Whippany River

A Holistic Approach to Volunteer Monitoring

- *Swift or smooth, broad as the Hudson or narrow enough to scrape your gunwales, every river is a world of its own, unique in pattern and personality. Each mile on a river will take you further from home than a hundred miles on a road. - Bob Marshall*

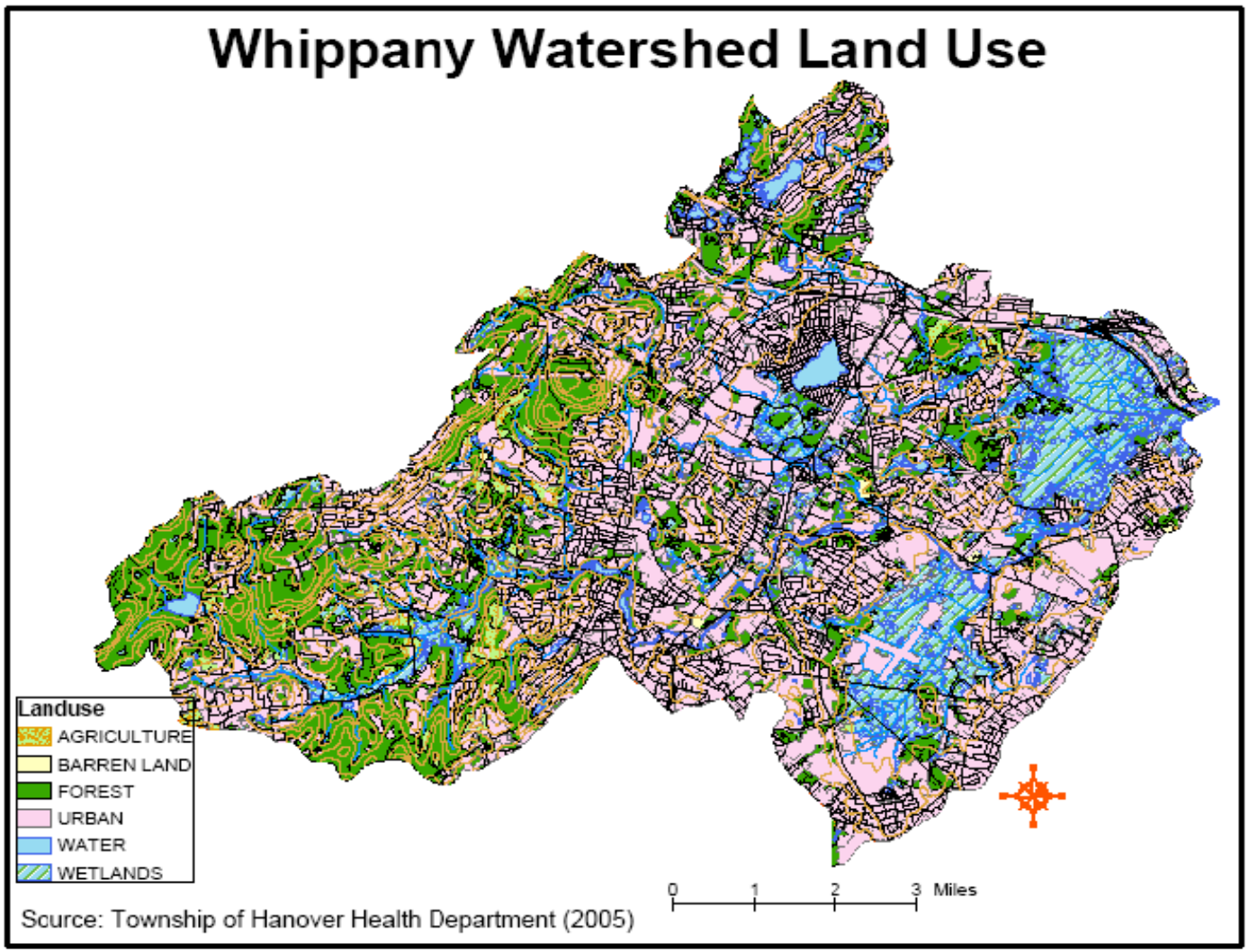

NEW YORK
Ramapo
Hackensack
Pequannock
Pompton
Rockaway
Paterson
Hackensack
Passaic
Whippany
Passaic
Passaic
New York City
Newark
Jersey City
NEW JERSEY

Wikipedia

Whippany River

- The **Whippany River,** approximately 20 mi (32 km) long is a tributary of the Rockaway River, and part of the Passaic River Basin. Watershed is approximately 69.3 mi^2
- Headwaters are in Mendham, Morris County and it flows east/northeast through Morristown and the Whippany area of Hanover Township
- Joins Rockaway River in Hatfield Swamp in eastern Morris County just prior to the Rockaway joining the Passaic River.
- Name comes from the Whippanong Indians, Whippanong meant “place of the willows”
- Wikipedia 2009

Land Use in Whippany River Watershed



Our Mission

- The Whippany River Watershed Action Committee's members are the stewards of the Whippany River Watershed. The members have come together to preserve, protect and maintain the land and water resources of the watershed through broad-based community action, projects, on-going assessment, education and promotion of resource conservation.

Member Towns

At present, thirteen of the sixteen watershed municipalities are members:

- **Denville,**
- **East Hanover,**
- **Florham Park,**
- **Hanover,**
- **Madison,**
- **Mendham Borough,**
- **Mendham Township,**
- **Morris Plains,**
- **Morris Township,**
- **Morristown,**
- **Mountain Lakes,**
- **Parsippany- Troy Hills, and**
- **Randolph.**

WRWAC

- Celebrated 10th Anniversary September 2009

Volunteers do more than collect data

Whippany River Watershed Action Committee

- 16 municipalities in watershed
- Began as Mayors Action Committee in 1998
- Evolved into 501 c(3) not for profit WRWAC
- Have been partnered in well over dozen grants with NJDEP, Victoria Foundation, municipalities, Rutgers University, Pfizer and other corporate sponsors
- Canoe trips, festivals, hikes, educational outreach, schools and civic organizations, engineering roundtables, goose workshops, stormwater conferences

Volunteer Monitoring

- To increase the knowledge/understanding of our river
- To increase the skills/knowledge of the volunteers
- To increase understanding of what the data actually means
- To provide long term data sets
- To identify issues of concern
- To select potential sites for installation of Best Management Practices (BMPs)

Volunteer Monitoring

- Visual Assessments (some volunteers trained at Rutgers, some with Danielle, some both protocols)
- Goose Monitoring Program
- Trends Analysis
- Lake Study

Stormwater monitoring for fecal coliform and Escherichia coli and in-situ for Temperature, pH, conductivity, dissolved oxygen

Trained to do basic macroinvertebrate sampling

2007-2008

Visual Assessment

New Jersey Department of Environmental Protection
Volunteer Monitoring Program

Fields marked with * are required by E2

General Sheet

Segment ID/ Site Name: _____ **Assessment # of the year:** _____

*** Water Body Name:** _____ *** Watershed Management Area:** _____

*** County:** _____

*** Segment Identification**

Beginning at Latitude/Longitude: _____

Ending at Latitude/Longitude: _____

*** Survey Team:** _____ *** Time:** _____

_____ *** Date:** _____

Weather:

*** Today's Weather**	1. Clear	5. Steady Rain
	2. Partly Cloudy	6. Heavy Rain
	3. Overcast	7. Snow
	4. Light rain/Showers	8. Heavy Snow Melt

Check one:
- ☐ Days since last rain: _____
- ☐ More than one week since last rain
- ☐ More than one month since last rain

Air Temperature: _____ ° F

Water Temperature: _____ ° F

Site Sketch: includes riffles, pools, runs, ditches, riprap, outfalls, roads, sampling, locations, photo reference #, GPS reference #'s

Lake/ Park Name ______
Address / Location ______
Municipality ______
GPS coordinates if recorded ______
1. Lake / Parkland Description

Goose Monitoring Program

Geese Monitoring Program - Visual Assessments of Lakes, Parklands, Public Lands

Monitor Names ______ Date ______

Lake/ Park Name ______

Address / Location ______

Municipality ______

GPS coordinates if recorded ______

1. Lake / Parkland Description
   a. Ownership
      ___ Municipal ___ County ___ State ___ Private
   b. Lake Association Contact info ______
   c. ___ Swimming Beech ___ Boating ___ Trails ___ Parklands
      ___ Recreational fields ___ Lawns ___ Meadows ___ Other ______

