

# WATER SNAPSHOT



# **Water Snapshot '97**

An Earth Week Survey of the  
Delaware River and its  
Tributaries

(Cover graphic by DRBC, Tom Brand)

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*Water Snapshot '97*, following its predecessor, *Water Snapshot '96*, continued the Earth Day water quality monitoring event throughout the entire Delaware River Basin. For nine days in April 1997, nearly 80 organizations and more than 350 individuals monitored the waters of the Delaware River Basin. These monitors sampled a total of 358 locations on 174 waterways throughout the Delaware River watershed. Monitors collected over 2,100 pieces of information. These data give us a “snapshot” of the Delaware River watershed, which can be used to examine today’s water quality and to serve as a baseline for measuring future water quality. Furthermore, these efforts can be augmented in future Snapshots, to assess watershed quality more fully. For the parameters measured in 1997, the Delaware River Basin water quality is good.

## How It Began and How It Has Continued

*Water Snapshot '96* was conceived as a way of identifying and uniting the numerous water quality monitoring programs that are operating in the Delaware River Basin. Various governmental agencies and the Delaware Riverkeeper Network supported this idea. The result was *Water Snapshot '96*, the first basin-wide sampling event ever undertaken in the Delaware River Basin.



The vision of *Water Snapshot '96* was a nine-day event, running concurrently with Earth Day, enlisting hundreds of people to test the waters of the Delaware River Basin as a massive display of commitment toward clean water in the basin. Watershed associations, schools, youth organizations,

citizen monitoring groups, government agencies, water and sewer departments, industries, environmental professionals, sportsmen, and others collected water quality data. They

submitted the data to the Delaware River Basin Commission (DRBC) for analysis.

*Water Snapshot '96* was a huge success. More than 70 organizations plus many individuals collected water quality information during the event. Twenty-three schools and youth organizations, 20 citizen and watershed groups, 17 governmental agencies, and three private companies joined in the Earth Week project.

Because of the great success of *Water Snapshot '96*, *Water Snapshot '97* took place from April 19 through 27, 1997, including Earth Week. The purposes for 1997 were the same as for 1996. In addition, it was hoped that new participants would be attracted to the *Snapshot* event.

To help achieve these goals, a Volunteer in Service to America (VISTA) member served as the full time coordinator. Teresa Halverson was recruited by the U.S. Environmental Protection Agency (EPA), Region III.

The coordinator used mailing lists from the environmental organizations from the four states of the Delaware River Basin (New York, New Jersey, Delaware, and Pennsylvania), the two EPA regions, and participants from *Water Snapshot '96*. An introductory flyer was then mailed out to announce the event. Later, a one-page data sheet for recording data was mailed out. Also, the coordinator made presentations at various public meetings to publicize the event.

These efforts led to an increase in the number of participants for *Water Snapshot '97*. Overall, 37 school and youth organizations, 27 citizen and watershed groups, 10 governmental agencies, and 5

private companies joined together to sample the waters of the Delaware River Watershed. The total number of people participating in the event was near 400.

The selection of water quality parameters for *Water Snapshot '96* had been a critical decision, since the program's participants would vary from highly scientific organizations to elementary school programs using simple test kits and litmus paper. A small suite of 'core' parameters consisting of air and water temperature, pH, dissolved oxygen, nitrate, and phosphate had been chosen and had proven effective.

Recognizing that most programs sampled additional parameters, *Water Snapshot '97* asked for any additional tests monitored by the participants. Because of this request, the committee included five optional parameters in *1997*. These were alkalinity, carbon dioxide, coliform, conductivity, and turbidity. The data form also asked participants what type of equipment they used. The two most common testing kits used by the various non-governmental programs were from the LaMotte Company and the Hach Company.

Since many diverse groups participate in *Water Snapshot '97*, data are democratized—i.e., all data are lumped together no matter the precision of the analytical method or expertise of the analyst.

Appendix A displays a list of the waterbodies monitored, site description, and the core monitoring data, as was done in Appendix D of the *1996* report.

Appendix B displays the names, addresses, and phone numbers of the *Water Snapshot '97* participants. Based on the individual

participants, 14 percent were from Delaware, 18 percent from New Jersey, 8 percent from New York, and 60 percent from Pennsylvania. In addition, results from the five optional monitoring parameters are listed here.

## The Delaware River Basin: Environmental Setting

The Delaware River Basin is a fairly small watershed in comparison with those of other major U.S. rivers. In land area, the basin drains 12,765 square miles, which is only 0.4% of the U.S. total. However, the basin seems much larger considering the fact that almost 7% of the U.S. population depends upon the Delaware Basin as its source of water supply. Blessed by 44 inches of rainfall per year, the basin is able to support not only the 7.5 million residents within its boundaries, but another 10 million outside the basin in New York City and northern NJ. The Delaware Basin also serves to supply many industrial, agricultural, commercial, and recreational needs.

It was not long ago when the many demands placed upon Delaware River water nearly killed the river itself, for in addition to serving as a water supply for so many people and their activities, the river also served as an open sewer. At the height of World War II, many reaches of the river were devoid of life due to lack of oxygen. Since then, the river has been brought back to life. Much of the credit for restoration of the river has been given to creation of the federal Clean Water Act, the E.P.A. and the Delaware River Basin Commission. These agencies were not alone in their heroic efforts. Since the 1970's environmental movement, government agencies have been aided greatly by watchful citizen monitors. Recognizing that government alone cannot preserve the outstanding water quality of the Delaware, regular people banded together to take ownership of their local waterways, and to preserve their valuable water resources for future generations. Just as the

Delaware River Basin is composed of many smaller watersheds (also called sub-basins), the citizen monitors listed in the appendices of this document contribute to a much larger collective effort.

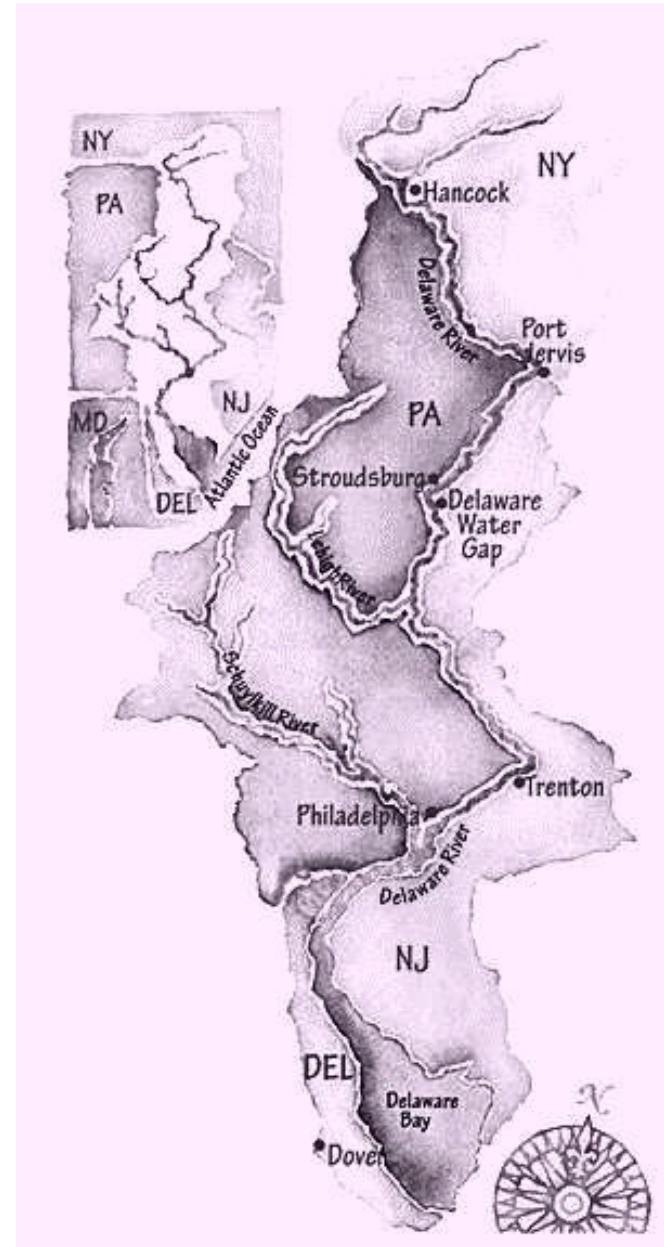
### *A Tour of the Delaware River Watershed*

Along its 330-mile path to the Atlantic Ocean, the Delaware River collects water from ecologically diverse tributaries, influenced by wide-ranging natural and human-induced conditions which dictate its water quality. The major tributaries to the Delaware are the Lehigh and Schuylkill Rivers in Pennsylvania. Both of these watersheds have been subject to by-products of intensive coal mining in their headwaters. Major towns along each tributary include: Allentown, Bethlehem and Easton along the Lehigh River, and Pottsville, Reading, Pottstown, Norristown, and Philadelphia along the Schuylkill River.

The cold, clear, highly oxygenated mountain streams of the New York Catskill Mountains form the headwaters of the Delaware River Basin, draining into the East and West Branches of the Delaware River, which meet at Hancock, NY. This northern region is known to geologists as the glacier-carved Upland physiographic province. This area is home to the Upper Delaware National Scenic and Recreational River as well as the Middle Delaware Scenic and Recreational River, both of which have been included in the National Wild and Scenic Rivers System. Once the river breaks through the main ridge of the Appalachians at Delaware Water Gap, it flows through broad valleys past the rolling hills of the Piedmont. Here the streams are a bit less sloped, flow is a little slower, light penetration is greater, the substrate is less influenced by the glacial origin of the rock, and the land includes less forest and more farmland and suburban sprawl.

Past the fall line at Trenton, the river flows through the Coastal Plain of New Jersey, southeastern Pennsylvania and Delaware in the tidal Delaware Estuary. The major influence on water quality in the Lower Delaware is urbanization. The river flows past Trenton, Camden, Philadelphia, Chester and Wilmington, a highly populated urban complex with major ports and industries. Tributaries along this reach of river have felt the effects of a few hundred years of development and industrialization, and must accommodate further rapid growth in their headwaters now that our population has shifted out of the cities and into the ever-growing suburbs. Many of these tributaries are especially in need of protection by citizen monitors, and are close to most of our back yards.

Below Wilmington, the river widens into Delaware Bay, where the land is flat, the shores are marshy, and agriculture dominates the inland landscape. Some industry exists where petrochemical and power plants require cooling water, but most other human-induced effects on water quality originate from poultry and vegetable farming. Feeder streams flow slowly, meander, and are generally warmer than the mountain streams in Pennsylvania and New York. Major tributaries to the bay include the Salem, Cohansey and Maurice Rivers (a National Wild and Scenic River) in New Jersey, and the Chesapeake & Delaware Canal and the Smyrna, Leipsic, Murderkill, and Broadkill Rivers in DE. Water quality in the bay is heavily influenced by the tides, which may cause great variation in local water quality. Before feeding into the Atlantic Ocean between Cape May, New Jersey, and Cape Henlopen, Delaware, the bay encompasses an extremely rich and diverse ecosystem known for its fisheries, horseshoe crabs, and huge flocks of migratory birds.



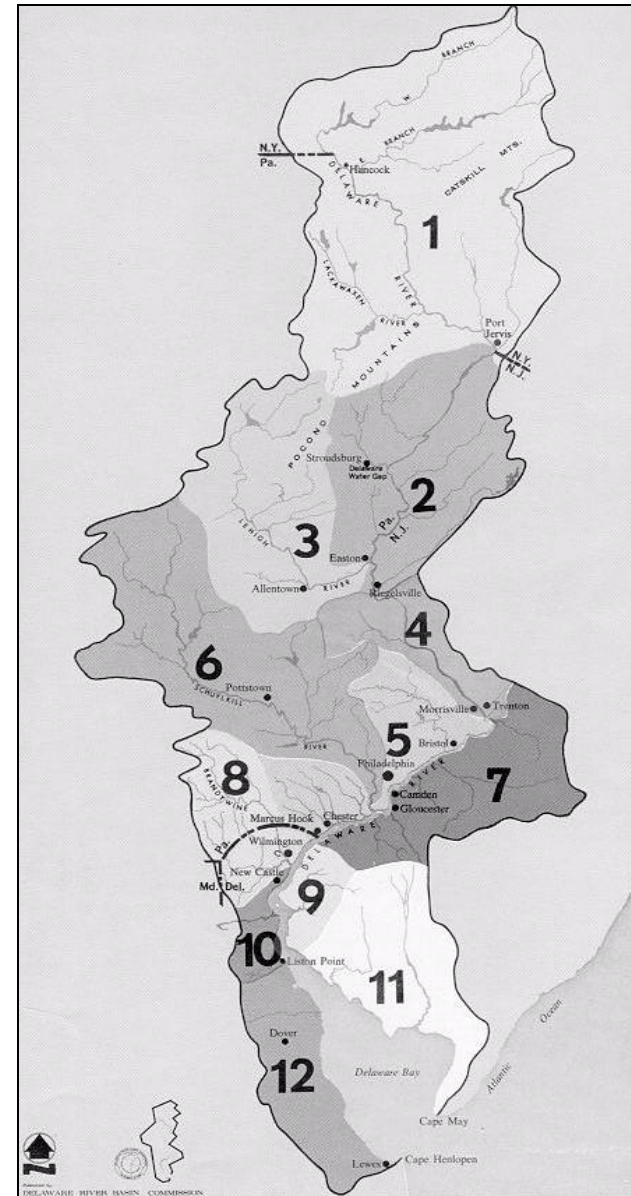


## *Sub-Basins of the Delaware River Watershed*

For the purpose of defining the geographic extent of sampling which occurred during Snapshot '97, sample locations were assigned sub-basin numbers (see Appendix A). Though some of the DRBC sub-basin boundaries are political rather than hydrologic divisions, their utility has proved useful toward defining the extent of sampling coverage for this study. The following definitions include lists of major tributaries to the Delaware River which are located in each sub-basin. Some discussion of sampling effort is included along with the sub-basin descriptions.

### **Sub-Basin 1: Upper Basin (NY and PA)**

Drainage in New York, Pennsylvania, and a very small part of New Jersey, including tributaries entering the Delaware River above the USGS stream flow gauge at Montague, NJ, located at Delaware River mile 246.3. The approximate drainage area totals 3,422 square miles. In New York, the major tributaries to the Delaware River include: East Branch Delaware River, West Branch Delaware River, Callicoon Creek, Tenmile River, Mongaup River, and the Neversink River. In Pennsylvania, major tributaries include: Equinunk Creek, Lackawaxen River, and Shohola Creek. Sub-basin 1 includes the National Park Service Upper Delaware Scenic and Recreational River. 36 samples were taken from locations in sub-basin 1.



### **Sub-Basin 2: Middle Delaware (NJ and PA)**

Drainage in New Jersey and Pennsylvania between the streamflow gauge at Montague, NJ (river mile 246.3) and the gauge at Riegelsville, NJ (river mile 174.8). Excludes the Lehigh River watershed. The approximate drainage area is 1,542 square miles. In New Jersey, major tributaries include: Flat Brook, Paulins Kill, Pequest River, Pohatcong Creek, Lopatcong Creek, and the Musconetcong River. Pennsylvania tributaries include: Sawkill Creek, Raymondskill Creek, Dingmans Creek, Bush Kill, Brodhead Creek, Cherry Creek, Martins Creek, and Bushkill Creek. Sub-basin 2 includes the National Park Service Middle Delaware Scenic and Recreational River. 55 samples were taken from locations in sub-basin 2.

### **Sub-Basin 3: Lehigh River Watershed (PA)**

The Lehigh River drainage area encompasses 1,364 square miles, entering the Delaware River at Easton, PA. Tributaries to the Lehigh include: Tobyhanna Creek, Bear Creek, Black Creek, Nesquehoning Creek, Mahoning Creek, Pohopoco Creek, Lizard Creek, Aquashicola Creek, Hokendaqua Creek, Little Lehigh Creek, Monocacy Creek, and Saucon Creek. 41 samples were collected from sites located in sub-basin 3.

### **Sub-Basin 4: Lower Delaware to Trenton (NJ & PA)**

This is the drainage area, composed mostly of small Delaware River tributaries, located between the USGS gauge at Riegelsville, NJ (river mile 174.8), and the USGS gauge at Trenton, NJ (river mile 134.3). The approximate drainage area is 452 square miles. New Jersey tributaries include:

Hakihokake Creek, Harihokake Creek, Nishisakawick Creek, Copper Creek, Warford Creek, Locketong Creek, the Delaware and Raritan Canal water diversion point, Wickecheoke Creek, Alexauken Creek, Swan Creek, Moore Creek, Fiddler Creek, Jacobs Creek, and Gold Run. Pennsylvania tributaries include: Cooks Creek, Gallows Run, Tinicum Creek, Tohickon Creek, Hickory Creek, Paunacussing Creek, Rabbit Run, Dark Hollow Run, Pidcock Creek, Jericho Creek, Houghs Creek, Dyers Creek, and Buck Creek. 11 sites were sampled in sub-basin 4, mostly on the Delaware River.

### **Sub-Basin 5: Upper Estuary Tributaries (PA)**

This is the drainage area in Pennsylvania between the Trenton gauge (river mile 134.3) and the Pennsylvania-Delaware state boundary near Marcus Hook, PA (river mile 78.8). This sub-basin excludes the Schuylkill River watershed above Fairmount Dam in Philadelphia, PA. The confluence of the Schuylkill into the Delaware (river mile 92.5) divides sub-basin 5 into minor basins 5A (upstream of the Schuylkill) and 5B (downstream of the Schuylkill).

The approximate combined drainage area of sub-basin 5 is 678 square miles. Tributaries to the Delaware River located in sub-basin 5A include: Mill Creek, Neshaminy Creek, Poquessing Creek, Pennypack Creek, and Frankford Creek. Sub-basin 5B tributaries to the Delaware River include: Darby Creek, Crum Creek, Ridley Creek, Chester Creek, and Marcus Hook Creek. 32 sites were sampled in sub-basin 5A, and 27 sites were sampled in sub-basin 5B.

### **Sub-Basin 6: Schuylkill River Watershed (PA)**

This is the Schuylkill River watershed above Fairmount Dam in Philadelphia, PA. The Schuylkill River empties into the Delaware River at river mile 92.5. Fairmount Dam is located at Schuylkill river mile 8.5. Below Fairmount Dam, the Schuylkill River is tidal and different in character from the upstream drainage area. The approximate drainage area is 1,893 square miles. Major tributaries to the Schuylkill River include: West Branch Schuylkill River, Little Schuylkill River, Maiden Creek, Tulpehocken Creek, Manatawny Creek, French Creek, Pickering Creek, Perkiomen Creek (including Unami Creek, Swamp Creek, East Branch Perkiomen Creek, and Skippack Creek), and Wissahickon Creek. In 1996, the Schuylkill River was under-represented in sampling effort (the main stem was sampled just once). In 1997, the Schuylkill River watershed was sampled 88 times on 49 tributaries, and the main stem was sampled 13 times. This makes the Schuylkill watershed the most highly represented among all of the Delaware River watersheds for Snapshot '97.

