Pre-Natural Gas Drilling

Baseline Monitoring Report for the Delaware River

Delaware River Basin Commission

March 2017

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Summary

Approximately 36% of the Delaware River Basin is underlain by the Marcellus shale formation that is known to contain deposits of natural gas (Figure 1). The formation underlays a portion of the Basin's Special Protection Waters (SPW) area, which is protected by regulations that require no measurable change to existing water quality. By monitoring SPW and establishing pre-gas drilling water quality conditions, DRBC will be in a stronger position to evaluate potential impacts from gas development and to compel remedial action if impacts do occur. DRBC baseline monitoring initiatives in the Upper Delaware River Basin, in order to characterize water resources before any natural gas related activities occurred, include: 1) archived sample reanalysis for metals and ions at over 55 ICP/BCP sites, 2) continuous water chemistry every 15 minutes for conductivity and temperature at 6 sites using HOBO® monitors, 3) macroinvertebrate sampling from over 100 sites, 4) toxicity testing at 4 sites, and 5) discrete water chemistry for radionuclides at 32 sites. This report summarizes all the baseline monitoring efforts and results in portions of the Upper Delaware River Basin most likely to see impacts of natural gas development should that activity occur. Monitoring activities under this program have allowed the DRBC to establish a strong data set of pre-gas drilling concentrations of important hydraulic fracturing indicator parameters such as barium and strontium; a year-round specific conductivity data set at key water quality management locations; and a solid radiochemistry baseline for comparison with future radiochemistry levels which will be useful for comparison to any post-gas development water quality conditions. The biomonitoring samples collected during this effort, combined with the existing state and federal biomonitoring results from these same watersheds, should provide a robust and relatively complete baseline from which to assess any future natural gas development within these watersheds. In addition, DRBC working with Stroud Water Research Center has strengthened the protection of basin water quality by evaluating appropriate toxicity tests to measure baseline ambient water conditions and assess potential impacts from natural gas development through the characterization of toxicity in surface waters of upper-basin tributaries.

An interactive map featuring results from several of the efforts documented in this report is available at the DRBC web site at:

http://drbc.maps.arcgis.com/home/webmap/viewer.html?webmap=77103d206e314c4ea6bb5387c39bb340