2. Describe Lake Shoreline Vegetation

___ % Shoreline mowed lawn
___ % Shoreline Privately Owned
___ % Shoreline 2-3 ft tall shrubs and vegetation
___ % Shoreline Wooded / Tree lined

3. Describe Geese Populations Present
___ < 20 geese ___ < 50 ___ < 100 ___ > 100 ___ > 200

4. Describe Nesting Areas ______

___ How many geese nests are present

5. Describe Foraging Areas
   ___ Lawns
   ___ Parking Areas
   ___ Meadows
   ___ Recreational Ballfields

6. Describe Geese Mitigation Measures
___ Signage – Do not feed geese ___ Flagging ___ Egg oiling ___ Egg addling
Identify who performs the work ______
___ Dog Silhouettes ___ How many Other programs ______
___ are geese nearby < 100 ft ___ > 100 ft

Goose Monitoring Program

Lake Pocahontas

Geese Monitoring Program - Visual Assessments of Lakes, Parklands, Public Lands

Monitor Names Dawn Brandt Kathleen Magretta Date 4-10-09 good Friday

Lake/ Park Name Pocahontas

Address / Location Between Speedwell Ave & Patriots Path, Early St & Martin Luther King Ave

Municipality Morristown

GPS coordinates if recorded ______

1. Lake / Parkland Description
   a. Ownership
   ✓ Municipal ___ County ___ State ___ Private
   b. Lake Association Contact info ______
   c. ___ Swimming Beech ___ Boating ✓ Trails ✓ Parklands
   ___ Recreational fields ___ Lawns ___ Meadows ___ Other

2. Describe Lake Shoreline Vegetation

   0 % Shoreline mowed lawn
   50 % Shoreline Privately Owned
   ___ % Shoreline 2-3 ft tall shrubs and vegetation
   ___ % Shoreline Wooded / Tree lined

3. Describe Geese Populations Present
   ___ < 20 geese ✓ < 50 ✓ < 100 ___ > 100 ___ > 200

4. Describe Nesting Areas On shore in woods mainly in island area wooded & brushy - accessible by boat (kayak)

   15-21 How many geese nests are present

5. Describe Foraging Areas
   ✓ Lawns
   ___ Parking Areas
   ✓ Meadows & woods
   ✓ Recreational Ballfields

6. Describe Geese Mitigation Measures
   ___ Signage – Do not feed geese ✓ Flagging ✓ Egg oiling ✓ Egg addling
   Identify who performs the work ______
   ___ Dog Silhouettes ___ How many Other programs ______
   ✓ are geese nearby < 100 ft ___ > 100 ft
   5' - 20'

Geese Monitoring Program - Visual Assessments of Lakes, Parklands, Public Lands

Monitor Name(s) PAT RECTOR Date OCT 9, 2009

Volunteer Hours Used for This Assessment 1

Lake/ Park Name MORRIS COUNTY FACILITY

Address / Location 550 W. HANOVER AVE

Municipality MORRIS PLAINS

GPS coordinates if recorded _____

1. Lake / Parkland Description
   a. Ownership
      ____ Municipal ✓ County ____ State ____ Private
   b. Lake Association Contact info _____
   c. ____ Swimming Beech _____ Boating _____ Trails _____ Parklands
      _____ Recreational fields _____ Lawns _____ Meadows ____ Other _____

2. ~~Describe Lake Shoreline Vegetation~~

100 % Shoreline mowed lawn
_____ % Shoreline Privately Owned
_____ % Shoreline 2-3 ft tall shrubs and vegetation
_____ % Shoreline Wooded / Tree lined

This is a detention basin

3. Describe Geese Populations Present 93
   _____ < 20 geese _____ < 50 ✓ < 100 _____ > 100 _____ > 200

4. Describe Nesting Areas MORE GREEN
   _____ How many geese nests are present

5. Describe Foraging Areas
   ✓ Lawns
   ____ Parking Areas
   ____ Meadows
   ____ Recreational Ballfields

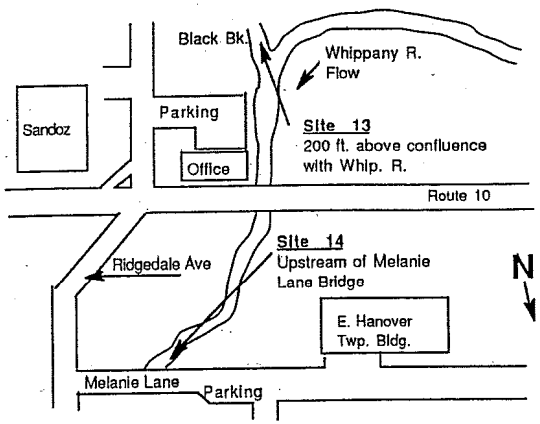
6. Describe Geese Mitigation Measures
   _____ Signage – Do not feed geese _____ Flagging _____ Egg oiling _____ Egg addling
   Identify who performs the work _____
   _____ Dog Silhouettes ____ How many Other programs _____
   _____ are geese nearby < 100 ft _____ > 100 ft

Trends Analysis

- Dr. George Van Orden
- Ralph Rhodes (Mendham Township Environmental Commission)
- Garry Annibal *Harding Township Health Adminstrator)
- Mary Arnold (WRWAC)
- Pete Summers (Health Officer East Hanover Township)

Trends Analysis

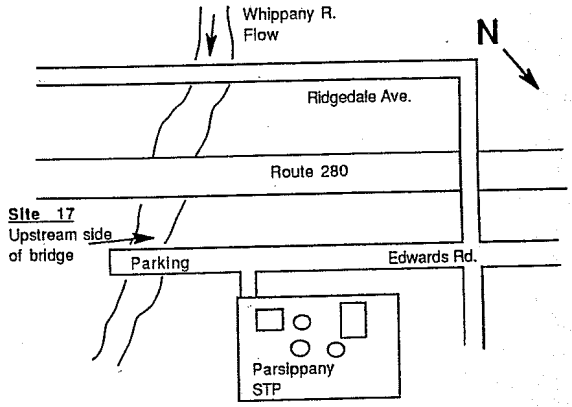
- The WRWAC Technical Advisory Committee (TAC) devised sampling protocols and created database
- Sampled at established locations (5 sites)
- Temperature, Dissolved Oxygen, pH, Nitrate Nitrogen, Nitrite Nitrogen, Ammonia Nitrogen, Total Kjeldahl Nitrogen, Ortho Phosphorus, Total Phosphorus, TSS,TDS, Alkalinity, Chloride, Conductivity, BOD, chl a, Enteroccocus, fecal coliform



LOCATION: Off Melanie Lane, near Ridgedale Ave.

OBSERVATIONS: Wadeable, partial rock/mud bottom
Stream Width 38 ft. ave.
Stream Depth 4.5 ft. ave.

LONG/LAT: 14 - 74 23'13.9"W - 40 48'55.8"N



LOCATION: Edwards Rd. where it dead ends with Whippany R.

