



**NJ Department of Environmental Protection  
Water Monitoring and Standards**



# **AMBIENT LAKES MONITORING NETWORK**

**Panel 5**

**Volume 1 of 2**



**Silver Lake, Upper Deerfield Twp., Cumberland County**

**December 2011**

**State of New Jersey  
Chris Christie, Governor  
Kim Guadagno, Lt. Governor**

**NJ Department of Environmental Protection  
Bob Martin, Commissioner**

NJ Department of Environmental Protection



Water Monitoring and Standards  
Jill Lipoti, Director

Bureau of Freshwater & Biological Monitoring  
Leslie J. McGeorge, Administrator

December 2011

## **AMBIENT LAKES MONITORING NETWORK Panel 5**

### **Volume 1 of 2**

#### **AUTHOR**

Victor Poretti

#### **PROJECT OFFICER**

Johannus Franken

#### **DATA MANAGEMENT**

Thomas Miller

Brian Taylor

#### **GIS AND MAPS**

Leigh Lager

#### **FIELD COLLECTION STAFF**

Johannus Franken

Thomas Miller

Victor Poretti

Brian Taylor

## ACKNOWLEDGEMENTS

This report would not have been possible without the significant contributions from environmental scientists at the New Jersey Department of Environmental Protection and the United States Environmental Protection Agency. Alfred Korndoerfer, Debra Hammond, Kevin Berry, Leslie McGeorge, and Alena Baldwin-Brown, of NJDEP Water Monitoring and Standards provided useful editorial comments and interpretation of results. Jim Kurtenbach at U.S. EPA Region 2 provided guidance on the Network's design and implementation. Tony Olsen at USEPA National Health and Environmental Effects, Research Lab/ORD Western Ecology Division created the probabilistically-based design of the Network. Many thanks to all involved for the successful implementation of the Ambient Lakes Monitoring Network.

## TABLE OF CONTENTS

Executive Summary .....	1
Introduction.....	7
Methods and Materials.....	11
Results and Discussion.....	17
Summary of Physical/Chemical and Biological Measures.....	17
Trophic State Index (TSI).....	24
Potential Stressors.....	29
Recommendations.....	30
References.....	32

## EXECUTIVE SUMMARY

The NJ Department of Environmental Protection (NJDEP) initiated a renewed Ambient Lake Monitoring Network in 2005. This initiative, which was undertaken by Water Monitoring and Standards' (WM&S) Bureau of Freshwater & Biological Monitoring (BFBM), was in response to deficiencies cited in a 1999 USEPA Office of Inspector General's (OIG) Audit Report<sup>[14]</sup> of the state's water monitoring programs, recommendations from EPA's "Elements of a State Water Monitoring and Assessment Program" (March 2003)<sup>[11]</sup>, as well as needs identified by the Department's Watershed Management and Water Quality Standards and Assessment programs. Additional monitoring and assessment is performed in support of USEPA's National Lake Assessment (NLA).

The network consists of 200 lakes, divided into five Panels of 40 lakes each. Lakes were selected probabilistically, using EPA's Generalized Random Tessellation Stratified (GRTS) method, in a manner that equalizes selections over all Omerik Level III Ecoregions<sup>[9]</sup>, of which there are six (6) in the state. The GRTS survey design is a plan for selecting the sample area appropriately so that it provides valid data for developing accurate estimates for the entire population or area of interest that meets specific design criteria. In this case, the population is New Jersey's lakes defined as: a permanent body of water man made or natural of at least two (2) hectares in size, and a depth of approximately one meter at the deepest point measured; potable water reservoirs with active "draw downs" are excluded. These Statewide probabilistic estimates will be addressed in a separate report.

Data is collected to evaluate the trophic state of selected lakes and assess the ecological health of the State's lentic water resources. Forty lakes (designated as a Panel) per year are monitored in order to develop baseline, and eventually statewide status and trend information for New Jersey lakes. Water quality monitoring takes place at up to three in-lake stations that best represent the limnological aspects of the lake. Sites are sampled three times per year (spring, summer, and fall).

In addition to evaluating the ecological health of lakes statewide, information from this monitoring network is used to assess the conditions of individual lakes in the New Jersey Integrated Water Quality Monitoring and Assessment Report (Integrated Report)<sup>[6]</sup> (see <http://www.state.nj.us/dep/wms/bwqsa/generalinfo.htm>). The methods used to collect, analyze, and interpret data for the Integrated Report are outlined in the Integrated Water Quality Monitoring and Assessment Methods document.<sup>[7]</sup> This Methods Document provides an objective and scientifically sound assessment methodology. The Methods require samples for *in-lake* chemistry to be collected just below the *surface* (generally at a one-meter depth if the lake is sufficiently deep). Lakes can have multiple in-lake sampling locations, depending on their size. Each sampling location within a lake is considered a "subsample". Lake subsamples that do not comply with the applicable numeric SWQS criteria are considered excursions and are reviewed to determine if the excursion is within the margin of error of the analytical method or can be attributed to natural conditions or transient events. Excursions occurring at multiple locations or subsamples within a lake on the same date are considered a "single excursion".

For lakes there are three parameters with numeric SWQS criteria:

☛ **Total Phosphorus (TP) > 0.05 mg/L**

☛ **Dissolved Oxygen (DO) < 4.0mg/l**

(There is also a daily average criterion of 5mg/l, which is not applicable to the sampling methods used for this monitoring network)

☛ **pH 3.5 - 8.5 Standard Units (SU)\***

\*6.5 – 8.5 SU for lakes within waters designated as FW2 waters in the Upper Delaware, Upper Raritan, Passaic, and Wallkill River Basins.

\*4.5 - 7.5 SU for lakes within FW2 waters in the Atlantic, Lower Delaware, and Lower Raritan River basins.

\*3.5 - 5.5 SU for lakes designated as PL waters.

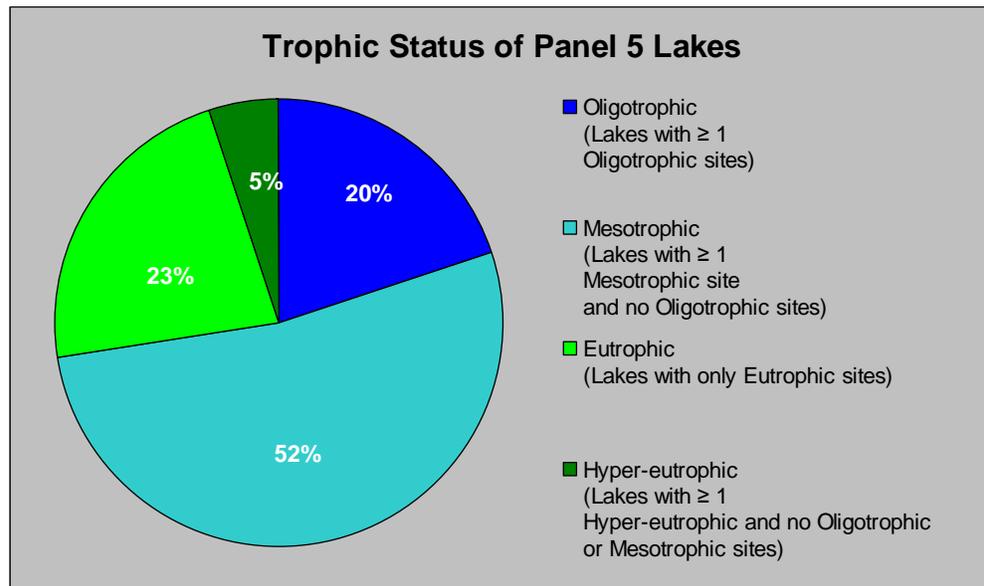
The lake condition is evaluated along with other water quality information at the subwatershed level (HUC14) and presented in the Integrated Water Quality Monitoring and Assessment Report.

In 2009, 40 Panel 5 lakes were sampled. Of these 40 lakes, 12 had an excursion from the SWQS Criterion <sup>[7]</sup> for TP from at least one in-lake station.

Very low DO levels (the SWQC of < 4.0mg/l) were observed in 10 lakes in the mesotrophic-through-hypereutrophic range, predominantly during the summer months. Elevated pH levels showed a strong correlation to algal concentrations. Lakes with higher pH measurements also had higher chlorophyll “a” concentrations and were more likely to be in a eutrophic state. See Volume 2 of this report for all raw data results.

### ***Carlson’s Trophic State Index***

(TSI) is used as the basis for estimating the trophic status of New Jersey Lakes. Trophic status ranges from oligotrophic to hyper-eutrophic, and is viewed as a continuum on this scale. Carlson’s TSI is based on the interrelationships of Total Phosphorus (TP), chlorophyll “a”, and Secchi disk transparency. Eight (8) lakes (Albert Lake, Heritage Pond, Cains Mill Lake, Algonquian Waters Lake, Stafford Forge Lake, Wawayanda Lake, Outdoor World Lake, and Deer Head Lake) had a TSI rating of oligotrophic for at least one station and one season. This rating always occurred in the spring or fall.

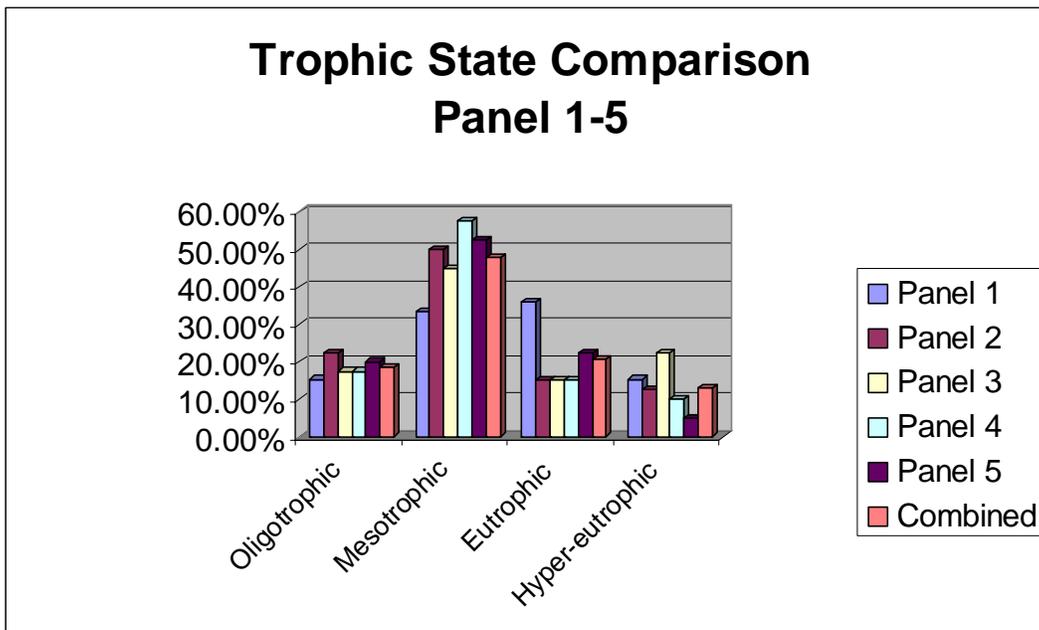


**Figure ES1. Panel 5 Summary of Trophic Status.**

Five of the lakes which had an oligotrophic site are of particular note, Heritage Pond, Cains Mill Lake, Stafford Forge Lake, Wawayanda Lake, and Deer Head Lake. These lakes were a combination of oligotrophic and mesotrophic for all seasons sampled. The other three lakes which had oligotrophic sites also had site with a eutrophic TSI.

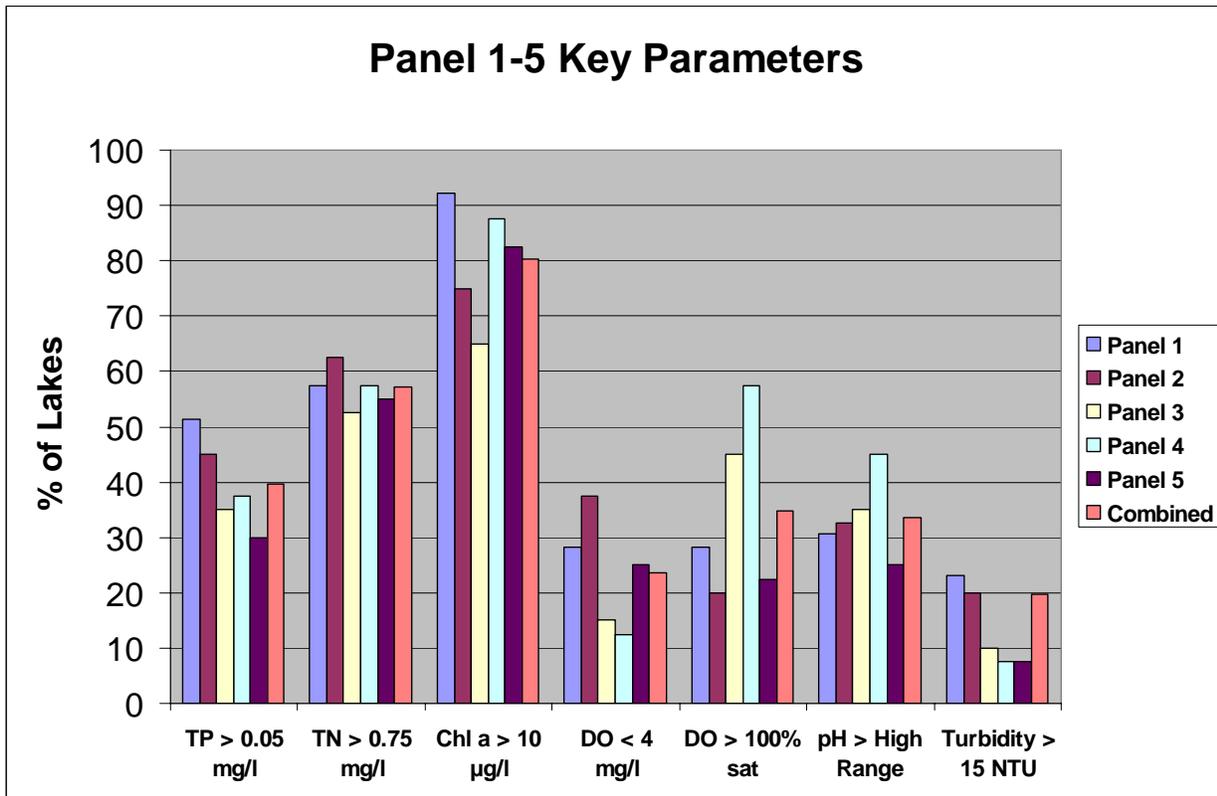
Two lakes (Glovers Pond, Lake Fred) maintained a mesotrophic state for all seasons sampled. All other lakes sampled had at least one site during one season that a TSI rating of eutrophic or hyper-eutrophic. (Figure ES1)

The Panel 5 sampling data and assessments is the final Panel for the entire Network. An estimate of the statewide trophic status of New Jersey lakes is shown in Figure ES1. Panel 5 is consistent with all network lakes in that periods of oligotrophy were limited and no were lakes oligotrophic for all three (Figure ES2). This demonstrates that lakes assessed for the Network are in, or may be accelerating toward, an entirely eutrophic state. Figure ES2 provides a comparison of results from Panel 1- 5 lakes. All lakes sampled for the Network are shown in Figure ES4.



**Figure ES2. Comparison of Panel 1 - Panel 5 Lakes**

Combined results for all 5 Panels showed persistent algal growth, as measured by chlorophyll “a”. Approximately 80% of the lakes in the Network have significant chlorophyll



**Figure ES3. Percentage of Lakes Statewide showing key parameters with levels exceeding thresholds for at least one in-lake site during the sampling season. TP, DO mg/l, and pH are SWQC thresholds. pH high range is determined by Water Basin specific thresholds .**

“a” concentrations of >10 µg/L. (Figure ES3) TP is likely the limiting nutrient causing the algae growth because it has been shown through the results of this Network that TP concentrations rise with chlorophyll “a” concentrations.

Pending the availability of sufficient resources, it is recommended that site specific lentic studies be performed, on individual lakes, to supplement the data collected for statewide status in the Ambient Lakes Monitoring Network. In particular, source identification of TP as this nutrient promotes persistent algae growth which can then impact other physical/ chemical conditions of a lake such as DO, pH, and use attainment.

## **Information**

**Additional information on the Ambient Lakes Monitoring Program can be obtained from WM&S' Bureau of Freshwater & Biological Monitoring by calling 609-292-0427 or visiting its website at: [www.state.nj.us/dep/wms/bfbm](http://www.state.nj.us/dep/wms/bfbm).**

**Raw data is posted on this website by the end of the calendar year that the data is received and validated.**

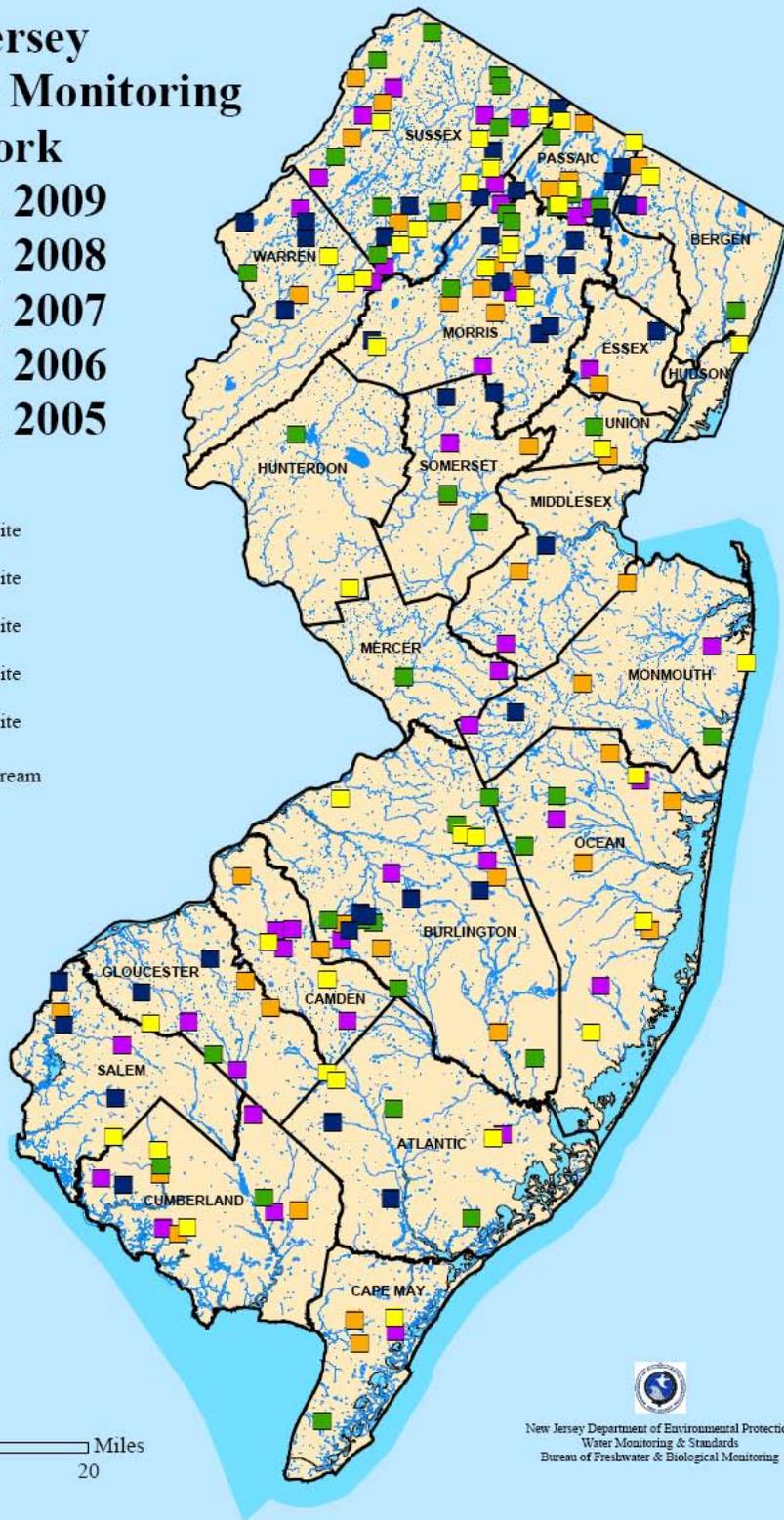
**Additionally, raw data is submitted to WQX as soon as the data is received and validated. WQX is USEPA's repository and framework for water quality, biological, and physical data. It is used by state environmental agencies, EPA and other federal agencies, universities, private citizens, and many others to store data. The retrieval of the data is handled through the STORET interface and can be accessed at: [www.epa.gov/storet](http://www.epa.gov/storet).**

**Comments are welcome and may be emailed to: [bfbm@dep.state.nj.us](mailto:bfbm@dep.state.nj.us)**

# New Jersey Ambient Lake Monitoring Network

Panel 5, 2009  
Panel 4, 2008  
Panel 3, 2007  
Panel 2, 2006  
Panel 1, 2005

- Panel 5 Lake Site
- Panel 4 Lake Site
- Panel 3 Lake Site
- Panel 2 Lake Site
- Panel 1 Lake Site
- Major River/Stream
- Lake/Pond
- County



New Jersey Department of Environmental Protection  
Water Monitoring & Standards  
Bureau of Freshwater & Biological Monitoring

1/19/10

Figure ES4. Panel 1-5 Lakes

# INTRODUCTION

## Background

In 2003, Water Monitoring & Standard's (WM&S') Bureau of Freshwater and Biological Monitoring (BFBM) formed an Ambient Lake Water Quality Monitoring Workgroup (Lake Workgroup). The workgroup was tasked with developing a monitoring network design optimized to address the ambient lake assessment deficiencies cited in the 1999 USEPA Office of Inspector General's (OIG) Audit Report,<sup>[14]</sup> the recommendations from EPA's "Elements of a State Water Monitoring and Assessment Program"<sup>[11]</sup>, as well as needs identified by the Department's Watershed Management and Water Quality Standards and Assessment programs. Of particular concern to EPA was that the state needed a network design that would capture the status of lake water quality statewide – a task the EPA felt could only be accomplished by a probabilistically designed network. Members of the Workgroup included representatives from WM&S/BFBM, the Bureau of Environmental Analysis and Restoration (BEAR) in the Division of Watershed Management (responsible for developing TMDLs); WM&S' Bureau of Water Quality Standards and Assessment, which is responsible for preparing the Integrated Water Quality Monitoring and Assessment Report (Integrated Report)<sup>[6]</sup>; and the USEPA Region 2, Division of Environmental Science and Assessment.

## New Jersey Ambient Lakes Monitoring Network

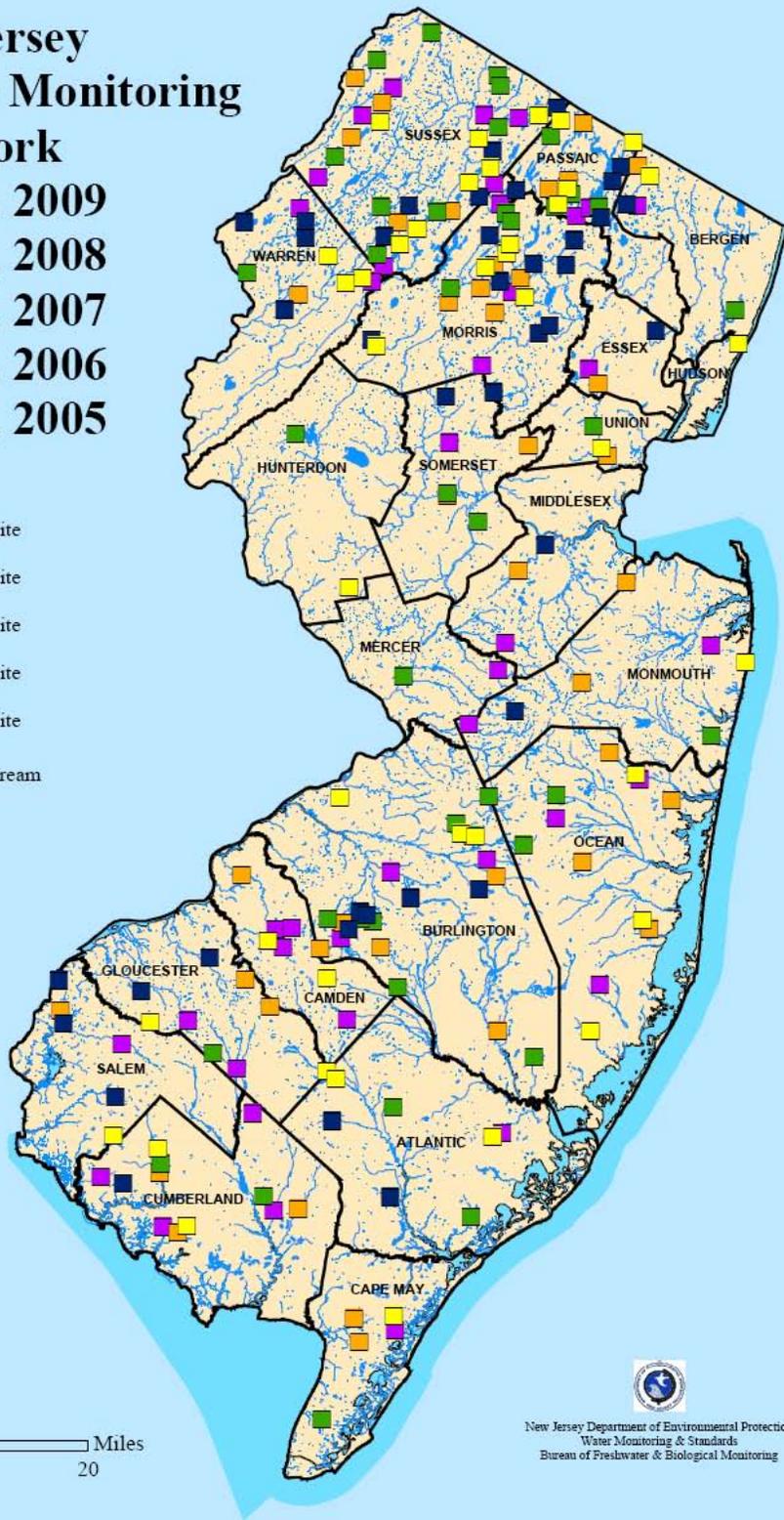
As a result of the recommendations of the Lake Workgroup NJDEP initiated a renewed ambient lake monitoring network in 2005. The target population was identified as all lakes, man-made or natural, wholly or partially within New Jersey's political boundaries, excepting water supply reservoirs being actively managed for potable water supply. Water supply reservoirs are subject to various pumping and water exchange operations, which do not represent the statewide status of New Jersey lakes and were, therefore, excluded. In order to maximize the applicability of the monitoring for statewide assessments, a probabilistically-based design was selected for the renewed network. Towards that end, lakes were selected randomly, using EPA's Generalized Random Tessellation Stratified (GRTS) method, but in a manner that equalizes selections over all Omerik Level III Ecoregions<sup>[9]</sup>, of which there are six (6) in the state. Additional design stratifications include defining a lake as a permanent body of water of at least two (2) hectares in size, and a depth of approximately one meter at the deepest point measured; potable water reservoirs with active "draw downs" are excluded.

The final probabilistic network consists of 200 lakes divided into five Panels of 40 lakes, each Panel sampled once every five (5) years; each lake sampled 3 times per year, during the Spring, Summer and Fall. Because lakes were chosen using the GRTS method, data from the 200 lakes in the Network can be used to develop accurate probabilistic estimates for all lakes in New Jersey which meet the network design stratifications. These Statewide probabilistic estimates will be addressed in a separate report. Table 1 lists the active sites sampled for Panel 2. Figure 1 shows sites sampled as of this report. Additional monitoring and assessment is performed in support of USEPA's National Lake Assessment (NLA).