### **Sub-Basin 7: Upper Estuary Tributaries (NJ)**

In New Jersey, this is the drainage area located between the USGS gauge at Trenton (river mile 134.3) and the point opposite the Pennsylvania-Delaware state boundary (river mile 78.8) at Nortonville, NJ, which is just seaward of the mouth of Raccoon Creek in New Jersey. Sub-basin 7 is divided into sub-basins 7A and 7B at a point just seaward of the mouth of Woodbury Creek in New Jersey (river mile 91.6). The approximate combined drainage area of sub-basin 7 is 1,019 square miles. Tributaries to the Delaware River in sub-basin 7A include: Crosswicks Creek, Blacks Creek, Crafts Creek,

Assiscunk Creek, Rancocas Creek, Swede Run, Pompeston Creek, Pennsauken Creek, Pohack Creek, Baldwin Run, Cooper River, Newton Creek, Big Timber Creek, and Woodbury Creek. Sub-basin 7B tributaries include: Little Mantua Creek, Mantua Creek, Clonmell Creek, Nehonsey Brook, Repaupo Creek, and Raccoon Creek. 19 sites were sampled in sub-basin 7, though most of the largest tributaries were missed, including the Rancocas and Mantua watersheds.

### **Sub-Basin 8: Brandywine-White Clay-Christina (PA, DE)**

This is the drainage area in Pennsylvania and Delaware between the PA-DE state boundary at Marcus Hook, PA (river mile 78.8) and a point just seaward of the mouth of the Christina River in Delaware (river mile 70.7). The approximate drainage area is 591 square miles. Tributaries include: Naaman Creek, Christina River, White Clay Creek, Red Clay Creek, West Branch Brandywine Creek, East Branch Brandywine Creek, and the Brandywine Creek. 23 sites were sampled in sub-basin 8.

### **Sub-Basin 9: Lower Estuary Tributaries (NJ)**

In New Jersey, this is the drainage area between Delaware River mile 78.8 at Nortonville, NJ, and the mouth of the Delaware River (head of Delaware Bay) at Hope Creek Monument (opposite Liston Point, DE) at river mile 48.2. The approximate drainage area of sub-basin 9 is 257 square miles. Tributaries include: Oldmans Creek, Salem River, and Alloways Creek. 8 sites were sampled in sub-basin 9.

### **Sub-Basin 10: Lower Estuary Tributaries (DE)**

In Delaware, this is the drainage area from a point just seaward of the mouth of the Christina River (river mile 70.7) to the mouth of the Delaware River (head of Delaware Bay) at Liston Point (river mile 48.2). This sub-basin is broken into minor sub-basins 10A and 10B at the Chesapeake & Delaware Canal (river mile 58.9). The approximate combined drainage area of sub-basin 10 is 166 square miles. Tributaries to the Delaware Estuary in sub-basin 10 include: Red Lion Creek, Dragon Creek, C & D Canal, Augustine Creek, Appoquinimink River, Hangmans Run, and Blackbird Creek. 3 samples were taken from sites located in sub-basin 10.

### **Sub-Basin 11: Delaware Bay Tributaries (NJ)**

In NJ, this sub-basin includes the drainage area from the Hope Creek Monument (head of Delaware Bay) at river mile 48.2 to the mouth of Delaware Bay at Cape May, NJ (river mile 0). Sub-basin 11 is divided into minor basins 11A and 11B, just below the confluence of the Maurice River (river mile 21.02). The combined drainage area of sub-basin 11 is 769 square miles. Tributaries to Delaware Bay located in sub-basin 11 include: Stowe Creek, Cohansey River, Cedar Creek, Nantuxent Creek, Oranoaken Creek, Dividing Creek, Maurice River, West Creek, Dennis Creek, Fishing Creek and the Cape May Canal. The Maurice River is included in the National Wild and Scenic Rivers system, serving the towns of Vineland and Millville, NJ, yet was never sampled during Snapshot '97. The Cohansey River watershed, which contains the town of Bridgeton, NJ, was sampled just once. No lower Delaware Bay tributaries in sub-basin 11B were sampled.

### **Sub-Basin 12: Delaware Bay Tributaries (DE)**

In Delaware, this sub-basin includes the drainage area between the head of Delaware Bay at Liston Point (river mile 48.2) and the mouth of Delaware Bay at Cape Henlopen (river mile 0). Sub-basin 12 is divided into minor basins 12A and 12B at a point just seaward of the St. Jones River (river mile 23.7). The combined drainage area of sub-basin 12 is 612 square miles. Tributaries to Delaware Bay in sub-basin 12 include: Smyrna River, Leipsic River, Mahon River, Little River, St. Jones River, Murderkill River, Mispillion River, Broadkill Creek, and Roosevelt Inlet (entrance to the Lewes & Rehoboth Canal). 14 samples were taken from sites located in sub-basin 12.

*Snapshot '97 Sampling Effort, a Look at the States*

**State Distribution of Waterways Sampled, with a Comparison to Snapshot '96.** This table shows that the majority of streams sampled for Snapshot '97 were located in Pennsylvania. A particular area of improvement from 1996 to 1997 was the effort applied to coverage of the Schuylkill River Basin. This table also shows that New Jersey sampling was not as extensive as in 1996, and should be better represented during future events. In particular, tributaries to the Delaware Estuary and Delaware Bay need to be sampled more (see sub-basin descriptions and sampling summaries).

	<b>% of 1996 Waterways Sampled</b>	<b>% of 1997 Waterways Sampled</b>	<b>No. of 1997 Waterways Sampled</b>	<b>% of DRB Land Area</b>
<b>PA</b>	51	67	116	47
<b>NJ</b>	28	13	23	22
<b>NY</b>	13	10	16	17
<b>DE</b>	7	9	17	7

## Water Quality Findings

*Water Snapshot '96* indicated that, overall, the Delaware River Basin water quality was in good condition. The Delaware River, the main stem of the Basin, was also in good condition. Many people and organizations cared enough about the Basin's waters to take the time and effort to monitor its waters, ranging from small streams to large rivers. This snapshot effort suggested that there was an important constituency who would be available to help protect the Delaware Basin.

*Water Snapshot '97* verified the results of 1996. Once again, numerous people and organizations are looking after the Basin's waters. The condition of these waterways is good. The need for increased monitoring of the Schuylkill River, suggested in the 1996 report, was amply taken care of in 1997.

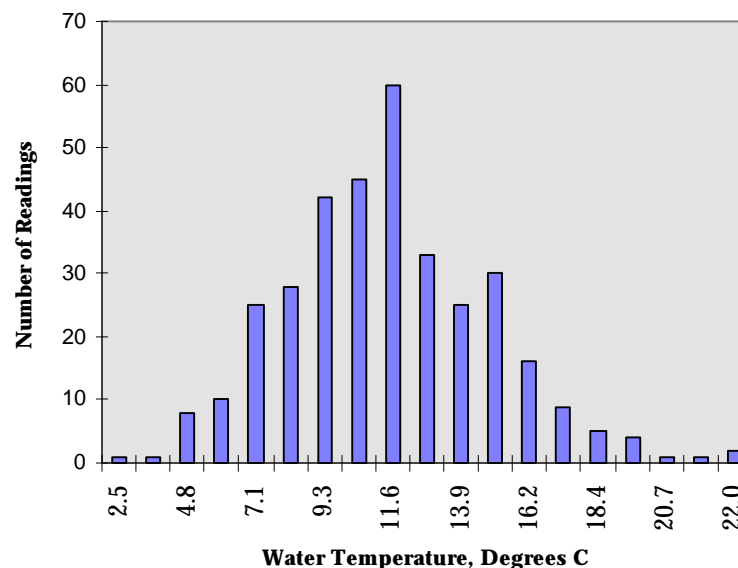
The local-scale, site-by-site picture, which is still the heart of *Snapshot*, is seen in Appendix A. Participants, listed in Appendix B, monitored more than 350 sites within the Basin during the nine-day period.

### Water Temperature

Water Temperature is an important environmental factor for fish and other aquatic life, with many species needing specific temperature ranges to thrive. Temperature affects the concentrations of dissolved oxygen in water, with higher concentrations occurring with colder temperatures. The average water temperature of all sampling sites in the basin was 10.9°C (51.6°F). This average is about 2.7°C (4.9°F) lower than the Basin-wide water temperature of *Water Snapshot '96*.

**Distribution of Water Temperatures in the Delaware River Basin Watershed.** The range of temperatures from 1997 is similar to the range found in *Snapshot '96*. The values reflect nine days of monitoring in the Springtime, in locations ranging from the mountains to the coastal plain.

**Distribution of Water Temperatures in the Delaware River Watershed**



## ***Dissolved Oxygen***

The amount of oxygen that can be dissolved into water is dependent on temperature. For any temperature, the maximum dissolved oxygen (DO) concentration that can be achieved is called the saturation value. If the water temperature rises, the saturation value falls; if the temperature falls, the saturation value rises, allowing greater concentrations of DO.

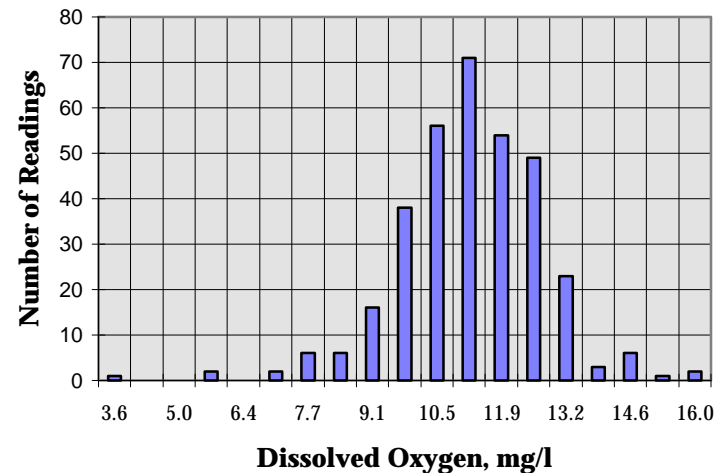
In natural streams, saturation values generally will be above 90 percent, but less than 100 percent, because of naturally occurring organic material in the water. The exception occurs when aquatic plant photosynthetic activity during daylight raises dissolved oxygen concentrations temporarily above 100 percent saturation. On the deficit side, pollution by discharges of oxygen-demanding materials like improperly treated sewage can drastically lower dissolved oxygen concentrations.

In general, DO levels above 6 milligrams per liter of water, or 6 mg/l, (equivalent 6 parts per million) provide full support of fish and other aquatic life. Levels of 4 or 5 mg/l are often acceptable, but levels lower than that lead to reductions in populations. The exact requirement for DO varies by species, with some being very tolerant and others being intolerant—and, thus, more susceptible—to the effects of water pollution.

*Water Snapshot '96's* DO concentration levels were a bit lower than *Snapshot '97*. *Snapshot '96's* average water temperature was 13.6°C. This temperature would have 100 percent saturation value at 10.3 mg/l dissolved oxygen. The 1996 mean dissolved oxygen concentration was 9.9 mg/l; the hypothetical percent saturation for the basin as a whole would be 96 percent.

**Distribution of Dissolved Oxygen Concentrations for the Delaware River Basin Watershed.** *Water Snapshot '97* collected 336 samples of dissolved oxygen concentrations. The mean DO concentration was 10.8 mg/l. This value represents a hypothetical saturation value of 100.9 percent, given the basin's mean water temperature of 10.9 °C. The high DO value makes sense because the colder water is able to hold more oxygen. Low saturation values were found at sites on Cobbs Creek and Poquessing Creek in Philadelphia, and on the Delaware River at Pea Patch Island and Ship John Light, indicating potential problem spots.

### **Distribution of Dissolved Oxygen Concentrations for the Delaware River Watershed**



## pH

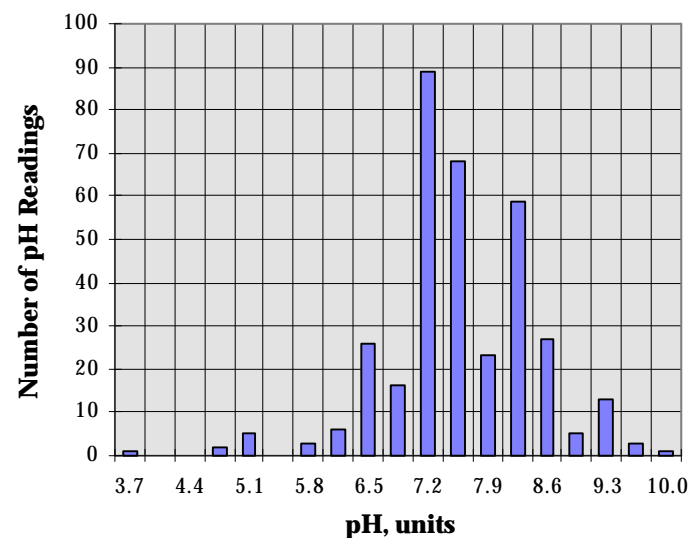
pH is a measure of the acid/alkaline relationship in a stream. pH values range on a scale of zero to 14, with 7 being neutral. Since pH is logarithmic, a one-notch change in pH (e.g., from 6 to 7) represents a 10-fold increase.

A pH of about 6 to 9 is generally favored by aquatic life, especially fish. Algae and rooted plants in a stream modify pH levels through the photosynthesis and respiration processes. If plants are active, wide swings in pH levels can be observed over a 24-hour period, with low values experienced at night and high values experienced at midday. Plant use and release of carbon dioxide cause these swings in the water column. In-stream pH levels can also be impacted by acid and alkaline chemicals from industry, mining, and other man-made sources, as well as by natural sources such as limestone deposits (bedrock) and tannic acid (produced by certain vegetation).

Values of pH below 6 should be viewed with concern, unless a natural condition exists that can explain them. On the Pocono Plateau, in the Tobyhanna & Tunkhannock Creek watersheds, the water is acidic and appears tea-colored. The area is dominated by thick stands of pine, and the ground is boggy wetlands. The reason for low pH values in these streams is the tannic acid from the pine trees.

**Distribution of pH values for the Delaware River Basin Watershed.** The average pH for *Water Snapshot '97* was 7.4. Most of the monitoring sites fell within the desired pH range. Of 347 pH samples, 11 were below 6 (9 of these in the tannic acid-rich Tobyhanna & Tunkhannock Creek area) and nine were above 9. Of these, most had DO values in the super-saturation range, indicating aquatic plant activity.

**Distribution of pH Values for the Delaware River Watershed**





## Nitrate and Phosphate

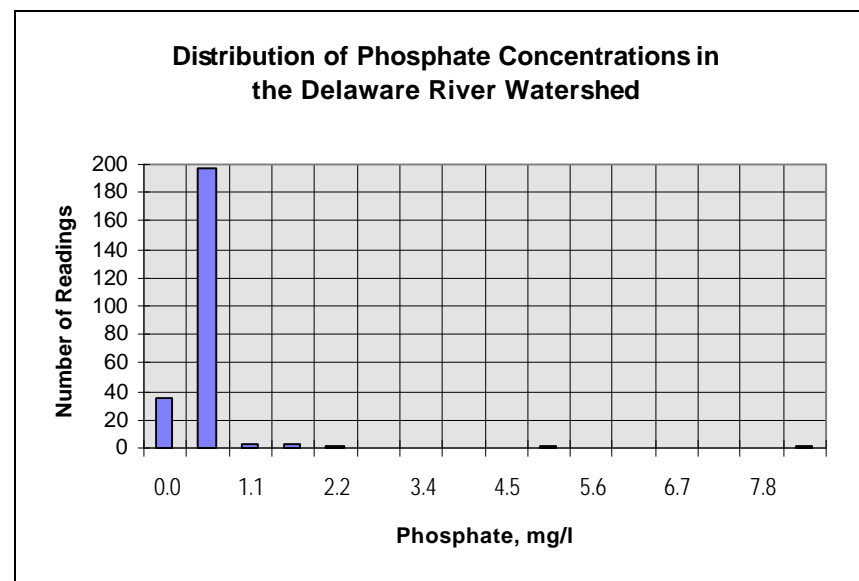
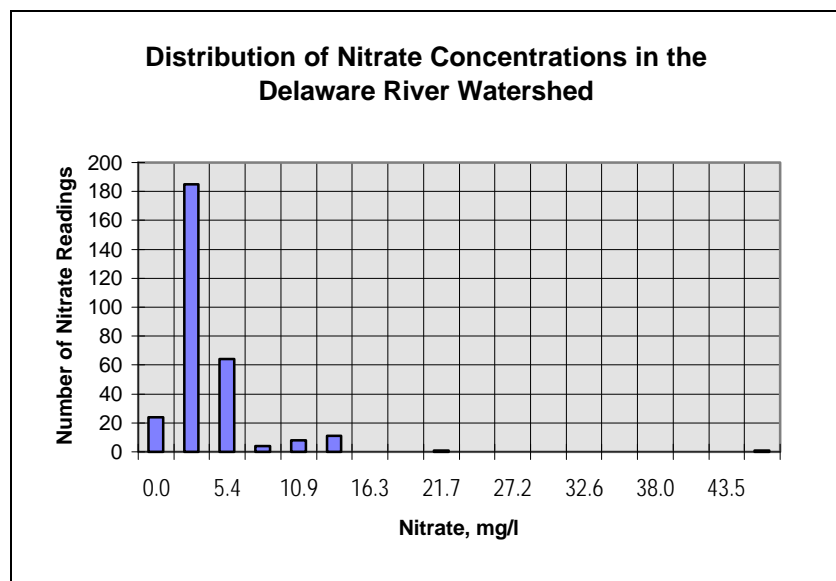
Nitrate and phosphate are necessary for aquatic plant growth, which supports the rest of the aquatic food chain. Both of these nutrients are derived from a variety of natural and artificial sources, including decomposition of plant and animal materials, man-made fertilizers, and sewage. While excessive nutrients might cause undesirable plant growth with their deleterious impacts on water quality, an appropriate level of nutrients is one of the driving forces of the aquatic ecosystem.