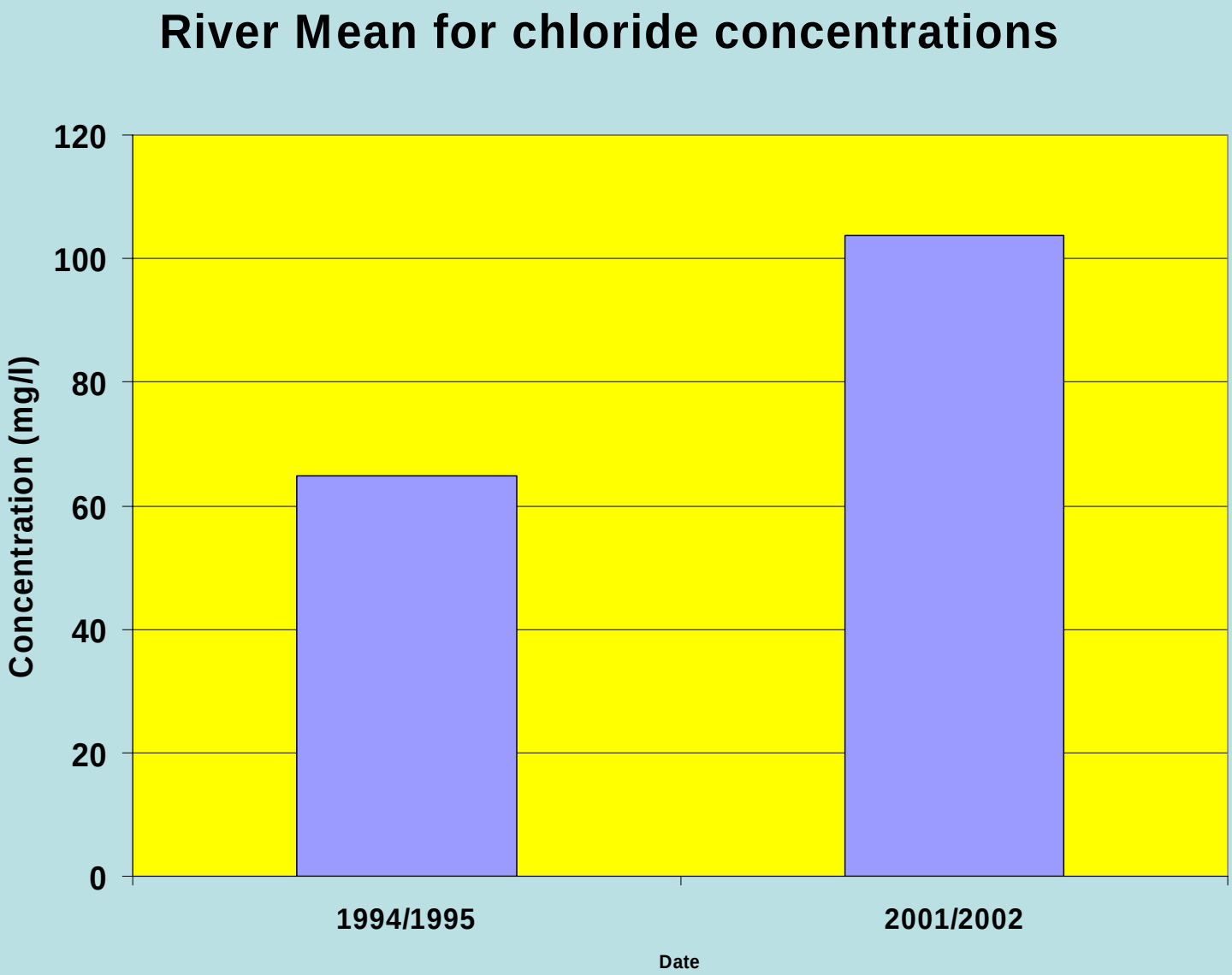
OBSERVATIONS: Hip boots needed, depth of water and mud vary by time of year and rainfall. May sample off Edwards rd. bridge if water too high. Stream Width 35 ft. ave. Stream Depth 4.5 ft. ave.

LONG/LAT: 17 - 74 20'50.8"W - 40 50'42.6"N

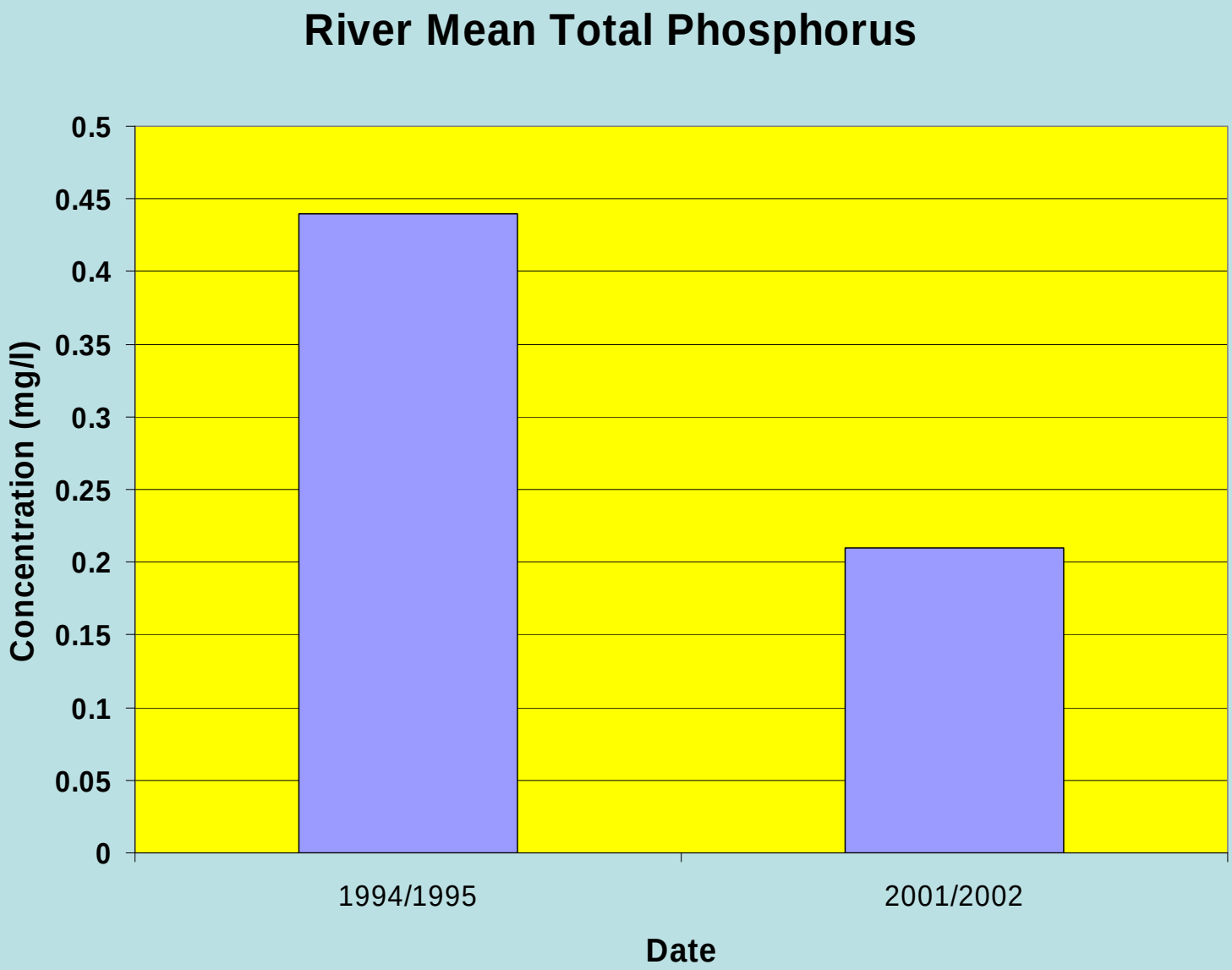
Trends Analysis

- The Trends Analysis will be continued, even without any outside funding for this event. Conducted approximately every 5 years.
- WRWAC considers it important enough to fund on their own.