# New Jersey Ambient Lake Monitoring Network

Panel 5, 2009  
Panel 4, 2008  
Panel 3, 2007  
Panel 2, 2006  
Panel 1, 2005

- Panel 5 Lake Site
- Panel 4 Lake Site
- Panel 3 Lake Site
- Panel 2 Lake Site
- Panel 1 Lake Site
- Major River/Stream
- Lake/Pond
- County



New Jersey Department of Environmental Protection  
Water Monitoring & Standards  
Bureau of Freshwater & Biological Monitoring

1/19/10

Figure 1. Panel 1-5 Lakes

**Table 1. Panel 5, 2009 Active Sites**

<b>SITEID</b>	<b>NAME</b>	<b>COUNTY</b>	<b>MUNICIPALITY</b>
NJW04459-162	Albert Lake	ATLANTIC	FOLSOM BORO
NJW04459-187	Algonquian Waters Lake	PASSAIC	WEST MILFORD TWP
NJW04459-165	Allamuchy Pond	WARREN	ALLAMUCHY TWP
NJW04459-193	Alphano Pond	WARREN	ALLAMUCHY TWP
NJW04459-290	Ames Lake	MORRIS	ROCKAWAY TWP
NJW04459-169	Amphibious Lake	BURLINGTON	NEW HANOVER TWP
NJW04459-184	Amwell Lake	HUNTERDON	EAST AMWELL TWP
NJW04459-278	Atco Lake	CAMDEN	WATERFORD TWP
NJW04459-281	Bloodgood's Pond	UNION	CLARK TWP
NJW04459-170	Cains Mill Lake	GLOUCESTER	MONROE TWP
NJW04459-283	Carasaljo Lake	OCEAN	LAKEWOOD TWP
NJW04459-172	Culver Lake	SUSSEX	FRANKFORD TWP
NJW04459-288	Deer Head Lake	OCEAN	LACEY TWP
NJW04459-180	George Lake	MORRIS	WASHINGTON TWP
NJW04459-182	Girl Scout Pond	MORRIS	ROCKAWAY TWP
NJW04459-175	Glovers Pond	WARREN	FRELINGHUYSEN TWP
NJW04459-196	Harrisonville Lake	SALEM	PILESGROVE TWP
NJW04459-186	Heaters Pond	SUSSEX	OGDENSBURG BORO
NJW04459-167	Heritage Lakes	SUSSEX	HAMBURG BORO
NJW04459-274	Lake Fred	ATLANTIC	GALLOWAY TWP
NJW04459-279	Lake Takanassee	MONMOUTH	LONG BRANCH CITY
NJW04459-161	Laurel Lake	CAMDEN	LAUREL SPRINGS BORO
NJW04459-197	Little Pine Lake	BURLINGTON	PEMBERTON TWP
NJW04459-181	Lower Sylvan Lake	BURLINGTON	BURLINGTON TWP
NJW04459-173	Lummis Mill Pond	CUMBERLAND	LAWRENCE TWP
NJW04459-198	Mount Hope Pond	MORRIS	ROCKAWAY TWP
NJW04459-168	North Hudson Park Lake	HUDSON	NORTH BERGEN TWP
NJW04459-284	Outdoor World Lake	CAPE_MAY	DENNIS TWP
NJW04459-289	Panther Lake	SUSSEX	BYRAM TWP
NJW04459-164	Rainbow Lakes	MORRIS	PARSIPPANY-TROY HILLS TWP
NJW04459-179	Rhodo Lake	SALEM	QUINTON TWP
NJW04459-174	Scarlet Oak Pond	BERGEN	MAHWAH TWP
NJW04459-189	Sheppard Pond	PASSAIC	RINGWOOD BORO
NJW04459-276	Silver Lake	CUMBERLAND	UPPER DEERFIELD TWP
NJW04459-190	Stafford Forge Lake	OCEAN	EAGLESWOOD TWP
NJW04459-177	Stag Pond	SUSSEX	BYRAM TWP
NJW04459-192	Tamaracks Lake	SUSSEX	HARDYSTON TWP
NJW04459-282	Upper Greenwood Lake	PASSAIC	WEST MILFORD TWP
NJW04459-271	Wawayanda Lake	SUSSEX	VERNON TWP
NJW04459-195	Wonder Lake	PASSAIC	WEST MILFORD TWP

## Lake Eutrophication (aging) Process

Lakes are frequently divided into two (2) types: oligotrophic and eutrophic. These two types represent the extreme ends of a lake aging (eutrophication) continuum. Some typical characteristics of an oligotrophic lake are greater depth, adequate concentrations of DO from surface to bottom, low nutrients, low quantities of phytoplankton (measured as chlorophyll “a”), little aquatic plant growth, and good water clarity. Eutrophic lakes, in contrast, are usually shallow, have low dissolved oxygen levels, are rich in nutrients, have persistent aquatic plant and phytoplankton growth, and decreased water clarity (usually due to an increase of phytoplankton levels).

Generally, as the oligotrophic lake ages, it gradually accumulates sediment and nutrients and moves toward and eventually into the eutrophic stage. There is a transitional stage between the oligotrophic and eutrophic conditions and this has been labeled the mesotrophic condition. Lakes having a hyper-eutrophic condition have little or no oxygen in the bottom layers. They have extreme algae and aquatic plant problems. The lake aging process is a natural process that commonly occurs over thousands of years. This natural aging process is often accelerated, however, by what has been termed *cultural eutrophication* (resulting from human activities). Unlike natural eutrophication, cultural eutrophication can rush oligotrophic type lakes into the eutrophic conditions in a matter of a human generation or two.

To measure the trophic state of the lakes sampled, the Carlson’s Trophic State Index (TSI), calculated using Total Phosphorus concentrations, Chlorophyll-a concentrations, and Secchi disk transparency measurements was selected as the indicator of choice. <sup>[3]</sup>

## METHODS and MATERIALS

**General Procedures:** Sampling was performed on a given lake when there had not been any rainfall within 24 hours prior to sampling. This is to ensure that the sample is representative of the overall condition of the lake and not the condition of the lake only after a rain event. Sample volumes and container types are as described in the respective analytical laboratory's "Quality Manual" and/ or SOP, which have been approved by the NJDEP Office of Quality Assurance (OQA) and are on file with that Office as part of the laboratory's certification application (copies provided upon request).

**Sample Equipment Cleaning:** Prior to field sampling, all sample collection equipment is thoroughly cleaned using a phosphate free detergent and rinsed with ultra pure PICO® water several times to ensure no phosphorus contamination is present.

**Physical / Chemical Sampling Procedures and Parameters:** Samples were collected at multiple lake locations (up to three in-lake stations). In addition, the outlet(s) of each lake were sampled. Samples were collected as per "NJDEP Field Sampling Procedures Manual", 2005.<sup>[5]</sup> In-lake samples were taken one meter below the surface, unless the lake was stratified or the sampling station had a depth of less than one meter. When a lake is stratified (the seasonal formation of a thermocline), samples will be taken from the epilimnion (upper layer) and hypolimnion (lower layer). While every attempt was made to select lakes with a depth of at least one meter, some lakes had depths of slightly less than one meter. A drop in depth to below one meter was usually attributed to seasonality. In lakes less than one meter deep, samples were collected at 0.5 meters below the surface or mid-depth. Samples were collected using a submerged horizontal sampler. A combination field blank and equipment blank of PICO® water was collected on-site from the submerged horizontal sampler prior to the first sample for each lake (PICO® water, an ultra clean water, is supplied from the BFBM lab system, which is analyzed twice per year at a NJ certified laboratory for applicable parameters).

Prior to sampling each station, the submerged sampler is field rinsed with "water of interest" (i.e. lake water present at each station at the sample depth) three times prior to collecting a sample at each station for the lake. Each individual lake required one dedicated and cleaned submerged sampler. Samples collected from the submerged sampler were analyzed for the following parameters:

- Total Phosphorus (TP)
- Nitrite and Nitrate
- Ammonia
- Total Kjeldahl Nitrogen (TKN)
- Hardness
- Alkalinity
- Turbidity
- Chlorophyll "a".

For stratified lakes, these samples (with the exception of chlorophyll "a") were collected from the epilimnion and hypolimnion. Turbidity was also measured from these discrete samples, using

a HACH 2100P Turbidity meter. All samples were analyzed at a New Jersey certified laboratory. Analytical results are reported in exact concentrations except when a result is at a level below the method Reporting Limit (RL) and a definitive concentration cannot be determined. In these cases, the result is reported as Non-Detected (ND).

An *in situ* top-to-bottom profile was also measured at each in-lake station for:

- Specific Conductance
- pH
- Water Temperature
- Dissolved Oxygen.

Measurements were recorded at one meter depth intervals using a Hydrolab QUANTA multi-parameter meter. Total depth was measured using a Hondex Portable Depth Sounder. Aquatic plants, however, sometimes obstruct the readings of the Depth Sounder. In these cases, measurements were recorded using the Hydrolab QUANTA multi-parameter meter. The Hydrolab probe was lowered until resting on the lake bottom and the total depth was recorded. Transparency was measured using a Secchi Disk.

Sampling was also performed, using the above methods and same parameters, at observed “hot spots”. A “hot spot” is defined as a small area of the lake which has unusual characteristics as compared to the rest of the lake. These characteristics include dense algal growth and unusual odor or color. A “hot spot” was not observed at any Panel 5 lakes sampled.

Beginning in 2009, lake outlet stream sampling has been discontinued. It has been determined that water immediately at the lake outlet represents lake water and not stream water and therefore characterized through in-lake samples. Stream water monitoring is performed through other monitoring programs. These programs will identify if a lake is adversely impacting a stream and determine if further study is required.

### **Other Parameters Sampled / Measured / Observed**

**Aquatic vegetation:** A gross estimate of total areal coverage of dominant type(s) of surface macrophytes was recorded. Lake macrophyte areal extent is determined by preparing an aerial photograph map of each lake prior to the sampling date. This is done using the latest version of aerial photography available and using GIS shapefiles for lake identification. The map includes the entire area of the lake so that it can be used for navigation/identification while on the lake. During the summer sampling season, all surface vegetation observed at each lake was marked on the aerial photograph map. This is done using a combination of landmarks (such as houses, bridges, etc.), lake shoreline features and estimated distances to these features. Areal extent is recorded as accurately as possible so it can be transcribed to GIS maps. Upon return to the office, the aerial photograph map is modified with the polygon that best represents the areal extent of the macrophytes present in each lake.

**Algal Concentration:** As mentioned previously, a sample was collected from the submerged horizontal sampler for chlorophyll “a”. Sample analyses were performed by WM&S/BFBM staff, in the Bureau’s certified laboratory, using a modified "EPA Method 445.0.”

**Storm Water Outfall Pipes:** The presence of storm water outfall pipes was noted and their locations recorded using a handheld Global Positioning System receiver (GPS). The diameters of the pipes were measured and the material of their composition was recorded.

# CALCULATING CARLSON'S TROPHIC INDEX

## Trophic State

As previously noted, *Carlson's Trophic State Index* (TSI) is used for estimating the trophic state of New Jersey Lakes; "state" defined as a measure in a given point in time. Carlson's TSI uses algal biomass as the basis for trophic state classification. Total Phosphorus, Chlorophyll "a", and Secchi depth independently estimate algal biomass. These three index variables are interrelated by linear regression models and should produce the same index value for a given combination of variable values. Any of the three can therefore, theoretically, be used to classify a waterbody<sup>[3]</sup>.

Each variable has its limitations, however, in estimating algal biomass to classify a trophic state. Chlorophyll "a" is the most accurate of the three but still has drawbacks as a biomass surrogate. The greatest drawback being that the amount of chlorophyll in an algal cell may vary considerably depending on the condition of the cell and species. Cells that are subject to low light conditions will have more chlorophyll in them than cells exposed to high light.<sup>[2]</sup> In turbid lakes, phosphorus may be attached to non-algal particles and not available for algal growth, thus making it a poor predictor of trophic state.<sup>[2]</sup> Similarly, Secchi depth measurements can be influenced by a number of abiotic sources such as turbidity and is a poor predictor in these instances.

## Calculating the TSI<sup>[3]</sup>

Data results for each TSI parameter are converted into common units using the following calculations:<sup>[4]</sup>

<b>Total Phosphorus TSI</b>	<b>(TSIP) = 14.42 ln (TP) + 4.15</b>
<b>Chlorophyll "a" TSI</b>	<b>(TSIC) = 9.81 ln (Chl a) + 30.6</b>
<b>Secchi Disk TSI</b>	<b>(TSIS) = 60-14.41 ln (SD)</b>

These calculated values can then be placed in the proper TSI category below. Trophic state ranges from oligotrophic to hypereutrophic, and is viewed as a continuum (Figure 2), on this scale.

### **Oligotrophic. TSI values range from 0 to 40.**

Lakes have low nutrient levels, are usually deep, and have high oxygen levels in the bottom waters. These lakes have very few algal blooms.

### **Mesotrophic. TSI values range from 41-50.**

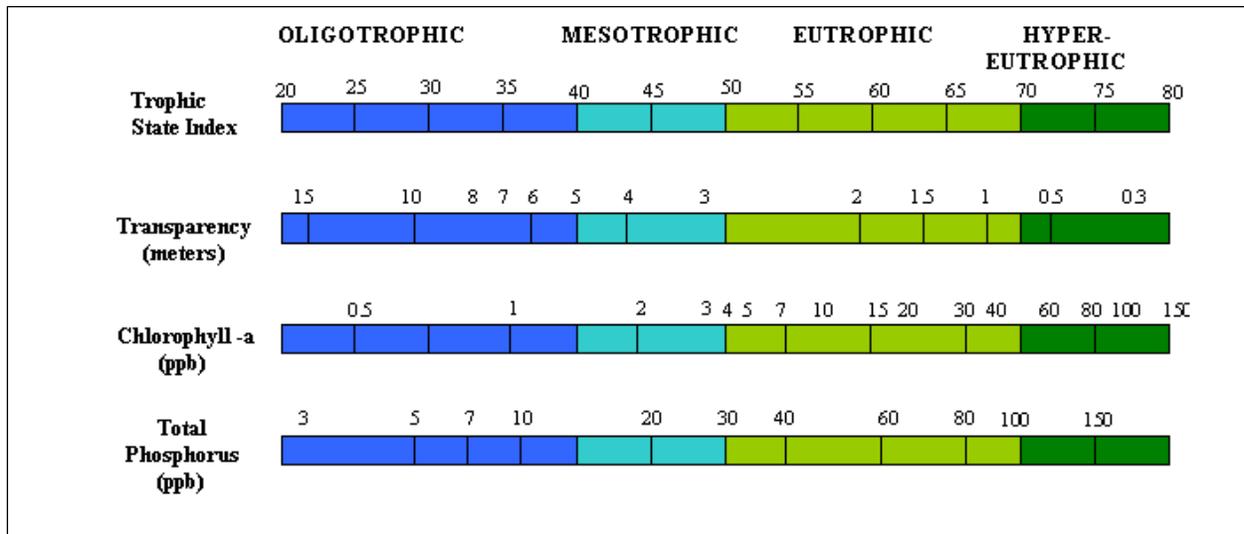
Lakes are in the "middle" of the trophic scale. They have increasing amounts of nutrients and slightly lower amounts of dissolved oxygen. There are temporary algae and aquatic plant problems.

**Eutrophic. TSI values range from 51-70.**

Lakes are nutrient rich. They are usually shallow, "green" lakes that have limited oxygen levels in the bottom waters. They have persistent algae and aquatic plant problems.

**Hypereutrophic. TSI range is >70.**

Lakes are very green and have little or no oxygen in the bottom layers. There are extreme algae and aquatic plant problems.



**Figure 2. Carlson Trophic State Index viewed as a continuum.**<sup>[1]</sup>

Each lake may have up to three fixed stations per sampling event (season) where parameters used for the TSI were collected. Because each TSI variable has its own strengths and limitations in estimating a lake's trophic state, calculated TSI values at each in-lake station, and for each season, are individually reported (see Volume 2). Although TSI can be calculated for any of the parameters<sup>[3]</sup> measured, when comparing TSI values priority should be given to Chlorophyll, as it is the most accurate in predicting algal biomass and, therefore, trophic state.<sup>[2]</sup>

For the purpose of demonstrating an approximation of statewide trophic states, TSI values were averaged for each station, and each season. Secchi disk measurements were not used in the calculation of the "average" if the transparency was obscured by vegetation, or the lake was too shallow to give a representative measurement. Furthermore, TP was not used in the "average" if the concentration was below the analytical reporting limit.

To summarize the percentage of lakes in which a particular trophic state was represented, the following convention was used: Since most lakes had periods of having eutrophic states, a lake was designated by its most unique state that was not eutrophic. For example, if a lake had one site that was oligotrophic during the sampling period and eutrophic the rest, it was designated oligotrophic for the purpose of statewide status. This same convention was used for mesotrophic and hyper-eutrophic sites. If more than two trophic states were observed in a lake, the least eutrophic state was used for the summary. This was done to show a lake's recovery potential. If a

lake was eutrophic for all sites and seasons then it was designated eutrophic. The purpose of this convention was to capture those trophic states that may not have been represented in predominantly eutrophic lakes. See Figure 9 in the *Trophic State Index Discussion* for the statewide averages of trophic conditions.

For a more detailed account of how the above trophic designations were derived for individual lakes, see Volume 2 of this report. Volume 2 contains raw data and TSI results for each parameter and each in-lake site. The following *Results and Discussion* section discusses how the interactions of each parameter can affect the trophic state of individual lakes. Non-TSI data such as hypolimnetic oxygen, other nutrients, and total plant biomass should be used to further assess a lake.

Emphasis should be made that TSI is not the same as a water quality index, although existing terminology often equates eutrophic lakes with poor water quality.<sup>[3]</sup> The TSI should serve as standard measurement against which comparisons can be made between the many biological and physical/chemical components of the lake system, and how these components relate to each other and the lake ecosystem as whole.<sup>[3]</sup> The TSI, along with individual chemical results, lake morphological observations, and expected or designated lake use, will allow for the proper management of New Jersey lakes. The Integrated Report should be referred to for assessments concerning support, or non-support, of aquatic life use.

## RESULTS AND DISCUSSION

In this Volume, a summary of the results from the 2009 (Panel 5) monitoring is presented. A full accounting of Panel 5 results, by lake sampled, can be found in Volume 2 of this report. Panel 5 also marks the completion of the entire Network of lakes. A discussion on the relationships between trophic state and the physical/ chemical and biological results follows for Panel 5. Also included is a summary of trophic conditions and key parameters for the entire Network. Statewide probabilistic estimates (i.e. using Ambient Lake Monitoring Network data to estimate conditions for all lakes in New Jersey meeting the design criteria) will be addressed in a separate report.

### SUMMARY OF IN-LAKE PHYSICAL/ CHEMICAL AND BIOLOGICAL MEASURES

The following is a discussion of the results and their relationship to the trophic state of a lake.

#### Surface Vegetation

A gross estimate of total areal coverage of dominant type(s) of surface macrophytes was recorded during the summer season, as this would represent the height of the growing period. During the lake visit, all surface vegetation observed was marked on the aerial photograph map for that lake. Areal extent was recorded as accurately as possible so it could be transcribed to GIS maps.

Surface vegetation can be described in four ways: none present, minimal (small areas along the shoreline), moderate (larger areas along the shoreline and extending into lake), extensive (majority of lake covered by vegetation). A direct correlation between vegetation coverage and trophic status could not be determined.

Although extensive surface vegetation (Figure 3) was not

observed in lakes with oligotrophic states, one did have moderate growth.

Moderate-to-extensive vegetation was observed in lakes that had mesotrophic through hyper-eutrophic states. Inversely, absent-to-minimal vegetation was also observed in lakes of all trophic levels (Table 2).



Figure 3. Stag Pond surface vegetation.

**Table 2. Surface vegetation and  
Lakes with an Issued Pesticide Control Permit**

<b>SITE ID</b>	<b>NAME</b>	<b>Percentage of Lake Surface Area covered by Aquatic Vegetation</b>	<b>Pestide Control Permit Issued</b>
NJW04459-162	Albert Lake	1.25	
NJW04459-187	Algonquian Waters Lake	0.00	
NJW04459-165	Allamuchy Pond	0.00	
NJW04459-193	Alphano Pond	3.91	X
NJW04459-290	Ames Lake	37.78	
NJW04459-169	Amphibious Lake	0.29	
NJW04459-184	Amwell Lake	36.12	
NJW04459-278	Atco Lake	66.60	
NJW04459-281	Bloodgood's Pond	5.05	
NJW04459-170	Cains Mill Lake	81.37	
NJW04459-283	Carasaljo Lake	1.08	X
NJW04459-172	Culvers Lake	2.02	
NJW04459-288	Deer Head Lake	0.36	
NJW04459-180	George Lake	0.00	X
NJW04459-182	Girl Scout Pond	31.99	
NJW04459-175	Glovers Pond	6.52	
NJW04459-196	Harrisonville Lake	17.97	
NJW04459-186	Heaters Pond	63.38	X
NJW04459-167	Heritage Lakes	0.00	
NJW04459-274	Lake Fred	35.09	
NJW04459-279	Lake Takanassee	0.00	
NJW04459-161	Laurel Lake	1.68	
NJW04459-197	Little Pine Lake	33.75	
NJW04459-181	Lower Sylvan Lake	2.33	
NJW04459-173	Lummis Mill Pond	4.96	
NJW04459-198	Mount Hope Pond	0.00	X
NJW04459-168	North Hudson Park Lake	0.00	
NJW04459-284	Outdoor World Lake	0.00	
NJW04459-289	Panther Lake	11.28	X
NJW04459-164	Rainbow Lakes	0.00	
NJW04459-179	Rhodo Lake	2.33	
NJW04459-174	Scarlet Oak Pond	0.00	
NJW04459-189	Sheppard Pond	8.37	
NJW04459-276	Silver Lake	0.00	
NJW04459-190	Stafford Forge Lake	32.18	
NJW04459-177	Stag Pond	31.47	
NJW04459-192	Tamaracks Lake	0.38	X
NJW04459-282	Upper Greenwood Lake	0.74	X
NJW04459-271	Wawayanda Lake	7.48	
NJW04459-195	Wonder Lake	41.53	X

Information is calculated from NJDEP Lakes GIS shapefile and summer aquatic vegetation observation shapefile. See Volume 2 for aerial photograph maps.

Compounding the difficulty of relating vegetation to trophic state is the treatment of some lakes to eliminate vegetation from the water. This is often done through the use of herbicides but dredging and lake lowering are also common practices. At the time of sampling, it usually cannot be determined if plant life is absent due to natural conditions or treatment. However, a notice is required to be posted in a conspicuous location upon treatment. If such a notice was posted while sampling occurred it was recorded as part of the field observations (see Volume 2). Thirteen lakes sampled were permitted through the NJDEP Pesticide Control Program (Table 2). Vegetation observed at these lakes ranged from absent to 81.37 % (Table 2).

### **Chlorophyll ‘a’**

Algal concentrations in the water column are measured through Chlorophyll ‘a’ analysis. Chlorophyll ‘a’ concentrations  $\geq 4 \mu\text{g/l}$  are in the eutrophic range as assessed by Carlson’s TSI. Concentrations at Panel 5 sites ranged from 0.56  $\mu\text{g/l}$  to 200.53  $\mu\text{g/l}$  with the higher concentrations occurring predominantly in the summer months. There is not a numeric SWQC for Chlorophyll ‘a’. However, it may be inferred that concentrations greater than 10  $\mu\text{g/l}$  may be indicative of impacted water quality. As shown by Carlson’s TSI continuum (Figure 2) a Chlorophyll ‘a’ concentration of 10  $\mu\text{g/l}$  approximately corresponds to a Total Phosphorus (TP) concentration of 0.05 mg/l, the lower threshold for the TP SWQC (see further discussion below).

### **Total Phosphorus**

Of the 40 lakes sampled in 2009, 12 lakes had at least one excursion above the total phosphorus criteria of 0.05 mg/L. (Figure 6) TP results from all lakes ranged from non-detected to 0.179 mg/l in the spring, 0.212 mg/l in the summer, and 0.163 mg/l in the fall. Amwell Lake, Bloodgoods Pond, Lummis Mill Pond, and North Hudson Park Lake were above the TP standard for all in-lake stations each season. See Volume 2 for results for each lake.

### Surface Water Quality Criteria Thresholds for Lakes

☛ **Total Phosphorus (TP) > 0.05 mg/L**

☛ **Dissolved Oxygen (DO) < 4.0mg/l**

(There is also a daily average criterion of 5mg/l, which is not applicable to the sampling methods used for this monitoring network)

☛ **pH 3.5 - 8.5 Standard Units (SU)\***

\*6.5 – 8.5 SU for lakes within waters designated as FW2 waters in the Upper Delaware, Upper Raritan, Passaic, and Wallkill River Basins.

\*4.5 - 7.5 SU for lakes within FW2 waters in the Atlantic, Lower Delaware, and Lower Raritan River basins.

\*3.5 - 5.5 SU for lakes designated as PL waters.

**Figure 4. SWQC Thresholds for Lakes.**

Phosphorus is essential to the growth of organisms and can be the nutrient that limits primary productivity in a body of water. <sup>[10]</sup> Of the nutrients analyzed, TP exhibited the best correlation to algal concentrations and trophic state. When TP levels were elevated, algal concentrations as measured by Chlorophyll “a” were also elevated. When these individual TSI parameters (TP and Chlorophyll “a”) are approximately equal, it can be inferred that TP limits the algal growth. If they are not equal, then light or other nutrients are likely the limiting factors. <sup>[12]</sup> In all instances for Panel 5 the TSI for TP and Chlorophyll “a” was approximately equal suggesting that TP was the limiting nutrient.

Although the TSI is not a direct measure of water quality, some correlation can be made. TSI scores in the upper eutrophic through hyper-eutrophic states can be said to be impacted due to the likelihood of an excursion of TP from the SWQC.

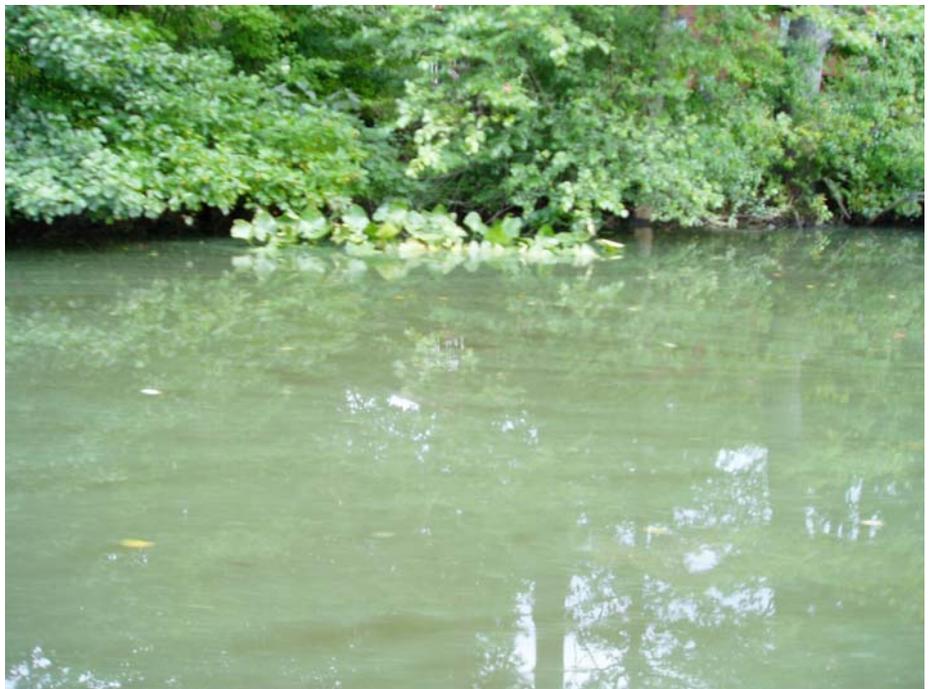
### Other Nutrients

The other analyzed nutrients were: Total Kjeldahl Nitrogen (TKN - also referred to as organic nitrogen), Total Nitrite + Nitrate Nitrogen, and Ammonia Nitrogen. Total Nitrogen (TN) is calculated using the sum of TKN and Total Nitrite + Nitrate Nitrogen concentrations. A trophic assessment, independent of Carlson's TSI was developed by the USEPA as part of their National Lake Assessment for Total Nitrogen.<sup>[13]</sup> A threshold of greater than 0.75 mg/l for Total Nitrogen (TN) was established as being a eutrophic state. Greater than 50 % of lakes showed TN elevated above the 0.75 mg/l threshold indicating that TN may be significantly contributing to eutrophication.

### Physical / Chemical Measurements

Dissolved oxygen (DO), temperature, pH, conductivity, and turbidity were measured in the field, while alkalinity and hardness samples were collected using a submerged horizontal sampler. DO, pH, and turbidity results showed a strong correlation with a lake's trophic state. As expected, temperature showed a strong relationship with DO as low DO only occurred in the summer.

Very low DO levels (below the SWQC) in some lakes in the mesotrophic-through-hypereutrophic range during the summer months. The majority of lakes with very low dissolved oxygen were shallow



**Figure 5. Lower Sylvan Lake. Supersaturated Dissolved Oxygen and high Chl “a” concentrations.**

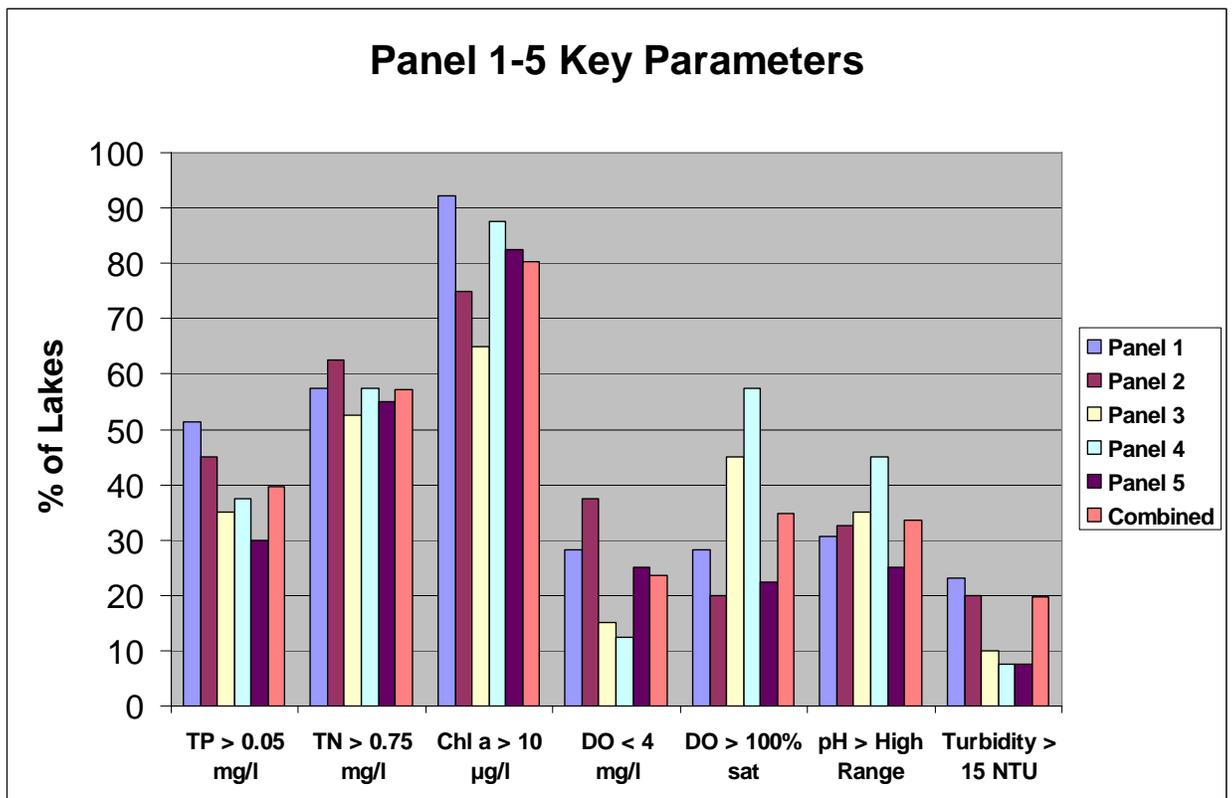
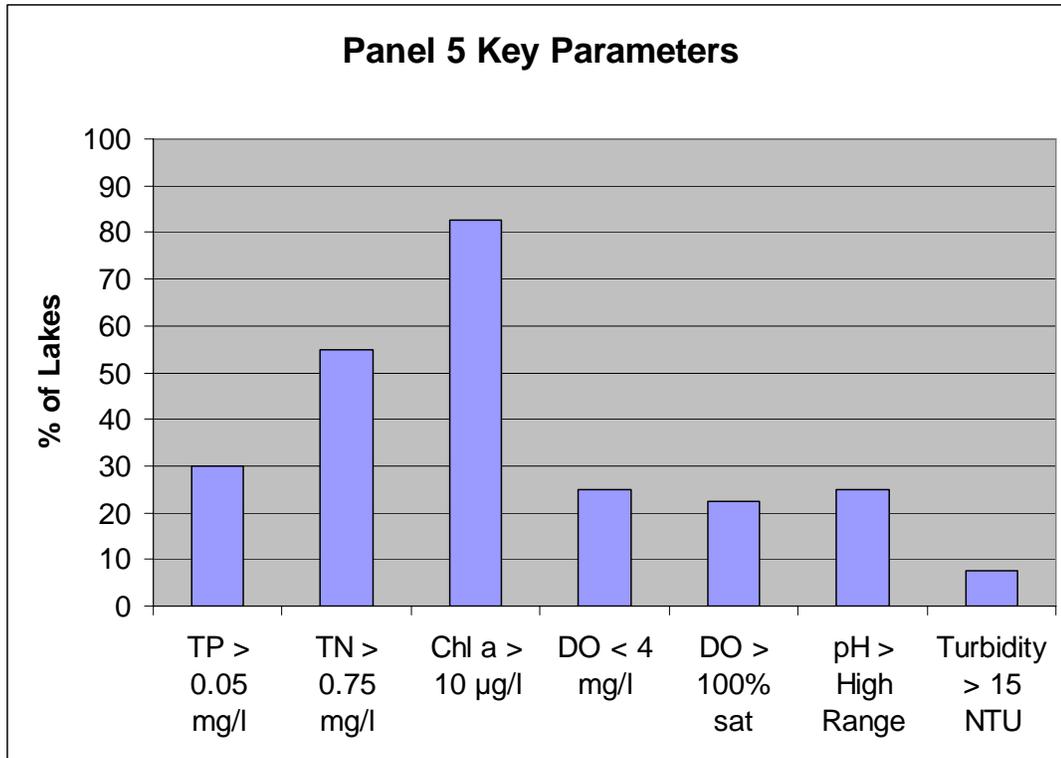
(approximately 1 – 2 meters in depth). Shallow depths can limit the ability of a lake to maintain cooler temperatures, because of the penetration of sunlight. As a result, they tend to exhibit unstable DO concentrations. It could not be determined whether lake depth or other factors had the greater influence on low DO concentrations. Furthermore, waters with high algal levels (Figure 5) will generally have fluctuating DO levels. DO rises when algae are in the growth state and respiring, and decreases when algal growth slows. A diurnal study of lakes with very low DO would be necessary to definitively determine if water level, or algae, is primarily affecting the DO. A similar study would be necessary to record the fluctuating DO where super-saturation was observed.