Determining the optimum levels of nitrates and phosphates in water is extremely complex. A concentration of nitrate or phosphate that causes problems in one stream might not cause similar problems in another. Nitrate and phosphate levels are also complex because they are constantly being taken up and released by aquatic life, being exchanged with stream bed sediments, and undergoing various other transformations.

Natural nitrate concentrations rarely exceed 10 mg/l. Most are less than 1 mg/l, especially during periods of high plant production. Concentrations greater than 20 mg/l may pose a health hazard to babies and other small mammals, causing a problem where the blood's hemoglobin cannot transport oxygen.

Man-made sources of phosphate include fertilizers, domestic sewage, and detergents. In natural unpolluted water, phosphate levels are generally very low, and its presence usually determines plant growth. Phosphorus, which combines with oxygen to form phosphate, is most often the limiting factor for plant production in streams.

**Distribution of Nitrate and Phosphate Concentrations in the Delaware River Watershed.** To determine whether levels are excessive or not, check concentrations at nearby streams in Appendix A, or check value against these frequency histograms.



## DELAWARE RIVER FINDINGS

Small headwater streams flow out of springs, down mountainsides, and through fields and wetlands to join with other headwater streams. These larger streams flow into other larger streams until ultimately a tributary flows into the Delaware River somewhere along its route to the Atlantic Ocean. The Delaware thus integrates the water quality, flow, land uses, and other attributes of hundreds of watersheds that drain the Delaware River Basin. The Delaware River and its water quality are the sum of these parts.

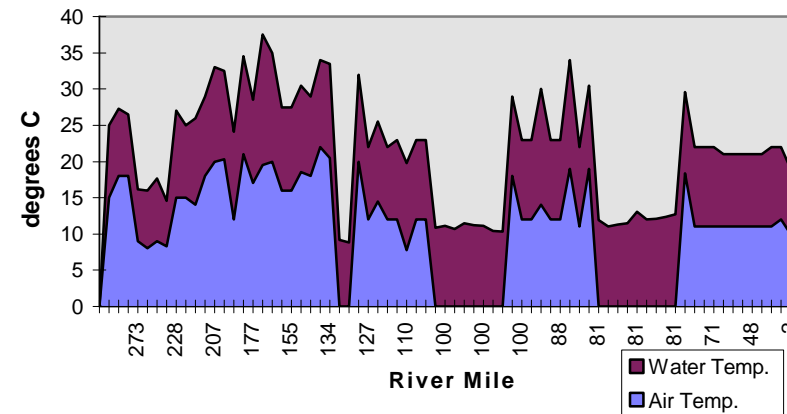
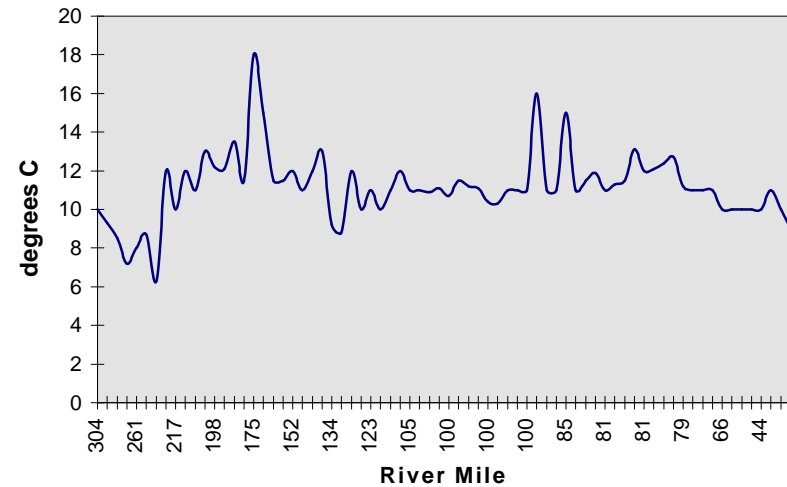
During Water Snapshot '97, the Delaware River/Bay was sampled 74 times at 50 different locations. By comparison, the river was sampled only 48 times during Water Snapshot '96. Sampling the river were various federal, state, and local agencies; industries; youth organizations; citizens; and others. DRBC celebrated Secretary's Day by having its secretaries spend a day in the field collecting data at various river sites.

The following data profiles compile the river data collected during *Water Snapshot '97*. Trends and other information that can be identified in the profiles are discussed.

### Water Temperature

In general, an increasing trend in water temperature is observed in the non-tidal river from Hancock, New York (mile 331) to Trenton, New Jersey (mile 133) with relatively constant water temperatures in the tidal Delaware Estuary and Bay (miles 133 to 0). The influence of some large tributaries and thermal discharges are probably seen in the spikes. The profile is generally similar to 1996, but lower. When air and water temperatures are shown together, the influence of each on the other is readily apparent. It should not be assumed that air temperature is influencing water temperature, since a large river like the Delaware influences the climate nearby.

Delaware River Water Temperature (Celsius)

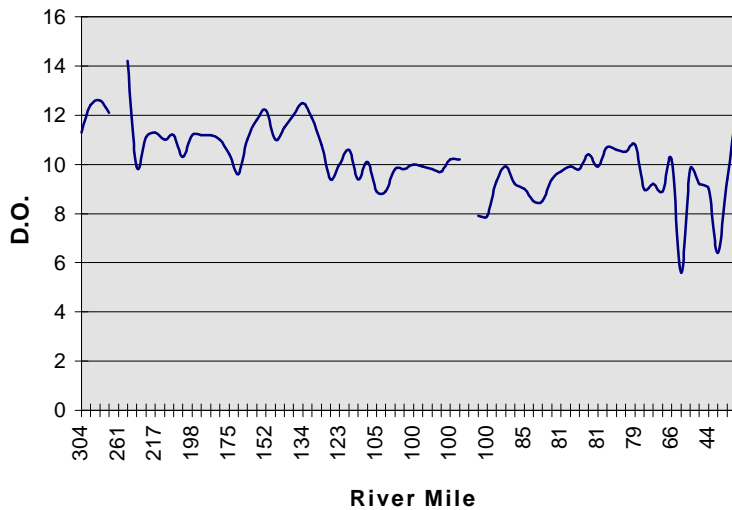


## Dissolved Oxygen

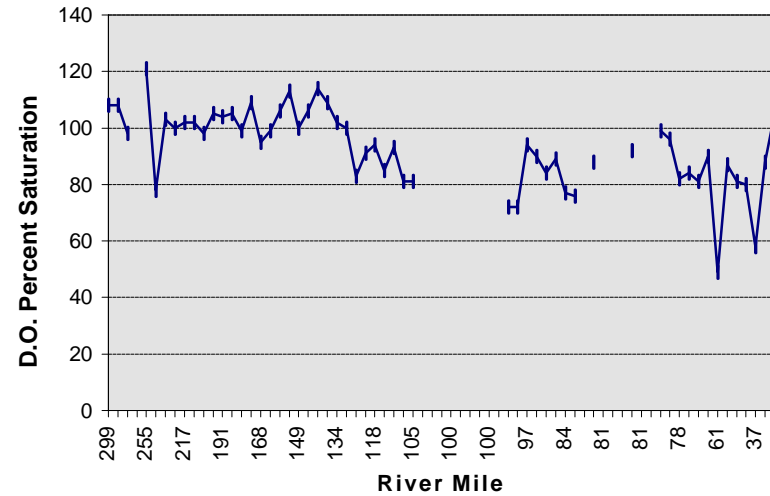
Dissolved oxygen generally declines from the upper-most reaches of the river to the lower reaches of the Delaware Estuary. This is due to water temperature differences as described previously, and also because the downstream reaches of the river are more urbanized and subject to more wastewater treatment plant discharges. During Water Snapshot'97, however, dissolved oxygen levels throughout the Delaware were more than adequate to support the migration and spawning of important migratory fish like the American Shad. However, the low values (for April) observed at River Miles 61 (Pea Patch Island) and 37 (Ship John Light) suggest a possible problem that requires investigation.

While dissolved oxygen data provides useful information, additional information is derivable by combining D.O. data with water temperature data and calculating percent D.O. saturation. As shown below, various locations in the upper Delaware reaches indicate possibly excessive algal photosynthesis (saturation above 100) while some locations downstream of Trenton, New Jersey, (mile 134) particularly around Philadelphia and Camden, show impacts from the large amount of oxygen-demanding wastewater being discharged into the Delaware Estuary (saturation values below 95 or so).

**Delaware River Dissolved Oxygen**

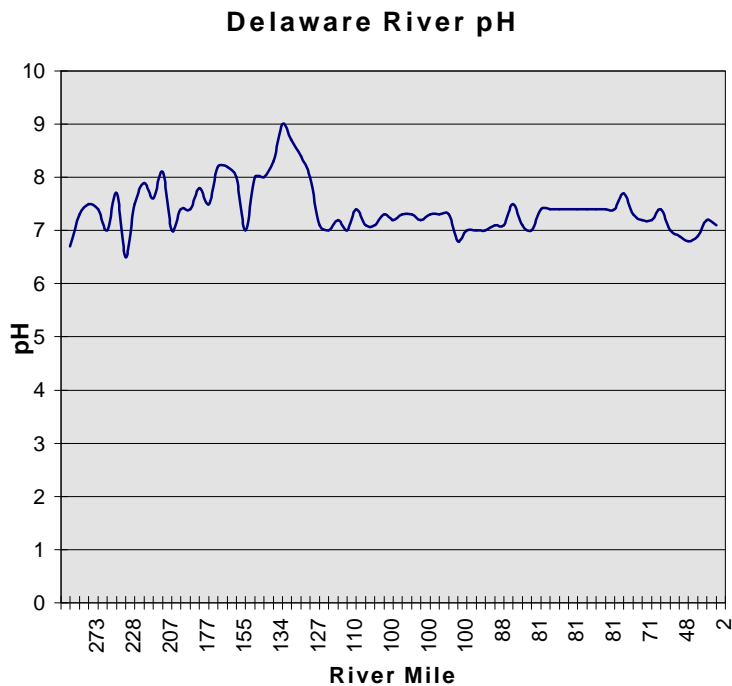


**Delaware River Dissolved Oxygen  
(Percent Saturation)**



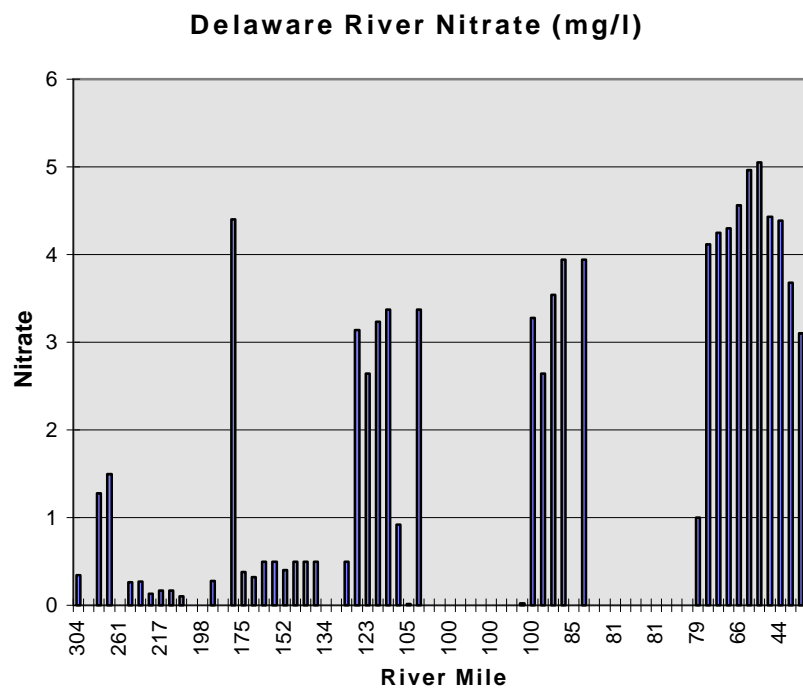
## pH

Values for pH were generally higher and more variable in the non-tidal river than in the Delaware Estuary and Bay. The pattern of pH observed during Water Snapshot '97 suggests that biological reactions (notably photosynthesis) were actively occurring in the non-tidal reach of the river, but less noticeable in tidal waters. Tidal waters (Delaware Estuary and Bay) are generally more turbid and thus provide light-limited conditions. Photosynthesis by algae and other aquatic plants is dependent on sunlight. Low pH conditions observed during Water Snapshot '96 at Bordentown, NJ were not observed in 1997.



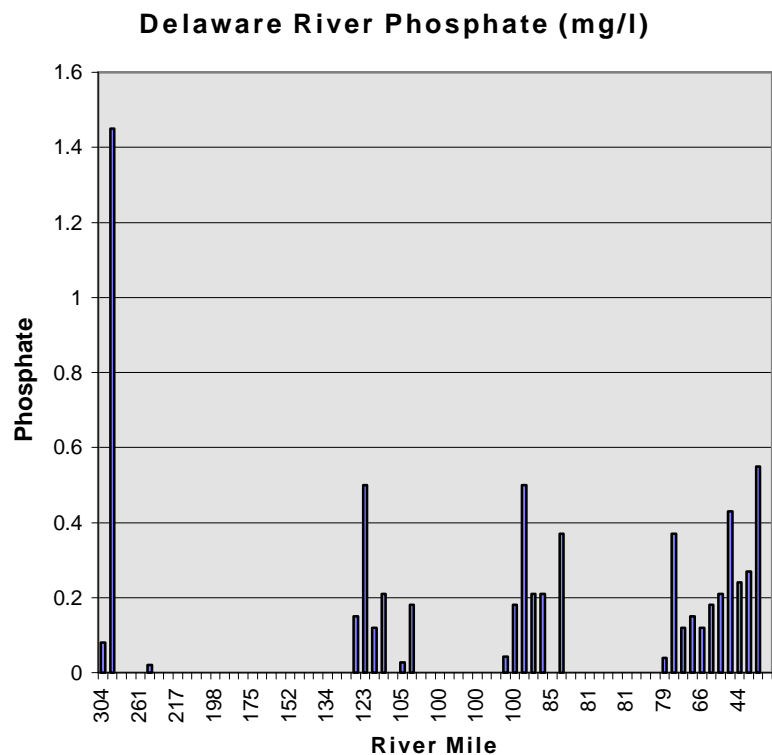
## Nitrate

Nitrate shows a general increase from upstream to downstream until the upper Delaware Bay is reached. In past decades, the Delaware Estuary was dominated by ammonia forms of nitrogen, but the upgrading of wastewater treatment plants has resulted in a system dominated by nitrate, a good trend. The regions of higher nitrate concentrations are due to nitrate loads coming into the system from urban areas and large tributaries including the Lehigh River at mile 184 and very large treatment plants after mile 104. Decreases in nitrate in the upper section of Delaware Bay (after mile 55) are due to dilution by sea water.



## Phosphate

Phosphate's pattern in the Delaware River system is somewhat similar to nitrate's. Human sources of phosphate appear to dominate. This trend is quite pronounced in the Delaware Estuary (downstream of mile 133). Particularly interesting in 1997 was the high spike shown at mile 299 (the Damascus, Pa - Cocheton, NY bridge). The source of this high phosphate value, whether from a reservoir release, agricultural runoff, sampling error etc., is unknown.



## Summary

*Between April 19 and 27, 1997 a huge flash bulb went off over the Delaware River Basin as 79 organizations and hundreds of people took the second "snapshot" of Basin water quality. Climbing down stream banks, hanging from bridges, and wading in still-cold water, these folks collected an estimated 2100 pieces of data at 350 locations on 172 streams. The picture of water quality and, more importantly, the interest of the participants, is a good one. As Water Snapshot '97 is pasted into the Delaware River Basin album, planning for 1998 is well underway. See you out there!*

Appendix A

**Water Snapshot '97 Stream Data**

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
01NY	Beaver Brook	NPS - Upper Delaware Scenic & Recreational River	.2 mile up from mouth, river mile 275.5, Sullivan County, NY	04/22/97	12.0	6.9	6.9	12.0	0.00	0.00
01NY	Binnekill stream	Margaretville Central School	42 8'45" N 74 36'00"W	04/23/97	15.0	10.0	7.0		0.88	0.20
01NY	Biscuit Brook	Frost Valley Environmental Education Center	@ Frost Valley YMCA, near town of Denning, NY	04/26/97	16.0	5.0	6.0	12.0	0.00	0.00
01NY	Bushkill stream	Margaretville Central School	Fleischmanns, NY	04/21/97	2.0	5.0	7.0	11.2	0.88	0.20
01NY	Bushkill stream	Margaretville Central School	42 7'30"N 74 32'30"W,	04/21/97	11.0	4.0	6.5	9.3	0.88	0.20
01NY	Callicoon Creek	Delaware Riverkeeper Network - Uplands Office	at Hortonville, 20 yds above the Callicoon Creek & north branch Callicoon Creek confluence	04/20/97	13.5	8.0	7.0	12.0	1.76	0.20
01NY	Callicoon Creek - North Branch	Delaware Riverkeeper Network - Uplands Office	at DEC Fishing access about 1 mile upstream from Hortonville	04/20/97	10.5	5.5	6.8	12.2	2.20	0.20
01NY	Delaware River - East Branch	Margaretville Central School	42 8'47"N 74 39'20"	04/23/97	12.0	7.0	6.5	11.0	0.88	0.20
01NY	Delaware River - East Branch	Margaretville Central School	Margaretville, NY	04/23/97	22.0	6.0	6.5	10.0	0.88	0.20
01NY	Delaware River - West Branch	Pennsylvania DEP	Bridge on West Branch, Hancock, NY	04/21/97	10.0	5.5	6.9	12.6	0.52	0.01
01NY	Delaware River mile 255	New York State DEC	Port Jervis, at Route 6/209 Bridge	04/22/97	9.0	8.7	7.7	14.2	0.26	0.02
01NY	Delaware River mile 261	Audubon Society of NYS	At Mongaup River, Orange/Sullivan County, Deerpark/Lumberland, NY	03/07/97	8.0	8.0	7.0			
01NY	Delaware River mile 273	NPS - Upper Delaware Scenic & Recreational River	Barryville Bridge, river mile 273.5, Sullivan County, NY	04/22/97	9.0	7.2	7.4	12.1	1.50	0.01
01NY	Delaware River mile 284	NPS - Upper Delaware Scenic & Recreational River	Ten Mile River Access, river mile 284, Narrowsburg, NY	04/22/97	18.0	8.5	7.5	12.6	1.28	0.01
01NY	Delaware River mile 304	Pennsylvania DEP	Callicoon, NY Bridge	04/22/97	15.0	10.0	6.7	11.3	0.34	0.08