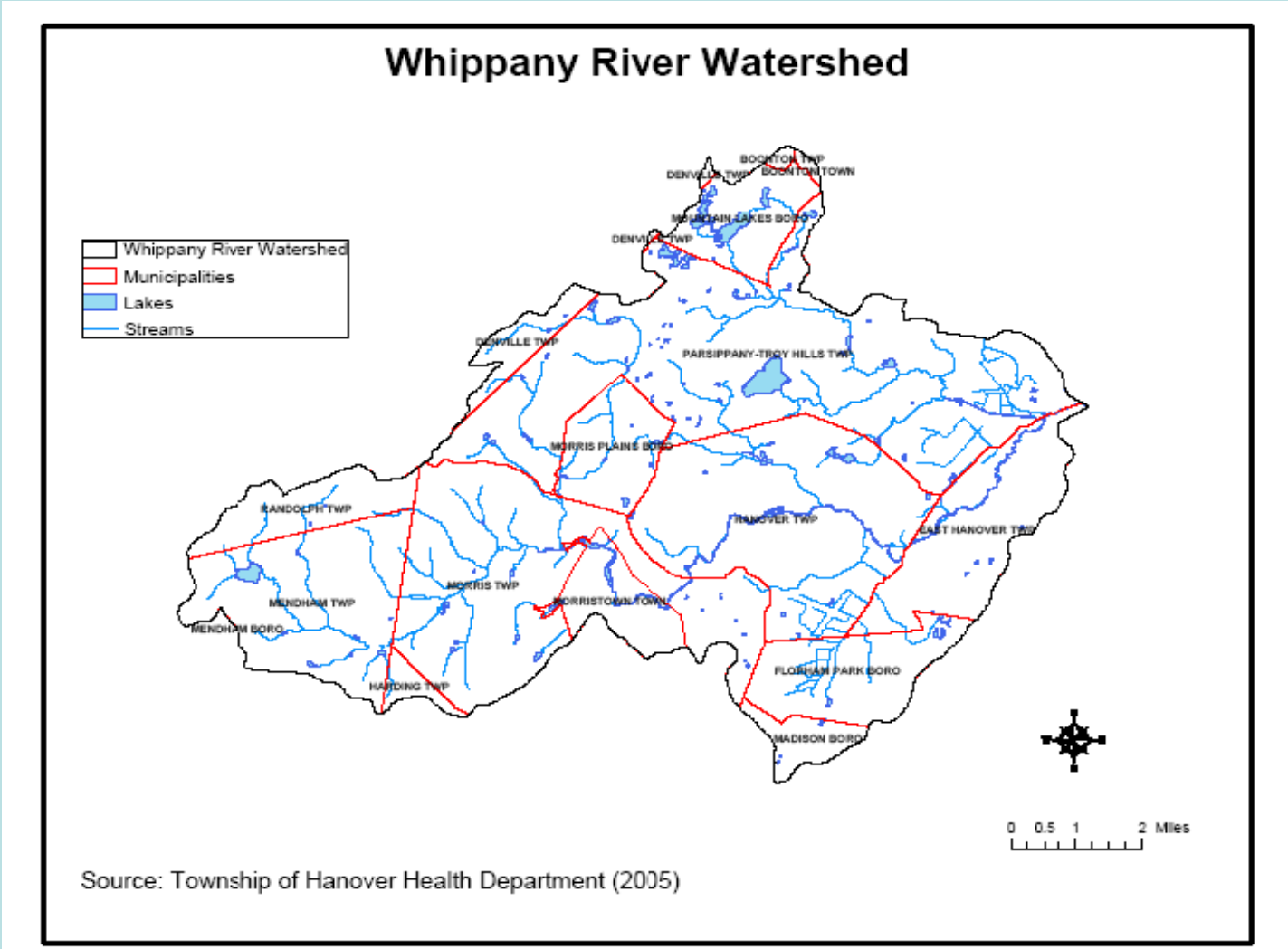
Up


River Mean for chloride concentrations
120
100
80
60
40
20
0
Concentration (mg/l)
1994/1995
2001/2002
Date

And down


River Mean Total Phosphorus
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
1994/1995
2001/2002
Date

Lakes Study


Whippany River Watershed
Whippany River Watershed
Municipalities
Lakes
Streams
BOONTON TWP
BOONTON TOWN
DENVILLE TWP
PARSIPPANY-TROY HILLS TWP
MORRIS PLAINS BORO
RANDOLPH TWP
HANOVER TWP
EAST HANOVER TWP
MORRIS TWP
MORRISTOWN TOWN
MENDHAM TWP
MENDHAM BORO
HARDING TWP
FLORHAM PARK BORO
MADISON BORO
0 0.5 1 2 Miles
Source: Township of Hanover Health Department (2005)

Lakes Study

The TAC selected and sample five lakes in the watershed. The lakes include Lake Parsippany, Sunrise Lake, Mountain Lake, Bee Meadow Pond, and Speedwell Lake.

The sampling team will use the Trimble GPS unit to locate the sampling sites;

Sampling was conducted during dry weather conditions in the summers of 2003, 2004 and 2005;

Dr. Van Orden led a team of volunteers from municipal health departments and environmental commissions. During sampling in the field, all team members learned how to use monitoring and GPS equipment.

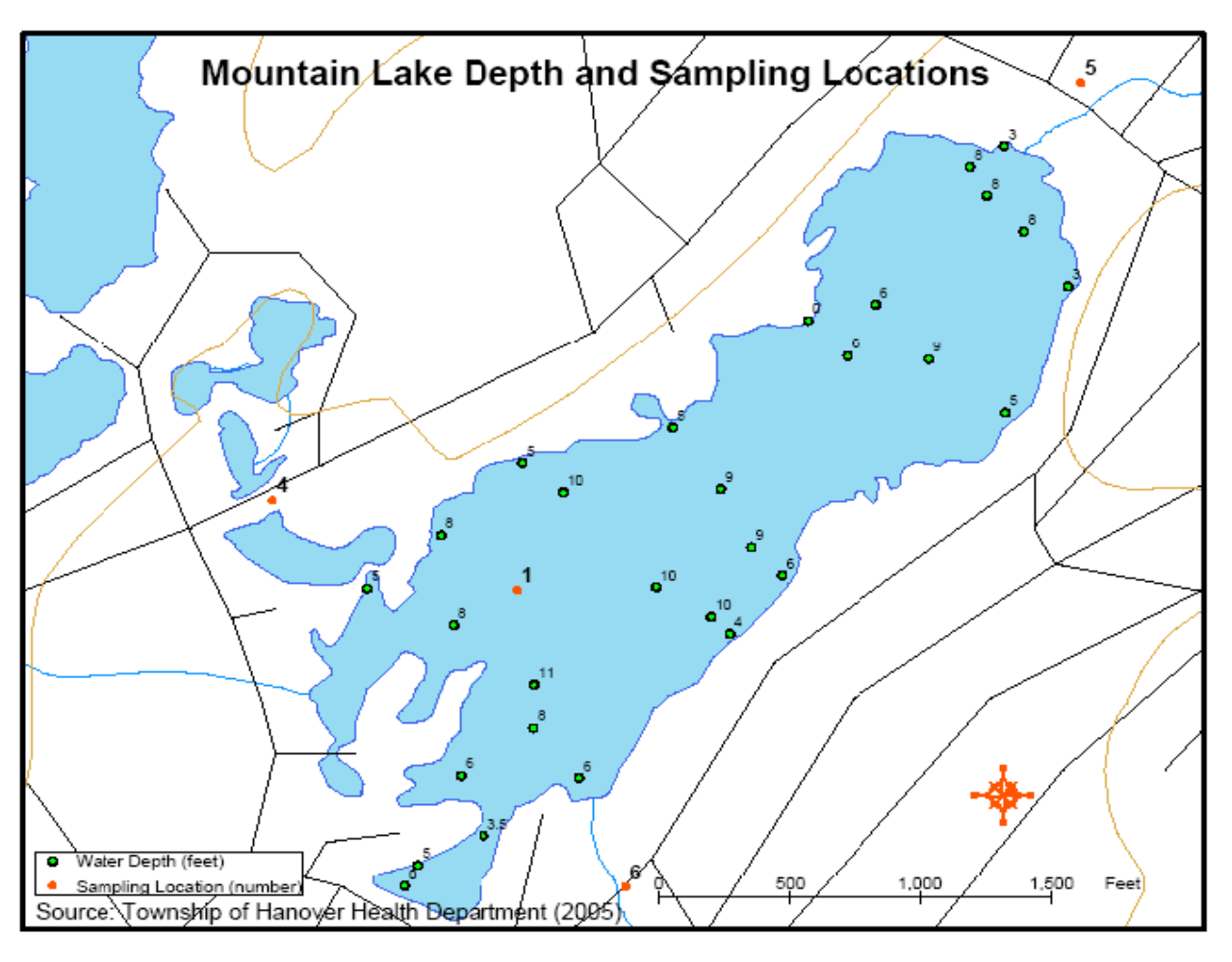
After samples were collected they were immediately delivered to a certified laboratory (Garden State Laboratories, Inc.) for testing. Because fecal coliform is the major pollutant of concern in the Whippany River at this time, samples were handed off to the lab within six hours after they are drawn from the river.