Elevated pH levels showed a strong correlation to algal concentrations. Lakes with higher pH measurements also had higher chlorophyll “a” concentrations. The production of the hydroxyl ion during photosynthesis is likely responsible for the increase in lake water pH when elevated levels of algal chlorophyll are present. Furthermore, lakes with the highest pH measurements predominantly had supersaturated DO concentrations. Both the pH and DO concentrations measured are likely part of the diurnal cycle associated with algal growth. These relationships demonstrate how the trophic state and algal concentration can directly affect the chemical composition of a lake.

Turbidity also showed a strong correlation to a lake’s trophic state. Turbidity was always low when a lake was in an oligotrophic or mesotrophic state. Turbidity levels were high when a lake was in a eutrophic state and very high when in a hypereutrophic state (see discussion on “Potential Stressors” for exploration of this relationship). The value of 15 Nephelometric Turbidity Units (NTU) used in Figure 6 is the SWQC, thirty day average threshold, for streams. SWQC for turbidity in lakes has not been established and the 15 NTU value was chosen to demonstrate significant elevations observed in lakes.

Alkalinity and hardness results did not show levels outside of expected ranges or correlations with trophic state.

Figure 6 shows a summary of key parameters. Individual results can be found in Volume 2 of this report.



**Figure 6. Percentage of Panel 5 lakes and all Panels Statewide showing key parameters with levels exceeding thresholds for at least one in-lake site during the sampling season. TP, DO mg/l, and pH are SWQC thresholds. pH high range is determined by Water Basin specific thresholds (see Figure 4).**

## TROPHIC STATE INDEX (TSI) DISCUSSION

*Carlson's Trophic State Index* (TSI) is used as the basis for estimating the trophic state of New Jersey lakes. See Calculating Carlson's Trophic State Index in the Methods and Materials section on how trophic states were designated. The trophic state for lake sampling sites range from oligotrophic to hypereutrophic and is viewed as a continuum on this scale (Figure 2). Carlson's TSI is based on the interrelationships of TP, chlorophyll "a", and Secchi disk transparency.

### Oligotrophic Lakes

Lakes that were entirely oligotrophic were not represented in Panel 5 and the number of lakes exhibiting periods of oligotrophy was limited. Only eight of the 40 Panel 5 lakes had stations which were in an oligotrophic state. Albert Lake, Heritage Pond, Cains Mill Lake, Algonquian Waters Lake (Figure 8), Stafford Forge Lake, Wawayanda Lake, Outdoor World Lake, Deer Head Lake exhibited a TSI rating of oligotrophic for at least one station, which occurred either in the spring and/ or fall season. No lake remained in a constant oligotrophic state for all seasons sampled. This suggests that the trophic state is likely affected by seasonal variation.



**Figure 8. Algonquian Waters Lake. One of eight lakes with oligotrophic sites.**

Five of the lakes which had an oligotrophic site are of particular note, Heritage Pond, Cains Mill Lake, Stafford Forge Lake, Wawayanda Lake, and Deer Head Lake. These lakes were a combination of oligotrophic and mesotrophic (see below) for all seasons sampled. The other three lakes which had oligotrophic sites also had a site with a eutrophic TSI.

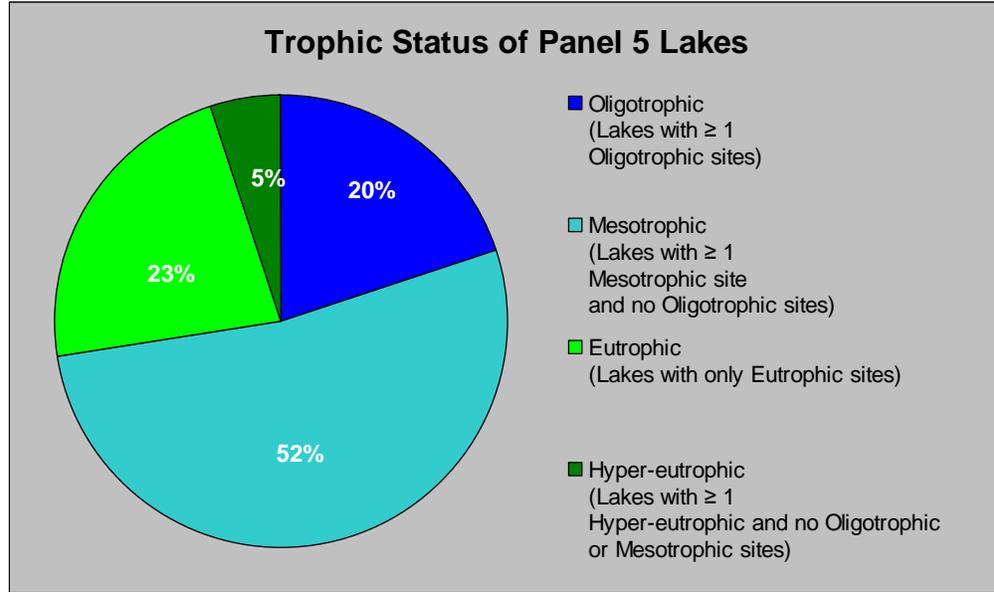
### Mesotrophic Lakes

Lakes having periods of mesotrophic status, which are by definition in transition to a eutrophic state, were more prevalent than oligotrophic states. Twenty one lakes had stations in a mesotrophic state, two of which, Glovers Pond and Lake Fred, maintained a mesotrophic state throughout all seasons.

### Eutrophic and Hyper-eutrophic Lakes

Eleven (11) Panel 5 lakes exhibited TSI ratings exclusively in the eutrophic range (Eutrophic, or Hypereutrophic) for all seasons sampled.

All Panel 5 lakes exhibited degrees of eutrophication depending on the season and / or area of the lake sampled. Accordingly, this data demonstrates that all Panel 5 lakes are in, or accelerating towards, an entirely eutrophic state. Figure 9 shows a summary of the percentage of lakes exhibiting a particular trophic state at least one time during the sampling run.



**Figure 9. Panel 5 Summary of TSI Results.**

## Statewide TSI Comparison

Panel 5 showed similar TSI as compared to other Panels. The spring season was not sampled for Panel 1 due to difficulties contracting a certified lab that could perform low level TP analysis. Subsequent Panels have shown that oligotrophic and mesotrophic conditions usually occur in the spring and fall. Because Panel 1 was not sampled in the spring, it is likely that some lakes that may have exhibited these states in the spring were not represented, thus showing a higher occurrence of eutrophic conditions for that Panel. (Figure 10).

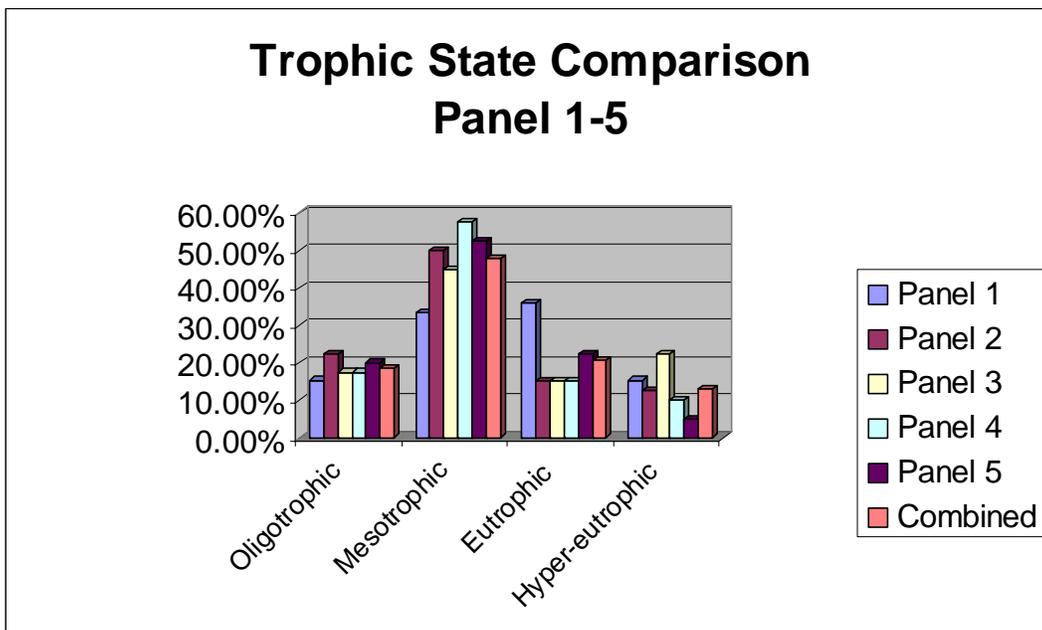
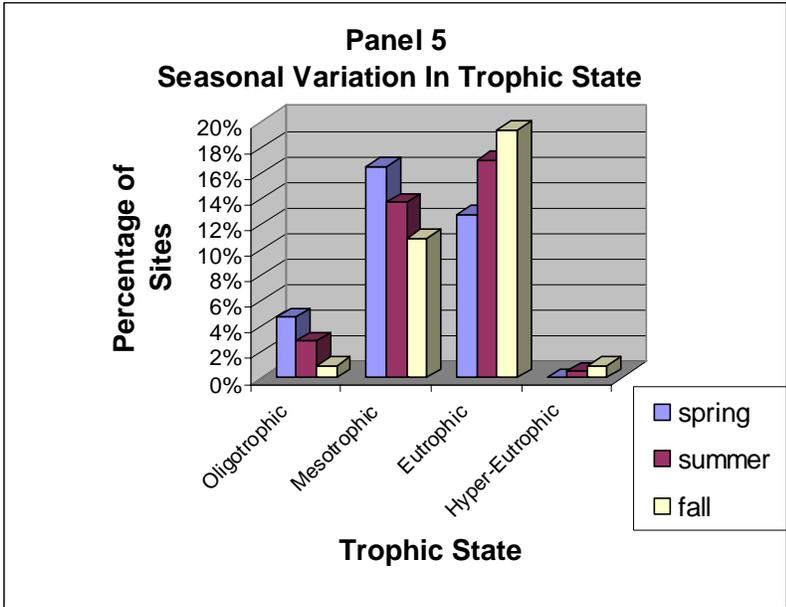


Figure 10. Comparison of Panel 1-5 TSI

**Seasonal Variation in TSI**

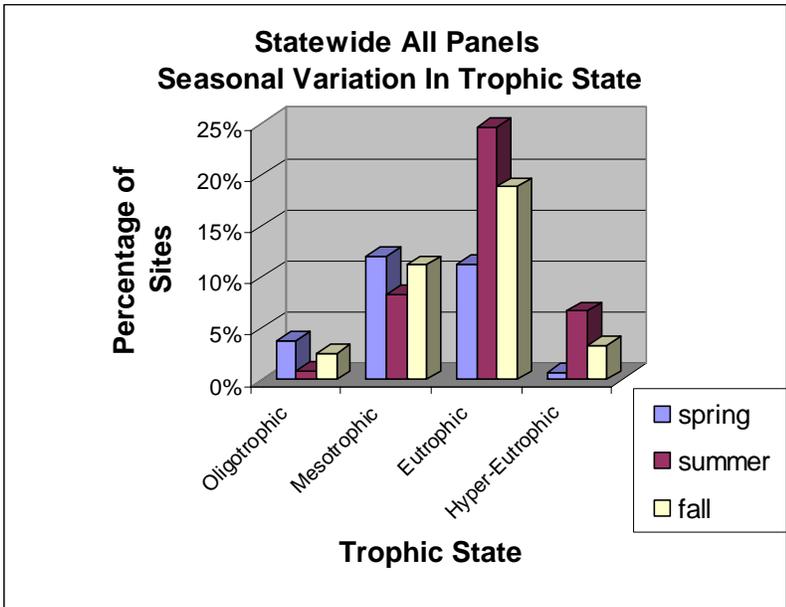
As the results demonstrate (see Volume 2), the trophic state of a lake is highly related to the season. As shown in Panel 5 and also statewide, eutrophic and hyper-eutrophic TSI results were most common in the summer, while oligotrophic and mesotrophic TSI results occurred mostly in the spring or fall. (Figure 11, 12) This phenomenon can likely be attributed to the seasonal concentrations of TP. In the spring and fall, sites that had a TSI of oligotrophic or mesotrophic had TP concentrations were often below the analytical reporting limit of 0.01 mg/l. In the summer, the TP concentrations rose at many of the same sites which corresponded with more eutrophic TSI results (see Volume 2 for results by season).



**Figure 11. Panel 5 Trophic State by Season**

Atmospheric precipitation and land runoff are potential sources of

phosphorus that can be affected by season. Atmospheric precipitation originates from fine particles of soil and rock, from living and dead organisms (primarily as volatile compounds released from plants) and from natural fires and the burning of fossil fuels. [15] Atmospheric phosphorus is generally low in unpopulated areas and increases considerably in urban-industrial areas. [15] Furthermore, in agricultural regions with heavy applications of phosphorus-containing fertilizers, the phosphorus content of precipitation is much higher during the active growing (summer) season.



**Figure 11. Statewide Trophic State by Season**

[15] Surface drainage is often a major contributor of phosphorus in lakes. The quantities of phosphorus entering surface drainage vary with the amount of phosphorus in soils, topography, vegetative cover, quantity and duration of runoff flow, land use, and pollution. [15] All of these

factors can be influenced by season. For example, nutrients can accumulate in snowpacks and ice in winter and release rapidly and in large amounts in the spring.<sup>[15]</sup> Another source of phosphorus is from the release of sediment bound phosphorus due to changes in the sediment-water interface. Exchanges of phosphorus across the sediment-water interface are regulated by oxidation-reduction interactions dependent on oxygen supply, metabolic activities of bacteria, and turbulence from physical activities.<sup>[10]</sup> All of these interactions are variable` by season.

## POTENTIAL STRESSORS

### Storm Water Outfalls

Storm water outfall pipes were observed at some lakes (Figure 13). These pipes were made of cement, corrugated metal, PVC, or vitrified clay. Fourteen Panel 5 lakes had storm water outfalls entering the lake.

Panel 5 lakes showed a strong relationship between trophic state and the presence of outfall pipes as all lakes from this subset were either eutrophic or hypereutrophic for at least one season.

Seven of the fourteen lakes had TP concentrations above the SWQC threshold, and one lake, Harrisonville Lake also exhibited elevated TN.

Storm water monitoring studies on these lakes would be helpful to determine the loading of nutrients and other pollutants from these outfalls.



**Figure 13. Stormwater outfall pipe at Carasaljo Lake which exhibited TP above SWQC thresholds.**

### Lakeshore Habitat

The National Lake Assessment (NLA) conducted by the EPA shows that of the physical indicators measured in the study, degraded lakeshore habitat is the most significant stressor to poor biological integrity. The NLA results also show that lakes in poor condition for habitat are 3 times more likely to be in poor biological condition. Another physical habitat indicator examined was the presence of human activities. From the standpoint of human disturbances along lakeshores, just one-third (35%) of the country's lakes are in good condition.<sup>[13]</sup>

## RECOMMENDATIONS

Storm water outfalls seem to be a major stressor for lakes. Fourteen lakes in Panel 5 had storm water outfall pipes entering the lake. All but four of these lakes demonstrated periods in a eutrophic state along with elevated TP. This is common for lakes throughout the Network; a significant number of lakes with outfalls tended to be eutrophic with elevated concentrations of TP or other nutrients. It is likely that these storm water pipes serve as a conduit for the increased levels observed. Storm water monitoring studies on these lakes would be helpful to determine the loading of nutrients and other pollutants from these outfalls. Such a study should include analysis in mixing zones of the outfalls.

As demonstrated in EPA's National Lake Assessment, lakeshore habitat is the most significant stressor to poor biological activity. More detailed lakeshore habitat observations should be recorded to assess degradation of habitat.

DO rises when algae are in the growth state and respiring, and recedes when algae growth slows. This was demonstrated in nine Panel 5 lakes where the DO was supersaturated (greater than 100% saturation) with corresponding high Chlorophyll "a" concentrations. As shown in Figure 6, supersaturation of DO was exhibited in over 30% of the lakes in the network. A diurnal study of lakes exhibiting either very low or supersaturated DO is necessary to definitively determine if water level or algae is a primarily affecting the DO concentrations measured.

Persistent algae growth as measured by chlorophyll "a" was observed in significant concentrations, > 10 µg/L, in approximately 80% of the lakes in the Network. As stated previously, TP is likely the limiting nutrient causing the algae to grow because it has been shown through the results of this Network that TP concentrations rise with chlorophyll "a" concentrations.

Pending the availability of sufficient resources, it is recommended that site specific lentic studies be performed on individual lakes to supplement the data collected for statewide status in the Ambient Lakes Monitoring Network. In particular source identification of TP as this nutrient promotes persistent algae growth which can then impact other physical/ chemical conditions of a lake such as DO, pH, and use attainment. Statewide probabilistic estimates (i.e. using Ambient Lake Monitoring Network data to estimate conditions for all lakes in New Jersey meeting the design criteria) will be addressed in a separate report.

## **Additional Information**

**Additional information on the Ambient Lakes Monitoring Program can be obtained from WM&S' Bureau of Freshwater & Biological Monitoring by calling 609-292-0427 or visiting its website at: [www.state.nj.us/dep/wms/bfbm](http://www.state.nj.us/dep/wms/bfbm).**

**Raw data is posted on this website by the end of the calendar year that the data is received and validated.**

**Additionally, raw data is submitted to WQX as soon as the data is received and validated. WQX is USEPA's repository and framework for water quality, biological, and physical data. It is used by state environmental agencies, EPA and other federal agencies, universities, private citizens, and many others to store data. The retrieval of the data is handled through the STORET interface and can be accessed at: [www.epa.gov/storet](http://www.epa.gov/storet).**

**Comments are welcome and may be emailed to: [bfbm@dep.state.nj.us](mailto:bfbm@dep.state.nj.us)**

## REFERENCES

1. Beltrami soil and water conservation district, Bemidji, Minnesota, 2006.
2. Carlson, Robert E. and J. Simpson. A coordinator's guide to volunteer lake monitoring methods. North American lake management society. 1996.
3. Carlson, Robert E. A trophic state index for lakes. *Limnology and Oceanography*. V. 22 (2). March 1977.
4. *MINNESOTA LAKE WATER QUALITY ASSESSMENT DATA: 2004*  
An update to data presented in the Minnesota Lake Water Quality Assessment Report: 1990, Environmental Outcomes Division, Environmental Standards and Analysis Section March 2004
5. NJDEP. Field sampling procedures manual. NJDEP. Trenton, NJ. 2005.
6. NJDEP. Draft New Jersey 2010 Integrated Water Quality Monitoring and Assessment Report. 2010.
7. NJDEP. New Jersey 2010 Integrated Water Quality Monitoring and Assessment Methods September 2010.
8. NJDEP. Surface water quality standards. N.J.A.C. 7:9B. October 2009.
9. Omernik, J. M. 1987a. Ecoregions of the conterminous United States. *Ann. Assoc. Am. Geograph.* 77(1):118-125
10. Standards methods for the examination of wastewater. 20<sup>th</sup> edition. American public health association. 1998.
11. USEPA. Elements of a state water monitoring and assessment program. March 2003.
12. USEPA. Lake and reservoir bioassessment and biocriteria technical guidance document. August 1998.
13. USEPA. National Lakes Assessment, a collaborative survey of the Nation's lakes. April 2010.
14. USEPA. Office of inspector general audit report. New Jersey's water quality monitoring program. July 1999.
15. Wetzel, Robert G. *Limnology, lake and river ecosystems*. 3<sup>rd</sup> edition. Academic Press. 2001.



**NJ Department of Environmental Protection  
Water Monitoring and Standards**



# AMBIENT LAKES MONITORING NETWORK

## Panel 5

### Volume 2 of 2 Data and Results



Silver Lake, Upper Deerfield Twp., Cumberland County

December 2011

State of New Jersey  
Chris Christie, Governor  
Kim Guadagno, Lt. Governor

NJ Department of Environmental Protection  
Bob Martin, Commissioner

NJ Department of Environmental Protection



Water Monitoring and Standards  
Jill Lipoti, Director

Bureau of Freshwater & Biological Monitoring  
Leslie J. McGeorge, Administrator

December 2011

## **AMBIENT LAKES MONITORING NETWORK Panel 5**

### **Volume 2 of 2**

#### **AUTHOR**

Victor Poretti

#### **PROJECT OFFICER**

Johannus Franken

#### **DATA MANAGEMENT**

Thomas Miller

Brian Taylor

#### **GIS AND MAPS**

Leigh Lager

#### **FIELD COLLECTION STAFF**

Johannus Franken

Thomas Miller

Victor Poretti

Brian Taylor

This Volume contains Panel 5 lakes raw data, observations, and trophic state assessments as described below. See Volume 1 of this report for detailed methods and discussion of results.

### Carlson Trophic State Index (TSI )

*Carlson's Trophic State Index* (TSI) is used as the basis for estimating the trophic state of New Jersey Lakes. Trophic states range from oligotrophic to hypereutrophic (and is viewed as a continuum) on this scale. Carlson's TSI is based on the interrelationships of Total Phosphorus (TP), chlorophyll "a", and Secchi transparency. Individual TSI values for each parameter are converted into common units using the following calculations.

<b>Total Phosphorus TSI</b>	(TSIP) = 14.42 ln(TP) + 4.15
<b>Chlorophyll "a" TSI</b>	(TSIC) = 9.81 ln (Chl a) + 30.6
<b>Secchi Disk TSI</b>	(TSIS) = 60-14.41 ln(SD)

Each lake may have up to three fixed stations per sampling event (season) where TSI parameters were collected. Using the above formulas, the result of each parameter was converted to TSI units. The three TSI values at each in-lake station were then averaged to obtain an overall TSI value for that station. Secchi disk measurements were not used in the calculation if the transparency was obscured by vegetation, or the lake was too shallow to give a representative measurement.

#### **Oligotrophic. TSI values range from 0 to 40.**

Lakes have low nutrient levels, are usually deep, and have high oxygen levels in the bottom waters. These lakes have very few algal blooms.

#### **Mesotrophic. TSI values range from 41-50.**

Lakes are in the "middle" of the trophic scale. They have increasing amounts of nutrients and slightly lower amounts of dissolved oxygen. There are temporary algae and aquatic plant problems.

#### **Eutrophic. TSI values range from 51-70.**

Lakes are nutrient rich. They are usually shallow, "green" lakes that have limited oxygen levels in the bottom waters. They have persistent algae and aquatic plant problems.

#### **Hypereutrophic. TSI range is > 70.**

Lakes are very green and have little or no oxygen in the bottom layers. There are extreme algae and aquatic plant problems.

#### **Surface Water Quality Criteria Thresholds for Lakes**

☛ **Total Phosphorus (TP) > 0.05 mg/L**

☛ **Dissolved Oxygen (DO) < 4.0mg/l**

(There is also a daily average criterion of 5mg/l, which is not applicable to the sampling methods used for this monitoring network)

☛ **pH 3.5 - 8.5 Standard Units (SU)\***

\*6.5 – 8.5 SU for lakes within waters designated as FW2 waters in the Upper Delaware, Upper Raritan, Passaic, and Wallkill River Basins.

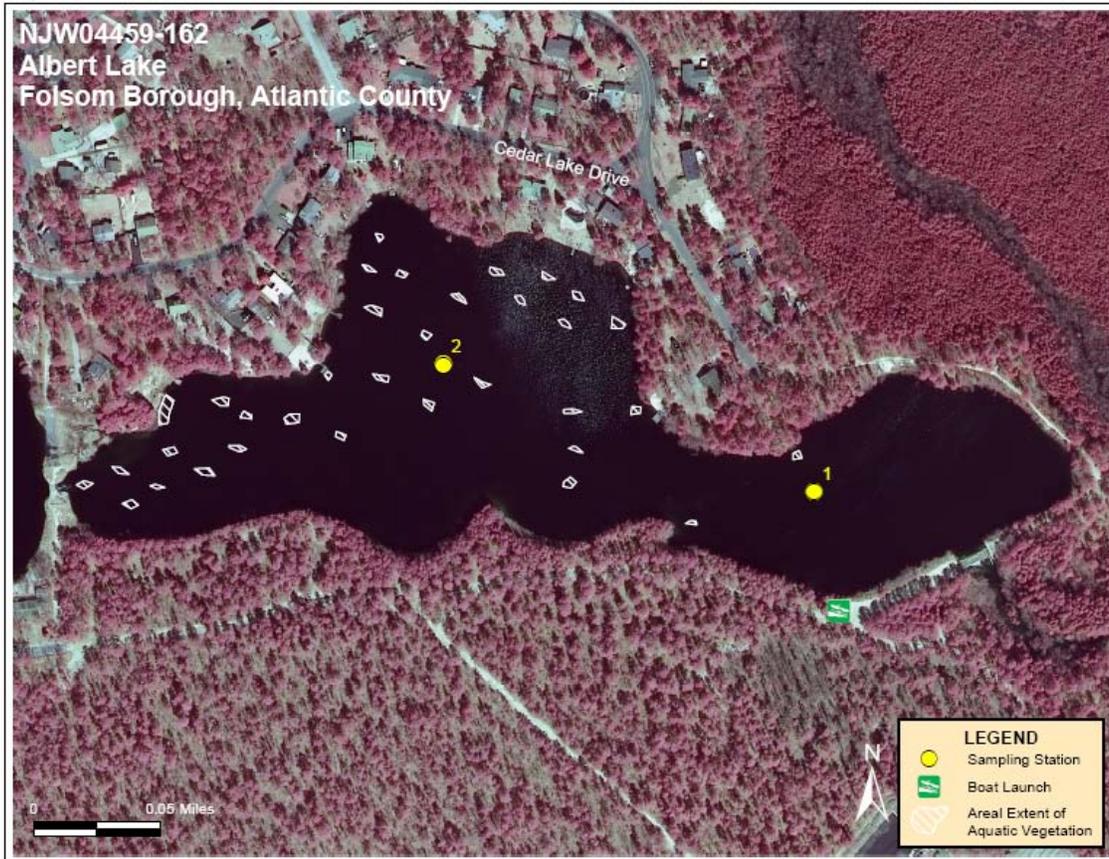
\*4.5 - 7.5 SU for lakes within FW2 waters in the Atlantic, Lower Delaware, and Lower Raritan River basins.