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
01NY	Dry Brook stream	Margaretville Central School	Arkville, Delaware Co., NY	04/22/97	13.0	4.0	6.5	8.8	0.88	0.20
01NY	Dry Brook stream	Margaretville Central School	Arkville, NY	04/24/97	4.0	4.0	6.5	10.0	0.88	0.20
01NY	Dry Brook stream	Margaretville Central School	Arkville, NY	04/27/97	14.0	8.0	7.0	11.3	0.88	0.20
01NY	Mill Brook	Audubon Society of NYS	Town of Lumberland, Sullivan Co. NY	05/01/97	12.8	10.0	7.0			
01NY	Millbrook stream	Margaretville Central School	42 4'00"N 74 37'00" W	04/24/97	10.0	7.0	6.5	11.0	0.88	0.20
01NY	Mongaup River	Delaware Riverkeeper Network - Uplands Office	Mongaup River & Rt. 17B, Mongaup, NY	04/24/97	7.0	10.0	6.8	11.0	0.80	0.20
01NY	Neversink River	Delaware Riverkeeper Network - Uplands Office	Fallsburg, NY, Rt. 52 junction Rt 42	04/24/97	7.0	10.0	6.8	12.0	0.80	0.20
01NY	Neversink River East Branch	Woodruff English Environmental Education Center	East Branch, 6 mi. upstream from Claryville, NY	04/30/97	20.0	9.0	5.5	9.0	0.00	0.00
01NY	Parcourse Stream	Sullivan County Boces	near Ferndale-Loomis Road, Liberty, NY, Sullivan County	05/16/97	10.0	12.0	6.9	9.4		
01NY	Ten Mile River	Delaware Riverkeeper Network - Uplands Office	a little upstream from where it empties into the Delaware River	04/21/97	14.5	8.0	7.0	10.8	0.20	0.20
01NY	Ten Mile River	NPS - Upper Delaware Scenic & Recreational River	.2 mile upstream from mouth, river mile 284.2, Narrowsburg, NY	04/22/97	18.0	8.2	7.0	12.0	0.13	0.01
01PA	Calkins Creek	NPS - Upper Delaware Scenic & Recreational River	.3 mile upstream from mile, River mile 295.6	04/22/97	18.0	10.0	7.6	11.4	1.01	0.01
01PA	Delaware River mile 255	Pennsylvania DEP	41 22'12.5 N, 74 41'53.5 W, at Route 6 & 209 Bridge WQN 153	04/21/97	8.3	6.3	6.5	9.9	0.27	0.02
01PA	Delaware River mile 299	NPS - Upper Delaware Scenic & Recreational River	Damascus/Cochecton Bridge, River 298.6, Wayne County	04/22/97	18.0	9.3	7.3	12.4		1.45
01PA	Dyberry Creek - East Branch	Pennsylvania DEP	right before it joins the West Branch, 5 miles north of Honesdale	04/22/97	12.0	6.0	6.8	12.4	0.45	0.02
01PA	Lackawaxen River	Delaware Riverkeeper Network - Uplands Office	near where it empties into the Delaware River	04/21/97	15.0	7.5	7.5	11.7	0.20	0.20



Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
01PA	Lackawaxen River	NPS - Upper Delaware Scenic & Recreational River	.2 mile up from mouth, river mile 277.7, Lackawaxen, PA	04/22/97	17.0	8.8	8.2	12.4	0.18	0.01
01PA	Lackawaxen River	Delaware Riverkeeper Network - Uplands Office	Kimbles, PA, approx. 5 miles from Hawley, PA	04/26/97	13.5	8.0	9.5	10.1	0.20	0.20
01PA	Lackawaxen River - WQN 147	Pennsylvania DEP	41 28'30.0 N, 75 02'09.6 W, at Route 590 Bridge	04/21/97	5.5	6.1	6.5	10.3	0.14	0.01
01PA	Masthope Creek	NPS - Upper Delaware Scenic & Recreational River	.1 mile upstream from mouth, river mile 282.5, Lackawaxen, PA	04/22/97	16.0	8.0	7.1	11.6	0.00	0.00
01PA	Wallenpaupack Creek - WQN 141	Pennsylvania DEP	41 20'09.7 N, 75 20'26.1 W, at T353 Bridge	04/21/97	2.2	4.5	6.4	11.0	0.25	0.01
02NJ	Big Flatbrook Creek	National Park Service - Delaware Water Gap NRA	DEWA Boundary, 100 meters upstream of confluence of Little Flatbrook and Flatbrook Creeks, near village of Peters Valley, NJ	04/24/97	14.0	10.0	7.7	11.0	0.01	0.01
02NJ	Delaware River mile 198	Delaware River Basin Commission	Belvidere Bridge	04/24/97	20.3	12.2	7.4	11.2	0.10	0.20
02NJ	Flatbrook Creek	Walpack Valley Environmental Education Center	Walpack, Sussex County, NJ	04/21/97	14.0	7.0	7.3	12.0	0.00	0.00
02NJ	Flatbrook Creek	Delaware Riverkeeper Network - NJ School of Conservation	Near Layton, Sussex Co, NJ	04/27/97	21.0	12.0	8.0	10.0	0.88	0.20
02NJ	Little Flatbrook Creek	National Park Service - Delaware Water Gap NRA	at DEWA Boundary, 100 meters upstream of confluence with Flatbrook Creek, near village of Peters Valley, NJ	04/24/97	13.0	10.0	8.1	11.4	0.20	0.01
02NJ	Musconetcong River	Musconetcong Watershed Association	Hughesville Bridge, WarrenGlen - Finesville, NJ	03/01/97	4.4	9.0	7.5	12.0	0.88	

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)	
02NJ	Musconetcong River	Musconetcong Watershed Association	Hughesville Bridge, WarrenGlen - Finesville, NJ	04/05/97	14.0	14.0	7.5	12.1	0.88	
02NJ	Musconetcong River	Musconetcong Watershed Association	Stephensburg Bridge, Stephensburg Road	04/19/97	9.0	7.5	8.0	11.0	0.86	0.20
02NJ	Musconetcong River	Musconetcong Watershed Association	Bloomsbury Water Co., Bloomsbury, NJ	04/26/97	22.0	13.5	8.0	11.4	0.00	
02NJ	Musconetcong River	Bethlehem Twp Environmental Commission	Bethlehem Twnshp, Person Road, south Rt. 642	04/27/97	17.5	14.5	8.0	10.7	4.43	
02NJ	Musconetcong River	Musconetcong Watershed Association	Asbury @ bridge in Asbury on Rte. 643	04/27/97	17.5	14.5	8.0	10.7	4.43	
02NJ	Musconetcong River	Musconetcong Watershed Association	Hughesville Bridge, WarrenGlen - Finesville, NJ	05/02/97	15.6	16.0	7.5	12.1	0.44	
02NJ	Norton Brook	Bethlehem Twp Environmental Commission	Bridgecut Hacket Road, Bethlehem Twnshp	04/26/97	27.0	16.0	7.0	10.0	0.00	
02NJ	Turkey Hill Creek	Bethlehem Twp Environmental Commission	1/4 mile down farm lane off RT 173, Bethlehem Twp., approx. 1 mile outside Boro of Bloomsburg	04/27/97	21.0	18.0	8.5	9.9	1.00	
02NJ	Van Campens Brook	National Park Service - Delaware Water Gap NRA	at Old Mine Road, at Depew Recreation site, DWGNRA, Warren County NJ	04/24/97	15.0	10.0	7.8	11.8	0.01	0.01
02NJ	West Portal Brook	Bethlehem Township Middle School	Tributary of Musconetcong River WQN 137, Smithfield Twp	04/28/97	18.0	12.0	7.5	10.7	0.01	
02PA	Brodhead Creek	Pennsylvania DEP	near Delaware Water Gap, approx. 1/4 mile downstream of confluence of Brodhead Creek & Marshalls Creek	04/22/97	5.6	8.2	7.8	11.8	0.32	0.02
02PA	Brodhead Creek	National Park Service - Delaware Water Gap NRA	41 02'09.1 N, 75 12'35.1 W, at Route 191 Bridge	04/22/97	14.5	10.0	8.0	12.2	0.16	0.02
02PA	Brodhead Creek - WQN 138	Pennsylvania DEP		04/23/97	11.1	8.2	6.3	10.4	0.14	0.01

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
02PA	Bushkill Creek	Wilson High School	Penn Pump Park, Palmer, PA near raw sewage pipe from a home	04/22/97	16.0	9.0	8.0	12.0	4.40	0.20
02PA	Bushkill Creek	Shafer Elementary School Earth Doers Club	Clearfield Road/ Hahn Road Bridge	04/27/97	10.0		7.0		0.00	
02PA	Bushkill Creek	Shafer Elementary School Earth Doers Club	Heyer Mill Road & Meyer Road	04/30/97	16.0	13.0	8.0	11.6		
02PA	Bushkill Creek	Shafer Elementary School Earth Doers Club	Bok Road, 15 yds south of road, 1.5 blocks south of Cherry Hill Road	04/30/97	21.5	18.5	7.5	9.0	0.00	
02PA	Bushkill Creek	Shafer Elementary School Earth Doers Club	Van Buren Road, corn field-west & road-east	04/30/97	23.0	11.5	8.0	10.8	0.00	
02PA	Bushkill Creek	Jacobsburg Environmental Education Center	E Douglasville Rd 40 46.832 N 75 18.581 W (GPS)	05/15/97	23.0	18.0	7.0	9.8	13.20	0.20
02PA	Bushkill Creek	Jacobsburg Environmental Education Center	Henry Rd 40 46.583 N 75 17.222 W (GPS)	05/16/97	14.0	15.0	7.0	10.4	13.20	0.20
02PA	Bushkill Creek	National Park Service - Delaware Water Gap NRA	at DEWA Boundary, USGS stream gauge, Pike County, PA	04/24/97	14.0	11.0	7.6	11.6	0.01	0.01
02PA	Bushkill Creek - WQN 139	Pennsylvania DEP	41 05'16.8 N, 75 02'19.1 W, at T523 Bridge	04/23/97	7.7	7.5	6.1	9.6	0.04	0.01
02PA	Bushkill Creek Trib (Tatamy)	Shafer Elementary School Earth Doers Club	Yost & S. Penn Dixie Road, Dam - Pool Water	04/30/97	21.0	16.0	8.0	11.3	11.30	
02PA	Bushkill Creek Trib (Tatamy)	Shafer Elementary School Earth Doers Club	Uhelar Road, 100 yds from road	04/30/97	23.5	17.0	9.0	12.2	12.20	
02PA	Cherry Creek	National Park Service - Delaware Water Gap NRA	in Delaware Water Gap, approx. 150 meters upstream of Rt. 80	04/22/97	17.0	11.0	8.2	11.9	0.50	0.05
02PA	Delaware River mile 184	Delaware River Basin Commission	Phillipsburg/Easton	04/24/97	21.0	13.5	7.8	11.2	0.10	0.20
02PA	Delaware River mile 191	Pennsylvania DEP	WQN 148, Lower Mt. Bethel Twp @ Martins Creek	04/22/97	12.0	12.1	7.4	11.2	0.28	0.02

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
02PA	Delaware River mile 191	Pennsylvania Power & Light Co	Martins Creek SES, 3 & 4 Intake	04/25/97	13.8	10.0	7.3	7.8		0.20
02PA	Delaware River mile 207	Delaware River Basin Commission	Portland/Columbia PA/NJ	04/24/97	20.0	13.0	7.0	10.3	0.10	0.20
02PA	Delaware River mile 212	National Park Service - Delaware Water Gap NRA	Kittatiny Point Visitors Center, approx. 3/4 mile downstream of I-80 bridge over Delaware River	04/22/97	18.0	11.0	8.1	11.2	0.10	0.01
02PA	Delaware River mile 217	National Park Service - Delaware Water Gap NRA	Smithfield Access, approx. 3 mile upstream of village of Shawnee - on - Delaware	04/22/97	15.0	10.0	7.9	11.3	0.17	0.01
02PA	Delaware River mile 217	National Park Service - Delaware Water Gap NRA	Smithfield Access Area, approx. 3 miles upstream of village of Shawnee - on - Delaware	04/24/97	14.0	12.0	7.6	11.0	0.17	0.01
02PA	Delaware River mile 228	National Park Service - Delaware Water Gap NRA	Bushkill Access Area, approx. 1 mile north on Rt. 209 from Bushkill, PA	04/24/97	15.0	12.0	7.5	11.1	0.13	0.01
02PA	Little Bushkill Creek	Pen Argyl High School	1 mile south of Knitters Hill Road	04/14/97	9.0	8.0	9.1	8.5	3.00	0.00
02PA	Little Bushkill Creek	National Park Service - Delaware Water Gap NRA	at DEWA Boundary, approx. 1/2 mile upstream of confluence with Bushkill Creek	04/24/97	15.0	12.0	7.0	10.8	0.01	0.01
02PA	Little Bushkill Creek - WQN 181	Pennsylvania DEP	41 08'03.7 N, 75 00'34.6 W, at T305 Bridge	04/22/97	11.6	9.1	6.1	10.1	0.04	0.02
02PA	McMichaels Creek	Pohoqualine Fish	40 58'0" N, 75 24' 0" W	04/25/97	8.0	7.0	6.6		0.12	0.02
02PA	McMichaels Creek	Pohoqualine Fish	40 59'30" N, 75 24' 0" W	04/25/97	8.0	8.0	6.6		0.08	0.02
02PA	McMichaels Creek	Pohoqualine Fish	40 57'0" N, 75 24' 0" W	04/25/97	10.0	7.0	6.8		0.15	0.02
02PA	McMichaels Creek	Pohoqualine Fish	40 55'30" N, 75 21'30" W	04/25/97	10.0	8.0	7.0		0.21	0.02

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
02PA	McMichaels Creek	Pohoqualine Fish	40 55'30" N, 75 22' 0" W	04/25/97	10.0	8.0	7.0		0.22	0.02
02PA	Pocono Summit Creek	Tobychanna Creek / Tunkhannock Creek Watershed Association	Below Hemlock Lane	04/26/97	11.7	13.0	7.6	10.2	0.05	0.03
02PA	Pocono Summit Creek	Tobychanna Creek / Tunkhannock Creek Watershed Association	Between Rt. 380 & Stillwater Lake	04/26/97	13.3	11.1	7.2	10.1	0.24	0.03
02PA	Shawnee Creek	National Park Service - Delaware Water Gap NRA	upstream from Shawnee STP outfall, in village of Shawnee - Delaware	04/22/97	13.0	11.0	8.2	11.4	0.01	0.01
02PA	Sober's Run	Jacobsburg Environmental Education Center	Belfast Rd 40 47.890 N 75 18.551 W (GPS)	05/15/97	19.0	15.0	6.5	10.6	8.80	0.20
02PA	Tom's Creek	Scotch Plain Field HS	Scotch Plain Field High School, picnic area	05/01/97		9.0	7.0	12.4		0.33
02PA?	Schoeneck Creek	Shafer Elementary School Earth Doers Club	behind Nazareth High School	04/24/97	12.8		8.0	11.5	1.00	
02PA?	Schoeneck Creek	Shafer Elementary School Earth Doers Club	Nazareth High School	04/28/97	16.0	12.0	8.0		0.00	
02PA?	Schoeneck Creek	Nazareth Area HS	behind Nazareth High School	05/15/97	11.0	7.0	7.5	11.0	4.40	0.20
03PA	Beaver Creek	Tobychanna Creek / Tunkhannock Creek Watershed Association	Above confluence with Upper Tunkhannock Creek	04/20/97	3.3	5.6	6.9	12.5	0.20	0.03
03PA	Beaver Creek	Tobychanna Creek / Tunkhannock Creek Watershed Association	Below Tamaque Lake in Pinecrest	04/27/97	13.3	11.1	5.0	11.0	0.05	0.03
03PA	Big Elk	Pennsylvania DEP	WQN 256, Kemblesville	04/21/97		10.3	8.2	13.0	0.02	0.02
03PA	Dotters Run	Tobychanna Creek / Tunkhannock Creek Watershed Association	300 ft upstream of Stillwater Lake	04/26/97	13.3	10.0	6.4	10.1	0.11	0.03
03PA	Frame Cabin Run	Tobychanna Creek / Tunkhannock Creek Watershed Association	200 ft. above confluence with Tobychanna Creek	04/27/97	17.8	8.1	6.7	10.7	0.11	0.03
03PA	Hawkey Run	Tobychanna Creek / Tunkhannock Creek Watershed Association	Between Rt. 380 & Stillwater Lake	04/26/97	10.0	11.7	7.0	10.2	0.43	0.03

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
03PA	Jordan Creek	Pennsylvania DEP	at the Martin Luther King Bridge, WQN 130, Allentown	04/21/97		10.1	8.7	13.8		
03PA	Keipers Run	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Below Rt. 903	04/19/97		3.2		11.6	0.20	0.03
03PA	Kistler Run	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Above Rt. 423	04/20/97	13.3	9.0	4.9	10.8	0.05	0.03
03PA	Lehigh River	Pennsylvania DEP	at Rte. 145 Bridge, WQN 125, Treichler's south of Bethlehem, PA, Freemansburg Bridge, Sand Island Self Storage	04/21/97		7.5	7.4	12.6		
03PA	Lehigh River	Life Member Telephone Pioneers - Lehigh Valley Chapter	WQN 123, Easton, Northampton Co	04/22/97	13.0	9.0	7.5	10.6	0.88	0.50
03PA	Lehigh River	Pennsylvania DEP	Glendon Canal Park, 50 yds downstream from iron bridge that crosses River in Park	04/22/97	16.0	12.9	7.7	11.4	1.78	0.07
03PA	Lehigh River	Delaware Riverkeeper Network	400 yards south of water treatment plant, 0.5 mile south of Hamilton Street Bridge, confluence of Lehigh & Little Lehigh Rivers	04/22/97	17.0	11.5	7.5	10.6	13.20	0.20
03PA	Lehigh River	Life Member Telephone Pioneers - Lehigh Valley Chapter	Easton, PA	04/24/97	9.5	9.0	7.0	10.2	0.44	0.10
03PA	Lehigh River	DRBC Secretaries	41 07'48.5 N, 75 37'34.1 W, at Route 115 Bridge	04/24/97	21.0	13.5	8.1	10.6	3.54	0.20
03PA	Lehigh River - WQN 126	Pennsylvania DEP	Macungie, PA; near 2060 Seem Road	04/22/97	3.3	5.0	6.4	9.7	0.10	0.01
03PA	Little Lehigh River	Life Member Telephone Pioneers - Lehigh Valley Chapter	Sand Island, Bethlehem, PA, 100 yds upstream from confluence of Lehigh River	04/25/97	16.5	14.0	8.0	12.5	0.88	0.00
03PA	Monocacy Creek	Delaware Riverkeeper Network		04/22/97	17.0	11.5	8.0	11.6	2.20	0.20