- George VanOrden sampling

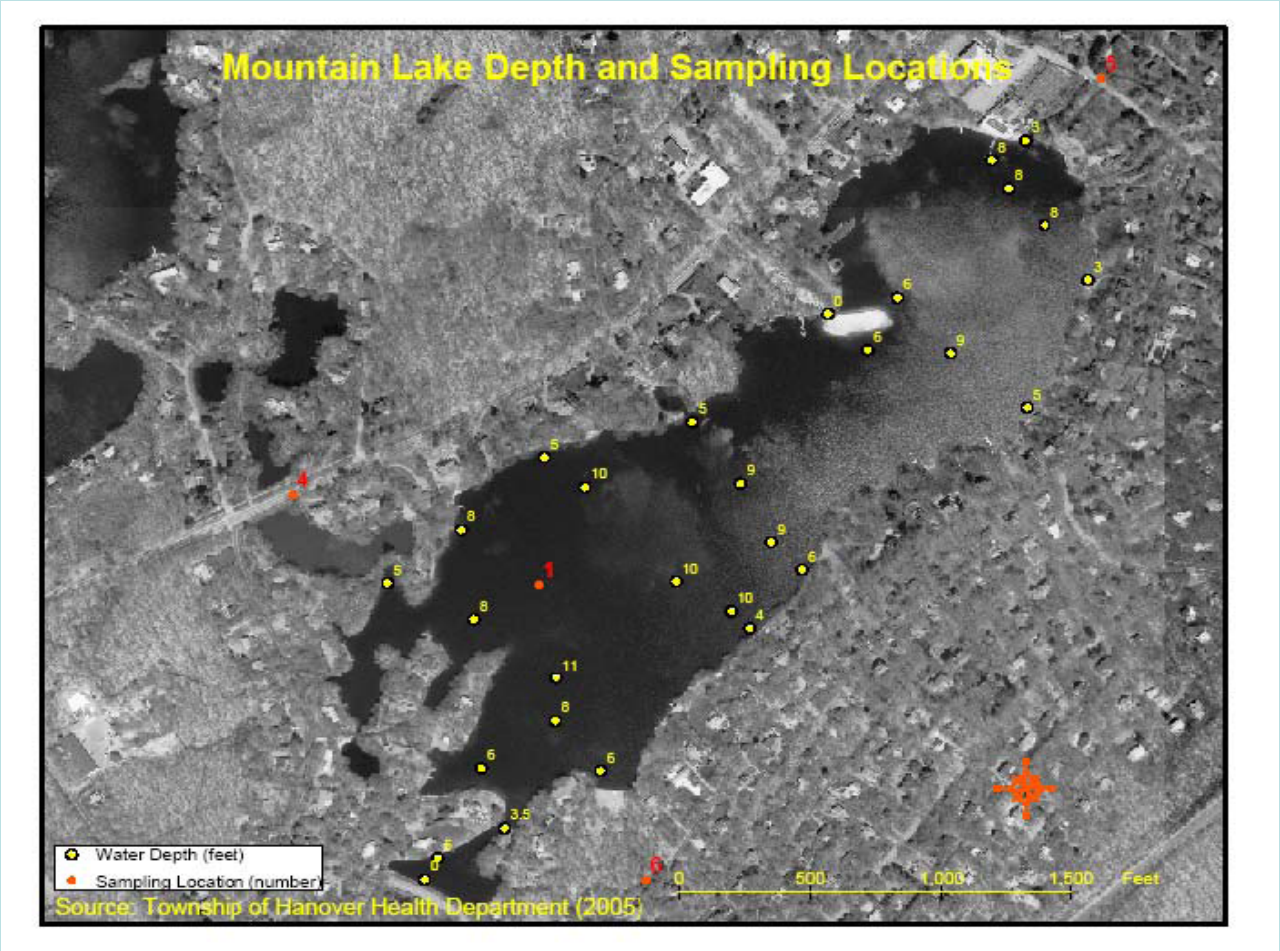
Water Quality Parameters

- temperature,
- dissolved oxygen (DO),
- pH, conductivity,
- specific conductivity,
- salinity and secchi depth
- Nitrogen series
- Phosphorus (ortho-P), (Total-P),
- total suspended solids (TSS),
- total dissolved solids (TDS),
- total alkalinity,
- chlorophyll A,
- fecal coliform and
- fecal streptococcus.
- Sediment samples were also collected at each lake and analyzed for total Kjeldahl nitrogen (TKN), ammonia nitrogen (NH3-N), nitrate nitrogen (NO3-N), orthophosphorus (ortho-P), total phosphorus as phosphorus (Total-P), fecal coliform and fecal streptococcus.