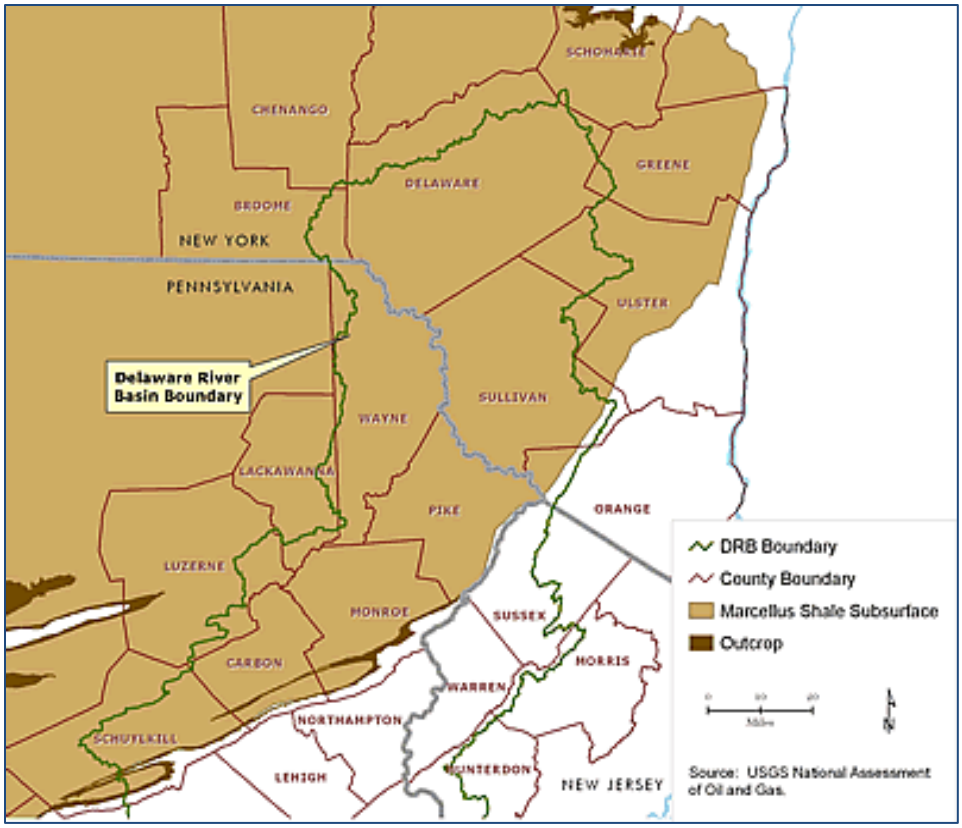

Figure 1: Map of Delaware River Basin underlain by Marcellus shale

Archived Sample Reanalysis for Metals and Ions

Over the years, the DRBC has worked with the Academy of Natural Sciences of Drexel University, Philadelphia, Pa., to perform analytical testing on samples collected as part of the commission's routine monitoring programs. One such program is the Scenic Rivers Monitoring Program (SRMP), an effort for which the DRBC and the National Park Service (NPS) partner to monitor and manage the water quality in the Special Protection Waters / National Wild and Scenic River segments of the non-tidal Delaware River.

Over 700 samples collected by DRBC at Delaware River and Tributary points (Figure 2) in 2009 and 2010 as part of the SRMP were frozen by the Academy in a process called “archiving.” Thanks to funding from the NPS and the Haas Foundation, DRBC contracted with the Academy to thaw the archived samples and reanalyze them for chemical parameters related to hydraulic fracturing, including barium (Figure 3), calcium (Figure 4), magnesium (Figure 5 and Figure 6), manganese (Figure 7), potassium (Figure 8), sodium (Figure 9 and Figure 10), strontium (Figure 11 and Figure 12), and sulfate (Figure 13 and Figure 14). The Academy performed this work, and DRBC now has a strong database of pre-gas drilling concentrations of important hydraulic fracturing indicator parameters (See Figures 3 through 14 below).

Photographic Documentation of Monitoring Effort

The SRMP photo album is available at:

https://www.flickr.com/photos/drbc1961/albums/72157633624890955

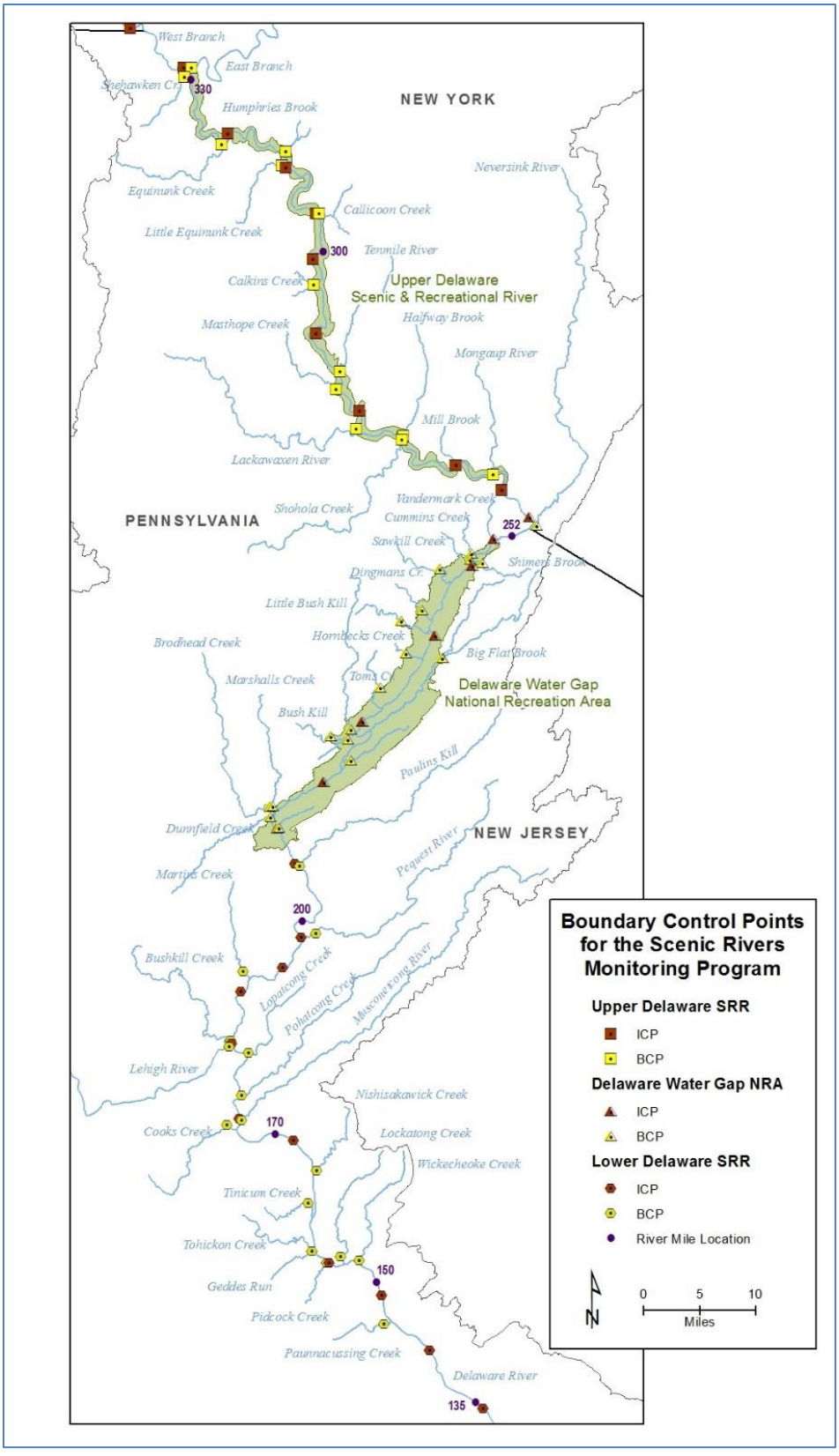

Figure 2: Delaware River Mainstem (ICP) and Tributary (BCP) Monitoring Locations and River Miles