\*3.5 - 5.5 SU for lakes designated as PL waters.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Albert Lake  
**Site ID** NJW04459-162

**County** Atlantic  
**Municipality** Folsom Borough



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	44.13	36.63	B	40.38 Oligotrophic
Spring Station 2	ND	37.3	B	37.30 Oligotrophic
Summer Station 1	46.41	56.68	58.63	53.97 Eutrophic
Summer Station 2	ND	51.01	B	51.01 Eutrophic
Fall Station 1	42.21	45.76	56.22	48.06 Mesotrophic
Fall Station 2	39.98	45.27	B	42.62 Mesotrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
 ND - TP concentration below detection limit

**Observations**

Spring - ducks, water cedar brown

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Albert Lake

County: ATLANTIC

SiteID: NJW04459-162

Municipality: FOLSOM BORO

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.5	11.81	9.04	83	6.3	0.044
2	1	0.5	1	11.68	9.13	83.5	5.9	0.045

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.3	0.6	1.1	25.84	6.52	80.9	6.2	0.04
2	0.9	0.5	0.9	25.26	5.92	72.7	5.96	0.041

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.3	21.27	6.22	69.9	5.31	0.046
2	1	0.5	1	21.16	6.02	67.5	5.39	0.045

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Albert Lake

County: ATLANTIC

SiteID: NJW04459-162

Municipality: FOLSOM BORO

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.016	0.233	0.654	0.00778	1.85	2	13.3	0.98
2	ND	0.312	0.612	0.0103	1.98	10	13.6	1.11

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.019	0.79	0.118	0.00778	14.28	10	13.4	2.48
2	ND	0.743	0.127	0.0169	8.01	9	13.4	2.53

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.014	0.420	0.0939	0.0301	4.69	20	13.2	1.88
2	0.012	0.553	0.0866	0.0393	4.46	4.0	13.4	1.85

Sample Device - Horizontal Polycarbonate Sampler

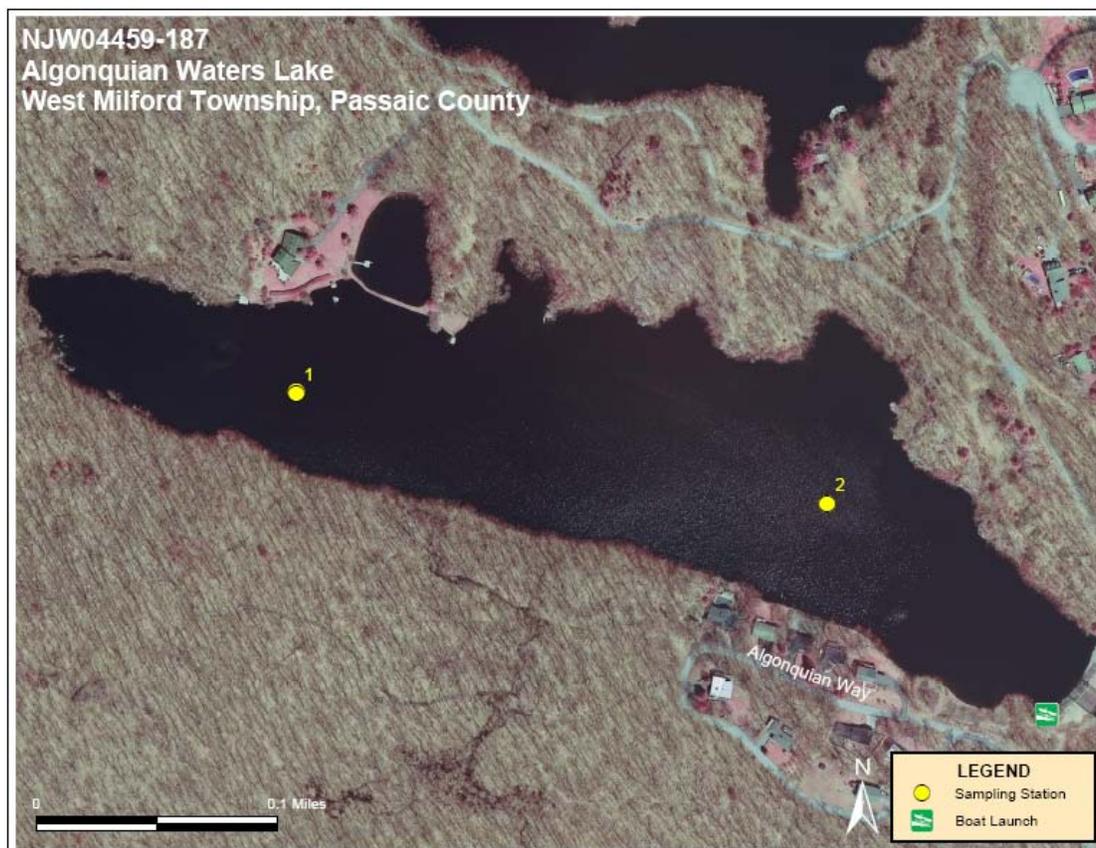
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Algonquian Waters Lake  
**Site ID** NJW04459-187

**County** Passaic  
**Municipality** West Milford Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	38.72	40.98	B	39.85 Oligotrophic
Spring Station 2	37.36	39.31	O	38.34 Oligotrophic
Summer Station 1	ND	55.22	B	55.22 Eutrophic
Summer Station 2	ND	48.5	42.8	45.65 Mesotrophic
Fall Station 1	52.2	48.16	B	50.18 Mesotrophic
Fall Station 2	52.71	51.02	41.95	48.46 Mesotrophic

ND - TP concentration below detection limit

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

O - Obscured by plants

### Observations

Spring - secchi obscured by plants at station 2

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Algonquian Waters Lake

County: PASSAIC

SiteID: NJW04459-187

Municipality: WEST MILFORD TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.7	1	2.7	20.38	7.52	85.9	7.29	0.096
1	2.7	2	2.7	20.36	7.58	86.6	7.26	0.096
2	3.8	1	3.4	20.42	7.53	86.1	7.15	0.097
2	3.8	2	3.4	18.73	8.04	88.9	7.13	0.096
2	3.8	3	3.4	16.47	7.55	79.7	7.07	0.097

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.6	1	2.6	24.51	6.68	82.2	6.96	0.107
1	2.6	2	2.6	24.32	6.5	79.7	6.95	0.107
2	3.8	1	3.3	24.84	6.63	82.1	6.97	0.107
2	3.8	2	3.3	24.36	6.27	77	6.96	0.107
2	3.8	3	3.3	22.35	0.8	9.5	6.56	0.126

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.7	1	2.7	8.94	9.03	80	7.32	0.114
1	2.7	2	2.7	8.82	9	79.5	7.29	0.114
2	3.6	1	3.5	9.25	9.07	81	7.14	0.114
2	3.6	2	3.5	9.14	9.03	80.4	7.13	0.115
2	3.6	3	3.5	9	8.95	79.5	7.08	0.115

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Algonquian Waters Lake

County: PASSAIC

SiteID: NJW04459-187

Municipality: WEST MILFORD TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.011	0.366	0.006	0.008	2.88	16	23.6	0.92
2	0.01	0.299	0.006	0.008	2.43	25	23.9	0.79

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.439	0.00630	0.00778	12.3	21	27.4	1.27
2	ND	0.403	0.00630	0.00778	6.2	15	27.2	1.08

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.264	0.00630	0.0167	5.99	15	28.2	1.12
2	0.029	0.256	0.00630	0.0162	8.02	19	28.1	1.3

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Allamuchy Pond  
**Site ID** NJW04459-165

**County** Warren  
**Municipality** Allamuchy Township



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	50.57	56.61	O	53.59 Eutrophic
Spring Station 2	51.68	58.1	O	54.89 Eutrophic
Summer Station 1	55.42	56.71	50.01	54.05 Eutrophic
Summer Station 2	38.73	61.22	49.31	49.75 Mesotrophic
Fall Station 1	51.68	60.98	50.01	54.22 Eutrophic
Fall Station 2	54.57	61.38	48.64	54.86 Eutrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
 O - Obscured By Plants

**Observations**

Spring - geese, swan, cormorants, ducks, SAV

Summer - swan, geese, heron, large algae mats in areas of SAV

Fall - frogs, SAV, duckweed, heron

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Allamuchy Pond

County: WARREN

SiteID: NJW04459-165

Municipality: ALLAMUCHY TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	7.4	1	3.3	19.05	10.16	111.9	8.8	0.312
1	7.4	2	3.3	13.93	11.35	112.2	9.02	0.316
1	7.4	3	3.3	11.5	11.2	104.9	9.01	0.317
1	7.4	4	3.3	8.89	10.8	95.2	8.85	0.325
1	7.4	5	3.3	7.97	9.64	83.3	8.61	0.332
1	7.4	6	3.3	6.83	4.7	39.6	8.21	0.361
1	7.4	7	3.3	6.29	0.2	1.7	7.73	0.393
1a	7.4	6.5	3.3	6.49	0.72	6	7.95	0.381
2	3.0	1	2.6	19.87	10.28	115.2	9.24	0.31
2	3.0	2	2.6	18.35	13.57	147.5	9.42	0.297

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.8	1	2.0	22.77	7.76	91.8	8.37	0.287
1	4.8	2	2.0	22.51	5.88	69.2	8.43	0.288
1	4.8	3	2.0	17.11	1.1	11.7	7.96	0.31
1	4.8	4.1	2.0	14.09	0.22	2.3	7.73	0.335
1	4.8	4.5	2.0	11.19	0.1	1	7.55	0.353
2	4.2	1	2.1	23.56	7.75	93.1	8.61	0.287
2	4.2	2	2.1	22.38	6.48	76.1	8.52	0.284
2	4.2	3	2.1	17.7	0.67	7.2	8.06	0.309
2	4.2	3.5	2.1	14.55	0.26	2.7	7.72	0.329
2	4.2	4	2.1	13.31	0.24	2.3	7.82	0.342

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.5	1	2.0	17.66	7.45	80.8	8.29	0.344
1	4.5	2	2.0	17.63	7.29	78.9	8.15	0.343
1	4.5	3	2.0	17.59	7.04	76.2	8.15	0.345
1	4.5	4	2.0	17.41	6.87	74.1	8.14	0.346
2	4.4	1	2.2	17.72	7.31	79.4	8.19	0.342
2	4.4	2	2.2	17.62	7.31	79.2	8.23	0.342
2	4.4	3	2.2	17.56	7.37	79.8	8.24	0.343
2	4.4	4	2.2	17.45	6.81	73.1	8.23	0.343

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Allamuchy Pond

County: WARREN

SiteID: NJW04459-165

Municipality: ALLAMUCHY TWP

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.025	0.51	0.0063	0.00778	14.17	92	124	2.23
1A	0.041	0.746	0.0063	0.1510	10.87	92	126	1.87
2	0.027	0.523	0.0063	0.00778	16.49	89	118	1.95

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.035	0.78	0.0063	0.0078	14.32	95	119	4.38
1A	0.037	0.649	0.0063	0.828	16.01	99	126	2.93
2	0.011	0.707	0.0063	0.0078	22.67	84	122	3.51
2A	0.03	1.16	0.0063	0.486	51.89	59	126	10.4

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.027	0.644	0.0284	0.015	22.12	62	138	5.29
2	0.033	0.574	0.0063	0.0184	23.05	100	135	4.62

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.



# AMBIENT LAKE MONITORING NETWORK

Lake Name: Alphano Pond

County: WARREN

SiteID: NJW04459-193

Municipality: ALLAMUCHY TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.3	15.83	10.54	107.8	7.65	0.671

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.4	0.7	1.1	25.28	2.83	35.5	7.28	0.793

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.4	0.7	1.4	12.8	9.65	92.2	8.22	0.698

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Alphano Pond

County: WARREN

SiteID: NJW04459-193

Municipality: ALLAMUCHY TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.03	0.584	0.061	0.00778	5.55	85	220	4.81

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.055	0.815	0.0181	0.044	24.67	65	292	6.29

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.036	0.378	0.00807	0.0175	4.88	140	263	3.70

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.



# AMBIENT LAKE MONITORING NETWORK

Lake Name: Ames Lake

County: MORRIS

SiteID: NJW04459-290

Municipality: ROCKAWAY TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.5	12.35	8.96	85.7	6.98	0.103
2	2	1	2	14.02	7.83	77.7	6.87	0.14

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.3	0.7	1.3	23.39	2.26	27.3	6.57	0.206
2	1.9	1	1.8	23.32	7.97	95.9	7.05	0.162

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.1	13.45	3.34	32.9	6.81	0.244
2	1.9	1	na	14.12	8.05	80.4	7.06	0.213

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Ames Lake

County: MORRIS

SiteID: NJW04459-290

Municipality: ROCKAWAY TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.03	0.36	0.06	0.01	4.55	#LA	39.30	2.03
2	0.026	0.31	0.04	0.01	3.98	25	40.20	1.34

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.019	0.383	0.0486	0.0311	11.62	35	51.8	2.18
2	0.01	.387	0.0063	0.0078	14.77	50	53.7	1.35

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.485	0.0427	0.0406	6.35	30	60.8	1.66
2	0.026	0.351	0.00913	0.0278	4.69	42	59.8	1.75

Sample Device - Horizontal Polycarbonate Sampler

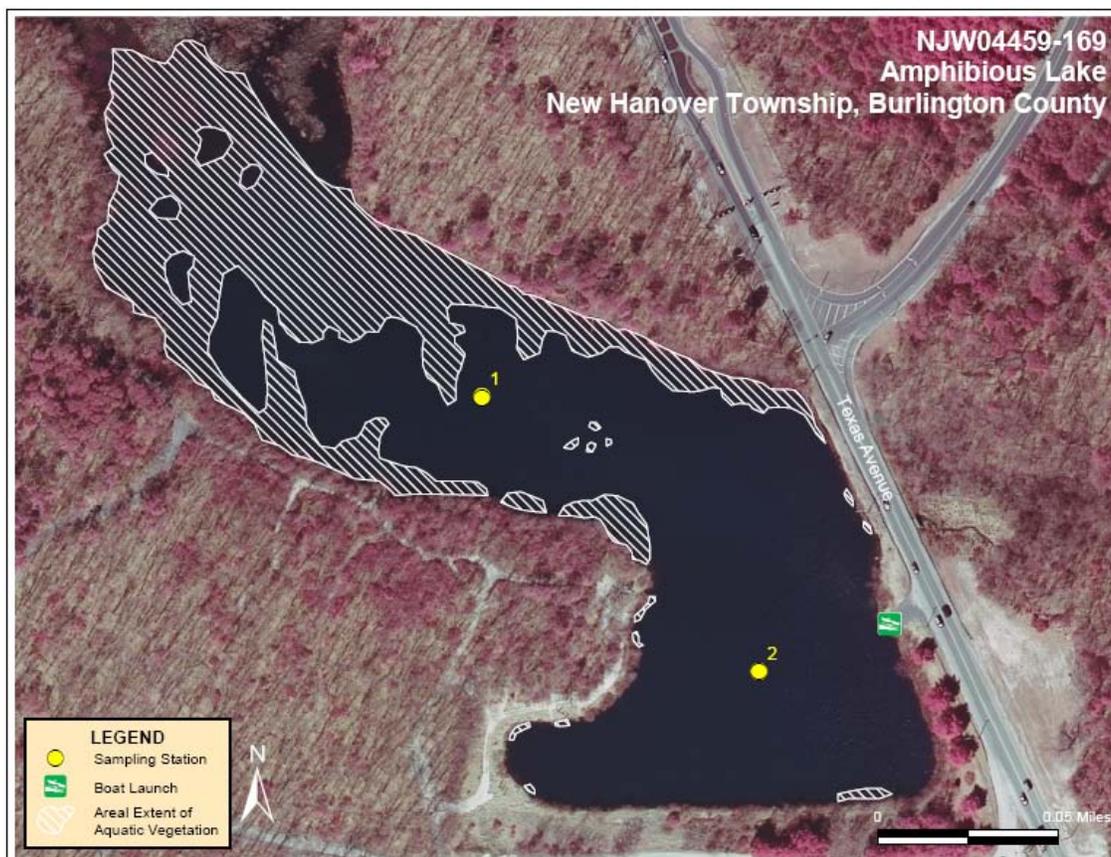
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Amphibious Lake  
**Site ID** NJW04459-169

**County** Burlington  
**Municipality** New Hanover Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	52.2	50.01	B	51.10 Eutrophic
Spring Station 2	52.71	49.46	51.53	51.23 Eutrophic
Summer Station 1	59.04	67.5	61.52	62.69 Eutrophic
Summer Station 2	54.57	67.57	58.63	60.25 Eutrophic
Fall Station 1	52.2	69.39	61.52	61.04 Eutrophic
Fall Station 2	55.42	69.53	63.22	62.72 Eutrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - kingfisher  
 Summer - ducks, lilipads  
 Fall - snapping turtle

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Amphibious Lake  
**SiteID:** NJW04459-169

**County:** BURLINGTON  
**Municipality:** NEW HANOVER TWP

## Surface to Bottom Profile

**Season:** Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1	0.5	1	9.75	9.22	81	6.19	0.152
2	2.8	1	1.8	10.24	9.53	84.5	6.43	0.153
2	2.8	2	1.8	10.22	9.57	84.9	6.48	0.153

**Season:** Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1	0.5	0.9	21.79	7.25	83.2	6.54	0.183
2	2.7	1	1.1	22.2	7.97	92.2	6.89	0.182
2	2.7	2	1.1	18.56	0.48	5.2	6.6	0.202
2	2.7	2.5	1.1	15.58	0.24	2.4	6.73	0.279

**Season:** Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.6	1	0.9	22.32	5.05	58	6.3	0.159
2	3.4	1	0.8	22.54	5.13	59.2	6.62	0.157
2	3.4	2	0.8	22.46	4.67	53.8	6.59	0.158
2	3.4	3	0.8	20.82	0.3	3.3	6.39	0.26

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Amphibious Lake

County: BURLINGTON

SiteID: NJW04459-169

Municipality: NEW HANOVER TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.56	0.02	0.06	7.23	9.00	36.40	4.83
2	0.029	0.38	0.02	0.04	6.84	15.00	37.60	3.92

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.045	0.789	0.0063	0.282	43.01	29	41.7	7.1
2	0.033	0.622	0.0063	0.0078	43.31	35	41.1	4.86
2A	0.052	1.48	0.0063	0.583	48.52	42	44.8	8.44

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.420	0.00630	0.018	52.17	1.0	43.2	7.08
2	0.035	0.456	0.00630	0.0217	52.92	25	43.6	7.52

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Amwell Lake  
**Site ID** NJW04459-184

**County** Hunterdon  
**Municipality** East Amwell Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	78.95	56.61	69.99	68.52 Eutrophic
Summer Station 1	81.39	82.6	61.52	75.17 Hyper-eutrophic
Fall Station 1	77.6	62.91	61.52	67.34 Eutrophic

     TP exceeds SWQC threshold(See Datasheet for actual concentration)

## Observations

Spring - rain previous day, ducks

Summer - blue heron, ducks, white geese, Canada geese, bladderwort, duckweed, SAV, snails

Fall - abundant geese population

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Amwell Lake

County: HUNTERDON

SiteID: NJW04459-184

Municipality: EAST AMWELL TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2	1	0.5	12.5	7.44	69.5	6.64	0.16

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.2	1	0.9	23.93	2.98	36	7.1	0.157
1	2.2	2	0.9	18.91	0.24	2.5	6.47	0.234

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.2	1	0.9	16.2	4.06	42.6	7.04	0.174
1	2.2	2	0.9	15.6	2.06	21.5	6.96	0.173

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Amwell Lake

County: HUNTERDON

SiteID: NJW04459-184

Municipality: EAST AMWELL TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.179	1.440	0.100	0.1440	14.17	#LA	53.6	25.2

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.212	2.13	0.0063	0.0404	200.53	45	57	12.4
1A	0.353	2.19	0.0063	0.04	115.97	50	60.3	20.2

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.163	0.820	0.00630	0.0825	26.95	85	60.9	9.44

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Atco Lake  
**Site ID** NJW04459-278

**County** Camden  
**Municipality** Waterford Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	47.35	40.2	B	43.77 Mesotrophic
Summer Station 1	45.83	39.9	B	42.86 Mesotrophic
Fall Station 1	44.13	64.87	B	54.50 Eutrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - most of lake 0.5-0.75 m deep  
 Summer - cedar water tint, SAV, geese

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Atco Lake

County: CAMDEN

SiteID: NJW04459-278

Municipality: WATERFORD TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.3	0.6	1.3	7.21	9.45	77	6.74	0.188

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.1	0.5	1.1	20.03	2.58	28.3	5.95	0.136

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.4	0.7	1.4	20.39	5.15	56.7	5.79	0.078

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Atco Lake

County: CAMDEN

SiteID: NJW04459-278

Municipality: WATERFORD TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.02	0.437	1.68	0.0432	2.66	24	34.6	1.73

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.018	0.54	0.404	0.023	2.58	12	29.7	0.87

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.016	0.623	0.0550	0.0123	32.9	11	19.7	1.32

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Bloodgood's Pond  
**Site ID** NJW04459-281

**County** Union  
**Municipality** Clark Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	73.89	54.36	67.36	65.21 Eutrophic
Summer Station 1	74.12	55.5	65.14	64.92 Eutrophic
Fall Station 1	69.97	34.45	B	52.21 Eutrophic

73.89 TP exceeds SWQC threshold(See Datasheet for actual concentration)  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - geese, swan, cormorant, ducks, turtles  
 Summer - swan  
 Fall - swan, duckweed

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Bloodgood's Pond

County: UNION

SiteID: NJW04459-281

Municipality: CLARK TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.6	1	0.6	15.29	8.13	81.5	6.93	0.329

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.8	1	0.7	20.2	6.58	72.2	6.88	0.305

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2	1	2	14.54	7.77	76.4	7.62	0.703

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Bloodgood's Pond

County: UNION

SiteID: NJW04459-281

Municipality: CLARK TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.126	0.889	0.584	0.0746	11.29	40	76.2	13.7

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.128	1.07	0.64	0.0581	12.66	55	90.3	9.65

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.096	0.278	1.39	0.0285	1.48	65	248	3.25

Sample Device - Horizontal Polycarbonate Sampler

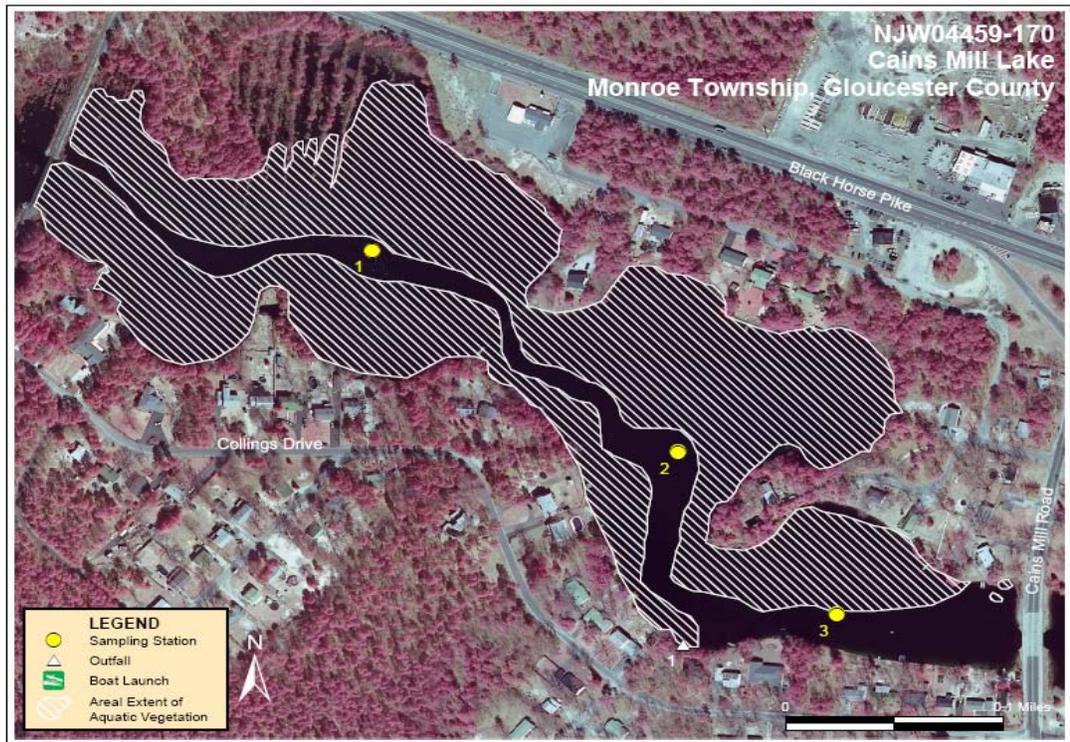
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Cains Mill Lake  
**Site ID** NJW04459-170

**County** Gloucester  
**Municipality** Monroe Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	42.21	42.19	B	42.20 Mesotrophic
Spring Station 2	43.2	43.64	B	43.22 Mesotrophic
Spring Station 3	42.21	41.89	B	42.05 Mesotrophic
Summer Station 1	42.21	37.1	B	39.65 Oligotrophic
Summer Station 2	41.14	38.2	B	39.67 Oligotrophic
Summer Station 3	ND	39.97	B	39.97 Oligotrophic
Fall Station 1	39.95	42.86	B	41.42 Mesotrophic
Fall Station 2	46.61	44.61	O	45.42 Mesotrophic
Fall Station 3	43.2	46.41	B	44.80 Mesotrophic

ND - TP concentration below detection limit  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
 O - Obscured By Plants

## Observations

Spring - geese, swan, ducks, cedar water  
 Summer - depth probe not working on meter,  
                   station 2 and 3 moved into channel due to plant/ algae growth  
                   impeding sample collection  
 Fall - bald eagle

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Cains Mill Lake

County: GLOUCESTER

SiteID: NJW04459-170

Municipality: MONROE TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.8	1	1.8	10.33	7.57	67.1	5.43	0.053
2	0.8	0.4		11.82	8.5	78	5.68	0.055
3	1.1	0.5	1.1	11.88	8.47	77.8	5.62	0.055

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.6	1	1.6	23.13	4.93	58.2	5.89	0.05
2	1.5	1	1.5	22.62	4.36	51	5.84	0.05
3	1.2	0.6	1.2	24.1	4.86	58.4	5.9	0.05

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.7	1	1.7	19.87	5.44	59.5	5	0.052
2	1.6	1	1.4	19.99	5.2	57	5.01	0.051
3	1.2	0.6	1.2	20.33	5.37	59.1	5.03	0.051

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Cains Mill Lake

County: GLOUCESTER

SiteID: NJW04459-170

Municipality: MONROE TWP

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.014	0.331	0.289	0.0123	3.26	12	12.3	1.98
2	0.015	0.397	0.278	0.0107	3.78	3	12.3	2.19
3	0.014	0.333	0.292	0.0160	3.16	1	12.6	2.00

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.014	0.477	0.0953	0.0199	1.94	7	11.8	2.08
2	0.013	0.606	0.0881	0.0314	2.17	6	11.7	2.39
3	ND	0.583	0.0731	0.0248	2.6	12	11.6	2.17

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.012	0.332	0.0638	0.0325	3.49	14	10.3	1.16
2	0.019	0.287	0.0535	0.0283	4.17	6.0	10.4	1.13
3	0.015	0.333	0.0417	0.0311	5.01	5.0	10.4	1.14

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

Lake Name Carasaljo Lake  
 Site ID NJW04459-283

County Ocean  
 Municipality Lakewood Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	47.35	41.86	51.53	46.91 Mesotrophic
Spring Station 2	54.13	37.78	55.15	49.02 Mesotrophic
Spring Station 3	55.42	42.95	B	49.18 Mesotrophic
Summer Station 1	59.04	59.83	58.63	59.17 Eutrophic
Summer Station 2	62.7	60.99	NR	61.85 Eutrophic
Summer Station 3	65.21	66.63	65.14	65.66 Eutrophic
Fall Station 1	58.05	44.05	52.35	51.48 Eutrophic
Fall Station 2	56.6	52.31	51.53	53.48 Eutrophic
Fall Station 3	61.4	59.81	B	60.61 Eutrophic

TP exceeds SWQC threshold(See Datasheet for actual concentration)  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
 NR- Not recorded

## Observations

Spring - lake joins Lake Manetta and shares outlet; ducks, geese, gulls

Summer - ducks, geese, gulls, heron

Fall - heron, cormorant, ducks, many geese

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Carasaljo Lake

**County:** OCEAN

**SiteID:** NJW04459-283

**Municipality:** LAKEWOOD TWP

## Surface to Bottom Profile

**Season:** Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.9	1	1.8	8.4	9.3	78.4	5.87	0.104
1	2.9	2	1.8	8.21	9.15	76.9	6.07	0.103
2	1.8	1	1.4	7.79	9.18	76.4	6.42	0.097
3	1	0.5	1	7.89	9.49	79.1	6.57	0.095

**Season:** Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.8	1	1.1	24.86	6.85	82.9	6.45	0.118
1	2.8	2	1.1	21.77	1.57	17.9	6.28	0.113
1	2.8	2.5	1.1	19.67	2.36	25.7	6.07	0.12
2	2.1	1		22.49	2.91	33.9	6.14	0.12
2	2.1	2		20.79	0.43	4.8	6.11	0.132
3	0.9	0.5	0.7	22.14	5.57	64	6.04	0.133

**Season:** Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.9	1	1.7	18.89	6.79	72.2	6.53	0.11
1	2.9	2	1.7	17.6	5.95	61.5	6.4	0.117
2	2.2	1	1.8	20.28	8.01	87.2	6.44	0.111
3	0.9	0.5	0.9	17.71	7.99	82.9	6.46	0.12

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Carasaljo Lake

County: OCEAN

SiteID: NJW04459-283

Municipality: LAKEWOOD TWP

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.02	0.640	0.438	0.318	3.15	15	22.8	4.26
2	0.032	0.568	0.393	0.0309	2.08	28	21.1	5.61
3	0.035	0.591	0.382	0.0277	3.52	13	21.0	5.58

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.045	0.689	0.349	0.0374	19.68	25	56	5.81
1A	0.045	0.713	0.345	0.0936	14.98	12	25.7	6.43
2	0.058	0.734	0.455	0.0352	22.16	2	27	7.18
3	0.069	0.689	0.349	0.0374	39.37	25	26	10.6

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.042	0.383	0.381	0.0352	3.94	15	26.8	4.34
2	0.038	0.380	0.381	0.0207	9.14	19	26.5	4.01
3	0.053	0.422	0.498	0.0227	19.65	5.0	27.3	5.65

