020
High	.021 - .040
Excessive	> .040

TROPHIC CLASS

The trophic class of a lake is a reflection of the biological production that occurs in the lake. The biological production is influenced by both nutrient levels (primarily phosphorus) and morphological characteristics such as volume, depth, flushing rate and sediment type. New Hampshire's Trophic Classification System places lakes into trophic groups according to bottom dissolved oxygen levels, water clarity (Secchi disk transparency), rooted plant growth (vascular

plant abundance), and planktonic algal production (chlorophyll a) (see table on the following page). A lake or pond can be placed in one of the following classes:

OLIGO – Oligotrophic lakes are usually nutrient poor and as a result do not support nuisance algal blooms or extensive rooted plant growths. Aesthetically, these lakes are the best of the three ratings and include most of the larger, deeper lakes.

MESO – Mesotrophic is intermediate between an oligotrophic and eutrophic waterbody. Algal production is moderate. Phosphorus input and water clarity are also intermediate compared to the other two lake ratings. If the lake is abused it eventually may move into the eutrophic category.

EUTRO – Eutrophic lakes are characterized by a high production of algae and aquatic plants, which indicates that the system is receiving an overabundance of phosphorus. Water clarity is reduced dramatically during algal blooms. These ponds tend to be shallower with mucky bottoms.

A **BLANK** entry under class indicates that sufficient data is not available to properly classify the pond.

TROPHIC CLASSIFICATION SYSTEM FOR NEW HAMPSHIRE LAKES AND PONDS

Trophic Points

1. Summer Bottom Dissolved Oxygen:

a. D.O. >4mg/L 0
b. D.O. = 1 to 4 mg/L & hypolimnion volume ≤10% lake volume 1
c. D.O. = 1 to 4 mg/L & hypolimnion volume >10% lake volume 2
d. D.O. <1mg/L in <1/3 hypo. volume & hypo. volume ≤10% lake volume 3
e. D.O. <1mg/L in ≥1/3 hypo. volume & hypo. volume ≤10% lake volume 4
f. D.O. <1mg/L in <1/3 hypo. volume & hypo. volume >10% lake volume 5
g. D.O. <1mg/L in ≥1/3 hypo. volume & hypo. volume >10% lake volume 6

2. Summer Secchi Disk Transparency:

a. > 7m 0
b. > 5m – 7m 1
c. > 3m – 5m 2
d. >2m – 3m 3
e. >1m – 2m 4
f. >0.5 – 1m 5
g. ≤0.5m 6

3. Aquatic Vascular Plant Abundance:

a. Sparse 0
b. Scattered 1
c. Scattered/Common 2
d. Common 3
e. Common/Abundant 4
f. Abundant 5
g. Very Abundant 6

4. Summer Epilimnetic Chlorophyll-a (mg/m^3):

a. <4 0
b. 4 - <8 1
c. 8 - <12 2
d. 12 - <18 3
e. 18 - <24 4
f. 24 - <32 5
g. ≥32 6

Trophic Classification	Trophic Points Stratified	*Unstratified
Oligotrophic	0-6	0-4
Mesotrophic	7-12	5-9
Eutrophic	13-24	10-18

*Lakes without hypolimnions are not evaluated by the bottom dissolved oxygen criterion.

Statistical Summary Information

To provide an understanding of how a particular lake compares to other New Hampshire lakes, the following table summarizes key biological and chemical parameters for all the state's lakes, using the most recent summer, upper water level data.

Parameter*	Number	Min.	Max.	Mean	Median
pH (units)	780	4.3	9.3	**6.5	6.6
ANC	781	-3	85.9	6.6	4.9
Color (units)	759	<5	250	---	28
Conductivity (μmhos/com)	768	13.1	696	59.4	40.0
Total Phosphorus	772	<0.001	0.121	---	0.012
Chlorophyll-a (μg/L)	776	0.19	143.8	7.16	4.58
Secchi Disk (ft.)	663	1.3	42.6	12.1	10.5

**All parameters in mg/L unless otherwise noted.*
*** True mean pH*