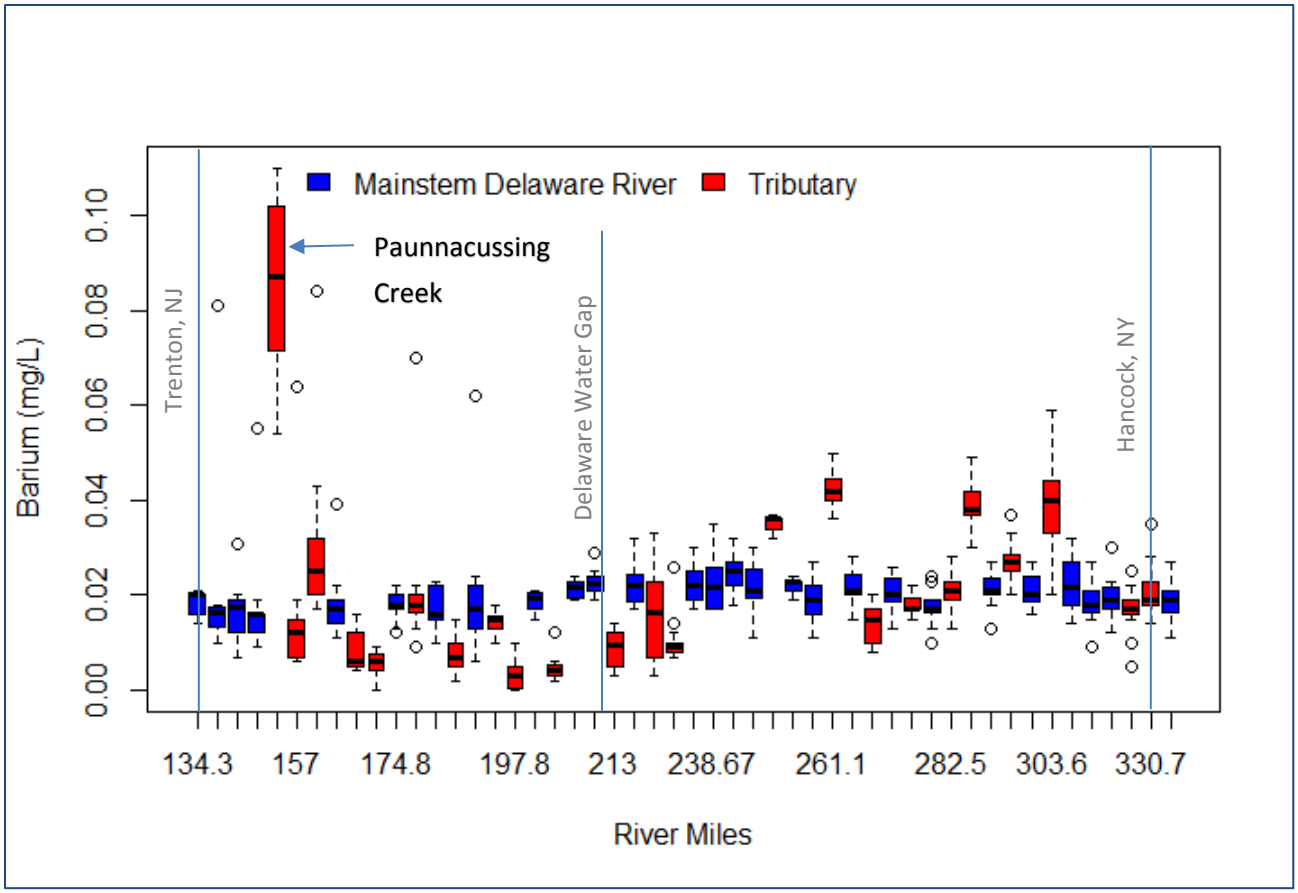

Figure 3: Box and whisker plot of barium concentrations in mg/L ordered by River Mile from archived samples for Interstate Control Points (ICP) corresponding the mainstem Delaware River and Boundary Control Points (BCP) which are the tributaries.