Sample Device - Horizontal Polycarbonate Sampler

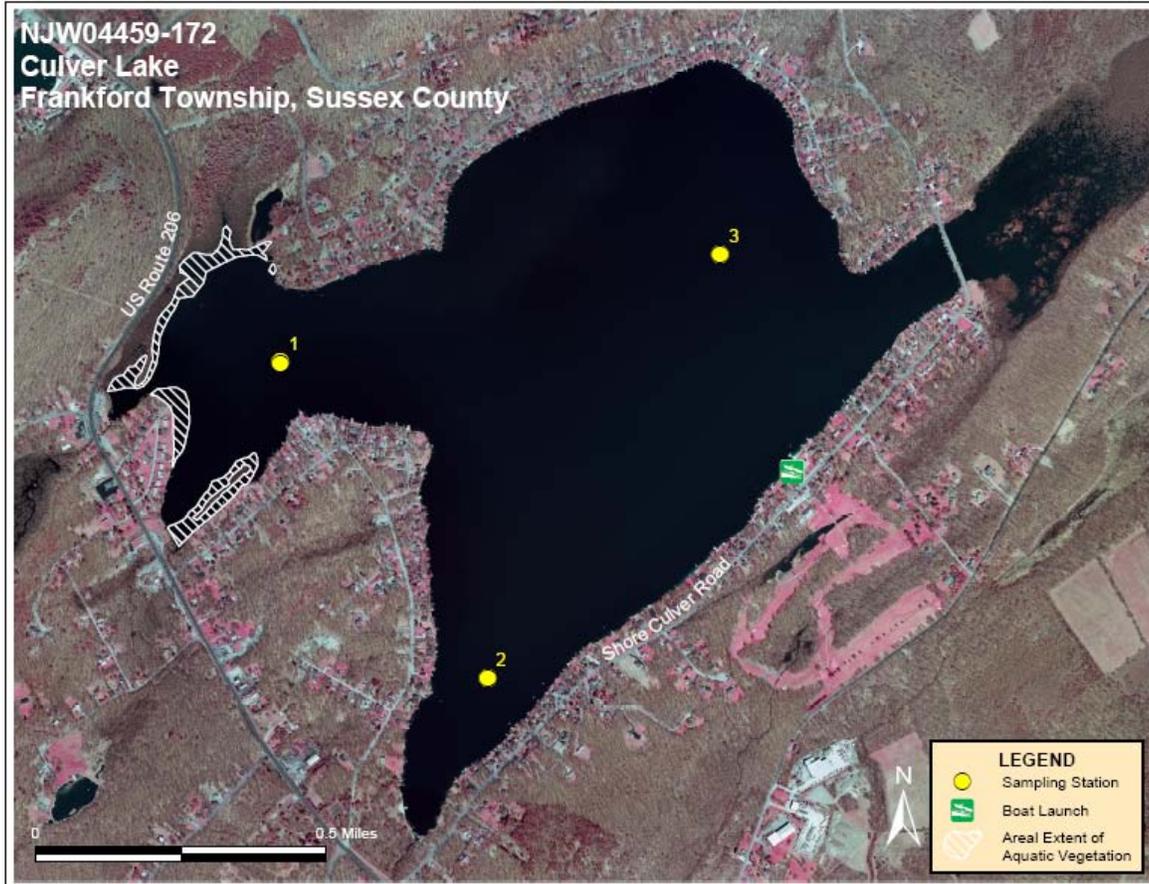
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

Lake Name Culver Lake  
 Site ID NJW04459-172

County Sussex  
 Municipality Frankford Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	52.2	52.4	44.66	49.73 Mesotrophic
Spring Station 2	53.2	55.5	45.69	51.46 Eutrophic
Spring Station 3	51.68	54.8	45.16	50.54 Mesotrophic
Summer Station 1	42.21	60.43	52.35	51.66 Eutrophic
Summer Station 2	41.14	60.22	50.75	50.70 Mesotrophic
Summer Station 3	37.35	60.62	50.01	49.33 Mesotrophic
Fall Station 1	47.35	61.27	48	52.21 Eutrophic
Fall Station 2	48.72	59.69	47.38	51.93 Eutrophic
Fall Station 3	51.13	56.73	48	51.95 Eutrophic

## Observations

Spring - cormorant, gulls

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Culvers Lake

County: SUSSEX

SiteID: NJW04459-172

Municipality: FRANKFORD TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.7	1	2.9	18.48	8.99	98.6	7.2	0.206
1	4.7	2	2.9	18.14	8.98	97.8	7.45	0.206
1	4.7	3	2.9	17.7	8.64	93.3	7.52	0.206
1	4.7	4	2.9	17.16	7.92	84.4	7.49	0.206
2	10.2	1	2.7	18.83	9.04	99.8	7.9	0.206
2	10.2	2	2.7	18.43	8.91	97.7	7.98	0.206
2	10.2	3	2.7	18.1	8.82	95.9	7.94	0.205
2	10.2	4	2.7	17.76	8.63	93.3	7.82	0.205
2	10.2	5	2.7	14.65	6.97	70.5	7.67	0.204
2	10.2	6	2.7	13.82	6.48	64.3	7.55	0.203
2	10.2	7	2.7	13.08	5.95	58.1	7.44	0.203
2	10.2	8	2.7	12.63	5.58	53.9	7.36	0.203
2	10.2	9	2.7	12.33	5.42	52.1	7.29	0.203
3	12	1	2.8	19.12	9.38	104.2	7.75	0.206
3	12	2	2.8	18.74	9.42	103.8	8.07	0.206
3	12	3	2.8	18.27	9.39	102.5	8.23	0.206
3	12	4	2.8	18.2	9.18	100.2	8.2	0.206
3	12	5	2.8	18	8.78	95.3	8.09	0.206
3	12	6	2.8	13.17	6.46	63.3	7.91	0.203
3	12	7	2.8	11.8	6.05	57.4	7.77	0.203
3	12	8	2.8	11.01	5.77	53.8	7.67	0.203
3	12	9	2.8	9.74	5.67	51.3	7.62	0.203
3	12	10	2.8	8.99	4.74	42.2	7.54	0.204
3	12	11	2.8	8.6	4.2	37	7.35	0.204

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.7	1	1.7	26.68	8.44	108.6	8.59	0.18
1	4.7	2	1.7	26.3	8.22	105.1	8.58	0.18
1	4.7	3	1.7	25.97	7.31	92.9	8.19	0.178
1	4.7	4	1.7	18.96	0.68	7.5	7.72	0.181
2	10	1	1.9	26.82	8.16	105.4	8.46	0.18
2	10	2	1.9	26.04	7.9	100.5	8.36	0.179
2	10	3	1.9	25.16	5.75	72.1	8.02	0.178
2	10	4	1.9	21.08	0.81	9.5	7.75	0.178
2	10	5	1.9	17.51	0.46	5	7.57	0.18
2	10	6	1.9	15.19	0.36	3.7	7.47	0.18

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Culvers Lake

**County:** SUSSEX

**SiteID:** NJW04459-172

**Municipality:** FRANKFORD TWP

## Surface to Bottom Profile

2	10	7	1.9	14.2	0.27	2.7	7.36	0.179
2	10	8	1.9	13.61	0.21	2.1	7.25	0.18
2	10	9	1.9	13.15	0.19	1.8	7.17	0.182
3	12	1	2	27.31	8.79	114.4	8.94	0.18
3	12	2	2	26.68	8.25	106.3	8.77	0.179
3	12	3	2	26.01	6.19	79.3	8.3	0.18
3	12	4	2	21.75	0.53	6.2	7.76	0.179
3	12	5	2	17.52	0.33	3.6	7.58	0.18
3	12	6	2	14.39	0.41	4.2	7.48	0.179
3	12	7	2	13.97	0.42	4.2	7.34	0.179
3	12	8	2	13.41	0.18	1.7	7.23	0.179
3	12	9	2	12.15	0.15	1.4	7.16	0.181
3	12	10	2	11.53	0.12	1.1	7.06	0.184
3	12	11	2	10.55	0.1	1	7.02	0.186

**Season:** Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.7	1	2.3	11.58	8.57	80.4	7.34	0.207
1	4.7	2	2.3	11.56	8.53	80	7.31	0.206
1	4.7	3	2.3	11.51	8.55	80.2	7.31	0.206
1	4.7	4	2.3	11.46	8.49	79.4	7.3	0.205
2	9.9	1.1	2.4	11.64	8.7	81.7	7.31	0.206
2	9.9	2	2.4	11.55	8.5	79.7	7.29	0.206
2	9.9	3	2.4	11.52	8.31	77.9	7.29	0.206
2	9.9	4	2.4	11.51	8.24	77.2	7.29	0.207
2	9.9	5	2.4	11.51	8.24	77.1	7.29	0.206
2	9.9	6	2.4	11.5	8.22	77	7.28	0.206
2	9.9	7	2.4	11.5	8.15	76.3	7.27	0.206
2	9.9	8	2.4	11.5	8.23	77.1	7.27	0.206
2	9.9	9	2.4	11.48	8.13	76.1	7.26	0.206
3	12.3	1	2.3	11.81	8.13	76.6	7.26	0.208
3	12.3	2	2.3	11.69	7.98	75.1	7.25	0.207
3	12.3	3	2.3	11.49	7.8	73	7.24	0.207
3	12.3	4	2.3	11.47	7.7	72.1	7.22	0.207
3	12.3	5	2.3	11.47	7.67	71.8	7.21	0.207
3	12.3	6	2.3	11.46	7.58	70.9	7.21	0.206
3	12.3	7	2.3	11.46	7.65	71.6	7.2	0.207
3	12.3	8	2.3	11.45	7.65	71.6	7.2	0.207
3	12.3	9	2.3	11.45	7.66	71.7	7.19	0.207
3	12.3	10	2.3	11.45	7.6	71.1	7.19	0.207
3	12.3	11	2.3	11.41	7.53	70.4	7.18	0.207
3	12.3	12	2.3	11.38	7.23	67.6	7.16	0.209

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Culvers Lake

County: SUSSEX

SiteID: NJW04459-172

Municipality: FRANKFORD TWP

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.647	0.006	0.012	9.23	35	42.8	2.62
2	0.03	0.586	0.006	0.014	12.66	42	42.7	2.88
2A	0.018	0.394	0.019	0.030	3.63	37	42	1.15
3	0.027	0.598	0.006	0.014	11.78	25	43	2.51
3A	0.025	0.628	0.635	0.161	1.72	26	42	1.98

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.014	0.503	0.00630	0.00778	20.93	82	42.2	3.43
2	0.013	0.552	0.00630	0.00778	20.47	73	41.9	3.13
2A	ND	0.290	0.130	0.0417	2.66	22	41.1	1.61
3	0.01	0.548	0.00630	0.0153	21.32	90	42.1	3.4
3A	0.027	0.388	0.106	0.119	3.35	26	41.9	1.75

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.02	0.410	0.0207	0.0606	22.79	30	43.1	1.86
2	0.022	0.420	0.0201	0.0659	19.41	26	42.7	1.81
3	0.026	0.374	0.0188	0.0909	14.35	19	43.0	1.83

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Deer Head Lake  
**Site ID** NJW04459-288

**County** Ocean  
**Municipality** Lacey Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	44.13	40.35	B	42.24 Mesotrophic
Spring Station 2	ND	45.33	B	45.24 Mesotrophic
Summer Station 1	ND	34.25	B	34.25 Oligotrophic
Summer Station 2	ND	42.63	B	42.63 Mesotrophic
Fall Station 1	37.35	24.91	B	31.13 Oligotrophic
Fall Station 2	44.13	29.89	60	44.67 Mesotrophic

ND - TP concentration below detection limit

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - cedar water, egret, snapping turtle

Summer - duckweed, lillipads, SAV, filamentous algae

Fall - gulls, ducks, Canada geese

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Deer Head Lake

County: OCEAN

SiteID: NJW04459-288

Municipality: LACEY TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	0.8	0.4	0.8	19.68	7.74	84.4	4.27	0.054
2	1.1	0.5	1.1	20.09	7.76	85.4	4.25	0.054

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	0.9	0.4	0.9	18.42	6.7	70.8	4.34	0.049
2	1.1	0.5	1.1	22.59	7.13	81.7	4.2	0.046

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	0.8	0.4	0.8	11.49	7.28	66	3.99	0.061
2	1.2	0.6	1	12	6.95	63.6	3.97	0.063

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Deer Head Lake  
**SiteID:** NJW04459-288

**County:** OCEAN  
**Municipality:** LACEY TWP

## Lake Profile Raw Data

**Season:** Spring

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	0.016	0.339	0.021	0.017	2.7	1	4.35	1.04
2	ND	036	0.021	0.015	4.49	1	4.21	1.07

**Season:** Summer

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	ND	0.320	0.0375	0.0168	1.45	1.0	4.69	1.65
2	ND	0.276	0.0063	0.0208	3.41	1.0	4.36	1.88

**Season:** Fall

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	0.01	0.504	0.0150	0.0288	0.56	1.0	5.10	1.88
2	0.016	0.544	0.0152	0.0345	0.93	1.0	5.55	5.19

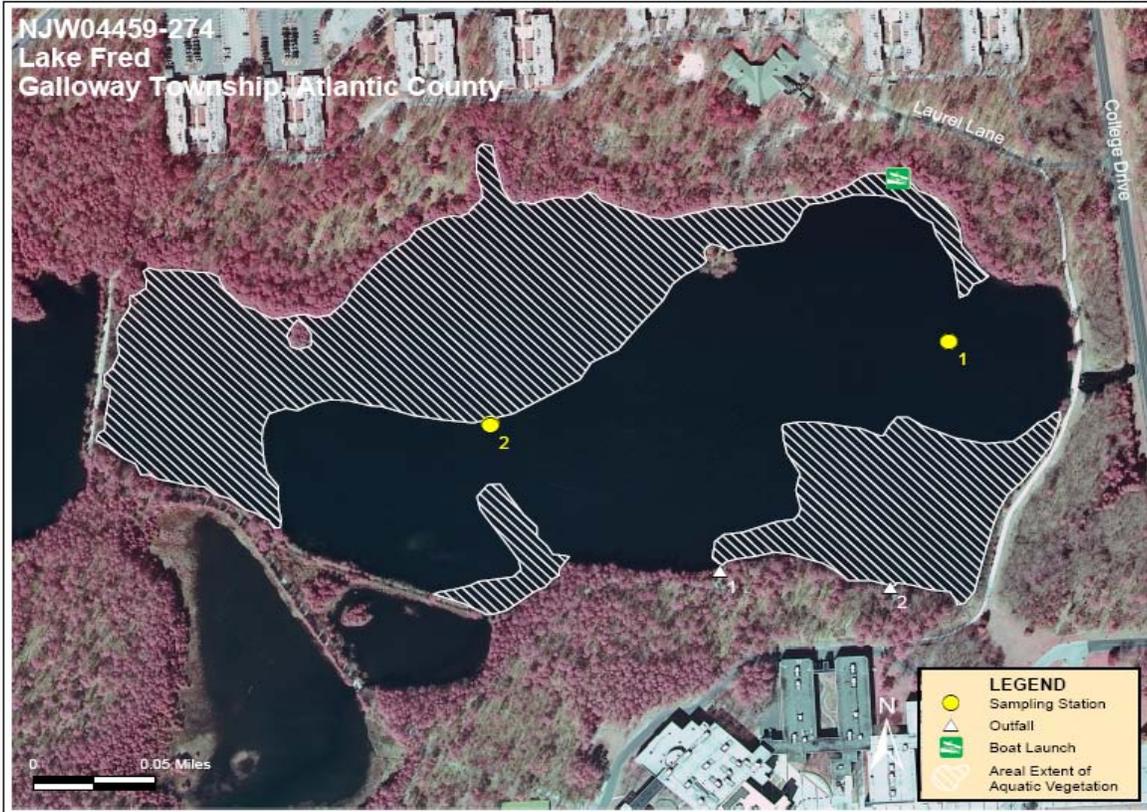
*Sample Device - Horizontal Polycarbonate Sampler*

*"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.*

*-A blank parameter result means the parameter could not be analyzed due to laboratory error.*

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Lake Fred                      **County** Atlantic  
**Site ID** NJW04459-274                      **Municipality** Galloway Township



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	37.35	50.02	B	43.69 Mesotrophic
Spring Station 2	37.35	52.39	B	44.87 Mesotrophic
Summer Station 1	44.13	42.1	B	43.12 Mesotrophic
Summer Station 2	43.2	43.57	B	43.38 Mesotrophic
Fall Station 1	48.05	41.25	B	44.64 Mesotrophic
Fall Station 2	45	45.97	B	45.49 Mesotrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

**Observations**

Spring - geese, ducks, turtle

Fall - gulls

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Lake Fred

County: ATLANTIC

SiteID: NJW04459-274

Municipality: GALLOWAY TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.1	0.5	1.1	7.18	9.88	80.4	5.64	0.071
2	0.8	0.4	0.8	7.63	9.95	81.9	5.18	0.071

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.1	0.5	1.1	25.16	8.15	98.1	5.48	0.079
2	0.8	0.4	0.8	24.09	8.11	95.8	5.4	0.077

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.2	0.6	1.2	21.97	6.24	71.3	4.53	0.067
2	0.8	0.4	0.8	20.61	6.86	76.1	4.63	0.073

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Lake Fred

County: ATLANTIC

SiteID: NJW04459-274

Municipality: GALLOWAY TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.01	0.261	0.485	0.0102	7.24	35	16.7	1.55
2	0.01	0.338	0.460	0.0174	9.22	8	16.7	2.24

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.016	0.418	0.257	0.008	3.23	15	16.3	0.99
2	0.015	0.457	0.249	0.136	3.75	4	15.6	1.25

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.021	0.499	0.157	0.0275	2.96	3.0	12.2	3.28
2	0.017	0.436	0.174	0.0251	4.79	2.0	13.2	2.62

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** George Lake      **County** Morris  
**Site ID** NJW04459-180      **Municipality** Washington Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	44.13	36.69	48	42.94 Mesotrophic
Summer Station 1	ND	44.65	47.38	46.01 Mesotrophic
Fall Station 1	56.98	59.82	50.75	55.85 Eutrophic

ND - TP concentration below detection limit

### Observations

Summer - geese

# AMBIENT LAKE MONITORING NETWORK

Lake Name: George Lake

County: MORRIS

SiteID: NJW04459-180

Municipality: WASHINGTON TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.5	1	2.3	10.19	9.95	91.5	7.25	0.35
1	2.5	2	2.3	9.69	9.89	89.9	7.25	0.355

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.7	0.5	2.4	21.08	10.48	122.2	7.49	0.331
1	2.7	1	2.4	19.89	10.67	121.5	7.43	0.334
1	2.7	2	2.4	17.92	12.11	132.5	7.45	0.33
1	2.7	2.5	2.4	16.37	1.44	15.2	6.82	0.348

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.6	1	1.9	14.19	7.5	75.5	7.34	0.328
1	2.6	2	1.9	13.91	7.42	74.2	7.27	0.328

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: George Lake

County: MORRIS

SiteID: NJW04459-180

Municipality: WASHINGTON TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.016	0.35	0.57	0.01	1.86	57.00	239.00	2.91

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.366	0.606	0.0199	4.19	45	102	1.51
1A	0.044	0.826	0.421	0.0114	57.64	62	102	3.91

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.039	0.521	0.630	0.0674	19.66	45	105	5.07

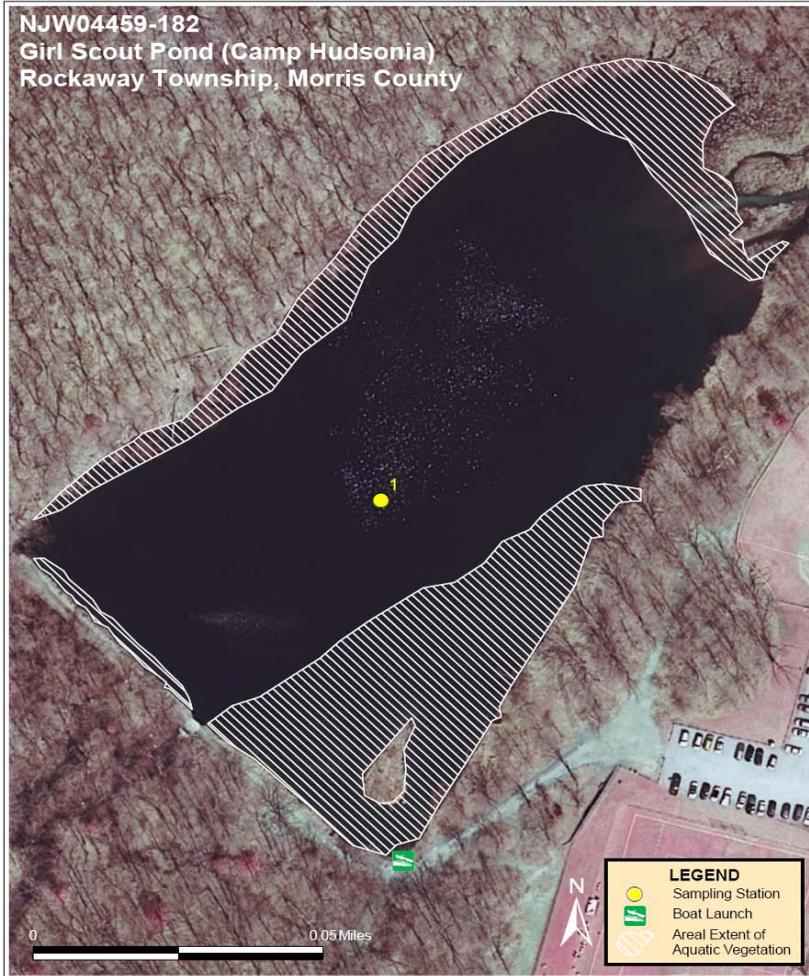
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Girl Scout Pond      **County** Morris  
**Site ID** NJW04459-182      **Municipality** Rockaway Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	50.57	53.48	B	52.02 Eutrophic
Summer Station 1	ND	49.66	B	49.66 Mesotrophic
Fall Station 1	45.83	50.37	B	48.10 Mesotrophic

ND - TP concentration below detection limit  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - geese, heavy aquatic vegetation beginning to emerge  
 Fall - SAV, lillipads, watershield

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Girl Scout Pond

County: MORRIS

SiteID: NJW04459-182

Municipality: ROCKAWAY TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.7	1	1.7	12.35	8.27	79.1	6.26	0.135

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.7	1	1.7	19.53	6.11	67.9	6.45	0.185

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.6	1	1.6	13.96	6.89	68.5	6.98	0.196

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Girl Scout Pond

County: MORRIS

SiteID: NJW04459-182

Municipality: ROCKAWAY TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.025	0.411	0.0284	0.00786	10.3	22	35.3	1.81

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.758	0.373	0.0198	6.98	19	42.9	1.55

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.018	0.292	0.0137	0.0158	7.5	29	51.5	1.33

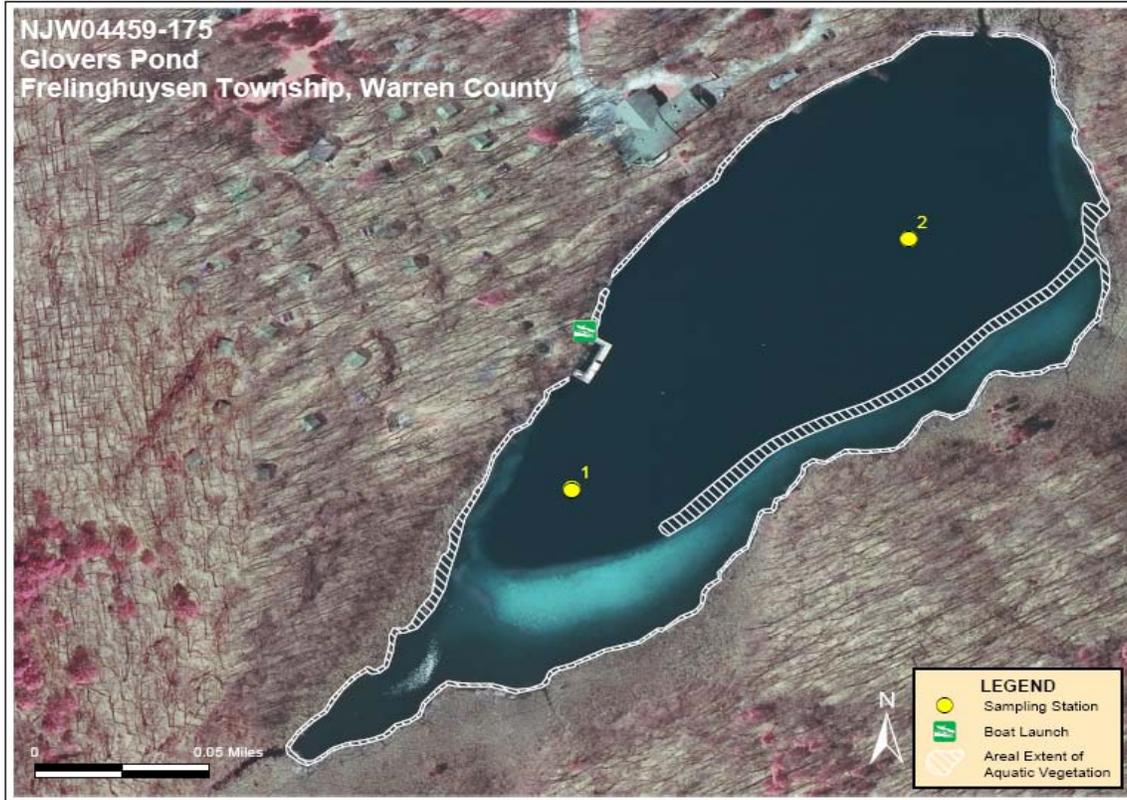
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Glovers Pond      **County** Warren  
**Site ID** NJW04459-175      **Municipality** Frelinghuysen Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	52.2	46.05	40.39	46.21 Mesotrophic
Spring Station 2	52.2	44	40.02	45.41 Mesotrophic
Summer Station 1	ND	52.55	41.15	46.85 Mesotrophic
Summer Station 2	ND	52.25	41.15	46.70 Mesotrophic
Fall Station 1	45.83	53.43	38.01	45.76 Mesotrophic
Fall Station 2	48.05	52.93	37.7	46.23 Mesotrophic

ND - TP concentration below detection limit

## Observations

Spring - organisms is sample 2A  
 Summer - snakes, fish, lillipads, SAV, swimming area  
 Fall - water green along shoreline, algae

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Glovers Pond

**County:** WARREN

**SiteID:** NJW04459-175

**Municipality:** FRELINGHUYSEN TWP

## Surface to Bottom Profile

**Season:** Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	6.8	1	3.9	18.1	8.37	89.9	7.68	0.381
1	6.8	2	3.9	17	7.88	82.8	7.88	0.384
1	6.8	3	3.9	14.86	6.31	63.3	7.81	0.387
1	6.8	4	3.9	9.39	4.73	41.9	7.76	0.387
1	6.8	5	3.9	7.3	2.41	20.2	7.64	0.397
1	6.8	6	3.9	5.96	0.73	5.9	7.45	0.43
2	8.3	1	4	18.39	8.58	92.7	8.17	0.38
2	8.3	2	4	17.63	8.27	88	8.17	0.381
2	8.3	3	4	13.32	6	58.2	7.98	0.386
2	8.3	4	4	10.03	6.22	55.9	7.93	0.384
2	8.3	5	4	7.38	3.04	25.6	7.74	0.396
2	8.3	6	4	5.78	1.04	8.4	7.53	0.436
2	8.3	7	4	5.07	0.72	5.8	7.32	0.456
2	8.3	8	4	5.21	0.36	2.9	6.98	0.505

**Season:** Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	6	1	3.7	26.44	7.76	98.8	7.64	0.323
1	6	2	3.7	25.57	4.68	58.7	7.6	0.33
1	6	3	3.7	22.9	4.32	51.5	7.53	0.368
1	6	4	3.7	19.31	2.91	32.3	7.48	0.384
1	6	5	3.7	14.57	6.65	66.8	7.6	0.392
1	6	6	3.7	9.57	0.41	3.6	7.27	0.419
2	8.5	1	3.7	26.4	7.73	98.3	7.98	0.324
2	8.5	2	3.7	25.37	6.91	86.2	7.87	0.341
2	8.5	3	3.7	23.26	5.39	64.7	7.66	0.369
2	8.5	4	3.7	19.18	7.94	87.7	7.86	0.375
2	8.5	5	3.7	14.23	10.95	109.3	8.02	0.385
2	8.5	6	3.7	9.94	0.48	4.3	7.29	0.414
2	8.5	7	3.7	6.94	0.36	3.1	7.07	0.463
2	8.5	7.5	3.7	6.54	0.24	1.9	7.01	0.477
2	8.5	8	3.7	6.46	0.21	1.8	6.95	0.502

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Glovers Pond

County: WARREN

SiteID: NJW04459-175

Municipality: FRELINGHUYSEN TWP

## Surface to Bottom Profile

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	6.8	1	4.6	15.1	5.95	59.6	7.59	0.35
1	6.8	2	4.6	15.08	5.81	58.3	7.65	0.351
1	6.8	3	4.6	15.08	5.74	57.5	7.67	0.352
1	6.8	4	4.6	15.06	5.93	59.5	7.69	0.35
1	6.8	5	4.6	14.99	5.83	58.5	7.72	0.351
1	6.8	6	4.6	13.1	0.34	3.2	7.25	0.442
2	8.4	1	4.7	14.93	6.2	62	7.42	0.349
2	8.4	2	4.7	14.87	6.1	60.9	7.51	0.349
2	8.4	3	4.7	14.84	6.04	60.2	7.58	0.349
2	8.4	4	4.7	14.81	5.79	57.8	7.63	0.35
2	8.4	5	4.7	14.76	5.71	56.8	7.64	0.351
2	8.4	6	4.7	13.8	0.42	4.1	7.3	0.416
2	8.4	7	4.7	9.46	0.19	1.7	6.92	0.519
2	8.4	7.5	4.7	8.58	0.11	1	6.82	0.547
2	8.4	8	4.7	8.37	0.1	0.9	6.77	0.564