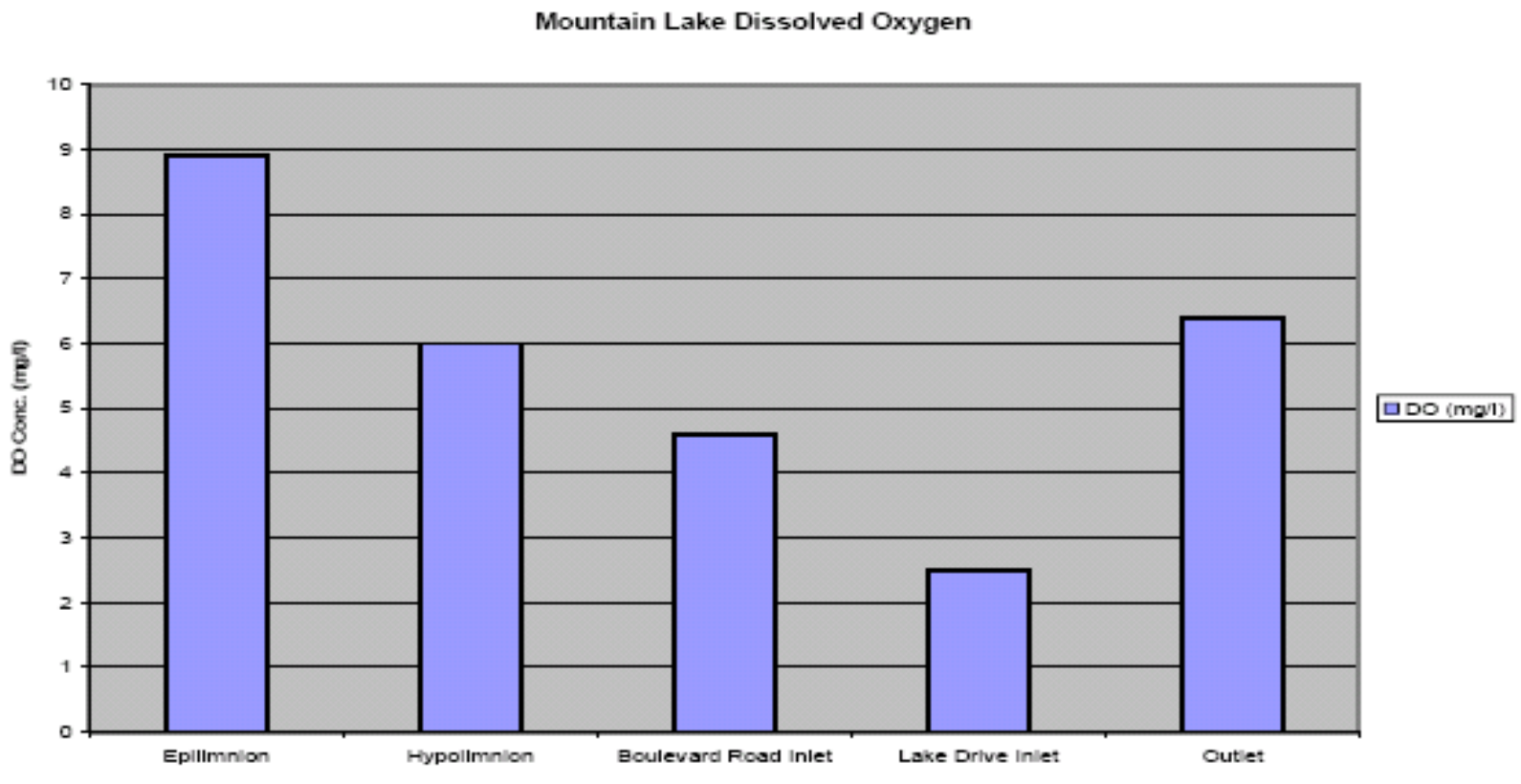
Mountain Lakes Sampling



Mountain Lakes Sampling Sites



Mountain Lakes Results for Dissolved Oxygen



Mountain Lakes fecal coliform

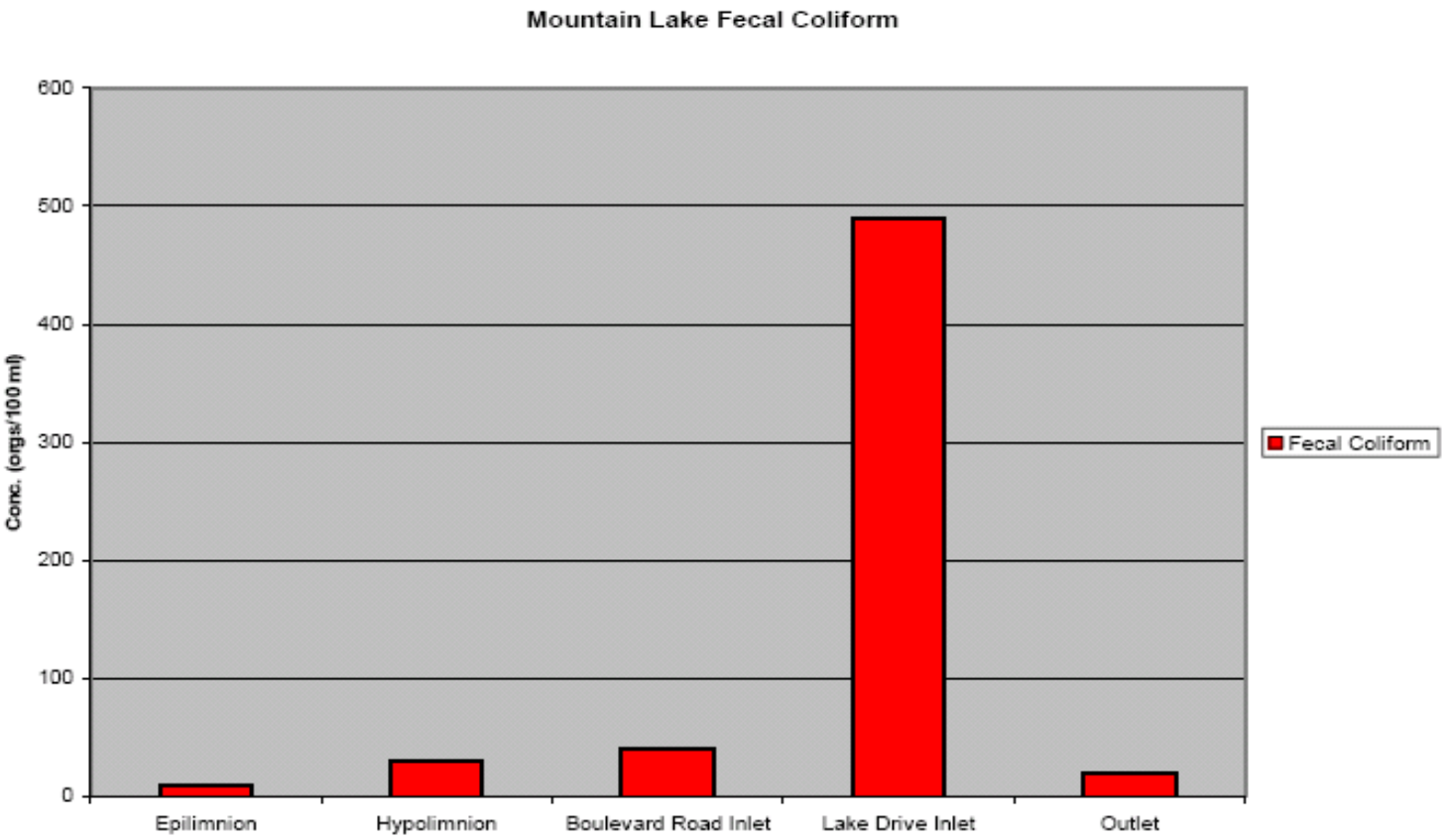


FIGURE 7 : Mountain Lake Fecal Coliform

Mountain Lakes Total Phosphorus

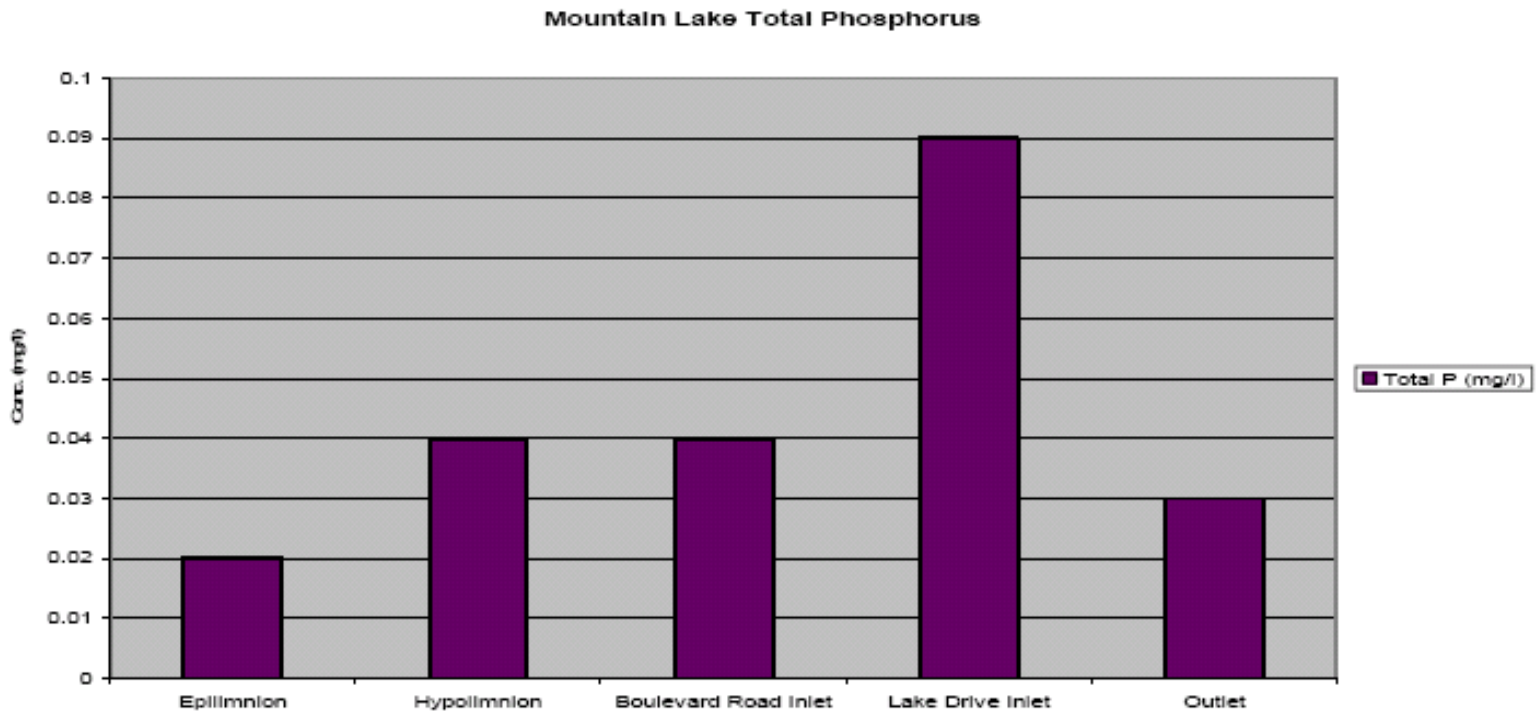
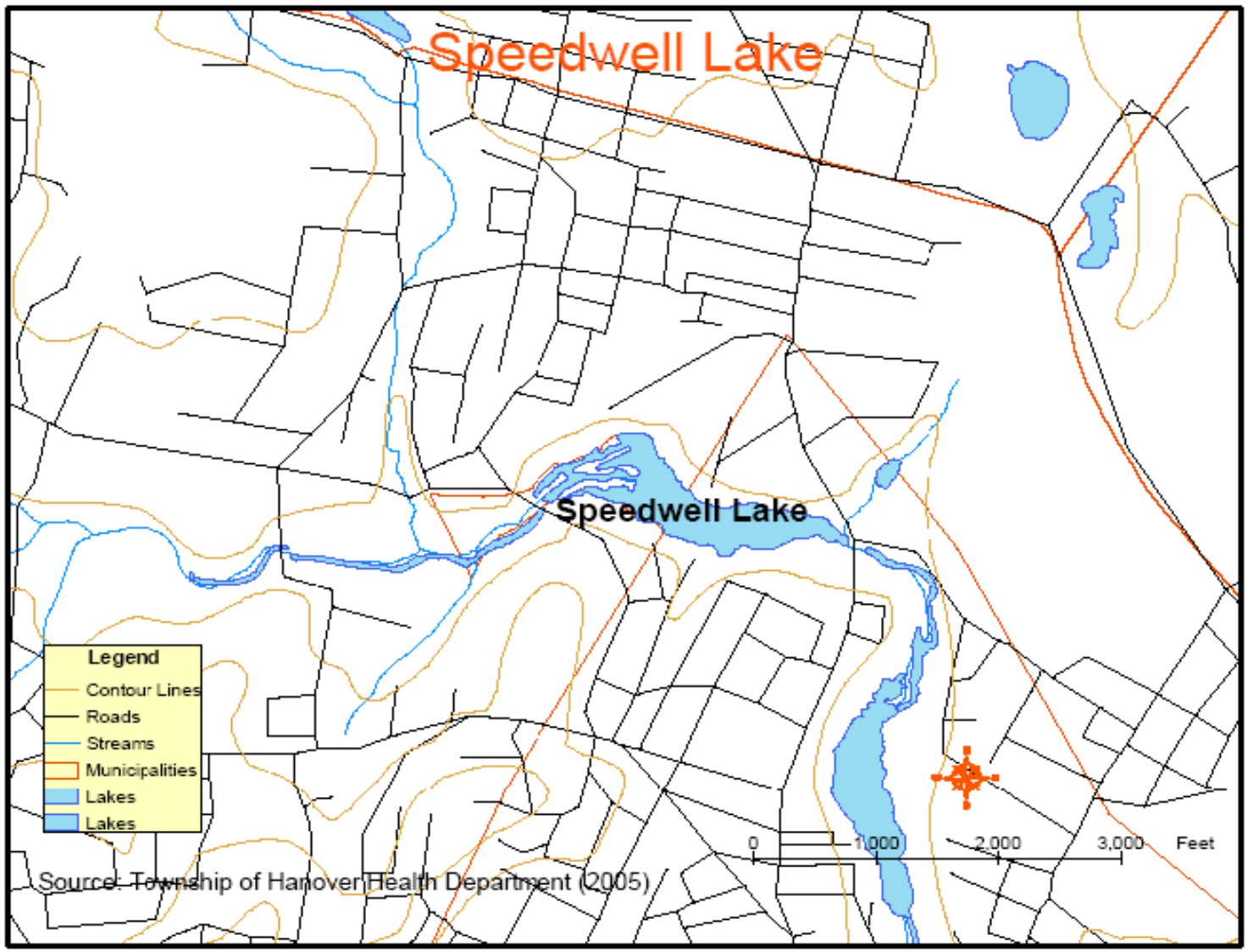