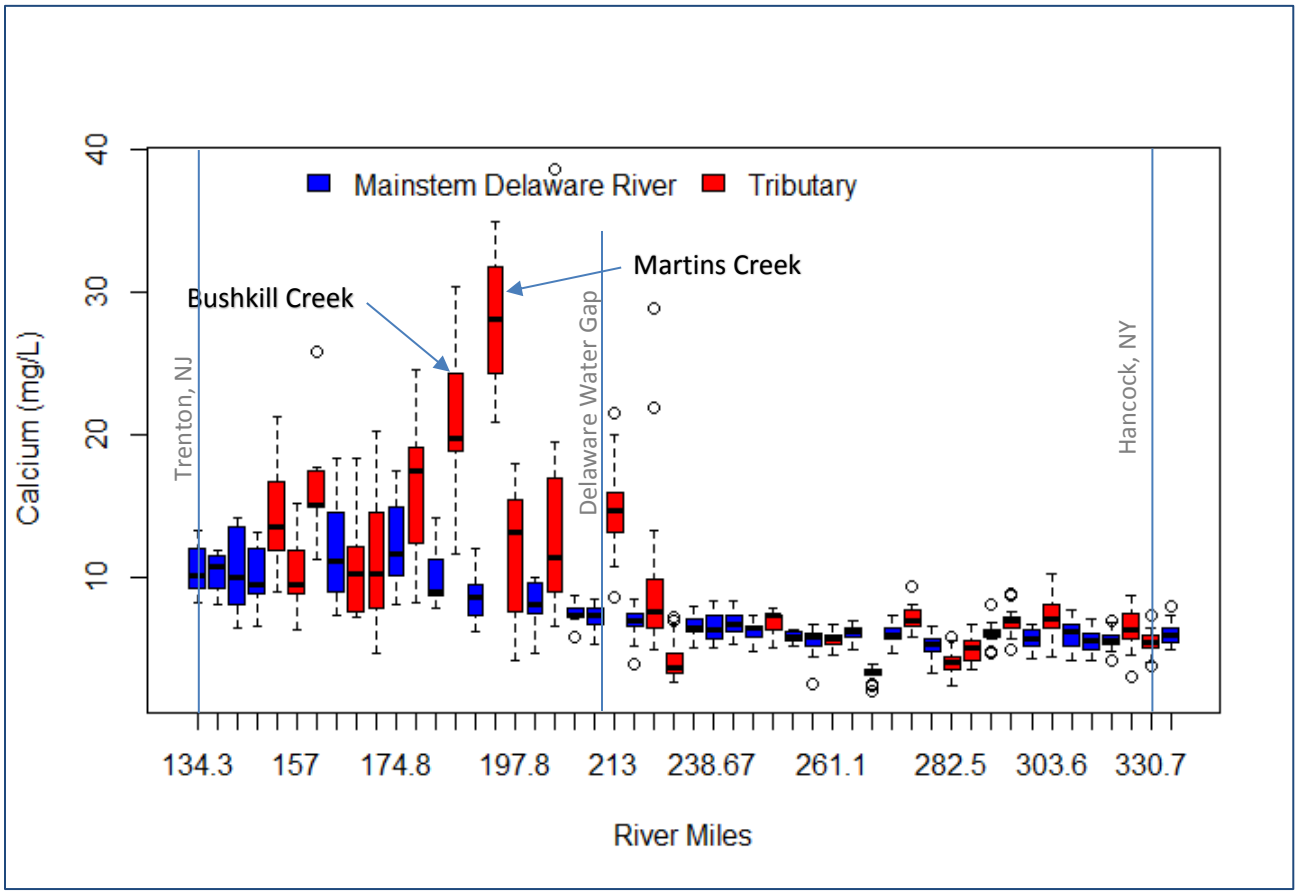

Figure 4: Box and whisker plot of calcium concentrations ordered by River Mile for ICPs and BCPs.

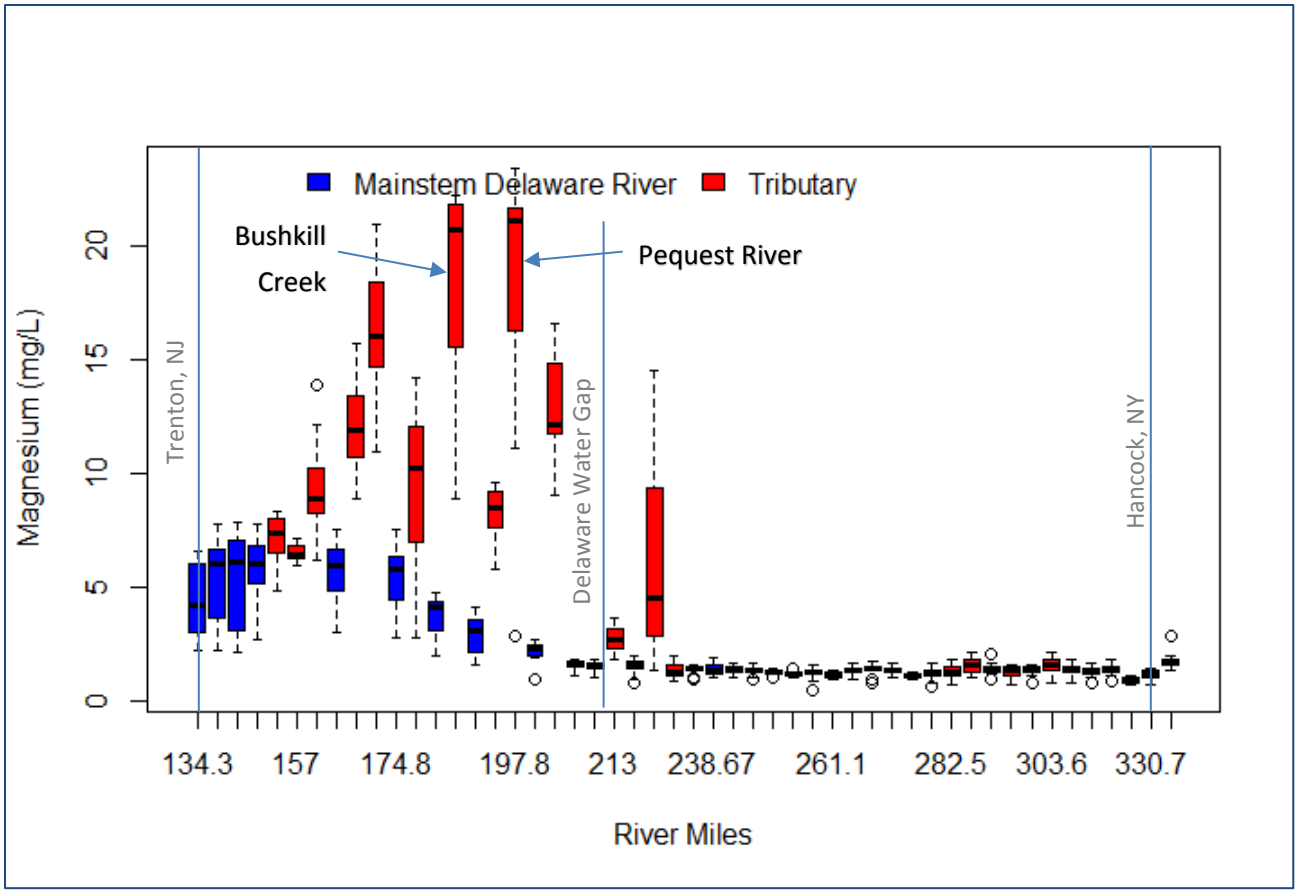

Figure 5: Box and whisker plot of magnesium concentrations ordered by River Mile for ICPs and BCPs