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Glovers Pond

**County:** WARREN

**SiteID:** NJW04459-175

**Municipality:** FRELINGHUYSEN TWP

## Lake Profile Raw Data

### Season: Spring

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	0.028	0.552	0.0063	0.00778	4.83	85	213	1
1A	0.065	0.906	0.0063	0.00778		69	219	1
2	0.028	0.678	0.0063	0.00778	3.92	85	213	1.04
2A	0.064	1.260	#LA	0.0322		102	216	1.04

### Season: Summer

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	ND	0.0798	0.0063	NA	9.37	NA	NA	0.8
1A	0.057	0.514	.0063	NA	71.8	NA	203	3.16
2	ND	1.29	0.0063	NA	9.09	70	234	0.74
2A	0.314	0.569	0.0063	0.0111	104.68	49	201	NA

### Season: Fall

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	0.018	0.499	0.00630	0.0244	10.25	150	204	2.12
2	0.021	0.521	0.00630	0.0204	9.74	130	203	1.53
2A	0.368	8.60	0.0063	8.54	74.46	140	281	NA

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Harrisonville Lake      **County** Salem  
**Site ID** NJW04459-196      **Municipality** Pilesgrove Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	52.2	43.25	B	47.72 Mesotrophic
Spring Station 2	56.98	41.7	55.15	51.28 Eutrophic
Summer Station 1	64.56	63.56	60	62.71 Eutrophic
Summer Station 2	66.41	59.95	58.63	61.66 Eutrophic
Fall Station 1	59.04	40.38	O	49.71 Mesotrophic
Fall Station 2	58.72	49.86	55.15	54.58 Eutrophic

64.56 TP exceeds SWQC threshold(See Datasheet for actual concentration)  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
 O - Obscured By Plants

## Observations

Spring - geese, ducks, beaver den, new dam

Summer - pond scum at station 2, canada geese, white geese, filamentous algae, duckweed, floating plant debris near dam

Fall - bryozoans, strong odor, geese, cormorant, kingfisher, algae mats, snow geese,

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Harrisonville Lake

County: SALEM

SiteID: NJW04459-196

Municipality: PILESGROVE TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.2	0.6	1.2	7.82	8.5	72.1	6.07	0.158
2	1.5	1	1.4	9.83	8.21	73.1	6.32	0.156

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1	20.95	4.37	49.4	6.29	0.192
2	1.8	1	1.1	23.05	2.3	27.1	6.69	0.192

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.2	0.6	1.1	16.53	7.18	73	6.17	0.189
2	1.5	1	1.4	18.23	6.89	72	6.43	0.181

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Harrisonville Lake

County: SALEM

SiteID: NJW04459-196

Municipality: PILESGROVE TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.656	2.35	0.0361	3.63	30	58.5	5.09
2	0.039	0.775	2.07	0.0911	3.1	25	59.8	5.75

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.066	0.736	1.81	0.0435	28.77	29	73.4	7.81
2	0.075	0.817	1.12	0.127	19.93	34	76.2	6.62

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.045	0.386	2.84	0.0426	2.71	27	70.5	5.15
2	0.044	0.478	2.18	0.0453	7.12	30	67.9	5.86

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Heaters Pond      **County** Sussex  
**Site ID** NJW04459-186      **Municipality** Ogdensburg Borough



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	49.98	54.54	B	52.26 Eutrophic
Spring Station 2	54.57	53.07	B	53.81 Eutrophic
Spring Station 3	51.68	57.13	55.15	54.65 Eutrophic
Summer Station 1	38.73	51.47	O	45.1 Mesotrophic
Summer Station 2	45	59.29	O	52.15 Eutrophic
Summer Station 3	45	57.67	O	51.34 Eutrophic
Fall Station 1	52.2	53.47	B	52.83 Eutrophic
Fall Station 2	45.83	43.72	B	44.78 Mesotrophic
Fall Station 3	49.36	44.1	B	46.73 Mesotrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
O - Obscured By Plants

## Observations

Spring - SAV, lillies, geese, ducks, turtles

Summer - bryozoans, turtles

Fall - extensive SAV, dead Canada goose, cedar colored water

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Heaters Pond

County: SUSSEX

SiteID: NJW04459-186

Municipality: OGDENSBURG BORO

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2	1	2	16.58	6.72	70.5	7.32	0.108
2	1.7	1	1.7	16.37	6.74	70.5	7.16	0.126
3	1.4	0.7	1.4	16.08	6.07	63.1	7.06	0.095

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.9	1	1.7	22.85	1.48	17.6	6.38	0.094
2	1.6	1	1.3	21.61	0.49	5.7	6.24	0.095
3	1.5	1	1.3	21.01	0.15	1.7	6.2	0.298

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.8	1	1.8	12.27	5.48	52.9	7.5	0.106
2	1.5	1	1.5	11.55	3.37	32.1	7.65	0.108
3	1.5	1	1.5	11.44	2.37	22.5	7.21	0.105

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Heaters Pond

County: SUSSEX

SiteID: NJW04459-186

Municipality: OGDENSBURG BORO

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.024	0.419	0.0063	0.00778	11.48	42	32.8	1.26
2	0.033	0.392	0.0063	0.00778	9.88	37	35.2	1.17
3	0.027	0.442	0.0063	0.00923	14.94	9	24.3	1.23

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.011	0.561	0.0063	0.0078	8.39	22	37	1.12
2	0.017	0.68	0.0063	0.0078	18.62	40	39.1	1
3	0.017	0.570	0.0063	0.0078	15.79	29	38.3	2.54

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.430	0.00630	0.0104	10.29	36	38.2	1.27
2	0.018	0.206	0.00630	0.00778	3.81	47	42.6	0.63
3	0.023	0.426	0.00630	0.0143	3.96	36	37.5	0.99

Sample Device - Horizontal Polycarbonate Sampler

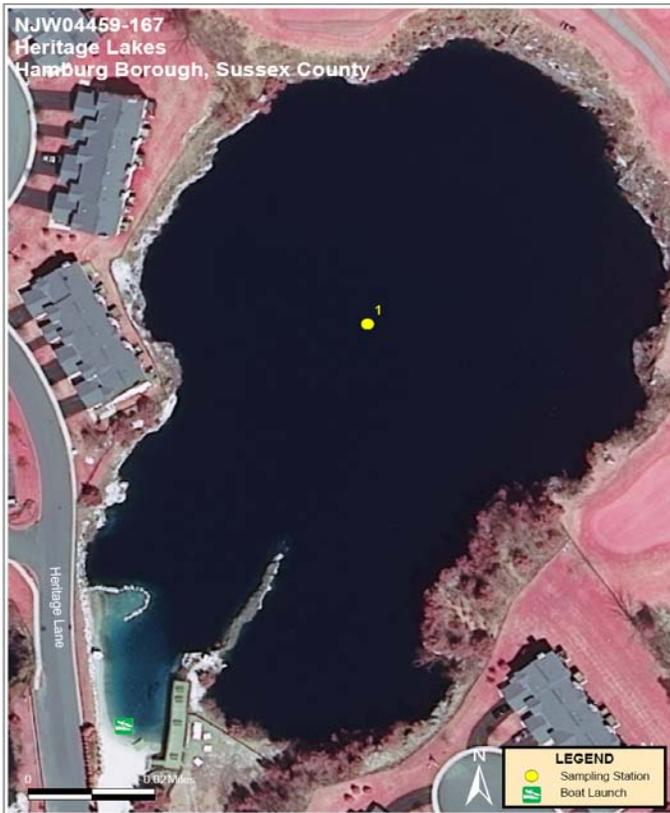
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Heritage Lakes  
**Site ID** NJW04459-167

**County** Sussex  
**Municipality** Hamburg Borough



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	38.73	52.25	31.96	40.98 Oligotrophic
Summer Station 1	ND	39.59	30.97	35.28 Oligotrophic
Fall Station 1	53.67	44.51	28.99	42.39 Mesotrophic

ND - TP concentration below detection limit

**Observations**

Spring - fish; site adjacent, to golf course  
 Summer - SAV

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Heritage Lakes

**County:** SUSSEX

**SiteID:** NJW04459-167

**Municipality:** HAMBURG BORO

## Surface to Bottom Profile

**Season:** Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	10	1	7	16.72	8.74	90.7	8.56	0.547
1	10	2	7	16.61	8.84	91.6	8.63	0.546
1	10	3	7	16.04	9.47	97	8.65	0.55
1	10	4	7	13.29	11.08	106.9	8.66	0.558
1	10	5	7	11.58	11.35	105.3	8.67	0.559
1	10	6	7	10.35	10.89	98.2	8.59	0.566
1	10	7	7	9.47	10.36	91.6	8.45	0.584
1	10	8	7	9.06	8.8	77	8.19	0.631
1	10	9	7	9.05	6.75	59.1	7.96	0.674

**Season:** Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	10	1	7.5	25.99	7.88	99.4	8.17	0.532
1	10	2	7.5	25.93	7.92	100	8.26	0.532
1	10	3	7.5	25.8	8	100.6	8.33	0.532
1	10	4	7.5	25.62	7.94	99.5	8.35	0.532
1	10	5	7.5	25.11	7.66	95	8.23	0.543
1	10	6	7.5	23.49	6.89	83	8.1	0.555
1	10	7	7.5	21.6	4.81	55.9	7.93	0.562
1	10	8	7.5	19.54	1.66	18.5	7.8	0.572
1	10	9	7.5	16.81	0.19	2.1	7.51	0.618
1	10	9.5	7.5	15.45	0.09	1	7.33	0.697

**Season:** Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	9.8	1	8.6	16.37	5.95	61.9	7.71	0.575
1	9.8	2	8.6	16.39	5.9	61.4	7.69	0.575
1	9.8	3	8.6	16.39	5.87	61	7.7	0.575
1	9.8	4	8.6	16.4	5.91	61.4	7.71	0.575
1	9.8	5	8.6	16.4	5.83	60.6	7.73	0.575
1	9.8	6	8.6	16.39	5.84	60.7	7.74	0.575
1	9.8	7	8.6	16.4	5.84	60.7	7.75	0.575
1	9.8	8	8.6	16.4	5.83	60.7	7.75	0.575
1	9.8	9	8.6	16.4	5.79	60.2	7.76	0.575

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Heritage Lakes

County: SUSSEX

SiteID: NJW04459-167

Municipality: HAMBURG BORO

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.011	0.455	0.0063	0.0078	9.09	156	198	1.21
1A	0.019	0.277	0.0063	0.0205	2.87	102	217	0.62

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.348	0.0063	0.0078	2.5	145	205	0.3
1A	0.077	2.47	0.0063	1.31	21.3	80	282	2.6*

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.031	0.425	0.0642	0.144	4.13	150	225	0.67

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Laurel Lake      **County** Camden  
**Site ID** NJW04459-161      **Municipality** Laurel Springs Borough



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	58.39	51.71	B	55.05 Eutrophic
Spring Station 2	60.27	55.66	57.37	57.77 Eutrophic
Summer Station 1	65	57.82	B	61.41 Eutrophic
Summer Station 2	62.95	57.02	60	59.98 Eutrophic
Fall Station 1	58.72	43.67	B	51.19 Eutrophic
Fall Station 2	61.94	47.09	56.22	55.08 Eutrophic

65 TP exceeds SWQC threshold(See Datasheet for actual concentration)  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)

### Observations

Spring - geese, ducks, floatable trash along shoreline

Summer - geese, ducks, frogs, turtles, heron, filamentous algae(floating mats), duckweed, watermeal

Fall - watermeal, turtles

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Laurel Lake

County: CAMDEN

SiteID: NJW04459-161

Municipality: LAUREL SPRINGS BORO

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	0.9	0.5	0.9	9.81	8.94	79.5	6.59	0.165
2	1.7	1	1.2	9.78	8.97	79.8	6.66	0.163

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	0.9	0.5	0.9	22.44	4.8	55.9	6.89	0.175
2	1.8	1	1	21.58	4.28	49	6.62	0.166

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	0.9	0.5	0.9	20.66	6.41	71.2	6.49	0.155
2	1.8	1	1.3	19.39	5.87	63.6	6.28	0.153

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Laurel Lake

County: CAMDEN

SiteID: NJW04459-161

Municipality: LAUREL SPRINGS BORO

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.043	0.566	0.651	0.1550	8.6	35	47.8	4.42
2	0.049	0.682	0.588	0.5550	12.87	7	45.7	6.43

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.068	0.634	0.419	0.108	16.04	26	46.3	5.3
2	0.059	0.613	0.41	0.103	14.78	40	45.1	3.71

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.044	0.359	0.419	0.0915	3.79	28	43.6	4.63
2	0.055	0.425	0.408	0.11	5.37	19	42.7	5.69

Sample Device - Horizontal Polycarbonate Sampler

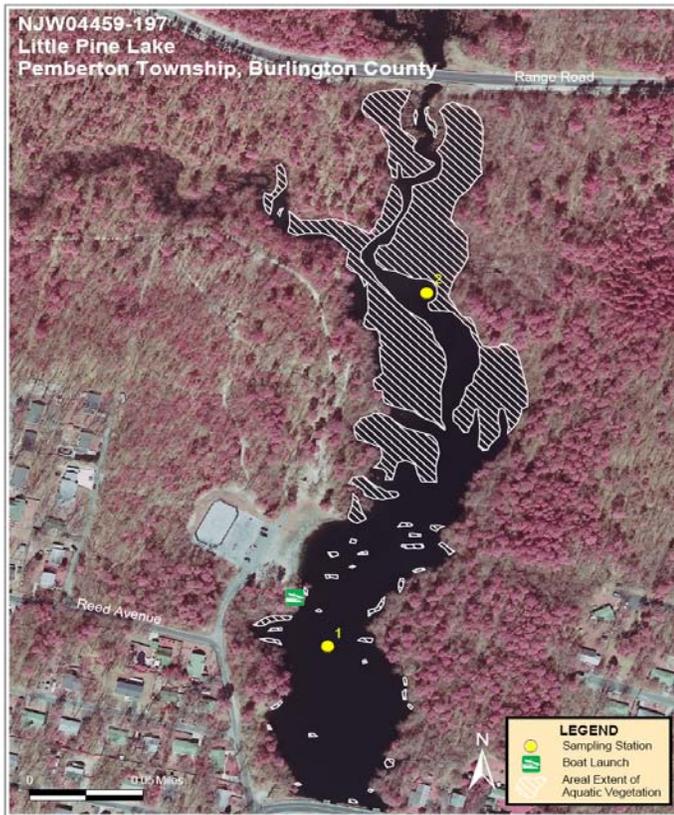
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Little Pine Lake  
**Site ID** NJW04459-197

**County** Burlington  
**Municipality** Pemberton Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	42.21	42.04	B	42.12 Mesotrophic
Spring Station 2	41.14	42.28	B	41.71 Mesotrophic
Summer Station 1	46.61	53.44	57.37	52.47 Eutrophic
Summer Station 2	48.72	48.16	57.37	51.41 Eutrophic
Fall Station 1	ND	54.99	B	54.99 Eutrophic
Fall Station 2	41.14	45.74	B	43.44 Mesotrophic

ND - TP concentration below detection limit

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

### Observations

Spring - geese, ducks, heron, cedar water

Summer - deer, ducks

Fall - hawks, ducks

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Little Pine Lake

County: BURLINGTON

SiteID: NJW04459-197

Municipality: PEMBERTON TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.4	0.7	1.4	10.38	8.58	76.4	5.82	0.075
2	1.9	1	1.9	9.37	8.05	70	5.76	0.068

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.6	1	1.2	19.03	1.41	15.4	5.98	0.079
2	1.6	1	1.2	19.48	3.02	33.1	5.89	0.062

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.4	0.7	1.4	20.78	5.33	59.4	6.17	0.095
2	1.9	1	1.9	19.14	4.58	49.4	5.94	0.11

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Little Pine Lake

County: BURLINGTON

SiteID: NJW04459-197

Municipality: PEMBERTON TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.014	0.358	0.0293	0.00778	3.21	7	19.9	1.97
2	0.013	0.365	0.0289	0.00778	3.29	9	20.1	2.07

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.019	0.65	0.021	0.0302	10.26	28	20	3.1
2	0.022	0.648	0.0272	0.0492	5.99	19	19.4	3.54

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.243	0.0270	0.0221	12.01	12	27.6	2.21
2	0.013	0.286	0.0943	0.0422	4.68	20	29.7	2.28

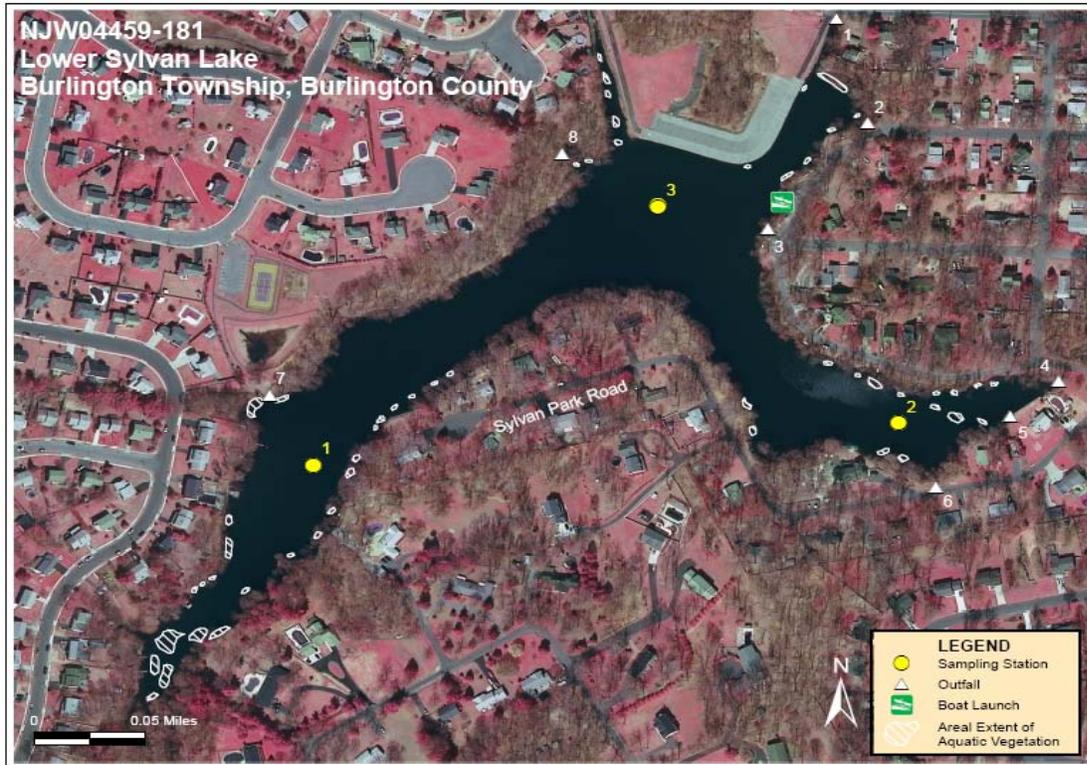
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Lower Sylvan Lake      **County** Burlington  
**Site ID** NJW04459-181      **Municipality** Burlington Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	50.57	63.02	54.16	55.92 Eutrophic
Spring Station 2	49.98	62.88	55.15	56.00 Eutrophic
Spring Station 3	49.98	63.13	56.22	56.44 Eutrophic
Summer Station 1	55.42	67.05	61.52	61.33 Eutrophic
Summer Station 2	49.36	64.57	60	57.98 Eutrophic
Summer Station 3	55.82	67.06	48.64	57.17 Eutrophic
Fall Station 1	71.12	66.34	63.22	66.89 Eutrophic
Fall Station 2	65.62	73.45	58.63	65.90 Eutrophic
Fall Station 3	68.88	71.8	58.63	66.43 Eutrophic

71.12 TP exceeds SWQC threshold(See Datasheet for actual concentration)

## Observations

Summer - geese (white), ducks, turtles, SAV, filamentous algae, bright green algae globules

Fall - ducks, kingfisher, heron, algae bloom

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Lower Sylvan Lake

County: BURLINGTON

SiteID: NJW04459-181

Municipality: BURLINGTON TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.2	1	1.5	10.45	11.05	98.5	6.27	0.301
1	3.2	2	1.5	10.31	11.05	98.2	6.53	0.301
1	3.2	3	1.5	10.07	8.9	78.7	6.57	0.302
2	2.9	1	1.4	11.5	11.11	101.5	6.93	0.306
2	2.9	2	1.4	11.1	11.08	100.3	6.99	0.306
3	4.9	1	1.3	10.8	10.95	98.5	6.93	0.306
3	4.9	2	1.3	10.39	10.66	94.9	6.97	0.305
3	4.9	3	1.3	10.14	9.46	84	6.95	0.307
3	4.9	4	1.3	8.88	4.57	39.3	6.83	0.33

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.2	1	0.9	24.48	8.1	98.5	7.56	0.221
1	3.2	2	0.9	19.5	0.86	9.8	7.11	0.229
1	3.2	3	0.9	13.09	0.12	1.2	6.9	0.309
2	2.8	1	1	26.11	9.65	120.8	7.18	0.21
2	2.8	2	1	19.91	0.84	9.5	6.9	0.226
2	2.8	2.5	1	16.23	0.7	7.3	6.75	0.254
3	4.9	1	2.2	24.23	10.53	127.4	8.26	0.211
3	4.9	2	2.2	19.34	1.13	12.5	7.54	0.229
3	4.9	3	2.2	14.1	0.22	2.1	7.23	0.271
3	4.9	4	2.2	10.65	0.16	1.5	7.05	0.349

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.2	1	0.8	20.28	6.21	68.6	6.88	0.205
1	3.2	2	0.8	20.15	4.32	47.6	6.82	0.207
1	3.2	3	0.8	18.96	0.18	1.9	6.58	0.224
2	2.9	1	1.1	19.93	3.49	38.2	6.8	0.202
2	2.9	2	1.1	19.84	3.72	40.7	6.75	0.204
3	4.8	1	1.1	19.94	4.7	51.5	6.85	0.202
3	4.8	2	1.1	19.86	2.75	30.1	6.78	0.2
3	4.8	3	1.1	18.53	0.14	1.5	6.56	0.251
3	4.8	4	1.1	14.58	0.09	0.9	6.51	513
3	4.8	4.5	1.1	12.53	0.08	0.7	6.59	0.653

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Lower Sylvan Lake  
**SiteID:** NJW04459-181

**County:** BURLINGTON  
**Municipality:** BURLINGTON TWP

## Lake Profile Raw Data

**Season:** Spring

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	0.025	0.731	0.423	0.0244	27.25	32	59.0	3.85
2	0.024	0.685	0.427	0.00965	26.85	29	60.1	3.33
3	0.024	0.751	0.437	0.0145	27.54	14	23.3	3.48

**Season:** Summer

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	0.035	0.894	0.164	0.0163	41.07	58	57.5	3.4
1A	0.116	1.52	0.0336	0.0368	135.4	60	63.1	18.2
2	0.023	0.934	0.128	0.0078	31.92	49	56.9	2.98
2A	0.107	1.7	0.0238	0.0343	161.79	32	61.5	24.7
3	0.036	0.845	0.144	0.0297	41.13	35	56.6	3.8
3A	0.12	2.24	0.0244	0.933	98.14	40	63	13.7

**Season:** Fall

<i>Station</i>	<i>Tot Phos</i> (mg/L)	<i>TKN</i> (mg/L)	<i>Nitrite-Nitrate</i> (mg/L)	<i>Ammonia-N</i> (mg/L)	<i>Chl a</i> (ug/L)	<i>Alk</i> (ppm)	<i>Hard</i> (ppm)	<i>Turbidity</i> (NTU)
1	0.104	1.44	0.0886	0.148	38.2	35	54.1	14.5
2	0.071	0.954	0.0646	0.292	78.91	30	48.1	8.07
3	0.089	0.954	0.0590	0.169	66.65	25	47.6	11.8
3A	0.869	7.29	0.0185	6.42	45.12	58	69.1	8.75

*Sample Device - Horizontal Polycarbonate Sampler*

*"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.*

*-A blank parameter result means the parameter could not be analyzed due to laboratory error.*

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Lummis Mill Pond      **County** Cumberland  
**Site ID** NJW04459-173      **Municipality** Lawrence Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	60.85	59.71	57.37	59.31 Eutrophic
Summer Station 1	61.94	73.14	63.22	66.10 Eutrophic
Fall Station 1	68.04	74.6	65.14	69.26 Eutrophic

  TP exceeds SWQC threshold(See Datasheet for actual concentration)

## Observations

Spring - geese, swan, kingfisher, cedar brown water

Summer - geese, swan, duckweed, algae, lillipads, turtles, fish

Fall - windy

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Lummis Mill Pond

County: CUMBERLAND

SiteID: NJW04459-173

Municipality: LAWRENCE TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.2	12.99	9.95	96.1	5.97	0.043

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.2	0.6	0.8	26.21	10.26	128.7	8.76	0.039

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.2	0.6	0.7	21.17	9.47	105.1	5.82	0.039

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Lummis Mill Pond

County: CUMBERLAND

SiteID: NJW04459-173

Municipality: LAWRENCE TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.051	0.432	0.0747	0.0177	19.44	17	11.4	4.59

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.055	0.947	0.0063	0.0816	76.46	12	10.8	14.3

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.084	0.892	0.0063	0.031	88.73	8.0	11.2	13.6

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Mount Hope Pond      **County** Morris  
**Site ID** NJW04459-198      **Municipality** Rockaway Township



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	48.05	42.58	48	46.21 Mesotrophic
Summer Station 1	44.13	48.58	49.31	47.64 Mesotrophic
Fall Station 1	59.97	65.35	57.37	60.90 Eutrophic

**Observations**

Summer - cormorant

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Mount Hope Pond

County: MORRIS

SiteID: NJW04459-198

Municipality: ROCKAWAY TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.2	1	2.3	10.96	9.63	90.1	7.34	0.153
1	4.2	2	2.3	10.93	9.66	90.4	7.34	0.153
1	4.2	3	2.3	10.9	9.65	90.2	7.32	0.153
1	4.2	4	2.3	10.9	8.9	83.2	7.27	0.153

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.1	1	2.1	24.64	7.88	97.8	6.68	0.146
1	4.1	2	2.1	23.93	7.78	95.3	6.74	0.146
1	4.1	3	2.1	23.44	6.55	79.5	6.62	0.147
1	4.1	4	2.1	21.72	0.3	3.4	6.19	0.218

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	4.0	1	1.2	18.68	6.02	67.4	7.35	0.128
1	4.0	2	1.2	18.61	6.23	69.6	7.26	0.128
1	4.0	3	1.2	18.57	6.35	71.1	7.21	0.128

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Mount Hope Pond

County: MORRIS

SiteID: NJW04459-198

Municipality: ROCKAWAY TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.021	0.297	0.0101	0.00778	3.39	14.00	22.00	1.73

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.016	0.383	0.0063	0.0105	6.25	20	22.6	2.24

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.048	0.479	0.012	0.0202	34.56	34	22.7	4.58

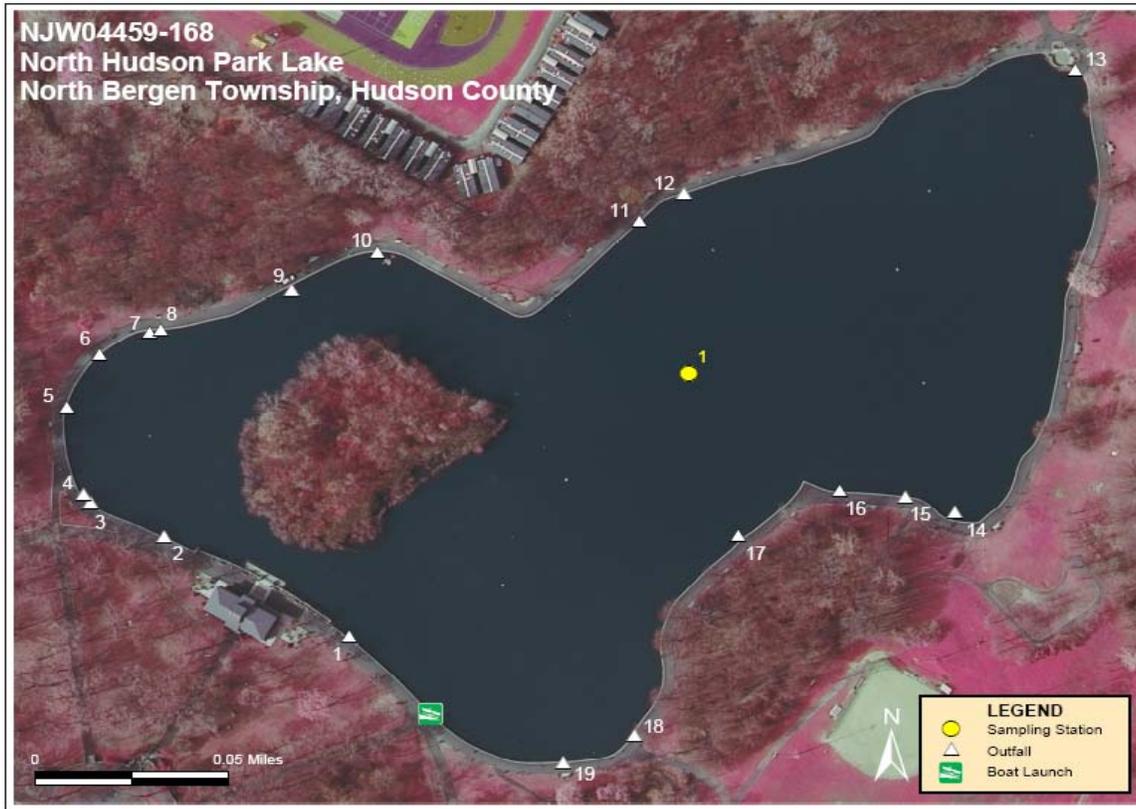
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** North Hudson Park Lake      **County** Hudson  
**Site ID** NJW04459-168      **Municipality** North Bergen Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	70.56	68.5	67.36	68.80 Eutrophic
Summer Station 1	71.53	65.12	NR	68.33 Eutrophic
Fall Station 1	70.84	68.3	65.14	68.09 Eutrophic

70.56 TP exceeds SWQC threshold(See Datasheet for actual concentration)  
 NR - Not Recorded

## Observations

Spring - geese, cormorants  
 Summer - geese, ducks, white geese, turtles, snails  
 Fall - high geese and turtle population, ducks, night heron