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)	
03PA	Monocacy Creek	Schuylkill River Greenway Association	Monocacy Station, 40 16'01" N 75 46'22" W	04/24/97	14.0	16.5	8.5	13.0	1.77	0.00
03PA	Mud Pond Run	Tobyhanna Creek / Tunkhannock Creek Watershed Association	200 ft downstream from Kohenbeaker Road	04/21/97	12.2	5.5	4.6	11.3	0.05	0.03
03PA	Nancy Creek	Delaware Riverkeeper Network	Freemansburg, PA, site between Canal & River	04/25/97	18.0	13.5	8.0	9.2	2.20	0.20
03PA	Polk Valley Run	Saucon Valley HS	at Herman's Farm on Polk Valley Road, 1/4 mile directly south of Saucon Valley High School	04/22/97	12.0	8.0	7.2	14.0	0.00	0.00
03PA	Saucon Creek	Saucon Valley HS	20 yds north of bridge on Water St across from grist mill, Hellertown, PA	04/30/97	17.0	14.0	8.2	10.2	1.00	0.00
03PA	Silver Creek	Saucon Valley HS	20 yds upstream from confluence with Saucon Creek, Hellertown, PA	04/23/97	20.0	12.0	8.0	12.4	2.66	0.00
03PA	Tobyhanna Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	1500 ft S. of pipeline	04/19/97	8.0	7.0	6.5	11.3	0.19	0.03
03PA	Tobyhanna Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	300 ft. N. of Route 115	04/19/97	8.0	7.0		11.3	0.18	0.03
03PA	Tobyhanna Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Above Pocono Lake	04/20/97	10.0	9.3	6.6	10.7	0.14	0.03
03PA	Tobyhanna Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	PP & L Bridge	04/20/97	10.6	9.7	6.8	10.9	0.17	0.03
03PA	Tobyhanna Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	upstream of Rt. 423 @ Warnertown	04/20/97	13.0	8.3	7.1	11.2	0.21	0.03
03PA	Tobyhanna Creek - WQN 142	Pennsylvania DEP	41 05'04.4 N, 75 36'20.7 W, at Route 940 Bridge	04/22/97	6.6	6.9	6.1	9.6	0.17	0.01

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
03PA	Tobyhanna Creek Tributary	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Above Judges Pond from Trout Pond	04/26/97	8.3	8.3	5.8	10.7	0.06	0.03
03PA	Tunkhannock Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Long Pond Road near Emerald Lake	04/18/97	-1.1	4.4	3.7	11.3	0.05	0.03
03PA	Tunkhannock Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Long Pond Road near race track	04/18/97	-1.1	4.4	4.6	12.5	0.17	0.03
03PA	Tunkhannock Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Above Rt. 115	04/19/97		2.5		10.9	0.22	0.03
03PA	Tunkhannock Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	50 ft downstream from Hysie Gap Road	04/21/97	6.1	5.0	4.9	12.6	0.16	0.03
03PA	Unnamed Creek (Hemlock Pond)	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Above Lakeview Drive, Lake Naomi	04/26/97	10.6	10.6	6.3	10.8	0.39	0.03
03PA	Upper Tunkhannock Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Above confluence with Beaver Creek	04/20/97	3.3	7.2	6.9	12.5	0.19	0.03
03PA	Upper Tunkhannock Creek	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Below Miller Drive in Lake Naomi	04/20/97	8.9	8.5	6.7	11.0	0.17	0.03
03PA	Upper Tunkhannock Creek Unnamed Tributary	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Below Tanglewood Drive, Lake Naomi	04/26/97	8.9	6.4	4.8	11.3	0.05	0.03
03PA	Wagner's Run	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Below North Shore Road	04/22/97	14.0	7.0	5.0	12.1	0.09	0.03
03PA	Wolf Spring Run	Tobyhanna Creek / Tunkhannock Creek Watershed Association	Below South Shore Road	04/22/97	12.0	6.0	6.3	12.3	0.13	0.03
04NJ	Delaware River mile 142	Delaware River Basin Commission	Washingtons Crossing, NJ	04/23/97	22.0	12.0	8.3	11.5	0.50	0.20
04NJ	Delaware River mile 149	Delaware River Basin Commission	Lambertville Bridge	04/23/97	18.0	11.0	8.0	11.0	0.50	0.20
04NJ	Delaware River mile 152	Delaware River Basin Commission	Stockton Bridge	04/23/97	18.5	12.0	8.0	12.2	0.40	0.20



Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
04NJ	Delaware River mile 155	Delaware River Basin Commission	Bulls Island Bridge	04/23/97	16.0	11.5	7.0	11.8	0.50	0.20
04NJ	Delaware River mile 164	Delaware River Basin Commission	Frenchtown Bridge	04/23/97	16.0	11.5	8.0	11.0	0.50	0.20
04NJ	Delaware River mile 168	Delaware River Basin Commission	Milford PA/NJ	04/24/97	20.0	15.0	8.2	9.6	0.32	0.20
04NJ	Delaware River mile 175	Delaware River Basin Commission	Riegelsville Bridge	04/24/97	19.5	18.0	8.2	10.4	0.38	0.20
04PA	Cooks Creek	Cooks Creek Watershed Association	bridge over creek north of former Pleasant Valley Mill off Rt. 212	04/27/97	18.0	14.5	8.0	11.6	5.28	0.20
04PA	Cook's Creek	Cooks Creek Watershed Association	30' upstream from Durham bridge, Bucks Co., PA	04/26/97	14.0	10.0	8.0	12.3	8.80	0.20
04PA	Delaware River mile 177	Delaware Riverkeeper Network	Ground Hog Lock, Raubsville, PA	04/22/97	17.0	11.5	7.5	11.0	4.40	0.20
04PA	Fry's Run	Delaware Riverkeeper Network	50 yds upstream from confluence of Delaware River, Raubsville, PA	04/25/97	18.0	13.0	8.0	10.4	13.20	0.50
05APA	Cobbs Creek	Turner Middle School	near Turner Middle School	04/22/97	24.0	13.0	6.5	3.6	1.00	
05APA	Cobbs Creek	Turner Middle School	near bridge at old stables	04/22/97	25.5	14.0	8.5	6.5	1.00	0.20
05APA	Delaware River mile 093	Delaware River Basin Commission	Storet Station -- 892065 River Mile 93.18 Navy Yard	04/22/97	12.0	11.0	7.1	9.9	3.54	0.21
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/19/97		10.3	7.3	10.2		
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/20/97		10.4	7.3	10.2		
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/21/97		10.7	7.3	10.0		

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/22/97	12.0	11.0	7.0	7.9	0.02	0.04
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/22/97	12.0	11.0	7.0	7.9	3.28	0.18
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/22/97		10.9	7.3	9.8		
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/23/97		11.1	7.3	9.7		
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/24/97		11.1	7.2	9.8		
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/25/97		11.2	7.2	9.8		
05APA	Delaware River mile 100	Delaware River Basin Commission	Storet Station -- 892071 River Mile 100.15 Ben Franklin Bridge	04/26/97		11.5	7.3	9.9		
05APA	Delaware River mile 105	Delaware River Basin Commission	Storet Station -- 892070 River mile 104.67 Betsy Ross Bridge	04/22/97	12.0	11.0	7.1	8.9	3.37	0.18
05APA	Delaware River mile 105	Delaware River Basin Commission	Storet Station -- 892070 River mile 104.67 Betsy Ross Bridge	04/22/97	12.0	11.0	7.1	8.9	0.02	0.03
05APA	Delaware River mile 110	Philadelphia Water Department	Baxter Raw Water Pumping Station, State Road & Linden Avenue	04/23/97	7.8	12.0	7.4	10.1	0.92	

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
05APA	Delaware River mile 111	Delaware River Basin Commission	Storet Station -- 892077 River Mile 110.7 Torresdale	04/22/97	12.0	11.0	7.0	9.4	3.37	0.21
05APA	Delaware River mile 118	Delaware River Basin Commission	Storet Station -- 892080 River Mile 117.80 Burlington Bristol Bridge	04/22/97	12.0	10.0	7.2	10.6	3.23	0.12
05APA	Delaware River mile 123	Delaware Riverkeeper Network	Behind Tullytown, PA, Borough Hall	04/25/97	14.5	11.0	7.0	10.0	2.64	0.50
05APA	Frankford Creek	Frankford HS	at Ferko Recreation Center	04/22/97	14.6	10.8	8.8	9.6	0.88	0.20
05APA	Little Neshaminy Creek	Philadelphia Suburban Water Co.	at Sackett's Ford Road, Bucks Co., PA	04/21/97	15.0	10.0	8.1	11.0	3.30	0.20
05APA	Mill Creek Tributary	Philadelphia Suburban Water Co.	at Stump Bridge Road, Bucks Co., PA	04/21/97	14.0	10.0	7.4	11.0	2.00	0.14
05APA	Neshaminy Creek	Philadelphia Suburban Water Co.	at Rushland Road, Bucks Co., PA	04/21/97	15.0	11.0	9.3	11.0	1.80	0.15
05APA	Neshaminy Creek - North Branch	North Penn Water Authority	Callowhill Road, New Britain Twp., PA	04/24/97	11.1	11.0	8.0	15.2	0.61	0.07
05APA	Neshaminy Creek - North Branch	North Penn Water Authority	Forest Park Treatment Plant, Park Ave., Chalfont, PA	04/24/97	11.1	12.0	8.4	11.2	0.65	0.05
05APA	Neshaminy Creek - North Branch	North Penn Water Authority	Valley Park Road, Plumstead Twp., PA	04/24/97	11.1	11.0	8.2	13.5	0.21	0.04
05APA	Pennypack Creek	Philadelphia Water Department	Ashburner Street & Frankford Avenue	04/23/97	7.8		8.0	12.9	2.64	
05APA	Pine Run Creek	North Penn Water Authority	Keely Road, New Britain Boro, PA	04/24/97	11.1	12.0	7.6	12.2	1.19	0.70
05APA	Poquessing Creek	Stephen Decatur Elementary School	Hagys Mill Road	04/25/97		15.6	7.0			
05APA	Poquessing Creek	Friends of Poquessing Watershed	at Frankford Avenue & Red Lion Road	04/26/97	15.0	15.5	8.0	11.3	4.40	0.20
05APA	Poquessing Creek	Stephen Decatur Elementary School	Academy & Torrey Roads	05/05/97	23.3	15.6	7.5	5.0		
05APA	Tacony Creek	Friends of Tacony Creek Park	Tabor Road, Philadelphia, PA	05/08/97	10.8	10.2	6.8		5.00	

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
05BPA	Chester Creek	Chester Ridley Crum Volunteer Monitoring Program	Thornbury Twp., site 100 ft downstream of Glen Mills Road Bridge, corner of Creek & Sweetwater Roads	04/19/97	7.0	4.0	8.5	11.6	3.52	0.00
05BPA	Crum Creek	Crum Ridley Chester Volunteer Monitoring Program	200 meters north of Yale Avenue dam	04/19/97	10.3	9.0	7.1	9.0	0.88	0.20
05BPA	Crum Creek	Philadelphia Suburban Water Co.	at Whitehorse Road, Berwyn, PA	04/21/97	8.0	7.0	7.4	11.0	2.60	0.14
05BPA	Crum Creek	Swarthmore Rutledge School	20 meters downstream form SEPTA railroad trestle	04/25/97	16.8	11.0	7.0	10.4	0.88	0.20
05BPA	Darby Creek	Radnor Middle School Watershed Program	Indian Rock Park, Drexel Hill	04/23/97	12.7	11.4	7.5	11.0	0.50	0.20
05BPA	Darby Creek	Cardinal O'Hara HS	at Rolling Green Park	04/26/97	18.0	12.0	7.0	10.7	0.20	0.20
05BPA	Delaware River mile 079	Pennsylvania DEP	Marcus Hook, at state line, WQN 182	04/21/97	18.4	11.2	7.7	10.8	4.26	0.04
05BPA	Delaware River mile 079	Delaware River Basin Commission	Storet Station -- 332049 River Mile 78.24 Marcus Hook	04/22/97	11.0	11.0	7.3	9.0	4.12	0.37
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/19/97		11.0	7.4	9.7		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/20/97		11.3	7.4	9.9		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/21/97		11.5	7.4	9.8		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/22/97		11.9	7.4	9.4		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/23/97		12.0	7.4	9.9		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/24/97		12.1	7.4	10.7		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/25/97		12.4	7.4	10.6		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/26/97		12.7	7.4	10.5		
05BPA	Delaware River mile 081	Delaware River Basin Commission	Chester, PA	04/27/97		13.1	7.4	10.4		

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
05BPA	Delaware River mile 084	Delaware River Basin Commission	Storet Station -- 892065 River Mile 84 Eddystone	04/22/97	11.0	11.0	7.1	8.5	3.94	0.37
05BPA	Delaware River mile 085	Bernardine Center	Essington	04/30/97	19.0	15.0	7.5	9.0		
05BPA	Ridley Creek	Philadelphia Suburban Water Co.	Media Station Road	04/21/97	9.0	11.2	7.4	10.6	7.10	1.19
05BPA	Ridley Creek	Philadelphia Suburban Water Co.	39 56'55" N 75 25'18.5" W at Chapel Hill Rd	04/21/97	9.0	8.6	7.6	12.6	2.10	0.58
05BPA	Ridley Creek	Philadelphia Suburban Water Co.	39 55'36" N 75 24'35.2" W Middletown Twp, Delaware Co, at Rosetree Rd	04/21/97	9.0	9.1	8.0	14.2	2.00	0.12
05BPA	Ridley Creek	Philadelphia Suburban Water Co.	100 ft altitude below water plant	04/21/97	11.0	9.4	7.8	11.9	2.00	0.15
05BPA	Ridley Creek	Pennsylvania DCNR - Ridley Creek SP	at Handicapped Fishing Pier along Sycamore Mills Road	04/29/97	19.0	14.0	8.0	12.0	0.89	
05BPA	Ridley Creek Trib - DEP Stream #00690	Philadelphia Suburban Water Co.	Tributary to Ridley Creek, 40 01'30" N 75 32'13" W	04/21/97	10.0	9.9	7.3	12.8	5.30	0.12
05BPA	Whetstone Run	Cardinal O'Hara HS	at Reed Road (from bridge), PA	04/28/97	20.0	14.0	7.0	10.0	0.20	0.20
05BPA	Whiskey Run	Crum Ridley Chester Volunteer Monitoring Program	Spring-fed start, tributary to Crum Creek	04/26/97	16.0	13.0	5.7	7.4	0.44	0.20
06PA	Allegheny Creek	Schuylkill River Greenway Association	Gibraltar, 40 17'02" N 75 52'25" W	04/23/97	12.0	16.0	7.0	9.8	0.44	0.00
06PA	Angelica Creek	Schuylkill River Greenway Association	Angelica Park, 40 18'34" N 75 55'50" W	04/26/97	16.0	22.0	7.0	10.5	0.89	0.10
06PA	Antietam Creek	Schuylkill River Greenway Association	Exeter Twp. Park, 40 18'34" N 75 50'50" W	04/25/97	15.0	16.5	8.0	10.6	0.89	0.10
06PA	Bear Creek	Academy of Natural Sciences - Stroud Water Research Center	Lower Schuylkill Haven, Schuylkill Co.	04/26/97	17.5	11.0	7.0	11.6	0.62	0.02
06PA	Bieber Creek	Berks County Conservancy	Forgedale Road, below Sheep Hill	04/07/97	9.4	7.8	7.0	10.5	8.80	

Water Snapshot '97 Stream Data										
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06PA	Birch Run Creek	Stream Watch - Owen J Roberts Middle School	tributary of French Creek, Owen J. Roberts Middle School	04/25/97	18.0	12.5	7.0	10.0	0.00	1.00
06PA	Brushy Run	Pennsylvania DEP	WQN 184, ICI Explosives property near South Tamaqua	04/24/97	11.7	8.1	6.9	11.4	0.12	0.02
06PA	Deep Creek	Philadelphia Suburban Water Co.	Green Lane, Montgomery Co., PA	04/21/97	11.0	8.0	7.7	11.0	0.50	0.24
06PA	FDR Park Lagoon	USEPA	Tidal lagoon, south side bank	04/24/97	15.5	15.5	9.2	15.6	0.88	0.20
06PA	FDR Park Pond at Tennis Court	Friends of FDR park	Broad & Pattison Avenue, Philadelphia	04/26/97		16.0	9.0	14.4	0.02	0.02
06PA	Furnace Creek	Berks County Conservancy	Stitzer Hill Road	04/07/97	10.0	8.3	7.6	11.0	8.80	
06PA	Furnace Run	Berks County Conservancy	Manatawny Road	04/15/97	10.6		8.1	11.5	4.40	
06PA	Goose Run	Berks County Conservancy	West Pottsgrove Park, Manatawny Street	05/05/97	8.3	8.3	7.3	7.5	4.40	
06PA	Gulley Run	Lower Merion Conservancy	Gulley Run Park, corner of Conshohocken State & Manayunk Road	04/26/97	23.9	16.7	7.3	9.0		
06PA	Hartenstine Creek	Berks County Conservancy	Rupert Road at first bridge over Hartenstine	05/05/97	9.4	8.3	8.3	12.3	0.00	
06PA	Hay Creek	Schuylkill River Greenway Association	Birdsboro, 40 15'28" N 75 48'39" W	04/21/97	12.5	16.0	7.0	9.6	0.00	0.00
06PA	Hillcrest Pond	Erdenheim Elementary School	feeds into Wissahickon Creek	04/22/97	16.0	14.0	7.5	12.2	1.00	0.20
06PA	Indian Creek	Lower Merion Conservancy	at L.M. Park, near Haverford & Remington Roads	04/23/97	16.0	11.0	8.0	10.0		
06PA	Indian Creek	Lower Merion Conservancy	East site, Conservancy #11, Shortridge Park, Shortridge Drive	04/26/97	16.0	16.0	7.7	11.0		
06PA	Ironstone Creek	Berks County Conservancy	Pine Forge Road	04/25/97	11.1	8.9	9.5	11.5	8.80	
06PA	Ironstone Creek	Berks County Conservancy	Funk Road, I Route 73	04/25/97					4.40	
06PA	Little Manatawny	Berks County Conservancy	at Bertolet Mill Road	04/07/97	10.0	8.9	9.0	11.5	8.80	
06PA	Little Manatawny Creek	Berks County Conservancy	Snyder Rd, @ Furnace Creek confluence	04/15/97	11.7	8.3	9.0	13.0	4.40	