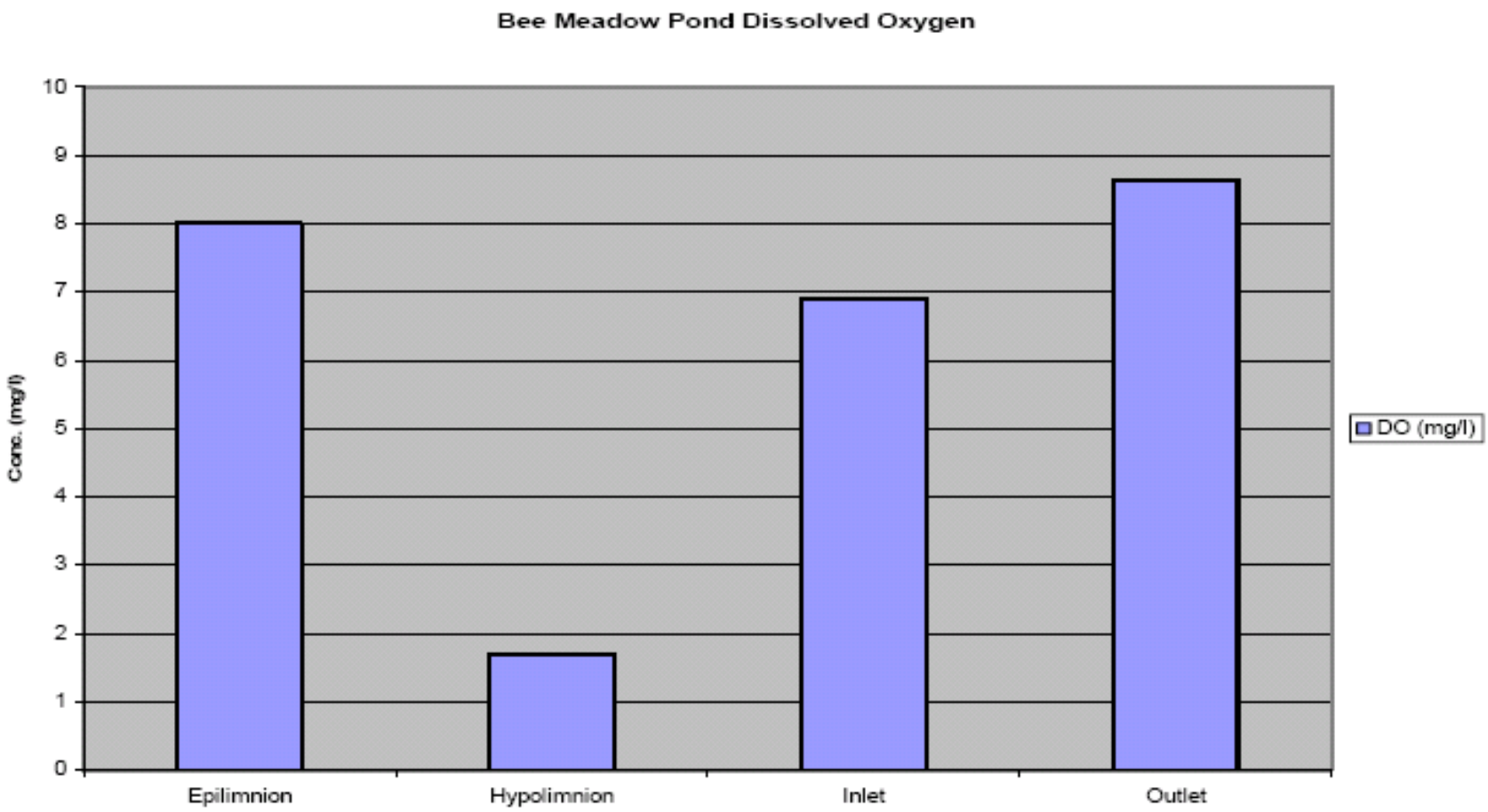
FIGURE 4: Mountain Lake Total Phosphorus