# AMBIENT LAKE MONITORING NETWORK

Lake Name: North Hudson Park Lake

County: HUDSON

SiteID: NJW04459-168

Municipality: NORTH BERGEN TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.8	1	0.6	12.3	8.97	85.2	6.86	1.146

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1		23.81	8.82	104	8.18	0.925

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	0.7	18.52	7.15	77.9	7.9	0.772

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: North Hudson Park Lake

County: HUDSON

SiteID: NJW04459-168

Municipality: NORTH BERGEN TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.1	1.40	0.168	0.0733	47.61	75	239	14.2

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.107	1.13	0.0063	0.031	33.74	95	194	15.3

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.102	1.12	0.0063	0.0265	46.67	70	151	15.8

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Outdoor World Lake  
**Site ID** NJW04459-284

**County** Cape May  
**Municipality** Dennis Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	41.14	29.35	B	35.24 Oligotrophic
Summer Station 1	ND	43.33	B	43.33 Mesotrophic
Fall Station 1	44.13	59.34	B	51.74 Eutrophic

ND - TP concentration below detection limit

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Summer - seagulls, fish, aerator

Fall - aeration in use near dock

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Outdoor World Lake

County: CAPE MAY

SiteID: NJW04459-284

Municipality: DENNIS TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.3	0.6	1.3	10.28	10.72	94	5.4	0.073

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.8	1	1.8	24.42	7.51	90.2	6.12	0.057

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.7	1	1.7	23.93	6.79	79.7	5.8	0.049

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Outdoor World Lake

County: CAPE MAY

SiteID: NJW04459-284

Municipality: DENNIS TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.013	0.256	0.00325	0.00778	0.88	45	13.3	0.48

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.399	0.0063	0.0078	3.66	20	10.6	0.69

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.016	0.560	0.0120	0.01	18.72	6.0	9.76	2.01

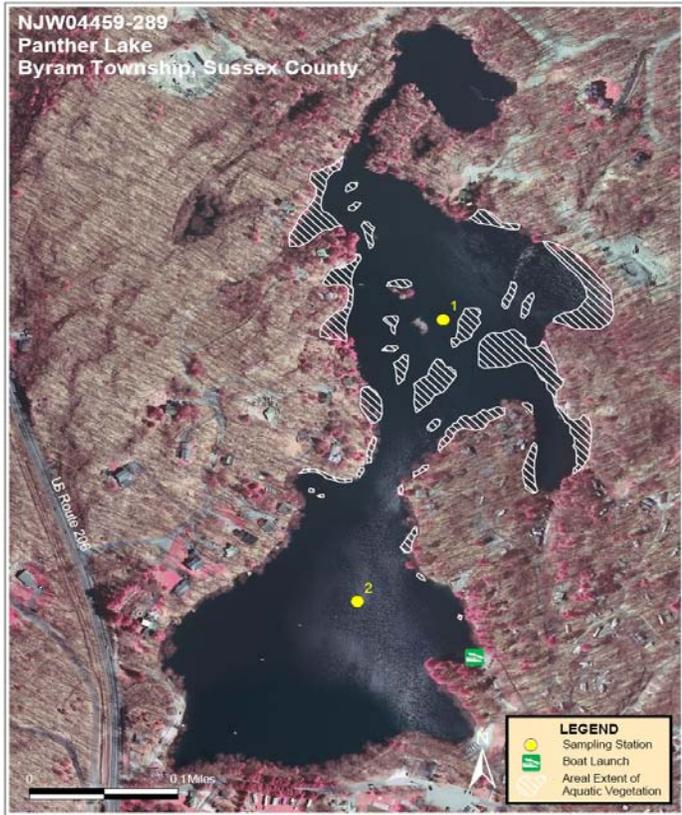
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Panther Lake                      **County** Sussex  
**Site ID** NJW04459-289                      **Municipality** Byram Township



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	53.2	55.52	O	54.36 Eutrophic
Spring Station 2	49.36	51.27	48	49.54 Mesotrophic
Summer Station 1	ND	46.64	49.31	47.97 Mesotrophic
Summer Station 2	37.35	45.44	42.37	41.72 Mesotrophic
Fall Station 1	56.6	52.54	48	52.38 Eutrophic
Fall Station 2	55	53.1	46.23	51.44 Eutrophic

ND - TP concentration below detection limit  
 O - Obscured By Plants

**Observations**

Spring - SAV, lillipads, filamentous algae at launch point  
           treated by Aquatic Technologies on 5/8/2009

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Panther Lake

**County:** SUSSEX

**SiteID:** NJW04459-289

**Municipality:** BYRAM TWP

## Surface to Bottom Profile

**Season:** Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.1	1	1.7	16.51	7.79	80.8	7.78	0.255
1	2.1	2	1.7	16.28	7.51	77.5	8.05	0.255
2	4.7	1	2.3	16.85	7.59	79.3	8.3	0.263
2	4.7	2	2.3	16.15	7.27	74.8	8.29	0.264
2	4.7	3	2.3	12.58	6.56	62.5	8.14	0.283
2	4.7	4	2.3	10.37	4.81	43.2	7.98	0.298

**Season:** Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.2	1	2.1	28.39	6.22	82.4	7.36	0.266
2	4.1	1	3.4	28.23	7.53	99.4	7.83	0.268
2	4.1	2	3.4	27.24	7.45	97.1	7.86	0.268
2	4.1	3	3.4	21.49	7.62	88.8	7.73	0.333
2	4.1	3.5	3.4	18.32	8.05	88.1	7.64	0.353
2	4.1	4	3.4	15.65	5.51	57	7.66	0.366

**Season:** Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.3	1	2.3	10.23	9.21	83.9	7.56	0.295
1	2.3	2	2.3	10.02	3.92	35.6	7.26	0.303
2	5.2	1	2.6	10.46	7.41	67.9	7.6	0.309
2	5.2	2	2.6	10.21	6.66	60.7	7.66	0.309
2	5.2	3	2.6	10.06	6.49	58.9	7.68	0.308
2	5.2	4	2.6	10.04	6.23	56.5	7.68	0.309
2	5.2	5	2.6	10.21	0.57	5.3	7.31	0.422

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Panther Lake

County: SUSSEX

SiteID: NJW04459-289

Municipality: BYRAM TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.03	0.642	0.0063	0.0078	12.68	69	134	2.15
2	0.023	0.473	0.0063	0.00778	8.22	135	141	2.01
2A	0.034	0.566	0.0063	0.0078	20.93	39	156	3.68

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.455	0.00630	0.00778	5.13	110	141	1.28
2	0.01	0.412	0.00630	0.00778	4.54	75	141	1.12
2A	ND	0.395	0.00630	0.00778	7.44	105	161	1.5

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.038	0.517	0.00790	0.0645	9.36	130	167	1.35
2	0.034	0.575	0.0134	0.124	9.91	140	172	1.62

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Rainbow Lake  
**Site ID** NJW04459-164

**County** Morris  
**Municipality** Parsippany-Troy Hills Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	60.56	59.54	54.16	58.09 Eutrophic
Summer Station 1	62.2	63.3	65.14	63.54 Eutrophic
Fall Station 1	63.19	65.66	56.22	61.69 Eutrophic

62.2 TP exceeds SWQC threshold(See Datasheet for actual concentration)

## Observations

Spring - cormorant

Fall - treated by Aquatic Analysts with copper sulfate on 8/12/2009

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Rainbow Lakes  
SiteID: NJW04459-164

County: MORRIS  
Municipality: PARSIPPANY-TROY HILLS  
TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3	1	1.5	20.78	8.46	96.4	7.88	0.752
1	3	2	1.5	18.07	3	32.4	7.62	0.75
1	3	2.5	1.5	16.07	0.22	2.2	7.01	0.758

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.1	1	0.7	26.44	7.76	98.4	7.62	0.627
1	3.1	2	0.7	25.48	1.69	21	7.3	0.634

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.1	1	1.3	11.32	8.71	80.8	7.47	0.639
1	3.1	2	1.3	10.79	6.03	55.2	7.37	0.639
1	3.1	3	1.3	10.93	0.32	3	6.98	0.637

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Rainbow Lakes

County: MORRIS

SiteID: NJW04459-164

Municipality: PARSIPPANY-TROY HILLS  
TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.05	0.862	0.006	0.17	19.11	85	82.9	3.25
1A	0.114	1.19	0.006	0.051	55.95	45	83.6	6.77

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.056	0.730	0.00630	0.00778	28.03	40	67.9	2.76

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.06	0.782	0.00630	0.0208	35.64	49	70.4	3.5

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

Lake Name Rhodo Lake  
 Site ID NJW04459-179

County Salem  
 Municipality Quinton Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	49.36	45.72	B	47.54 Mesotrophic
Spring Station 2	45.83	49.33	48.64	47.93 Mesotrophic
Summer Station 1	57.5	62.29	56.22	58.74 Eutrophic
Summer Station 2	54.57	59.6	52.35	55.51 Eutrophic
Fall Station 1	65	70.01	57.37	64.12 Eutrophic
Fall Station 2	64.78	69.94	61.52	65.41 Eutrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - fishermen present (bluegill, bass) ducks, plant nurseries to east and west  
 Summer - SAV, heron, filamentous algae, slight surface scum around outlet  
 Fall - algae mats, surface scum, duckweed

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Rhodo Lake

County: SALEM

SiteID: NJW04459-179

Municipality: QUINTON TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.5	8.17	10.79	90.5	6.24	0.131
2	2.7	1	2.2	8.59	10.86	92	5.69	0.124
2	2.7	2	2.2	8.44	10.38	87.6	5.77	0.124

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.4	0.7	1.3	20.81	8.45	93.9	6.58	0.11
2	2.5	1	1.7	19.92	5.14	56.1	6.52	0.113
2	2.5	2	1.7	16.42	0.49	5	6.34	0.108

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.2	20.93	7.14	79.1	6.5	0.087
2	2.4	1	0.9	21.91	4.67	52.8	6.49	0.087
2	2.4	2	0.9	21.22	4.34	48.4	6.34	0.097

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Rhodo Lake

County: SALEM

SiteID: NJW04459-179

Municipality: QUINTON TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.023	0.384	2.12	0.0148	4.67	39	39.1	2.51
2	0.018	0.322	2.04	0.0123	6.75	12	38.9	2.59

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.041	0.736	1.11	0.009	25.29	22	38.4	3.8
2	0.033	0.776	1.24	0.030	19.23	19	39.6	3.10
2A	0.041	0.636	1.03	0.083	14.95	20	39.2	4.74

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.068	0.791	0.675	0.0456	55.53	30	33.1	6.23
2	0.067	0.860	0.585	0.0638	55.17	41	30.8	8.44

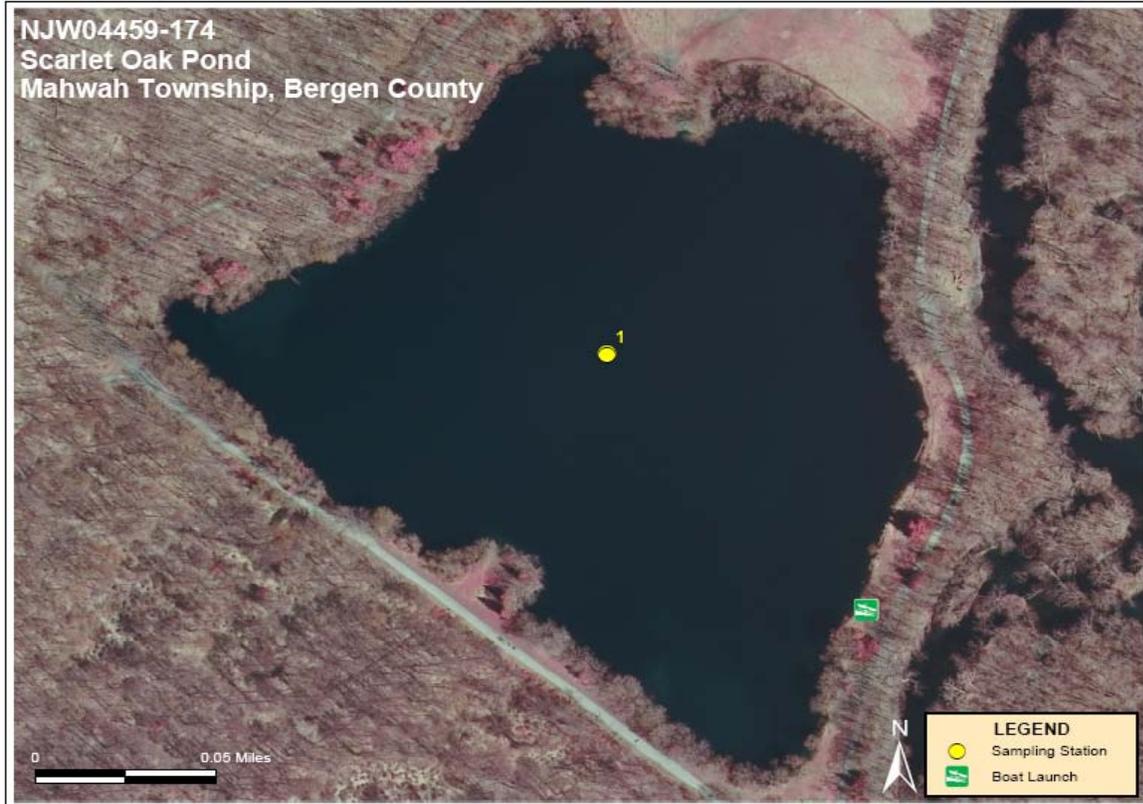
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Scarlet Oak Pond      **County** Bergen  
**Site ID** NJW04459-174      **Municipality** Mahwah Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	48.05	49.87	49.31	49.07 Mesotrophic
Summer Station 1	ND	48.67	43.7	46.18 Mesotrophic
Fall Station 1	49.36	51.14	52.35	51.29 Eutrophic

ND - TP concentration below detection limit

## Observations

Spring - swans, SAV  
 Summer - filamentous algae, dense SAV  
 Fall - SAV throughout

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Scarlet Oak Pond

County: BERGEN

SiteID: NJW04459-174

Municipality: MAHWAH TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	9.1	1	2.1	18.34	8.75	93.9	7.98	0.097
1	9.1	2	2.1	17.48	8.83	93	8.18	0.098
1	9.1	3	2.1	14.66	9.7	96.4	7.97	0.1
1	9.1	4	2.1	11.52	11.29	104.6	8.06	0.104
1	9.1	5	2.1	7.94	11.45	97.3	7.89	0.11
1	9.1	6	2.1	6.25	2.94	23.9	7.63	0.112
1	9.1	7	2.1	5.45	0.66	5.2	7.25	0.117
1	9.1	8	2.1	5.1	0.45	3.5	7.08	0.12
1	9.1	9	2.1	5.02	0.31	2.4	6.92	0.122

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	9.4	1	3.1	25.1	8.07	99.1	6.93	0.084
1	9.4	2	3.1	24.55	6.21	75.4	6.9	0.087
1	9.4	3	3.1	22.46	10.1	117.8	6.99	0.091
1	9.4	4	3.1	17.28	6.25	65.6	6.92	0.105
1	9.4	5	3.1	11.89	0.95	8.9	6.84	0.11
1	9.4	6	3.1	8.14	0.55	4.7	6.75	0.126
1	9.4	7	3.1	6.53	0.34	2.8	6.7	0.129
1	9.4	8	3.1	5.78	0.25	2	6.64	0.133
1	9.4	9	3.1	5.43	0.21	1.7	6.61	0.138

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	6.8	1	1.7	10.78	7.51	67.5	7.56	0.113
1	6.8	2	1.7	10.7	7.14	64.1	7.52	0.113
1	6.8	3	1.7	10.67	7.03	63.1	7.47	0.113
1	6.8	4	1.7	10.64	7.02	62.9	7.46	0.114
1	6.8	5	1.7	10.56	7.07	63.3	7.45	0.113
1	6.8	6	1.7	9.97	5.6	48.5	7.39	0.122

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Scarlet Oak Pond

County: BERGEN

SiteID: NJW04459-174

Municipality: MAHWAH TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.021	0.398	0.0063	0.0109	7.13	35	27.8	2.05
1A	0.033	0.439	0.0063	0.114	6.99	29	30.8	1.81

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.466	0.00630	0.00778	6.31	15	25.1	1.47
1A	0.026	0.762	0.00630	0.254	22.35	30	32.9	3.06

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.023	0.283	0.00630	0.0190	8.99	22	29.5	1.78

Sample Device - Horizontal Polycarbonate Sampler

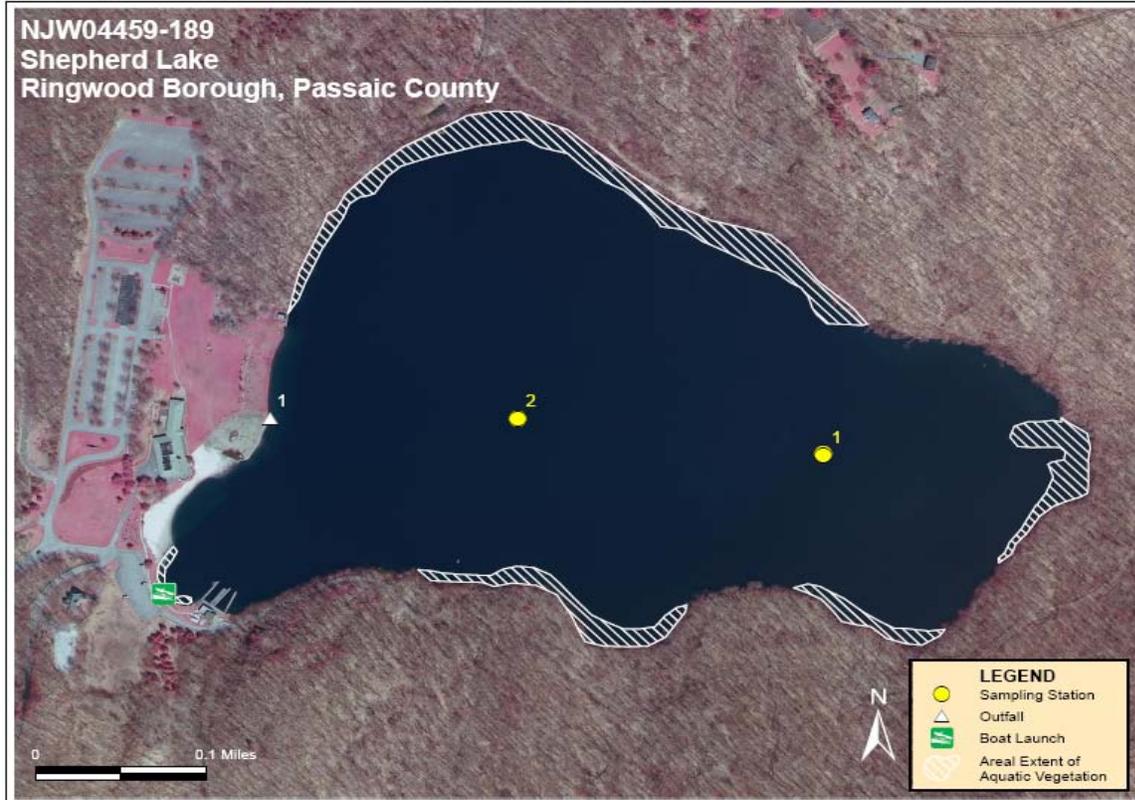
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Shepherd Lake  
**Site ID** NJW04459-189

**County** Passaic  
**Municipality** Ringwood Borough



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	42.21	47.54	O	44.88 Mesotrophic
Spring Station 2	43.2	48.42	45.69	45.77 Mesotrophic
Summer Station 1	ND	50.78	44.66	47.72 Mesotrophic
Summer Station 2	ND	48.13	40.76	44.45 Mesotrophic
Fall Station 1	54.13	56.01	O	55.07 Eutrophic
Fall Station 2	45	55.27	45.69	48.66 Mesotrophic

ND - TP concentration below detection limit  
 O - Obscured By Plants

## Observations

Spring - SAV, geese

Summer - geese

Fall - algae bloom in water column and clumped on surface near station 2

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Shepherd Lake

County: PASSAIC

SiteID: NJW04459-189

Municipality: RINGWOOD BORO

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.8	1	2.4	17.64	8.5	89.9	7.19	0.088
1	2.8	2	2.4	16.96	8.14	84.8	7.18	0.088
2	9.3	1	2.7	17.64	8.16	86.2	7.22	0.089
2	9.3	2	2.7	17.09	8.23	86	7.27	0.089
2	9.3	3	2.7	16.54	7.94	82	7.26	0.089
2	9.3	4	2.7	12.53	9.22	87.2	7.35	0.088
2	9.3	5	2.7	10.71	6.4	58.1	7.24	0.089
2	9.3	6	2.7	9.2	5.74	50.2	7.16	0.088
2	9.3	7	2.7	8.53	4.19	36.1	7.03	0.089
2	9.3	8	2.7	7.75	0.9	7.5	6.87	0.091
2	9.3	9	2.7	7.17	0.36	3	6.65	0.104

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.9	1	2.9	26.66	7.3	93.3	7.2	0.084
1	2.9	2	2.9	25.86	6.12	77.1	7.1	0.084
2	9.2	1	3.8	26.77	7.27	92.9	7.18	0.084
2	9.2	2	3.8	26.03	7.37	93	7.25	0.085
2	9.2	3	3.8	25.35	6.86	85.5	7.21	0.085
2	9.2	4	3.8	23.4	5.45	65.6	6.99	0.087
2	9.2	5	3.8	18.44	6.19	67.5	6.98	0.086
2	9.2	6	3.8	13.81	3.88	38.4	6.91	0.086
2	9.2	7	3.8	10.8	1.5	13.8	6.75	0.086
2	9.2	8	3.8	8.93	0.36	3.1	6.56	0.095
2	9.2	9	3.8	8.01	0.21	1.7	6.4	0.116

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.7	1	2.5*	11.66	7.01	65.4	7.4	0.097
1	2.7	2	2.5*	11.47	6.84	63.6	7.33	0.097
2	9.2	1	2.7	11.85	6.85	64.2	7.3	0.097
2	9.2	2	2.7	11.74	6.68	62.4	7.26	0.096
2	9.2	3	2.7	11.72	6.61	61.8	7.24	0.096
2	9.2	4	2.7	11.71	6.59	61.6	7.21	0.097
2	9.2	5	2.7	11.7	6.54	61.2	7.2	0.097
2	9.2	6	2.7	11.67	6.31	59	7.16	0.097

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Shepherd Lake

**County:** PASSAIC

**SiteID:** NJW04459-189

**Municipality:** RINGWOOD BORO

## Surface to Bottom Profile

2	9.2	7	2.7	11.59	6.28	58.5	7.12	0.097
2	9.2	8	2.7	11.09	4.16	38.4	6.99	0.102
2	9.2	9	2.7	8.77	0.4	3.5	6.66	0.153

*-Secchi measurements are not recorded for outlets.*

*-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.*

*-A blank parameter result means the parameter could not be measured due to a meter malfunction.*

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Shepherd Lake

County: PASSAIC

SiteID: NJW04459-189

Municipality: RINGWOOD BORO

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.014	0.362	0.0063	0.0078	5.62	30	27	1.2
2	0.015	0.27	0.0063	0.0078	6.15	21	27.8	1.2
2A	0.038	0.387	0.0063	0.0078	8.85	20	28	2.02

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.400	0.00630	0.00778	7.82	18	26.9	0.89
2	ND	0.361	0.00630	0.00778	5.97	25	27.5	0.97
2A	0.042	0.585	0.00630	0.00778	35.83	27	29.6	4.44

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.032	0.403	0.00630	0.0220	13.33	21	29.6	1.8
2	0.017	0.334	0.00630	0.0208	12.37	55	30.2	1.64

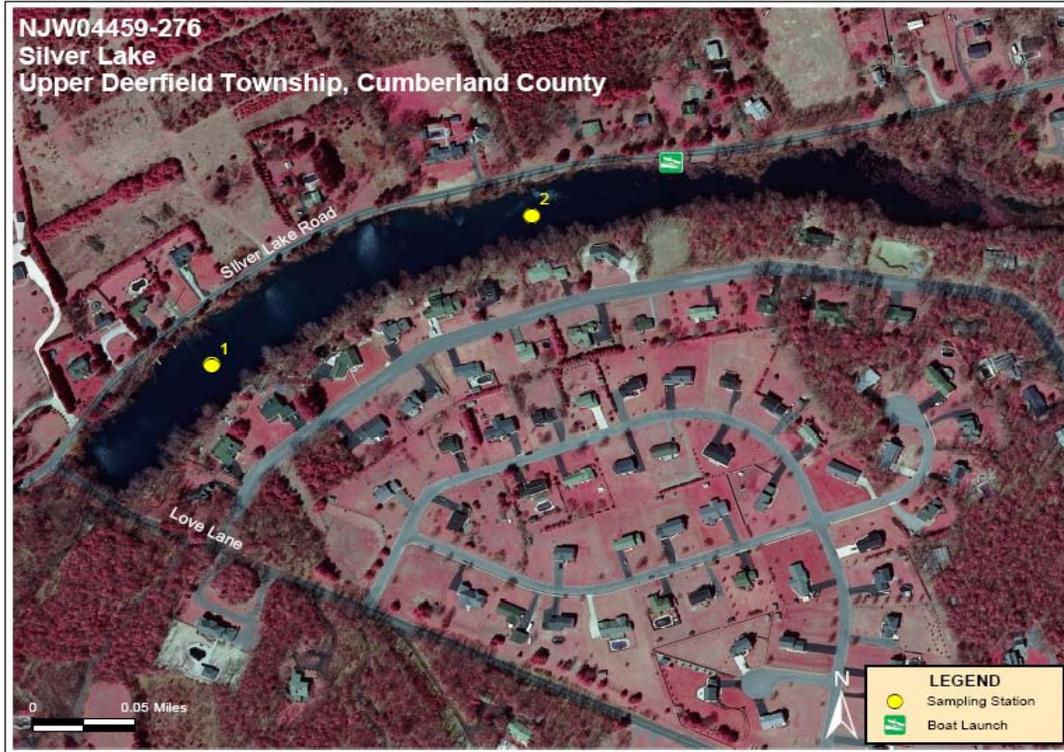
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

Lake Name Silver Lake County Cumberland  
 Site ID NJW04459-276 Municipality Upper Deerfield Township



Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	46.61	51.45	50.75	49.60 Mesotrophic
Spring Station 2	52.71	51.23	B	51.97 Eutrophic
Summer Station 1	56.98	59.09	51.53	55.87 Eutrophic
Summer Station 2	57.7	58.55	B	58.12 Eutrophic
Fall Station 1	75.61	66.76	79.98	74.12 Hyper-eutrophic
Fall Station 2	73.77	70.58	73.2	72.52 Hyper-eutrophic

75.61 TP exceeds SWQC threshold(See Datasheet for actual concentration)  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)

**Observations**

Spring - ducks, heron

Summer - geese, ducks, swans, turtles, floating filamentous algae, watermeal mostly near dam

Fall - geese, ducks, heron, swan, turtles, watermeal, extensive algae bloom

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Silver Lake

County: CUMBERLAND

SiteID: NJW04459-276

Municipality: UPPER DEERFIELD TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.3	1	1.9	8.75	10.02	85.2	5.5	0.177
1	2.3	2	1.9	8.7	10.03	85.3	5.67	0.177
2	1.5	1	1.5	8.55	10.12	85.6	5.47	0.181

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.3	1	1.8	23.88	8.9	105.6	8.31	0.156
1	2.3	2	1.8	20.62	6.28	69.8	7.84	0.139
2	1.5	1	1.5	24	10.91	130.4	8.8	0.155

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	2.7	1	0.25	22.6	4.09	46.9	6.53	0.076
1	2.7	2	0.25	22.53	4.14	47.4	6.43	0.078
2	1.8	1	0.4	22.59	5.92	67.7	6.45	0.093

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Silver Lake

County: CUMBERLAND

SiteID: NJW04459-276

Municipality: UPPER DEERFIELD TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.019	0.469	2.89	0.0121	8.38	9	46.8	2.41
2	0.029	0.426	3.08	0.0205	8.19	5	48.0	2.21

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.039	0.692	1.08	0.014	18.25	10	47	2.28
2	0.041	0.672	1.07	0.014	17.27	31	46.9	2.87

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.142	1.08	0.307	0.132	39.88	39	25.9	49.2
2	0.125	1.23	0.228	0.062	58.86	45	33.3	35.0

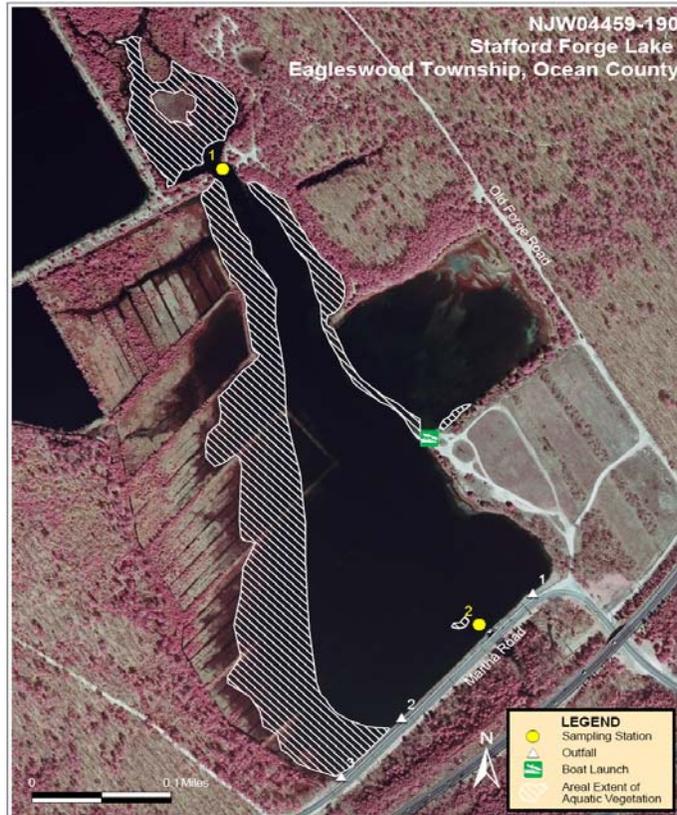
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Stafford Forge Lake      **County** Ocean  
**Site ID** NJW04459-190      **Municipality** Eagleswood Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	41.14	26.96	B	34.05 Oligotrophic
Spring Station 2	ND	31.26	B	31.26 Oligotrophic
Summer Station 1	ND	30.98	B	30.98 Oligotrophic
Summer Station 2	47.35	36.03	B	41.69 Mesotrophic
Fall Station 1	ND	29.99	B	29.99 Oligotrophic
Fall Station 2	ND	35.39	O	35.39 Oligotrophic