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
06PA	Little Schuylkill River	Schuylkill River Greenway Association	Port Clinton, 40 35'20" N 76 01'40" W	04/22/97	10.5	14.0	6.5	10.0	0.44	0.00
06PA	Locust Creek	Pennsylvania DCNR - Tuscarora SP	before it enters Locust Lake, Ryan Township, Schuylkill Co.	04/21/97	18.9		7.0	11.0	0.89	0.20
06PA	Locust Creek	Pennsylvania DCNR - Tuscarora SP	as enters Tuscarora Lake in Tuscarora SP	04/21/97	19.4		7.0	10.0	0.89	0.20
06PA	Locust Creek	Pennsylvania DCNR - Tuscarora SP	as exits Tuscarora Lake, close to where it enters the Little Schuylkill River in Tamaqua	04/21/97	19.4		7.2	10.0	0.89	0.20
06PA	Locust Creek	Pennsylvania DCNR - Tuscarora SP	as it exits Locust Lake	04/21/97	18.9		7.2	10.0	0.89	0.20
06PA	Maiden Creek - Lower	Schuylkill River Greenway Association	Below Lake Ontelaunee, 40 26'40" N 75 55'46" W	04/27/97	15.5	13.0	7.5	10.1	1.33	0.00
06PA	Maiden Creek - Upper	Schuylkill River Greenway Association	Moselem, 40 30'02" N 75 53'15" W	04/27/97	18.0	12.5	7.0	9.7	1.33	0.00
06PA	Manatawny Creek	Berks County Conservancy	Haas Rd, @ Bieber & Pine Cr confluence	04/08/97	10.6	5.3	8.0	12.5	19.80	
06PA	Manatawny Creek	Berks County Conservancy	below STP, Spangsville Road	04/14/97	6.1	3.9	7.7	12.5	4.40	
06PA	Manatawny Creek	Berks County Conservancy	Fisher Mill Road	04/22/97	10.6		8.5	12.5	11.00	
06PA	Manatawny Creek	Berks County Conservancy	Spotts Mill Road	04/22/97	11.7	6.7	9.0	12.5	6.60	
06PA	Manatawny Creek	Berks County Conservancy	Levengood Road	04/25/97	11.1	8.3	8.7	13.0	8.80	
06PA	Manatawny Creek	Berks County Conservancy	West Pottsgrove Park, Manatawny Street	05/05/97	8.3	7.2	8.5	10.5	6.60	
06PA	Manatawny Creek	Berks County Conservancy	at confluence, Riverfront Park	05/05/97	8.9	6.9	8.3	10.8	8.80	
06PA	Manatawny Creek - Lower	Schuylkill River Greenway Association	West Pottsgrove Twp. Park, 40 16'02" N 75 40'05" W	04/27/97	14.0	23.0	7.5	10.0	0.89	0.00
06PA	Manatawny Creek - Upper	Schuylkill River Greenway Association	Earlville, 40 18'47" N 75 44'13" W	04/24/97	13.0	16.5	8.5	12.6	0.89	0.00
06PA	Manatawny Creek Unnamed Tributary	Berks County Conservancy	Covered Bridge Road	04/22/97			8.5		46.20	

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
06PA	Mill Creek	Lower Merion Conservancy	Harriton Road (below Harriton House), near Gladwyne	04/17/97	14.4	11.1	7.5	13.0		
06PA	Mill Creek	Schuylkill River Greenway Association	Mill Creek, 40 42'13" N 76 10'35" W	04/19/97	7.0	6.0	6.0	10.0	0.44	0.00
06PA	Mill Creek	Lower Merion Conservancy	Black Rock & Dove Lake Roads, Gladwyne	04/20/97	10.6	8.3	7.4	13.0		
06PA	Mill Creek	Lower Merion Conservancy	Mill Creek & Youngsford Roads, Gladwyne, PA	04/20/97	12.8	12.2	8.0	12.0		
06PA	Mill Creek	Lower Merion Conservancy	West Mill Creek Park, Penn Valley	04/24/97	10.0	13.0	7.5	10.0		
06PA	Mill Creek	Lower Merion Conservancy	Mill Creek & Old Gulph Roads, Ardmore	04/25/97	8.9	9.4	7.3	11.0		
06PA	Mill Creek	Lower Merion Conservancy	Rose Glen & Mill Creek Roads, Gladwyne	04/23/97	16.1	12.2	8.0	11.0		
06PA	Oysterville Creek	Berks County Conservancy	Toll House Road	04/25/97	9.4	6.4	8.0	11.5	4.40	
06PA	Oysterville Creek - tributary	Berks County Conservancy	Hill Church Road	04/08/97	10.6	6.1	7.2	11.0	4.40	
06PA	Perkiomen Creek	Delaware Riverkeeper Network	Old Mill Site by Route 29, Perkiomenville, PA	04/20/97	12.0	9.0	8.0	11.3	11.68	0.20
06PA	Perkiomen Creek	Philadelphia Suburban Water Co.	Level Road, Arcola, Montgomery Co., PA	04/21/97	8.0	9.0	7.8		1.60	0.09
06PA	Perkiomen Creek	Pennsylvania DEP	WQN 116, Arcola Road Bridge	04/23/97		12.8	9.1	12.1	5.09	0.03
06PA	Perkiomen Creek West Branch	Delaware Riverkeeper Network	300 yards of new Route 100	04/21/97	13.5	10.2	8.5	13.2	4.40	0.00
06PA	Perkiomen Creek West Branch	Delaware Riverkeeper Network	Old Route 100 Bridge crossing	04/21/97	14.0	10.0	7.5	12.3	4.40	0.00
06PA	Perkiomen Creek West Branch	Delaware Riverkeeper Network	Himmelwright Road Bridge	04/21/97	15.5	11.2	8.5	13.8	4.40	0.00
06PA	Pickering Creek	Philadelphia Suburban Water Co.	Phoenixville YMCA, Phoenixville, PA	04/21/97	9.0	8.0	7.9	11.0	1.90	0.20
06PA	Pickering Creek	Schuylkill River Greenway Association	Charlestown, 40 05'55" N 75 33'19" W	04/26/97	11.5	17.5	7.5	10.0	0.89	0.00
06PA	Pine Creek	Berks County Conservancy	Long Lane	04/07/97	11.1	8.9	7.8	10.0	4.40	
06PA	Pine Creek	Schuylkill River Greenway Association	Deer Lake, 40 37'07" N 76 03'35" W	04/22/97	11.0	14.0	8.0	10.5	0.89	0.00
06PA	Pine Creek West Branch	Berks County Conservancy	Long Lane	04/07/97	10.6	8.3	7.0	9.8	4.40	



Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
06PA	Sanatoga Creek	Berks County Conservancy	Snell Road, Sanatoga Road before bridge	05/05/97	10.0	8.9	8.4	10.5	0.00	
06PA	Sanatoga Creek	Berks County Conservancy	Sanatoga Station Road @ confluence	05/05/97	12.8	10.0	8.5	9.8	0.00	
06PA	Saw Mill Run	Riverbend Environmental Education Center	Gladwyne, PA, near Conshohocken	04/23/97	13.0	12.0	7.0	11.0		
06PA	Schuylkill River	Schuylkill River Greenway Association	South of Pottsville, 40 39'04" N 76 11'19" W	04/19/97	8.0	8.0	6.5	9.8	0.44	0.00
06PA	Schuylkill River	Southwest Environmental Coalition	Bartram's Garden, next to apple press	04/21/97			8.2		1.76	
06PA	Schuylkill River	Pennsylvania DEP	Falls Bridge, Calumet Street, RM 12.2	04/21/97		8.0	8.6	12.0	2.55	0.08
06PA	Schuylkill River	Schuylkill River Greenway Association	Port Carbon, 40 41'48" N 76 09'13" W	04/22/97	11.0	17.0	6.0	9.8	0.00	0.00
06PA	Schuylkill River	Philadelphia Water Department	at Queen Lane Raw Water Pumping Station, Schoolhouse Lane & Ridge Avenue	04/23/97	7.8	14.0	8.5	10.5	2.90	
06PA	Schuylkill River	Schuylkill River Greenway Association	Seyfert, 40 17'21" N 75 52'31" W	04/23/97	10.0	15.0	8.0	12.6	1.77	0.10
06PA	Schuylkill River	Lower Merion Conservancy	Flat Rock Dam, Gladwyne	04/23/97	17.8	14.4	8.5	8.0		
06PA	Schuylkill River	Pennsylvania DEP	WQN 111, Pottstown, PA, Hanover Street Bridge	04/23/97		12.0	8.6	12.8	11.82	0.06
06PA	Schuylkill River	Bartram High School Communications Students	Historic Bartram's Garden, Philadelphia	04/24/97	18.0	14.0	8.5	10.0	1.00	0.50
06PA	Schuylkill River	Schuylkill River Greenway Association	Mohrsville, 40 28'20" N 75 58'15" W	04/25/97	14.0	14.0	6.5	10.4	0.89	0.00
06PA	Schuylkill River	Roosevelt Alternative School	at Pawlings Rd Bridge, Valley Forge National Park near Audobon, PA	04/26/97	22.0	17.0	8.0	12.8	1.33	0.10
06PA	Schuylkill River Tributary Spring Run	Schuylkill Center for Environmental Education	Tributary at the Schuylkill River	04/26/97	21.0	15.0	7.0	13.0	0.00	0.00
06PA	Schuylkill River West Branch	Schuylkill River Greenway Association	Cressona, 40 38'32" N 76 11'45" W	04/19/97	7.5	7.0	7.0	10.0	0.00	0.00
06PA	Sprogels Run	Berks County Conservancy	at Brookside Restaurant, Charlotte Street	05/05/97	13.3	8.3	8.5	11.0	0.00	

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
06PA	Sprogels Run	Berks County Conservancy	Sunnybrook Road at bridge upstream from park	05/05/97	13.3	10.3	8.5		0.00	
06PA	Sprogels Run	Berks County Conservancy	Porter Road at office building parking lot	05/05/97	13.3	10.0	8.8	10.5	4.40	
06PA	Swamp Creek	Philadelphia Suburban Water Co.	Rte. 29, Lower Frederick Twp., Montgomery Co. PA	04/21/97	9.0	8.0	8.6		2.50	0.12
06PA	Trout Run	Berks County Conservancy	at Everhardt's Garage, Manatawny Road	04/22/97	12.2	7.7	7.3	11.0	0.00	
06PA	Tulpehocken Creek	Schuylkill River Greenway Association	at Gaging Station, Reading, 40 22'07" N 75 58'45" W	04/27/97	11.5	14.0	7.0	16.0	2.50	1.50
06PA	Unami Creek	Philadelphia Suburban Water Co.	Rte 63, Montgomery Co., PA	04/21/97	12.0	10.0	8.1	11.0	1.50	0.17
06PA	Valley Creek	Pennsylvania DEP	at Wilson Road Bridge, Valley Forge National Park, Tredyffrin Twp, WQN 154	04/21/97		9.3	8.4	11.8	2.21	0.02
06PA	Valley Stream	Lower Merion Conservancy	Merion Botanical Park	04/19/97	12.0	11.0	6.5			
06PA	Wind Dance Pond Stream	Schuylkill Center for Environmental Education	Tributary to Schuylkill, begins as spring near Hagy's Mill road	04/26/97	20.0	13.0	7.0	11.0	0.00	0.00
06PA	Wissahickon Creek	Pennsylvania DEP	Ridge Avenue Bridge, RM 0.2	04/21/97		7.5	8.3	13.0	3.82	0.28
06PA	Wyomissing Creek	Schuylkill River Greenway Association	West Reading, 40 19'38" N 75 56'44" W	04/27/97	20.0	14.0	7.0	10.0	1.33	0.00
07ANJ	Blacks Creek	Burlington Regional HS	Fieldsboro, NJ Tidal portion (outgoing)	04/21/97	16.0	9.0	7.0	10.0	4.00	1.80
07ANJ	Crosswicks Creek	Bordentown Regional HS	Stanton Ave., Bordentown, NJ	04/23/97	16.0	12.0	7.0	9.0	2.20	0.05
07ANJ	Delaware River mile 097	Delaware Riverkeeper Network	cement pier, Haddon Township, Camden County	04/25/97	14.0	16.0	7.0	9.3	2.64	0.50
07ANJ	Delaware River mile 100	Mafoo Worldwide Corporation	end of MAFCO pier at Camden, NJ	04/25/97	18.0	11.0	6.8			
07ANJ	Delaware River mile 127	Delaware River Basin Commission	Storet Station -- 332061 River Mile 127.48 Fieldsboro	04/22/97	12.0	10.0	7.1	9.4	3.14	0.15

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
07ANJ	Delaware River mile 128	Delaware River Basin Commission	Bordentown Access	04/23/97	20.0	12.0	8.0	10.8	0.50	0.20
07ANJ	Delaware River mile 134	Delaware River Basin Commission	Trenton NJ	04/19/97		8.8	8.4	11.9		
07ANJ	Delaware River mile 134	Delaware River Basin Commission	Trenton NJ	04/20/97		9.2	8.7	12.5		
07ANJ	Delaware River mile 134	Delaware River Basin Commission	Calhoun Street Bridge	04/23/97	20.5	13.0	9.0	12.0	0.50	0.20
07ANJ	Pennsauken Creek North Branch	Delaware Riverkeeper Network	Lenola Road Bridge, Moorestown, NJ	04/26/97	15.0	16.0	6.5	9.2	2.20	0.40
07ANJ	South Newton Creek at Audubon Lake	New Jersey Community Water Watch	Kings Hwy & Haverford (Haddon Heights)	04/01/97	13.0	13.0	6.5	8.8	4.40	0.20
07ANJ	South Newton Creek at Audubon Lake	New Jersey Community Water Watch	Valley Road, Mt. Ephraim	04/01/97	19.0	9.5	7.0	8.3	4.40	0.30
07ANJ	South Newton Creek at Audubon Lake	New Jersey Community Water Watch	Valley Road, Mt. Ephraim	05/01/97	23.0	19.0	10.0	11.1	0.88	0.20
07ANJ	South Newton Creek at Audubon Lake	New Jersey Community Water Watch	Kings Hwy & Haverford (Haddon Heights)	05/01/97	25.0	18.5	6.5	9.5	4.40	0.20
07ANJ	South Newton Creek below Audubon Lake	New Jersey Community Water Watch	Black Horse Pike/ RT 168 & N. Merchant Street	04/01/97	15.0	13.0	8.0	10.0	4.40	0.30
07ANJ	South Newton Creek below Audubon Lake	New Jersey Community Water Watch	Black Horse Pike/ RT 168 & N. Merchant Street	05/01/97	27.0	21.0	9.5	9.5	0.88	0.20
07ANJ	Swede Run	Delaware Riverkeeper Network	off Garwood Road, Moorestown, NJ	04/15/97	14.5	16.0	7.0	11.2	2.64	0.00
07BNJ	Delaware River mile 088	Delaware River Basin Commission	Storet Station -- 332052 River Mile 87.90 Paulsboro	04/22/97	12.0	11.0	7.1	9.2	3.94	0.21
07BNJ	Raccoon Creek	Raccoon Creek Watershed Association	Russell Mill Road Bridge, upstream side, Swedeboro, NJ	04/20/97	18.0	11.0	7.0	10.5	4.40	0.20
08DE	Alapocas Woods Creek	Delaware Nature Society	Alapocas Road & Ball fields, Wilmington, DE	04/22/97	14.0	12.5	7.0	9.5		
08DE	Alapocas Woods Creek	DuPont Merck Pharmaceutical Co.	Alapocas Road & Ball fields, Wilmington, DE	04/24/97		11.0	7.0	10.0	0.89	0.20

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
08DE	Beaver Run	Delaware Nature Society	50 yds downstream Creek Rd, trib Brandywine 75 34' 36" N, 39 50' 5" W	04/27/97	21.5	13.6	7.5	11.5	3.00	
08DE	Canby Park Stream	Christina School District - Bayard Elementary School	At bridge near corner of Oak & Scott Sts. , Wilmington, DE	04/23/97	10.0	5.0	7.2			
08DE	Christina River	Delaware Nature Society	At Churchman's Road	04/25/97	18.5	13.0	7.5	13.1	13.28	
08DE	Christina River	Delaware Nature Society	At James St. bridge, Newport, DE	04/25/97	19.5	13.0	7.5	12.6	13.28	
08DE	Christina River	Delaware Nature Society	Watershed #13, site #3, Newark, DE	05/10/97	13.5	11.5	7.0	11.2	1.50	
08DE	Christina River	Delaware Nature Society	Watershed #13, site #4, Newark, DE	05/10/97	15.0	12.5	7.5	10.8	2.00	
08DE	Christina River	Lynch, Sheila	above Barksdale Road Bridge (upstream)	06/09/97	20.5	16.0	7.5	8.0		
08DE	Hoopes Reservoir	Delaware Nature Society	Wilmington, DE	04/22/97	11.0	13.0	7.0	10.5	0.25	
08DE	Middle Run	Fantastics 4-H Club	White Clay Cr trib, New Castle Co., DE	04/27/97	17.4	15.0	7.5			
08DE	Mill Creek	Artesian Water Co.	Tributary of Christina River, Mill Creek Road, S. of Evanson, N. of Nathalie	04/25/97	17.4	14.7	9.0	13.0		
08DE	Mill Creek	Delaware Nature Society	Hockessin, DE	04/26/97	12.0	10.0	7.5	12.4	2.00	8.40
08DE	Pike Creek	Independence School, The	At Independence School	04/25/97	19.0	12.0	8.0	11.8	3.00	0.00
08DE	Pike Creek	Independence School, The	Trib Pike Cr between Northstar & Meadowdale	04/25/97	20.0	15.5	8.0	12.0	8.00	0.00
08DE	Pike Creek	Delaware Nature Society	Wilmington, DE	04/26/97	13.0	10.5	7.3	11.3	3.00	4.90
08DE	Red Clay Creek	Delaware Nature Society	Hercules, Wilmington, DE	04/22/97	11.0	13.0	8.0	11.3	3.00	
08DE	Red Clay Creek	Delaware Nature Society	Yorklyn, DE	05/10/97	15.0	13.0	8.0	12.1	5.00	
08DE	Red Clay Creek	Delaware Nature Society	at Burrow Run, along Old Kennett Pike near Ashland School Road in extreme northern Delaware	05/24/97	27.0	18.0	7.5	10.0	1.00	