Speedwell Lake

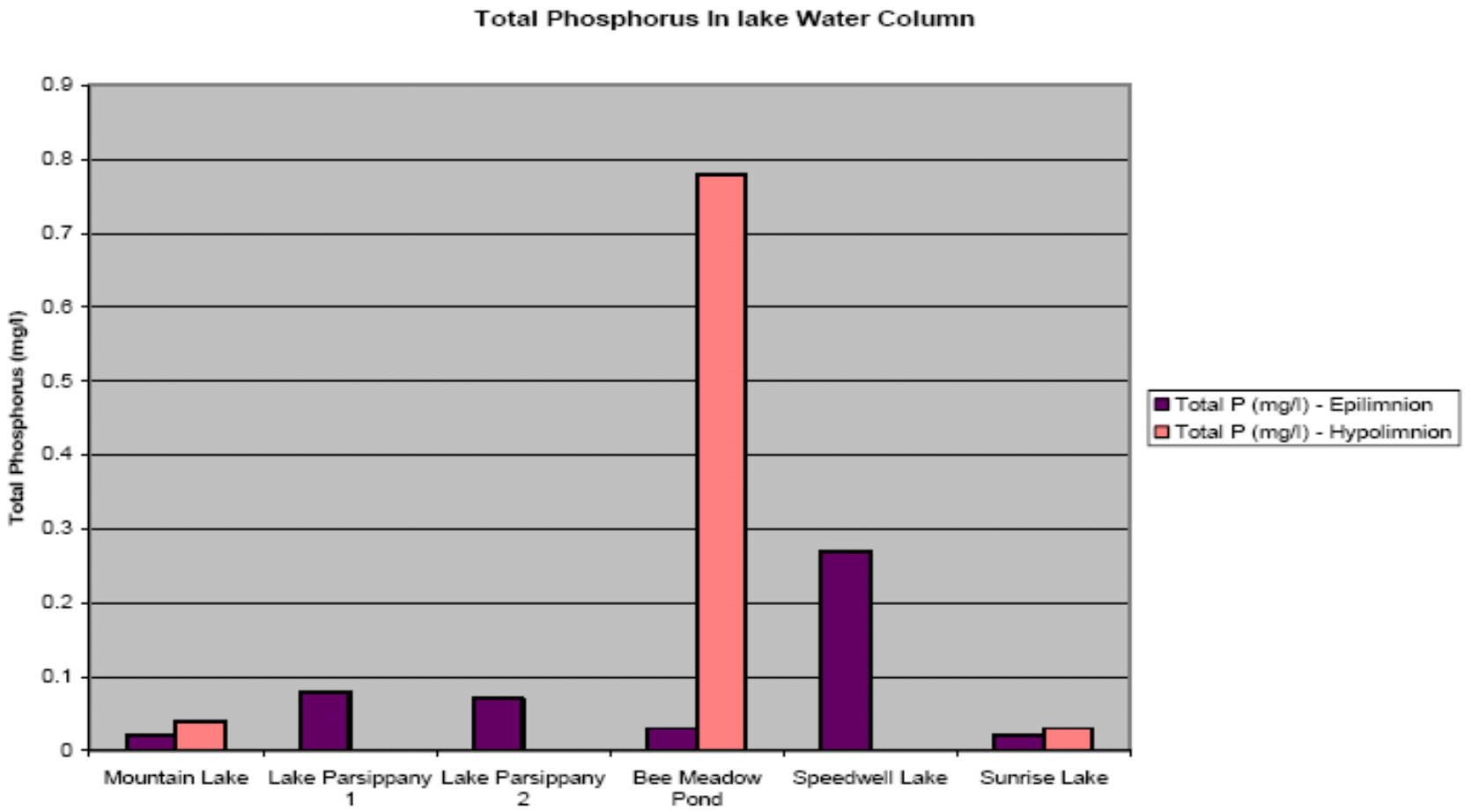


Bee Meadow Pond

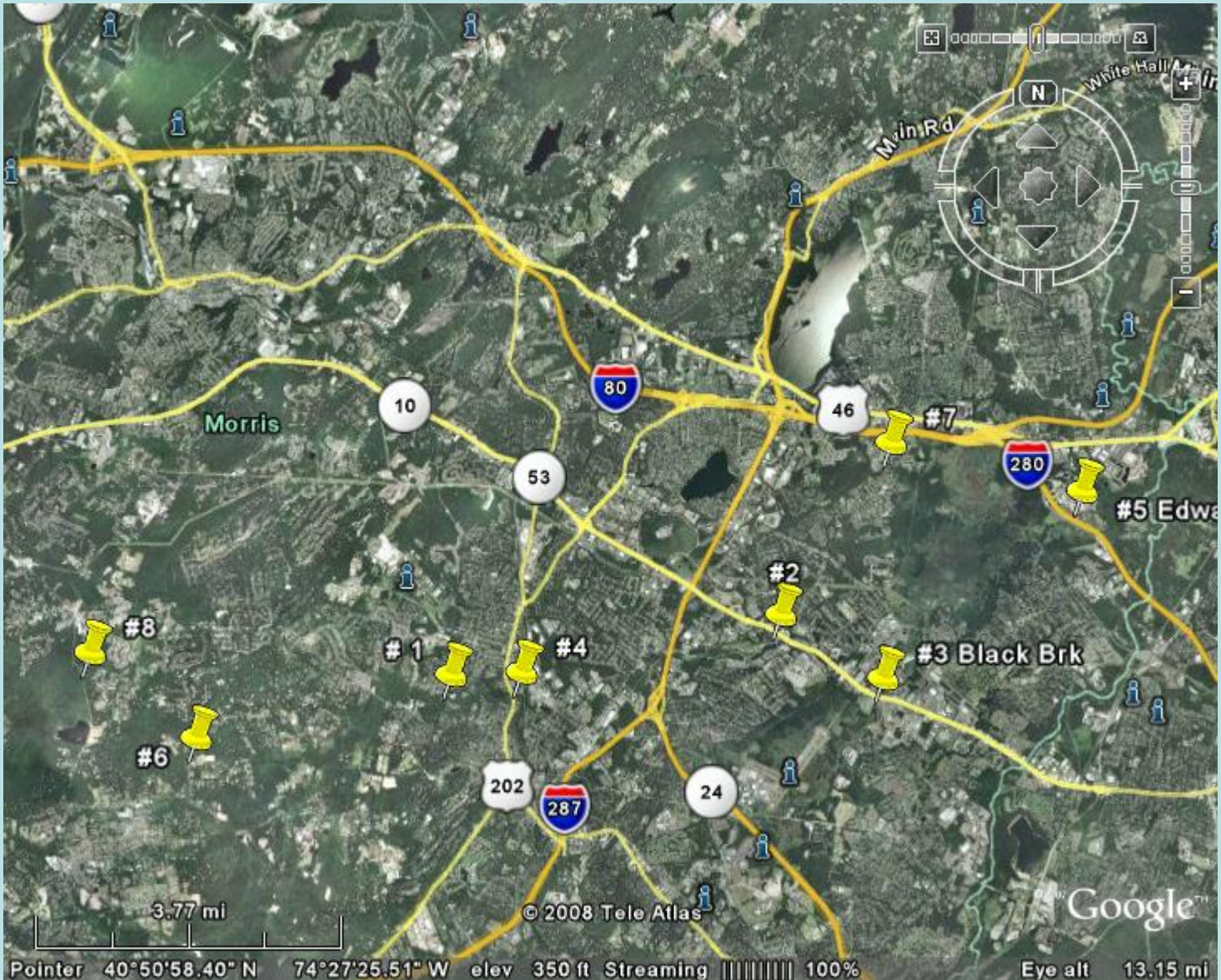
Bee Meadow Dissolved Oxygen



Comparison of Lakes data (TP)



Sampling sites for Whippany Restoration Plan



Whippany River at Old Brookside Rd – Station #1

Whippany River at Lake Valley Road Station #3

Whippany River at Speedwell Lake Station #4

Whippany River at S. Beverwyck Road #7

Whippany River at Edwards Road #8

Training- Bacteriological and in-situ

Volunteer Monitoring training

A WRWAC VOLUNTEER'S HANDBOOK

TO BASIC STREAM MONITORING

Prepared by:

Princeton Hydro, LLC
1108 Old York Road
Ringoes, New Jersey 08551

908-237-5660 (P)

908-237-5666 (F)

QUALITY ASSURANCE PROJECT PLAN (QAPP)
"Watershed Restoration and Protection Plan for the Whippany River Watershed"
Water Quality Monitoring Component

Prepared by: _____ Date: 3/19/09
Mr. Christopher L. Mikolajczyk
Princeton Hydro, LLC

Reviewed by: _____ Date: 3/19/09
Mr. Stephen J. Souza, Ph.D.
Princeton Hydro, LLC

Reviewed by: _____ Date: 4/28/09
Mr. Arthur W. Vespignani, Project Coordinator
Whippany River Watershed Action Committee

Reviewed by: _____ Date: 5/5/09
Ms. Pat Rector, Project Manager
NJDEP, Division Watershed Management, Bureau of Watershed Planning

Reviewed by: _____ Date: 6/15/09
Ms. Helen Pang, Research Scientist
NJDEP, Division Watershed Management

Approved by: _____ Date: 6/15/09
Mr. Marc Ferko, Quality Assurance Officer
NJDEP Office of Quality Assurance

WHIPPANY RIVER WATERSHED ACTION COMMITTEE
VOLUNTEER MONITORING DATA SHEET
Metering & Sampling Observations

NJDEP 319h Grant: RP08-055
Pollution Control & Management Implementation

Date 10/16/09

Time: Start 0955 Finish 1008

Sampling Site #2 WASHINGTON VALLEY RD., MORRIS TWP

Weather Conditions OVERCAST 40°

In-Situ Measurement:

Stream Depth	Temp (°C)	D.O. (mg/L)	pH (s.u.)	Sp. Cond. (mmhos/cm)	Turbidity
10"	7.12	10.02	8.19	0.287	3.2

Noted Observations:

Discrete Samples Collected? (Yes) No

Samples delivered to lab? (Yes) No

Signature _____ Date 10/16/09

Next Steps

- Newest Trends Analysis was conducted summer 2009 and spring 2010
- Continue with Visual Assessments
- Continue chemical and in-situ monitoring
- Continue with Goose surveys
- Involve even more volunteers in monitoring program
- Report outs to member municipalities

Monitoring for real use

- Data greatly utilized to educate residents (eg. Festivals) and municipalities
- Annual Report
- Data utilized to identify areas of concern
- Data utilized to provide BMP sites

For more information

- For more information please contact
  - Art Vespignani art724@aol.com
  - Whippany River website
    - www.wrwac.org