ND - TP concentration below detection limit  
 B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
 O - Obscured By Plants

## Observations

Spring - ducks, evidence of beaver  
 Summer - egret, swallows, tern, 3 stormwater conveyance "slides"  
                   on road along dam side of lake  
 Fall - egret

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Stafford Forge Lake

County: OCEAN

SiteID: NJW04459-190

Municipality: EAGLESWOOD TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.4	0.7	1.4	10.05	9.26	81.9	4.36	0.033
2	0.8	0.4	0.8	10.1	9.24	81.9	4.51	0.032

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.3	0.6	1.3	20.15	6.11	66.9	4.46	0.034
2	0.9	0.5	0.9	20.13	4.87	53.3	4.59	0.032

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.1	0.5	1.1	19.46	5.64	61.4	3.91	0.053
2	0.8	0.4	0.7	19.56	4.99	54.4	4.2	0.043

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Stafford Forge Lake

County: OCEAN

SiteID: NJW04459-190

Municipality: EAGLESWOOD TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.013	0.154	0.0103	0.0017	0.69	2	3.25	0.81
2	ND	0.189	0.00510	0.0017	1.07	1	3.39	0.3

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.349	0.006	0.013	1.04	1	3.23	0.9
2	0.02	0.351	0.006	0.008	1.74	3	3.52	0.93

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.377	0.0063	0.0504	0.94	1.0	5.16	1.04
2	ND	0.0953	0.0063	0.0212	1.63	1.0	4.91	0.71

Sample Device - Horizontal Polycarbonate Sampler

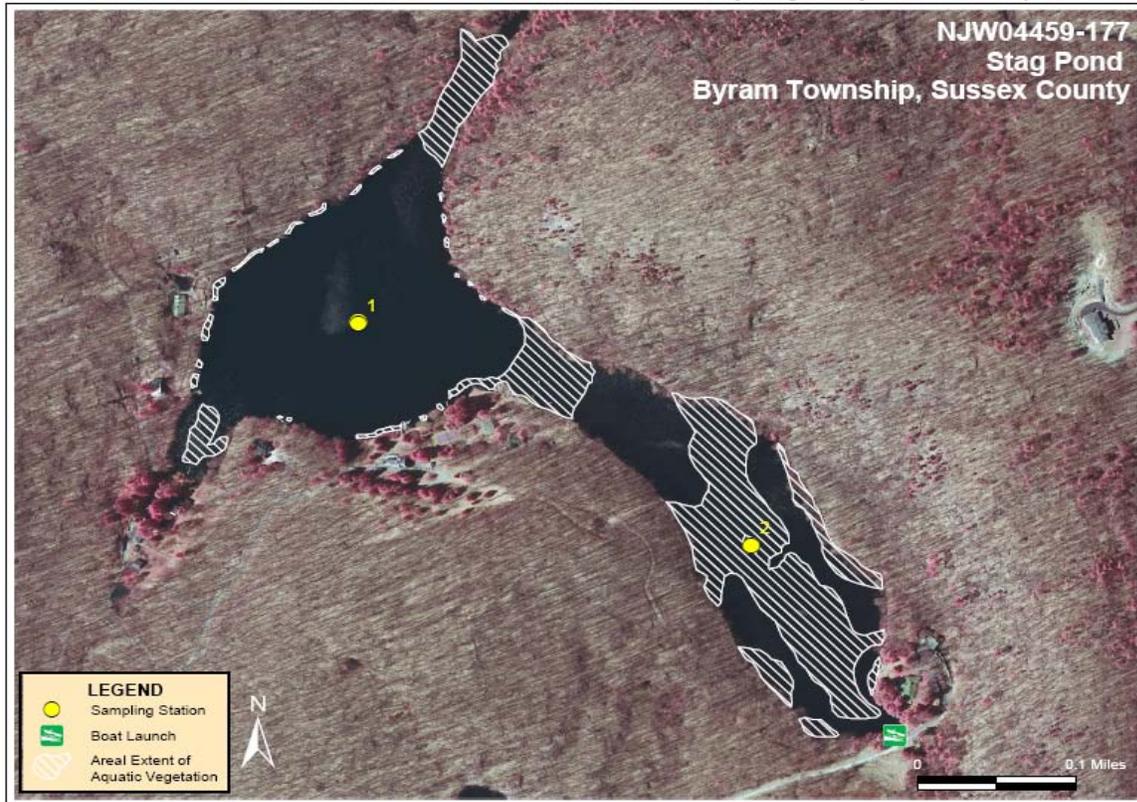
"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Stag Pond  
**Site ID** NJW04459-177

**County** Sussex  
**Municipality** Byram Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	52.2	49.38	40.02	47.20 Mesotrophic
Spring Station 2	58.39	46.58	B	52.48 Eutrophic
Summer Station 1	42.21	44.95	40.02	42.39 Mesotrophic
Summer Station 2	53.67	52.86	B	53.26 Eutrophic
Fall Station 1	59.04	65.55	51.53	58.71 Eutrophic
Fall Station 2	56.98	60.14	B	58.56 Eutrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - organisms in sample at station 1, algae, lillipads

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Stag Pond

**County:** SUSSEX

**SiteID:** NJW04459-177

**Municipality:** BYRAM TWP

## Surface to Bottom Profile

**Season:** Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	7.1	1	4	15.84	7.48	76.4	7.76	0.06
1	7.1	2	4	15.68	7.38	75.1	7.75	0.06
1	7.1	3	4	13.89	8.09	79.2	7.73	0.059
1	7.1	4	4	10.01	5.2	46.8	7.68	0.059
1	7.1	5	4	8.45	1.67	14.4	7.52	0.059
1	7.1	6	4	7.37	0.9	7.6	7.37	0.062
1	7.1	7	4	7.07	0.5	4.2	6.87	0.11
2	1.3	0.6	1.3	14.43	5.03	49.8	7.06	0.085

**Season:** Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	7.4	1	4.0	27.01	6.2	80.1	6.65	0.06
1	7.4	2	4.0	25.84	5.41	68.4	6.64	0.06
1	7.4	3	4.0	22.06	0.91	10.7	6.51	0.063
1	7.4	4	4.0	16.84	0.4	4.2	6.48	0.065
1	7.4	5	4.0	12.31	0.7	6.7	6.47	0.064
1	7.4	6	4.0	9.52	0.22	2	6.34	0.074
1	7.4	6.5	4.0	8.7	0.12	1	6.29	0.094
1	7.4	7	4.0	8.65	0.15	1.3	6.19	0.157
2	1.7	1	1.7	26.12	2.81	35.8	6.35	0.061

**Season:** Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	7.3	1	1.8	11.01	5.87	54.4	7.55	0.061
1	7.3	2	1.8	10.64	4.8	44.1	7.34	0.061
1	7.3	3	1.8	10.56	4.7	43.1	7.25	0.061
1	7.3	4	1.8	10.54	4.52	41.4	7.18	0.061
1	7.3	5	1.8	10.52	4.48	41.1	7.14	0.061
1	7.3	6	1.8	10.39	3.12	28.6	7.06	0.062
1	7.3	7	1.8	9.92	0.13	1.2	6.45	0.115
2	1.6	1	1.6	8.5	4.69	41	6.84	0.058

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Stag Pond

County: SUSSEX

SiteID: NJW04459-177

Municipality: BYRAM TWP

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.421	0.0063	0.0104	6.78	25	30.2	0.77
1A	0.036	0.323	0.0063	0.0137	12.69	15	30.2	0.98
2	0.043	0.514	0.0063	0.008	5.1	0.5	41	1.2

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.014	0.422	0.00630	0.00778	4.32	24	30.8	0.52
1A	0.118	1.30	0.00630	0.28	114.58	34	36.9	13.0
2	0.031	0.451	0.00944	0.00778	9.67	24	31.1	1.12

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.045	0.591	0.0063	0.017	35.24	25	33.3	1.8
2	0.039	0.447	0.0063	0.0166	20.31	22	29.1	1.44

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Lake Takanassee      **County** Monmouth  
**Site ID** NJW04459-279      **Municipality** Long Branch City



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	55.82	43.75	65.14	54.90 Eutrophic
Summer Station 1	58.39	75.19	O	66.79 Eutrophic
Fall Station 1	56.6	48.69	B	52.65 Eutrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)  
 O - Obscured By Plants

## Observations

Spring - geese, ducks, seagulls, cormorant, dead carp, fishermen  
 Summer - ducks, cormorant, swans

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Lake Takanassee

County: MONMOUTH

SiteID: NJW04459-279

Municipality: LONG BRANCH CITY

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.6	1	0.7	8.43	9.24	78.1	6.58	0.117

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1	22.99	9.23	108.2	6.62	0.171

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.5	18.97	9.72	103.3	6.38	0.167

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Lake Takanassee

County: MONMOUTH

SiteID: NJW04459-279

Municipality: LONG BRANCH CITY

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.036	0.459	0.322	0.0851	3.82	14	23.3	13.8

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.043	0.489	0.295	0.0154	94.16	29	46.6	6.03

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.038	0.150	0.510	0.0271	6.32	24	48.3	3.26

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Tamarack Lake      **County** Sussex  
**Site ID** NJW04459-192      **Municipality** Hardyston Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	45	50.06	45.69	46.92 Mesotrophic
Spring Station 2	52.2	52.02	47.38	50.54 Mesotrophic
Summer Station 1	ND	55.08	44.17	49.63 Mesotrophic
Summer Station 2	ND	50.29	46.23	48.26 Mesotrophic
Fall Station 1	56.22	65.58	52.35	58.05 Eutrophic
Fall Station 2	56.6	63.04	51.53	57.06 Eutrophic

ND - TP concentration below detection limit

## Observations

Spring - SAV in southern portion of lake, snails

Summer - ducks, geese

Fall - ducks, algae bloom

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Tamarack Lake

County: SUSSEX

SiteID: NJW04459-192

Municipality: HARDYSTON TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.7	1	2.7	16.67	8.4	88.4	7.45	0.277
1	3.7	2	2.7	16.44	8.25	86.4	7.55	0.278
1	3.7	3	2.7	16.2	7.8	81.3	7.53	0.277
2	2.9	1	2.4	16.7	9	94.8	7.87	0.277
2	2.9	2	2.4	16.54	8.93	93.7	7.99	0.278

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.8	1	3.0	25.52	8.08	102.2	7.77	0.274
1	3.8	2	3.0	24.46	6.45	80	7.72	0.272
1	3.8	3	3.0	23.34	0.95	11.5	7.33	0.274
1	3.8	3.5	3.0	21.69	0.11	1.3	6.89	0.326
2	3.0	1	2.6	25.6	8.37	106	7.89	0.273
2	3.0	2	2.6	24.73	7.17	89.3	7.83	0.274

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	3.4	1	1.7	16.05	8.73	93.3	7.67	0.325
1	3.4	2	1.7	15.94	8.7	92.8	7.68	0.326
1	3.4	3	1.7	15.73	8.2	87.1	7.66	0.325
2	2.7	1	1.8	15.83	8.55	90.9	7.72	0.326
2	2.7	2	1.8	15.7	8.2	87	7.68	0.326

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Tamarack Lake

County: SUSSEX

SiteID: NJW04459-192

Municipality: HARDYSTON TWP

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.017	0.308	0.0063	0.00778	7.27	39	61.8	1.38
2	0.028	0.410	0.0063	0.00778	8.88	68	62.7	1.7

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	.361	.0063	0.008	12.13	58	67	1.32
1A	0.028	.656	.0063	0.030	32.3	39	69	7.73
2	ND	.656	.0063	0.008	7.44	45	69.9	1.36

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.037	0.698	0.0586	0.134	35.35	60	76.7	4.02
2	0.038	0.551	0.0634	0.141	27.29	52	76.9	2.84

Sample Device - Horizontal Polycarbonate Sampler

"<" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Upper Greenwood Lake      **County** Passaic  
**Site ID** NJW04459-282      **Municipality** West Milford Township



## Carlson's Trophic Index (TSI)

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	52.2	57.49	B	54.85 Eutrophic
Spring Station 2	52.2	49.83	B	51.01 Eutrophic
Spring Station 3	48.05	47.59	B	47.82 Mesotrophic
Spring Station 4	47.35	49.04	B	48.19 Mesotrophic
Summer Station 1	54.13	62.62	55.15	57.30 Eutrophic
Summer Station 2	54.13	62.73	52.35	56.40 Eutrophic
Summer Station 3	52.71	63.8	54.16	56.89 Eutrophic
Summer Station 4	53.2	63.98	55.15	57.44 Eutrophic

B - Secchi visible to Lake bottom. (See Datasheet for total depth)

## Observations

Spring - filamentous algae, SAV

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Upper Greenwood Lake

**County:** PASSAIC

**SiteID:** NJW04459-282

**Municipality:** WEST MILFORD TWP

## Surface to Bottom Profile

**Season:** Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.5	18.66	7.28	81.2	7.48	0.3
2	2.7	1	2.7	20.07	6.62	76	7.51	0.31
2	2.7	2	2.7	19.53	6.66	75.6	7.51	0.307
3	3.3	1	3.3	20.83	6.51	75.9	7.37	0.321
3	3.3	2	3.3	19.92	6.73	77	7.42	0.321
3	3.3	3	3.3	19.63	6.63	75.4	7.42	0.319
4	2.2	1	2.2	20.39	7.26	83.8	7.59	0.321
4	2.2	2	2.2	19.74	7.66	87.3	7.67	0.32

**Season:** Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.5	1	1.4	24.81	6.09	75.9	7.01	0.258
2	2.8	1	1.7	25.3	6.31	79.5	7.09	0.261
2	2.8	2	1.7	24.91	5.96	74.6	7.07	0.255
3	3.3	1	1.5	26.08	7.15	91.4	7.17	0.278
3	3.3	2	1.5	25.82	6.91	87.9	7.2	0.278
3	3.3	3	1.5	25.49	6.23	78.8	7.17	0.28
4	2.3	1	1.4	25.6	6.93	87.8	7.11	0.281
4	2.3	2	1.4	25.2	6.66	83.7	7.13	0.281

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Upper Greenwood Lake

County: PASSAIC

SiteID: NJW04459-282

Municipality: WEST MILFORD TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.028	0.677	0.030	0.16	15.51	34	59.8	1.66
2	0.028	0.508	0.056	0.028	7.1	32	61.2	1.27
3	0.021	0.712	0.047	0.041	5.65	52	61.8	1.05
4	0.02	0.560	0.027	0.026	6.55	69	60.3	1.34

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.032	0.585	0.00630	0.00778	26.15	39	51.9	6.54
2	0.032	0.578	0.00630	0.00778	26.45	45	53.6	8.55
3	0.029	0.607	0.00630	0.00778	29.49	60	54.0	9.37
4	0.03	0.607	0.00630	0.00778	30.03	38	56.4	7.24

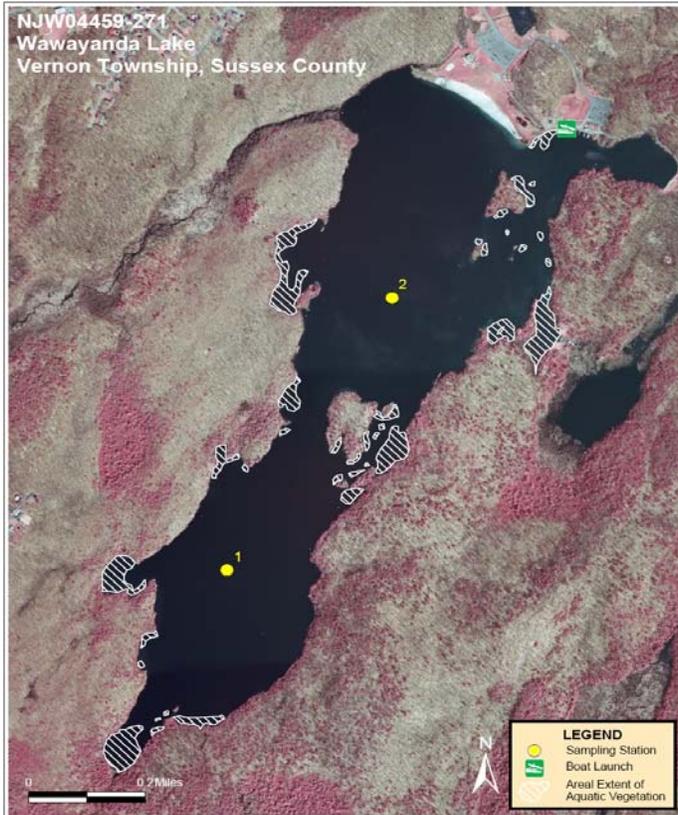
Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Wawayanda Lake      **County** Sussex  
**Site ID** NJW04459-271      **Municipality** Vernon Township



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	38.73	40.42	41.15	40.10 Oligotrophic
Spring Station 2	37.35	42.01	42.8	40.72 Oligotrophic
Summer Station 1	ND	49.26	43.24	46.25 Mesotrophic
Summer Station 2	45	50.88	45.69	47.19 Mesotrophic
Fall Station 1	43.2	51.93	38.01	44.38 Mesotrophic
Fall Station 2	50.57	51.12	41.54	47.74 Mesotrophic

ND - TP concentration below detection limit

**Observations**

Spring - SAV, heron, geese

Summer - kingfisher

Fall - geese, swans, gulls

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Wawayanda Lake

County: SUSSEX

SiteID: NJW04459-271

Municipality: VERNON TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	26.6	1	3.7	19.67	7.86	88.7	7.58	0.206
1	26.6	2	3.7	19.42	8.02	89.9	7.79	0.206
1	26.6	3	3.7	17.04	8.39	89.7	7.84	0.201
1	26.6	4	3.7	14.62	8.68	88.1	7.87	0.194
1	26.6	5	3.7	11.59	9.92	94.1	7.89	0.187
1	26.6	6	3.7	8.57	10.08	89.1	7.9	0.181
1	26.6	7	3.7	7.2	9.57	81.8	7.84	0.181
1	26.6	8	3.7	6.77	9.04	76.4	7.78	0.181
1	26.6	9	3.7	6.35	8.81	73.7	7.71	0.181
1	26.6	10	3.7	6.13	8.55	71.1	7.63	0.181
1	26.6	11	3.7	5.93	8.63	71.4	7.58	0.18
1	26.6	12	3.7	5.69	8.48	69.7	7.53	0.18
1	26.6	13	3.7	5.45	8.56	69.9	7.52	0.179
1	26.6	14	3.7	5.28	8.46	68.8	7.49	0.179
2	14.4	1	3.3	19.91	8.03	90.9	7.99	0.234
2	14.4	2	3.3	19.67	7.95	89.6	8.01	0.236
2	14.4	3	3.3	17.57	7.95	85.9	7.93	0.239
2	14.4	4	3.3	15.41	7.47	77.2	7.83	0.243
2	14.4	5	3.3	12.41	8.09	78.1	7.82	0.246
2	14.4	6	3.3	9.37	8.81	79.4	7.82	0.244
2	14.4	7	3.3	8.51	8.63	76.1	7.78	0.245
2	14.4	8	3.3	7.64	8.29	71.6	7.74	0.246
2	14.4	9	3.3	6.95	8.1	68.8	7.71	0.246
2	14.4	10	3.3	6.67	7.75	65.3	7.66	0.247
2	14.4	11	3.3	6.43	7.53	63.2	7.61	0.247
2	14.4	12	3.3	6.25	7.35	61.4	7.58	0.248
2	14.4	13	3.3	5.96	6.63	54.9	7.54	0.249
2	14.4	14	3.3	5.77	5.93	48.8	7.49	0.25

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	24.9	1	3.2	25.45	6.7	84.8	6.93	0.244
1	24.9	2	3.2	25.3	6.85	86.3	7.24	0.243
1	24.9	3	3.2	24.04	4.45	54.8	7.08	0.209
1	24.9	4	3.2	18.86	5.81	64.7	7.09	0.216
1	24.9	5	3.2	14.56	6.21	63.2	7.11	0.227
1	24.9	6	3.2	11.11	5.69	53.7	7.08	0.228

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Wawayanda Lake  
**SiteID:** NJW04459-271

**County:** SUSSEX  
**Municipality:** VERNON TWP

## Surface to Bottom Profile

1	24.9	7	3.2	8.89	6.4	57.2	7.08	0.226
1	24.9	8	3.2	7.42	6.24	53.8	7.08	0.225
1	24.9	9	3.2	6.79	6.31	53.7	7.06	0.225
1	24.9	10	3.2	6.27	6.54	54.8	7.04	0.225
1	24.9	11	3.2	5.92	6.5	54.1	7.03	0.224
1	24.9	12	3.2	5.68	6.82	56.3	7.02	0.224
1	24.9	13	3.2	5.48	6.56	53.9	7	0.223
1	24.9	14	3.2	5.3	6.62	54.1	6.99	0.223
1	24.9	15	3.2	5.14	6.62	54	6.98	0.223
1	24.9	16	3.2	5.01	6.64	53.9	6.97	0.222
1	24.9	17	3.2	4.86	6.73	54.5	6.96	0.222
1	24.9	18	3.2	4.79	6.46	52.2	6.95	0.222
1	24.9	19	3.2	4.7	5.92	47.6	6.92	0.222
1	24.9	20	3.2	4.57	5.52	44.3	6.9	0.222
1	24.9	21	3.2	4.53	4.33	34.8	6.86	0.222
1	24.9	22	3.2	4.53	3.34	26.7	6.8	0.224
1	24.9	23	3.2	4.51	2.2	17.6	6.75	0.226
1	24.9	24	3.2	4.47	1.08	8.7	6.71	0.229
1	24.9	1	3.2	25.64	6.61	83.9	7.22	0.316
2	14.4	1	2.7	25.64	6.61	83.9	7.22	0.316
2	14.4	2	2.7	25.42	6.52	82.4	7.33	0.317
2	14.4	3	2.7	23.29	1.92	23.3	7.03	0.372
2	14.4	4	2.7	19.01	1.09	12.2	7.04	0.343
2	14.4	5	2.7	15.43	2.94	30.5	7.06	0.317
2	14.4	6	2.7	11.5	3.96	37.6	7.08	0.307
2	14.4	7	2.7	9.47	4.77	43.3	7.09	0.306
2	14.4	8	2.7	8.33	5.39	47.5	7.1	0.305
2	14.4	9	2.7	7.59	4.78	41.4	7.08	0.308
2	14.4	10	2.7	7.07	5.28	45.2	7.07	0.307
2	14.4	11	2.7	6.74	4.23	35.9	7.03	0.309
2	14.4	12	2.7	6.36	3.83	32.2	7	0.31
2	14.4	13	2.7	6.03	3.44	28.7	6.98	0.311
2	14.4	14	2.7	5.77	1.92	15.9	6.94	0.313

**Season:** Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	26.8	1	4.6	10.76	9.58	88.8	7.3	0.231
1	26.8	2	4.6	10.69	9.47	87.7	7.31	0.231
1	26.8	3	4.6	10.59	9.37	86.5	7.34	0.231
1	26.8	4	4.6	10.56	9.41	86.8	7.36	0.231
1	26.8	5	4.6	10.47	9.1	83.8	7.38	0.231
1	26.8	6	4.6	10.19	8.66	79.3	7.37	0.231

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name:** Wawayanda Lake  
**SiteID:** NJW04459-271

**County:** SUSSEX  
**Municipality:** VERNON TWP

## Surface to Bottom Profile

1	26.8	7	4.6	9.88	8.43	76.5	7.36	0.23
1	26.8	8	4.6	9.65	8.14	73.4	7.36	0.233
1	26.8	9	4.6	8.41	6.37	55.8	7.35	0.218
1	26.8	10	4.6	7.06	5.14	43.5	7.33	0.206
1	26.8	11	4.6	6.04	5.25	43.4	7.28	0.205
1	26.8	12	4.6	5.7	5.27	43.1	7.26	0.205
1	26.8	13	4.6	5.47	5.41	44	7.23	0.204
1	26.8	14	4.6	5.27	5.58	45.3	7.2	0.203
1	26.8	15	4.6	5.05	4.94	39.9	7.18	0.202
1	26.8	16	4.6	4.91	4.32	34.7	7.15	0.203
1	26.8	17	4.6	4.84	4	32.1	7.12	0.203
1	26.8	18	4.6	4.76	3.4	27.1	7.1	0.203
1	26.8	19	4.6	4.74	2.42	19.3	7.06	0.204
1	26.8	20	4.6	4.71	1.81	14.5	7.03	0.206
1	26.8	21	4.6	4.62	0.35	2.9	6.97	0.209
1	26.8	22	4.6	4.62	0.2	1.6	6.94	0.21
1	26.8	23	4.6	4.57	0.14	1.1	6.89	0.215
1	26.8	24	4.6	4.56	0.12	0.9	6.89	0.217
1	26.8	25	4.6	4.64	0.1	0.8	6.94	0.344
2	14.5	1	3.6	10.79	9.77	90.7	7.3	0.302
2	14.5	2	3.6	10.66	9.58	88.6	7.23	0.302
2	14.5	3	3.6	10.53	9.6	88.5	7.24	0.302
2	14.5	4	3.6	10.46	9.42	86.8	7.27	0.302
2	14.5	5	3.6	10.44	9.39	86.3	7.34	0.302
2	14.5	6	3.6	10.24	8.88	81.3	7.34	0.303
2	14.5	7	3.6	9.87	8.44	76.7	7.34	0.304
2	14.5	8	3.6	9.55	8.12	73.2	7.34	0.304
2	14.5	9	3.6	9.03	7.51	66.8	7.33	0.304
2	14.5	10	3.6	7.87	5.4	46.7	7.29	0.293
2	14.5	11	3.6	6.46	2.59	21.6	7.24	0.284
2	14.5	12	3.6	6.13	0.91	7.5	7.17	0.288
2	14.5	13	3.6	6.01	0.27	2.2	7.09	0.289
2	14.5	14	3.6	5.84	0.2	1.7	7.02	0.297

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Wawayanda Lake

County: SUSSEX

SiteID: NJW04459-271

Municipality: VERNON TWP

## Lake Profile Raw Data

### Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.011	0.352	0.006	0.008	2.72	42	60.5	0.97
1A	ND	0.273	0.006	0.009	2.63	49	53.4	0.57
2	0.01	0.415	0.006	0.008	3.2	59	68.3	1.07
2A	ND	0.322	0.111	0.018	1.8	62	69.8	0.75

### Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	ND	0.345	0.00630	0.00778	6.7	30	61.4	1.31
1A	ND	0.192	0.0594	0.00778	1.44	50	55.6	0.94
2	0.017	0.348	0.00630	0.00778	7.9	59	77.8	1.71
2A	ND	0.214	0.0312	0.00922	3.02	61	73.4	1.36

### Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.015	0.351	0.00630	0.0143	8.8	44	62.4	0.8
1A	0.053	0.487	0.0146	0.178	1	39	56.7	3.63
2	0.025	0.399	0.00630	0.0155	8.1	75	78.2	1.8
2A	0.031	0.353	0.0129	0.0963	2.64	40	74.3	1.64

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.

# AMBIENT LAKE MONITORING NETWORK

**Lake Name** Wonder Lake                      **County** Passaic  
**Site ID** NJW04459-195                      **Municipality** West Milford Township



**Carlson's Trophic Index (TSI)**

Season	TSIP	TSIC	TSIS	TSI
Spring Station 1	53.2	42.46	57.37	51.01 Eutrophic
Summer Station 1	41.14	49.25	58.63	49.67 Mesotrophic
Fall Station 1	54.13	53.79	63.22	57.04 Eutrophic

**Observations**

Spring - cedar brown water, geese  
 Summer - frogs  
 Fall - water level very low

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Wonder Lake

County: PASSAIC

SiteID: NJW04459-195

Municipality: WEST MILFORD TWP

## Surface to Bottom Profile

Season: Spring

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.2	0.6	1.2	16.31	6.94	72.1	7.08	0.364

Season: Summer

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	1.1	0.5	1.1	24.21	5.71	70	6.66	0.253

Season: Fall

Station	Tot. Depth (M)	Profile Depth (M)	Secchi (M)	Water Temp (C)	DO (mg/L)	DO (%Sat)	pH (SU)	Conductivity (mS/cm)
1	0.8	0.4	0.8	7.57	11.43	98.2	6.99	0.287

-Secchi measurements are not recorded for outlets.

-A blank Secchi measurement for lake stations means that an accurate measurement could not be recorded.

-A blank parameter result means the parameter could not be measured due to a meter malfunction.

# AMBIENT LAKE MONITORING NETWORK

Lake Name: Wonder Lake

County: PASSAIC

SiteID: NJW04459-195

Municipality: WEST MILFORD TWP

## Lake Profile Raw Data

Season: Spring

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.03	0.604	0.0063	0.0078	3.35	34	60.6	2.17

Season: Summer

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.013	0.588	0.0063	0.0078	6.69	34	57.6	1.08

Season: Fall

Station	Tot Phos (mg/L)	TKN (mg/L)	Nitrite-Nitrate (mg/L)	Ammonia-N (mg/L)	Chl a (ug/L)	Alk (ppm)	Hard (ppm)	Turbidity (NTU)
1	0.032	0.488	0.00709	0.0181	10.63	55	79.9	1.27

Sample Device - Horizontal Polycarbonate Sampler

"ND" indicates the result is at a concentration below the analytical method's Reporting Limit (RL). See Volume I, Methods.

-A blank parameter result means the parameter could not be analyzed due to laboratory error.