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
08DE	Rocky Run	Delaware Nature Society	Creek Rd Bridge, trib Brandywine 75 34' 36" N, 39 50' 5" W	04/27/97	19.5	13.9	7.3	11.3	1.00	
08PA	Brandywine Creek	Pennsylvania DEP	WQN 105, Chadds Ford	04/21/97		10.6	7.8	12.0	0.03	0.03
08PA	Red Clay Creek	Pennsylvania DEP	WQN 150, Kennett Twp	04/21/97		10.4	9.2	14.4	4.28	0.06
08PA	White Clay Creek	Pennsylvania DEP	WQN 149, Chester County	04/21/97		10.1	9.0	14.5	3.86	0.02
09NJ	Alloway Creek	Salem County Watershed Task Force	At Route 49 bridge, Quinton, NJ	04/26/97	19.0	15.0	7.0	9.5	2.64	0.20
09NJ	Alloway Creek at Alloway Lake	Alloway Lake Association	Alloway-Woodstown Road - County Bridge #1097	05/03/97	18.0	14.0	6.5	7.2	4.40	0.20
09NJ	Alloway Creek at Alloway Lake	Alloway Lake Association	at the Dam, Canal Street side	05/03/97	18.0	16.5	7.5	9.4	3.52	0.20
09NJ	Alloway Creek at Alloway Lake	Alloway Lake Association	Commissioners Pike/ Rte 581, County Bridge 1065	05/03/97	19.0	17.0	6.5	7.5	2.20	0.20
09NJ	Delaware River mile 071	Delaware River Basin Commission	Storet Station -- 091011 River Mile 70.96 Cherry Island	04/22/97	11.0	11.0	7.2	8.9	4.30	0.15
09NJ	Delaware River mile 075	Delaware River Basin Commission	Storet Station -- 332046 River Mile 74.88 Oldmans Point	04/22/97	11.0	11.0	7.2	9.2	4.25	0.12
09NJ	Delaware River mile 082	Bernardine Center Woodstown HS	Commodore Barry Bridge	04/25/97	19.0	11.5	7.0	8.5		
09NJ	Salem River	Environmental Club	At Memorial Lake dam, Woodstown, NJ	04/27/97	20.0	19.3	8.0	11.0	4.40	0.20
10ADE	Delaware River mile 061	Delaware River Basin Commission	Storet Station -- 091005 River Mile 60.55 Pea Patch Island	04/22/97	11.0	10.0	7.0	5.6	4.96	0.18
10ADE	Delaware River mile 066	Delaware River Basin Commission	Storet Station -- 091008 River Mile 65.96 New Castle	04/22/97	11.0	10.0	7.4	10.2	4.56	0.12
10BDE	Delaware River mile 055	Delaware River Basin Commission	Storet Station -- 091002 River Mile 54.94 Reedy Island	04/22/97	11.0	10.0	6.9	9.8	5.05	0.21
11ANJ	Cohansey River	Cohansey Area River Preservation	at "River Bend" dock, Fairton, NJ	04/20/97	10.6	11.5	7.0	9.4	0.04	0.01

Water Snapshot '97 Stream Data										
DRB Sub-Basin	Stream Name	Organization	Site Description	Date	Air Temp (Celsius)	Water Temp (Celsius)	pH	Dissolved Oxygen (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)
12ADE	Delaware River mile 037	Delaware River Basin Commission	Storet Station -- 091020 River Mile 36.6 Ship John Light	04/22/97	11.0	11.0	7.2	6.4	3.68	0.27
12ADE	Delaware River mile 044	Delaware River Basin Commission	Storet Station -- 091017 mid channel river mile 43.50 Smyrna River mouth	04/22/97	11.0	10.0	6.9	9.0	4.39	0.24
12ADE	Delaware River mile 048	Delaware River Basin Commission	Storet Station -- 091015 River Mile 48.06 Liston Point	04/22/97	11.0	10.0	6.8	9.2	4.43	0.43
12ADE	Issacs Branch	Belisle, Connie	Foot bridge behind Simpson School, Camden, DE	04/20/97	12.0	10.5	7.3	11.6		
12ADE	Mill Pond stream	Delaware Nature Society - Abbotts Mill Nature Center	near Milford, DE	05/30/97	29.0	20.0	6.7	7.5		
12BDE	Delaware River mile 002	Delaware DNREC	Site J10.3 Lewes, DE	04/15/97	10.0	9.0		12.2		
12BDE	Delaware River mile 031	Delaware River Basin Commission	Storet Station -- 091023 River Mile 30.82 Mahon River mouth	04/22/97	12.0	10.0	7.1	9.4	3.10	0.55
12BDE	Lewes/Rehoboth Canal	Delaware DNREC	behind Rehoboth, DE	04/15/97	12.0	11.2		10.2		
12BDE	Lewes/Rehoboth Canal	Delaware Inland Bays Citizen Monitoring Program	Lewes, DE, Sussex Co.	04/28/97	14.0	15.0	7.2	7.2		
12BDE	Lewes/Rehoboth Canal G3	Delaware DNREC	Lewes, DE	04/15/97	11.0	6.2		11.2		
12BDE	Lewes/Rehoboth Canal GH8.5	Delaware DNREC	Breakwater, Lewes, DE	04/15/97	9.0	10.0		11.6		
OOB	Indian River GH5.5	Delaware DNREC	Pastere Point Cove	04/15/97	11.0	10.0		11.6		
OOB	Indian River ST 7.3	Delaware DNREC	Oak Orchard, DE	04/15/97	10.0	9.2		10.2		
OOB	Rehoboth Bay - EF 15	Delaware DNREC	in Rehoboth Bay	04/15/97	14.2	11.0		10.2		
				Average	13.8	10.9	7.4	10.8	2.4	0.2
				Median	13.3	11.0	7.4	11.0	0.9	0.1

**Additional Tests Conducted for Snapshot '97**

Additional Tests Conducted for Snapshot '97						
Participant	Date	Alkalinity	Carbon	Coliform	Conductivity	Turbidity
			Dioxide (mg/l)	(per 100 ml)		
Alloway Lake Association	05/03/97	20				10 J.T.U. @ 25 mL
Alloway Lake Association	05/03/97	32				10 J.T.U. @ 25 mL
Alloway Lake Association	05/03/97	40				10 J.T.U. @ 25 mL
Audubon Lake (NJ Community Water Watch)	04/01/97	52				< 5 J.T.U. @ 25 mL
Audubon Lake (NJ Community Water Watch)	04/01/97	60				< 5 J.T.U. @ 25 mL
Audubon Lake (NJ Community Water Watch)	04/01/97	50				> 5 J.T.U. @ 25 mL
Audubon Lake (NJ Community Water Watch)	05/01/97	52				< 5 J.T.U. @ 25 mL
Audubon Lake (NJ Community Water Watch)	05/01/97	58				20 J.T.U. @ 25 mL
Audubon Lake (NJ Community Water Watch)	05/01/97	60				30 J.T.U. @ 25 mL
Berks Co. Conservancy--Manatawny Sites- Bieber & Pine confluence	04/08/97	132				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Bieber Creek	04/07/97	44				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-confluence	05/05/97	87				5 JTU @25 mL
Berks Co. Conservancy--Manatawny Sites-Furnace Run	04/15/97	68				0 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Goose Run	05/05/97	80				10 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Ironstone Creek	04/25/97	84				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Manatawny	04/22/97	80				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Manatawny	04/22/97	85				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Manatawny	04/25/97	88				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Manatawny	05/05/97	85				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Manatawny below STP	04/14/97	72				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Oysterville Creek	04/25/97	60				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Pine Creek	04/07/97	44				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Pine Creek West Branch	04/07/97	44				5 JTU @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Trib. of Oysterville Creek	04/08/97	40				5 JTU. @ 25 mL
Berks Co. Conservancy--Manatawny Sites-Trout Run	04/22/97	44				5 JTU @ 25 mL
Berks Co. Conservancy--Sanatoga Creek/Hartenstine Creek-@confluence	05/05/97	88				5 JTU @ 25 mL
Berks Co. Conservancy--Sanatoga Creek/Hartenstine Creek-Hartenstine @ first bridge	05/05/97	72				5 JTU @ 25 mL
Berks Co. Conservancy--Sanatoga Creek/Hartenstine Creek-Sanatoga Rd before bridge	05/05/97	80				5 JTU @ 25 mL
Berks Co. Conservancy--Sprogels Run @ bridge upstream from park	05/05/97					10 JTU @ 25 mL
Berks Co. Conservancy--Sprogels Run @ office building parking lot	05/05/97	104				15 JTU @ 25 mL
Berks Co. Conservancy--Sprogels Run @ Brookside Restaurant	05/05/97	84				5 JTU @ 25 mL
Berks Co. Conservancy --Manatawny Sites-Furnace & Little Manatawny Creek confluence	04/15/97	80				5 JTU @ 25 mL
Berks Co. Conservancy --Manatawny Sites-Furnace Creek	04/07/97	44				5 JTU @ 25 mL
Berks Co. Conservancy --Manatawny Sites-Little Manatawny	04/07/97	64				5 JTU @ 25 mL
Delaware Nature Society--Beaver Run	04/27/97	48			221 s/cm	
Delaware Nature Society--Christina River, watershed #13, site #3	05/10/97	37			145.2 s/cm	
Delaware Nature Society--Christina River, watershed #13, site #4	05/10/97	45			242 s/cm	
Delaware Nature Society--Hercules stream?	04/22/97	64			290 s/cm	



Additional Tests Conducted for Snapshot '97						
Participant	Date	Alkalinity	Carbon	Coliform	Conductivity	Turbidity
			Dioxide (mg/l)	(per 100 ml)		
Delaware Nature Society--Hooper stream?	04/22/97	54			168.2 s/cm	
DRBC/NPS SRMP--Belvidere Bridge	04/24/97				106 s/cm	
DRBC/NPS SRMP--Bordentown Access	04/23/97				184 s/cm	
DRBC/NPS SRMP--Bulls Island Bridge	04/23/97				180 s/cm	
DRBC/NPS SRMP--Calhoun Street Bridge	04/23/97				176 s/cm	
DRBC/NPS SRMP--Frenchtown Bridge	04/23/97				182 s/cm	
DRBC/NPS SRMP--Lambertville Bridge	04/23/97				176 s/cm	
DRBC/NPS SRMP--Lehigh River @ Easton	04/24/97				259 s/cm	
DRBC/NPS SRMP--Milford	04/24/97				195 s/cm	
DRBC/NPS SRMP--Phillipsburg/Easton	04/24/97				142 s/cm	
DRBC/NPS SRMP--Portland/Columbia	04/24/97				91 s/cm	
DRBC/NPS SRMP--Riegelsville Bridge	04/24/97				332 s/cm	
DRBC/NPS SRMP--Stockton Bridge	04/23/97				172 s/cm	
DRBC/NPS SRMP--Washington Crossing, NJ	04/23/97				175 s/cm	
Lower Merion Conservancy--Mill Creek	04/20/97	85	10			
Lower Merion Conservancy -- Gulley Run	04/26/97	84	5			
Lower Merion Conservancy -- Mill Creek	04/23/97	68	5			
Lower Merion Conservancy --Indian Creek	04/23/97	51	10			
Lower Merion Conservancy --Indian Creek East	04/26/97	85	10			
Lower Merion Conservancy --Mill Creek	04/17/97	68	15			
Lower Merion Conservancy --Mill Creek	04/20/97	68	10			
Lower Merion Conservancy --Mill Creek	04/25/97	51	5			
Lower Merion Conservancy --Saw Mill Run	04/23/97	68	5			
Lower Merion Conservancy --Schuylkill River	04/23/97	85	5			
National Park Service--Brodhead Creek	04/22/97			50	59 mhos/cm	7 NTU
National Park Service--Smithfield Access on Delaware River	04/22/97			100	39 mhos/cm	8 NTU
National Park Service -- Delaware River @ Bushkill Access Area	04/24/97			100	42 mhos/cm	6 NTU
National Park Service -- Little Bushkill Creek @ DEWA Boundary	04/24/97			100	21 mhos/cm	12 NTU
National Park Service -- Van Campens Bk @ Old Mine Rd Bridge	04/24/97			100	27 mhos/cm	5 NTU
National Park Service --Big Flatbrook Creek @ DEWA Boundary	04/24/97			50	36 mhos/cm	5 NTU
National Park Service --Bushkill Creek @ DEWA Boundary	04/24/97			100	21 mhos/cm	8 NTU
National Park Service --Cherry Creek	04/22/97			25	105 mhos/cm	7 NTU
National Park Service --Delaware River @Smithfield Access Area	04/24/97			100	46 mhos/cm	7 NTU
National Park Service --Little Flatbrook Creek @ DEWA Boundary	04/24/97			50	149 mhos/cm	8 NTU
National Park Service --Rittatiny Point on Delaware River	04/22/97			100	41 mhos/cm	7 NTU
National Park Service --Shawnee Creek	04/22/97			25	117 mhos/cm	6 NTU
PA Department of Environmental Protection--Schuylkill River @Falls Bridge	04/21/97	74			373 s/cm	
PA Department of Environmental Protection--Valley Creek @Wilson Rd. Bridge	04/21/97	210				1 NTU

<b>Additional Tests Conducted for Snapshot '97</b>						
			Carbon	Coliform		
Participant	Date	Alkalinity	Dioxide (mg/l)	(per 100 ml)	Conductivity	Turbidity
PA Department of Environmental Protection--Wissahickon Creek @Ridge Av. Bridge	04/21/97	112			514 s/cm	
Pen Argyl Area High School Advanced Science class	04/25/97	58		200		1
Pennsylvania Power and Light Co.--Martins Creek SES 3 & 4 Intake	04/25/97					1.4 NTU
Philadelphia Suburban Water Co. --Ridley Creek	04/21/97			13		
Philadelphia Suburban Water Co.--Neshaminy Creek	04/21/97			25		
Philadelphia Suburban Water Co. -- Perkiomen Creek	04/21/97			30	370 s/cm	
Philadelphia Suburban Water Co. --Crum Creek	04/21/97			71		
Philadelphia Suburban Water Co. --Deep Creek	04/21/97			35	270 s/cm	
Philadelphia Suburban Water Co. --DEP stream #00690	04/21/97			55		
Philadelphia Suburban Water Co. --Mill Creek Tributary	04/21/97			182		
Philadelphia Suburban Water Co. --Pickering	04/21/97			83		
Philadelphia Suburban Water Co. --Ridley Creek	04/21/97			18		
Philadelphia Suburban Water Co. --Ridley Creek	04/21/97			32		
Philadelphia Suburban Water Co. --Swamp Creek	04/21/97			15	420 s/cm	
Philadelphia Suburban Water Co. --Unami Creek	04/21/97			43	230 s/cm	
Philadelphia Suburban Water Co. --Ridley Creek	04/21/97			15		
Philadelphia Suburban Water Company --Little Neshaminy Creek	04/21/97			127		
Philadelphia Water Department--Delaware River @State Rd. & Linden Av.	04/23/97	35		200	199 mhos/cm	4.42 J.T.U. @ 25 mL
Philadelphia Water Department --Pennypack Creek @Ashburner St. & Frankford Av.	04/23/97	66		700	411 mhos/cm	2.17 J.T.U. @ 25 mL
Philadelphia Water Department --Schuylkill River @Schoolhouse Ln. & Ridge Av.	04/23/97	75		1200	417 mhos/cm	3.94 J.T.U. @ 25 mL
Schuylkill River Greenway Assoc. -- Allegheny Creek @Gibraltar	04/23/97	28	35			
Schuylkill River Greenway Assoc. -- Antietam Creek @Exeter Twp. Park	04/25/97	88	0			
Schuylkill River Greenway Assoc. -- Little Schuylkill River @ Port Clinton	04/22/97	25	5			
Schuylkill River Greenway Assoc. -- Manatawny Creek Lower @West Pottsgrove Twp. Park	04/27/97	92	6			
Schuylkill River Greenway Assoc. -- Wyomissing Creek	04/27/97	142	6			
Schuylkill River Greenway Assoc. --Angelica Creek @ Angelica Park	04/26/97	64	3			
Schuylkill River Greenway Assoc. --Hay Creek @Birdsboro	04/21/97	25	5.5			
Schuylkill River Greenway Assoc. --Maiden Creek Lower @ below Lake Ontelaunee	04/27/97	83	4			
Schuylkill River Greenway Assoc. --Maiden Creek Upper @Moselem	04/27/97	52	4			
Schuylkill River Greenway Assoc. --Manatawny Creek Upper @Earlville	04/24/97	86	0			
Schuylkill River Greenway Assoc. --Monocacy Creek @Monocacy Station	04/24/97	154	0			
Schuylkill River Greenway Assoc. --Pickering Creek @Charlestown	04/26/97	53	8			
Schuylkill River Greenway Assoc. --Pine Creek @Deer Lake	04/22/97	24	4			
Schuylkill River Greenway Assoc. --Schuylkill River @Mohrsville	04/25/97	28	4			
Schuylkill River Greenway Assoc. --Schuylkill River @Seyfert	04/23/97	76	0			
Schuylkill River Greenway Association--Mill Creek	04/19/97	6	12			
Schuylkill River Greenway Association--Schuylkill River @Port Carbon	04/22/97	24	8.5			
Schuylkill River Greenway Association--Schuylkill River @south of Pottsville	04/19/97	68	5			

<b>Additional Tests Conducted for Snapshot '97</b>						
			Carbon	Coliform		
<b>Participant</b>	<b>Date</b>	<b>Alkalinity</b>	<b>Dioxide (mg/l)</b>	<b>(per 100 ml)</b>	<b>Conductivity</b>	<b>Turbidity</b>
Schuylkill River Greenway Association--Schuylkill River West Branch @Cressona	04/19/97	37	5			
Scotch Plain Field High School--Tom's Creek Picnic Area	05/01/97	8		0.75		
Stephen Decatur Elementary School grade 4 Rms A-7 & A-10--Poquessing Creek	05/05/97		48			
The Schuylkill Center for Environmental Education--Wind Dance Pond Stream	04/26/97		4			
The Schuylkill Center for Environmental Education -- tributary of Schuylkill River	04/26/97		5			
Wilson Area High School--Bushkill Stream @Penn Pump Park- Palmer	04/22/97	0	4			1 (Scale 1 to 5)

Appendix B

**Participants in Water Snapshot '97**

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
	Connie Belisle	110 Broad Street	Wilmington	DE	19934	302.697.9024 (home) 302.678.9800 x 444 (work)
Academy of Natural Sciences Stroud Water Research Center	Kristen Travers Jim McGonigle			PA		Kristen--610.268.2155 x 239 Jim --215.299.1557
Alloway Lake Association	Ralph H. Rickenbach	211 Wilson Avenue	West Colls. Heights	NJ	08059-1954	609.742.8187
Artesian Water Company, Inc.	Barry Price	PO Box 15004	Wilmington	DE	19850	302.453.6953
Artesian Water Company, Inc.	Doug Rambo	PO Box 15004	Wilmington	DE	19850	302.453.6953
Bartram High School Communications Students	Walter Shelley, Kareem Smith, & Micheal Bas	54th Street and Lindbergh Boulevard	Philadelphia	PA	19143	215.492.6452
Bayard Elementary School	Mrs. Carlin's class	200 South DuPont Street	Wilmington	DE	19805	
Bethlehem Township Environmental Commission	Suzanne Wilder	424 Charlestown Road	Hampton	NJ	08827	908.537.7631
Bethlehem Township Environmental Commission	Joyce Koch	55 Staats Road	Bloomsbury	NJ	08804	908.479.9943
Bethlehem Township Middle School	Jayne McKenna's 7th grade class	405 Mine Road	Asbury	NJ	08802-1107	
Bordentown Regional High School	Senior Biology Class (Mr. Fisher--teacher)	50 Dunn's Mill Road	Bordentown	NJ	08505	609.298.0025
BRHS	Mr. Mike Swish		Fieldsboro	NJ	08505	609.298.2515
Cardinal O'Hara High School	Kay Lansing	1701 South Sproul Road	Springfield	PA	19064-1199	610.544.3800

**Participants in Water Snapshot '97**

Organization	Name	Address	City	ST	ZIP	Phone Number
Chester/Ridley/Crum Volunteer Monitoring Program	Larry Barrett	47 Skyline Drive	Glen Mills	PA	19342	610.459.3231
Cohansey Area River Preservation	Cindy & Ernie Zirkle		Fairton	NJ	08320	609.455.6611
Cook's Creek Watershed Association	Lois Oleksa	PO Box 34	Durham	PA	18039	
Crum/Ridley/Chester Volunteer Monitoring Program	Cal Alston & Bob Bruce	68 South Britton Road	Springfield	PA	19064	610.543.7014
Crum/Ridley/Chester Volunteer Monitoring Program	Peter, Ben & Ethan Weber		Swarthmore	PA	19081	610.872.8454
Delaware Inland Bays Citizens Monitoring Program	June Connor	University of Delaware Sea Grant College Program	Lewes	DE	19958-1298	302.645.4252
Delaware Nature Society-- Stream Watch-Technical Monitoring	Carol & George Fox	1002 Wilson Road	Wilmington	DE	19803-3423	302.478.6024
Delaware Riverkeeper Network	Timshel Purdum	1 Wapalanne Road	Branchville	NJ	07823	201.948.2374
Delaware Riverkeeper Network	Fred Gusz	1217 Pine Grove Road	Morrisville	PA	19067	215.295.5903
Delaware Riverkeeper Network/ NJ School of Conservation	Andrea Young			NJ		

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Delaware Riverkeeper Network	Anna Kettell		Perkiomenville	PA	18074	215.723.2870
Delaware Riverkeeper Network	Kay Smith	15 Stokes	Moorestown	NJ	08057	609.235.2986
Delaware Riverkeeper Network	Roxane Shinn	10 White Oak Court	Cherry Hill	NJ	08034-3046	609.854.5108
Delaware Riverkeeper Network	Arthur Firman	338 Newbold Avenue	Moorestown	NJ	08057	215.369.1188
Delaware Nature Society	Liana Bauerle, John & Erin McElroy, Arianna & Jackie Langford	PO Box 700	Hockessin	DE	19707	302.695.4142
Delaware Nature Society	Gloria & William Cooke	1100 Flint Hill Road Arundel	Wilmington	DE	19808	302.999.1074
Delaware Nature Society	Ginger Stein	PO Box 700	Hockessin	DE	19707	302.239.2334
Delaware Nature Society	Gary Grulich	PO Box 700	Hockessin	DE	19707	302.239.2334
Delaware Nature Society	Crawford & Annamarie Mackeand		Yorklyn	DE	19707	
Delaware Riverkeeper	Bill Hartnett	1026 Main Street	Bethlehem	PA	18018-6637	215.369.1188
Delaware Nature Society	Deborah & Donald Hemmer			DE	19808	302.368.9770
Delaware Riverkeeper Network	Eugene Marks	1012 Sofa Road	East Greenville	PA	18041-2333	610.845.7142

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Delaware Nature Society	Kalpana Kumar & Tammy Tribit	PO Box 7000	Hockessin	DE	19707	
Department of Conservation and Natural Resources--Ridley Creek State Park	Joe Minnichbach	Sycamore Mills Road	Media	PA	19063	610.892.3900
Delaware River Basin Comm./National Park Service Scenic Rivers Monitoring Program	DRBC Secretaries	PO Box 7360	West Trenton	NJ	08628	609.883.9500
Fantastics 4-H Club—Newcastle Co. DE	Ed O'Donnell	103 Saint Regis Drive	Newark	DE	19711	302.737.9091
Frankford High School	Mrs. Phyllis Green	Oxford & Wakeling	Philadelphia	PA	19124	215.537.2519
Frankford High School	Mrs. Phyllis Green	Frankford section	Philadelphia	PA		
Friends of Tacony Creek Park	Fred Maurer	645 Brill Street	Philadelphia	PA	19120	215.324.8942
Frost Valley Environmental Education Center	David Scherf	2000 Frost Valley Road	Claryville	NY	12725-9600	914.985.2291
Jacobsburg Environmental Education Center	E. V. House	130 East High Street	Nazareth	PA	18064	610.759.1562
Life Member Telephone Pioneers - Lehigh Valley Chapter	Carroll R. Williams	1499 White Oak Road	Allentown	PA	18104-2151	610.395.9225
Lower Merion Conservancy	W. J. Frezel		Gladwyne	PA		610.520.9895
Mafco Worldwide Corporation	John Kropiewnicki	3rd Street & Jefferson Avenue	Camden	NJ	08104	609.964.8840



## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Margaretville Central School	Mike Porter		Margaretville	NY	12455	914.586.2647
Musconetcong Watershed Association	Roger & Sally Kissling	17 Staats Road	Bloomsbury	NJ	08804-3301	908.479.6840
Musconetcong Watershed Association	Micheal Franz	15 Musconetcong Road	Phillipsburg	NJ	08865	908.850.6335
Musconetcong Watershed Association	Jim Abbondante	301 Route 627	Phillipsburg	NJ	08865	908.995.9644
MWA	Roberta Morganstern	510 River Road	Asbury	NJ	08802	908.537.4294
New York State Department of Environmental Conservation-- Bureau of Watershed Assessment & Research	Raymond L. Gabriel, Jr.	50 Wolf Road Room 392	Albany	NY	12233-3502	518.457.4334
New Jersey PIRG	Dennis Sweeney & Beth Thomas	119 Somerset Street	New Brunswick	NJ	08901	
New Jersey Community Water Watch	Ralph H. Rickenback	211 Wilson Avenue	West Colls. Heights	NJ	08059-1954	609.742.8187
New York Audobon Society with Eldred Central School	Lori McKean & 10th grade biology students	Route 55, PO Box 111	Eldred	NY	12732	914.557.8025
New York Audobon Society with Boy Scout Troop #102	Lori McKean & Boy Scout Troop #102	Route 55, PO Box 111	Eldred	NY	12732	914.557.8025
North Penn Water Authority	Bruce Sandstrom and Sean Greene	144 B Park Avenue	Chalfont	PA	18914	215.822.1759
Owen J. Robert Middle School	Dave Jarvie	881 Ridge Road	Pottstown	PA	19465-9314	610.469.6261 or 610.469.0983

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Pen Argyl High School	Advanced Science Class --Mr. Charles J. Kopcho	501 West Laurel Avenue	Pen Argyl	PA	18072	610.863.1293
Pennsylvania Power and Light Company	James A. Klass	PO Box 257	Martins Creek	PA	18063	215.498.6200
Philadelphia Suburban Water Company	Craig Marleton	732 West Lancaster Avenue	Bryn Mawr	PA	19010-3489	610.525.1400 x 2103
Philadelphia Suburban Water Company	Bob Kahley	732 West Lancaster Avenue	Bryn Mawr	PA	19010-3489	610.645.1132
Philadelphia Suburban Water Company	Robert C. Feuer	732 West Lancaster Avenue	Bryn Mawr	PA	19010-3489	610.525.1400 x 2035
Philadelphia Suburban Water Company	Preston Luitweiler	762 West Lancaster Avenue	Bryn Mawr	PA	19010-3489	610.645.1132
Pocono Environmental Education Center	Daniel Siess & Scotch Plain Field High School			PA		717.828.2319 717.828.9695 (fax)
Pohoqualine Fish	Jim Hartzler	R.D. 2, Box 2562	Saylorsburg	PA	18353	717.992.6802
Raccoon Creek Watershed Association	Jo Ann A. Laughlin	Kings Highway PO Box 37	Swedesboro	NJ	08085-0037	609.467.4418
Roosevelt Alternative School	John R. Schirk	PO Box 124	Spring Mount	PA	19478	John--610.287.6365 School-- 610.275.9720
Salem County Watershed Task Force	Francis Ponti	439 Watsons Mill Road				
Sayre School			Philadelphia	PA	19143	

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Schuylkill River Greenway Association	Joseph G. Shidisky	1400 Hill Road	Reading	PA	19602-1499	610.373.4178 (work) or 610.375.2374 (home)
Shafer Earth-Doers -- Nazareth School District	Susan Krell, Leader	49 South Liberty Street	Nazareth	PA	18064	610.759.5228
Stephen Decatur School	Grade 4 Rms. A-7 & A-10	Academy and Torrey Roads	Philadelphia	PA	19154	215.281.2606
Swarthmore Rutledge School & US EPA	Mrs. Ann Robinson & Mrs. Robin Saunders 1st grade class	College Avenue	Swarthmore	PA	19081	610.544.5700
SWEC—Southwest Environmental Coalition	Andrea Hall	1251 South 50th Street	Philadelphia	PA	19143	215.471.
The Independence School	Renece Gracon	1300 Paper Mill Road	Newark	DE	19711	302.239.0330
The Independence School	Marion Laughlin	1300 Paper Mill Road	Newark	DE	19711	302.239.0330
The Schuylkill Center for Environmental Education	Katie Sheppard	8480 Hagy's Mill Road	Philadelphia	PA	19128-1998	215.482.7300
Turner Middle School			Philadelphia	PA	19143	
US EPA/ Erdenheim Elementary School	Janet Viniski	841 Chestnut Building	Philadelphia	PA	19107	215.566.2999
US Environmental Protection Agency	Peter Weber & Mary Moses	841 Chestnut Building	Philadelphia	PA	19107	215.566.5749
Wilson High School	Honors Biology Class -- R. Durnin	424 Warrior Lane	Easton	PA	18042	610.258.2732

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Woodruff English Environmental Education Center	David Scherf with an Elderhostel Class	2000 Frost Valley Road	Claryville	NY	12725-9600	914.985.2291
Nazareth Area High School	Environmental Science Class, Kathie Romano	East Center Street	Nazareth	PA	18064	610.759.1730
Cooks Creek Watershed Association	Anke M. Ellis	1966 Pleasant View Road	Coopersburg	PA	18036-9054	610.346.7263
PA Department of State Parks	Erin Rasor-Shellhamer, Environmental Education Specialist	Tuscarora State Park Complex RR #1 Box 1051	Barnesville	PA	18214-9715	717.467.2404
Saucon Valley High School	Lance Leonhardt's class		Hellertown	PA		610.838.7001
Lower Merion Conservancy	Janet Bortnick	9 South Bryn Mawr Avenue	Bryn Mawr	PA	19010	610.520.9895
Riverbend Environmental Education Center	Kevin Peter, Kathleen Geist, Lisa Aitken, Graham Vigiotta, Jeanne Braha		Gladwyne	PA	19035	610.527.5234
Bala Cynwyd Middle School	Mary Beth Hegeman & Debbye Wolfe's Team 6-5 students	510 Bryn Mawr Avenue	Bala Cynwyd	PA	19004	610.520.9895
Lower Merion Conservancy	Barbara Brown	9 South Bryn Mawr Avenue	Bryn Mawr	PA	19010	610.520.9895
Lower Merion Conservancy	Enid & David Caplan	9 South Bryn Mawr Avenue	Bryn Mawr	PA	19010	610.520.9895
Lower Merion Conservancy	Heidi Fenstermacher	9 South Bryn Mawr Avenue	Bryn Mawr	PA	19010	610.520.9895
Lower Merion Conservancy	David Cooperman	9 South Bryn Mawr Avenue	Bryn Mawr	PA	19010	610.520.9895

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Lower Merion Conservancy	Norah Goldfine	9 South Bryn Mawr Avenue	Bryn Mawr	PA	19010	610.520.9895
Lower Merion Conservancy	Leah & Alistar Erickson	9 South Bryn Mawr Avenue	Bryn Mawr	PA	19010	610.520.9895
Pennsylvania Department of Environmental Protection	Mike Boyer	Lee Park, Suite 6010 555 North Lane	Conshohocken	PA	19428	610.832.6131
Pennsylvania Department of Environmental Protection	Jay Maneval	Lee Park, Suite 6010 555 North Lane	Conshohocken	PA	19428	610.832.6130
Delaware Riverkeeper Network, Uplands Office	Moira Garthwaite	116 Bridge Street	Narrowsburg	NY	12764	914.252.7546
Delaware Riverkeeper Network, Uplands Office	John Tryglio	116 Bridge Street	Narrowsburg	NY	12764	914.557.6505
Delaware Riverkeeper Network, Uplands Office	Ken Armstrong	371 Brickman Road	Hurleyville	NY	12747	914.252.7546
Delaware Riverkeeper Network, Uplands Office	Steve Fleckenstein	116 Bridge Street	Narrowsburg	NY	12764	914.252.7546
Sullivan County Boces	Gary Cormier, Instructor	85 Ferndale-Loomis Road	Liberty	NY	12754	914.292.7900
Delaware Nature Society	Walt & Marion Partenheimer	16 Clermont Road	Wilmington	DE	19803-3945	302.239.2334
Abbotts Mill Nature Center	Susan Haynes	PO Box 700	Hockessin	DE	19707	302.422.0847
Upper Delaware Scenic & Recreational River	Don Hamilton & Bill Weber	RR 2 Box 2428	Beach Lake	PA	18405	717.729.7842

## Participants in Water Snapshot '97

Organization	Name	Address	City	ST	ZIP	Phone Number
Philadelphia Water Department Bureau of Laboratory Services	Patrick C. Frazer	1500 East Hunting Park Avenue	Philadelphia	PA	19124-4941	215.685.1456
National Park Service Delaware Water Gap	Al Ambler	Delaware Water Gap National Recreation Area	Bushkill	PA	18324	717.296.6952
Berks County Conservancy	Tami Jo Lutz	960 Old Mill Road	Wyomissing	PA	19610	610.372.4992
Pennsylvania Department of Environmental Protection	Stephen Piller	Lee Park, Suite 6010 555 North Lane	Conshohocken	PA	19428	610.832.6131
Bethlehem Township Girl Scout Troop 313	Robin Sielski, Troop Leader	310 Tunnel Road	Asbury	NJ	08802	908.479.6548
Walpack Valley Environmental Education Center, Eatontown Board of Education	Charles Bickart & Wayne Grove	Box 134	Walpack	NJ	07881	201.948.5749
Bernardine Center	Sister Rose MacDermott, Jim Walker, V. Granger, Olga Kleche, & Terry Moller	2625 West 9th Street	Chester	PA	19103	610.497.3641
Pennsylvania Department of Environmental Protection	David Burke	Lee Park, Suite 6010 555 North Lane	Conshohocken	PA	19428	610.832.6106
Friends of Poquessing Watershed	Donna Remick		Philadelphia	PA	19154	215.638.3108
Pennsylvania Department of Environmental Protection	JoAnn Dolchak	Lee Park, Suite 6010 555 North Lane	Conshohocken	PA	19428	610.832.6108

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Organization	Name	Address	City	ST	ZIP	Phone Number
Pennsylvania Department of Environmental Protection	Mark Miller			PA		610.861.2070
Pennsylvania Department of Environmental Protection	Leonard Nawrocki	2 Public Square	Wilkes Barre	PA	18711	717.826.2553
Pennsylvania Department of Environmental Resources	Eric Garner			PA		610.861.2070
Pennsylvania Department of Environmental Protection	Tom Sherk	2 Public Square	Wilkes Barre	PA	18711	717.826.2320
Pennsylvania Department of Environmental Protection	Bob Bisignani	2 Public Square	Wilkes Barre	PA	18711	717.826.2553
	Sheila Lynch	953 Alexandria Drive	Newark	DE	19711-7711	302.456.0346
Friends of FDR Park	Maria Mirarchi	2717 South Aider Street	Philadelphia	PA	19148	
Radnor Middle School	Ed Silcox	131 South Wayne Avenue	Wayne	PA	19087	610.688.8100 ext. 271
Tobyhanna Creek/Tunkhannock Creek Watershed Association	Don Duthaler	PO Box 796	Pocono Lake	PA	18347	717.643.2001
Tobyhanna Creek/Tunkhannock Creek Watershed Association	Mark Sincavage & Don Vangrelli	PO Box 796	Pocono Lake	PA	18347	717.643.2001
Tobyhanna Creek/Tunkhannock Creek Watershed Association	John & Fran Whipple	PO Box 796	Pocono Lake	PA	18347	717.643.2001

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Organization	Name	Address	City	ST	ZIP	Phone Number
Tobyhanna Creek/Tunkhannock Creek Watershed Association	Carol Ellis	PO Box 796	Pocono Lake	PA	18347	717.643.2001
Tobyhanna Creek/Tunkhannock Creek Watershed Association	Georgia & Keen Cornell	PO Box 796	Pocono Lake	PA	18347	717.643.2001
Tobyhanna Creek/Tunkhannock Creek Watershed Association	Robert & Dolores Kohnicen	PO Box 796	Pocono Lake	PA	18347	717.643.2001
Tobyhanna Creek/Tunkhannock Creek Watershed Association	J. Eiman	PO Box 796	Pocono Lake	PA	18347	717.643.2001
Tobyhanna Creek/Tunkhannock Creek Watershed Association	PW Snyder	PO Box 796	Pocono Lake	PA	18347	717.643.2001
Tobyhanna Creek/Tunkhannock Creek Watershed Association	Bill Bixby & Tess O'Brien	PO Box 796	Pocono Lake	PA	18347	717.643.2001