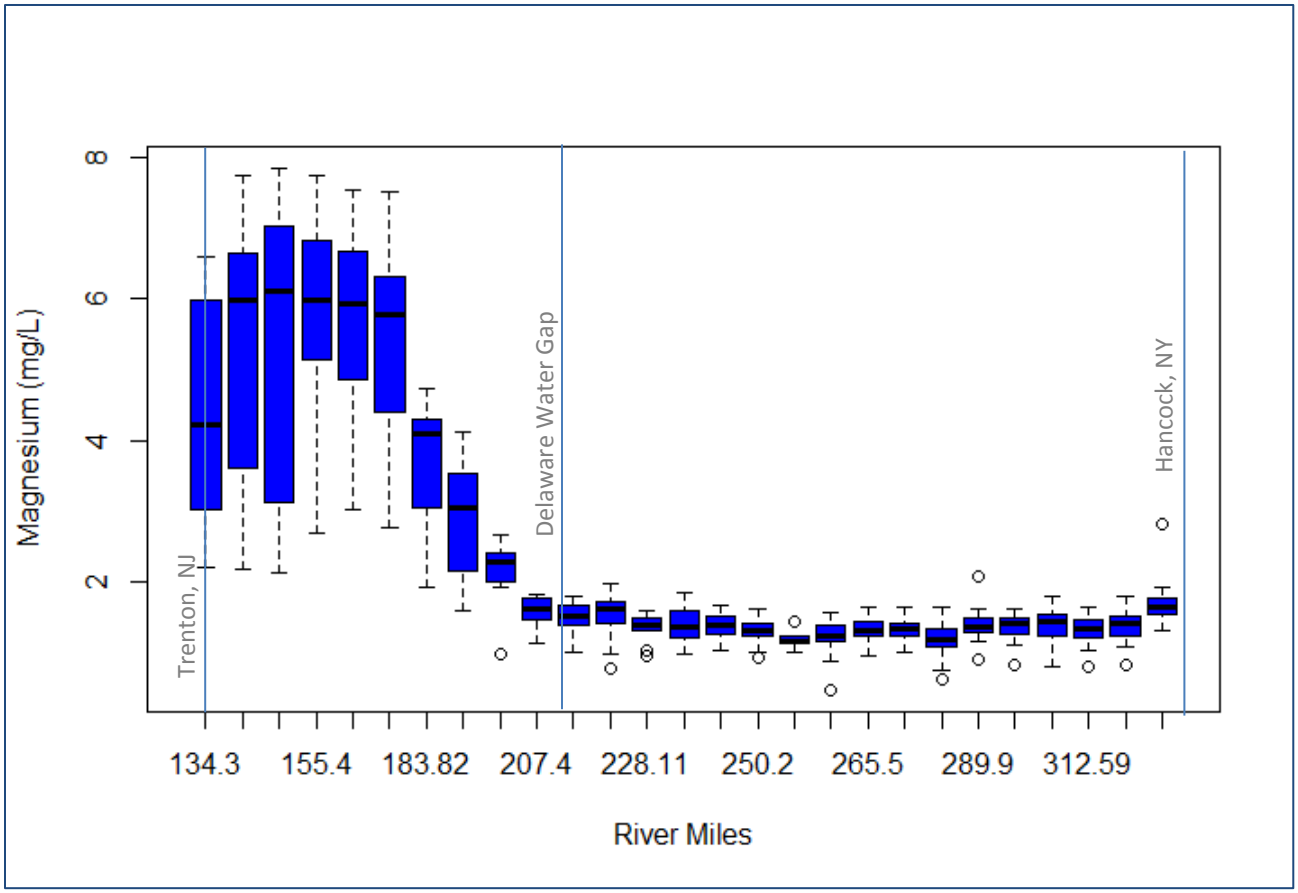

Figure 6: Box and whisker plot of magnesium concentrations ordered ICPs only, highlighting the longitudinal structure.

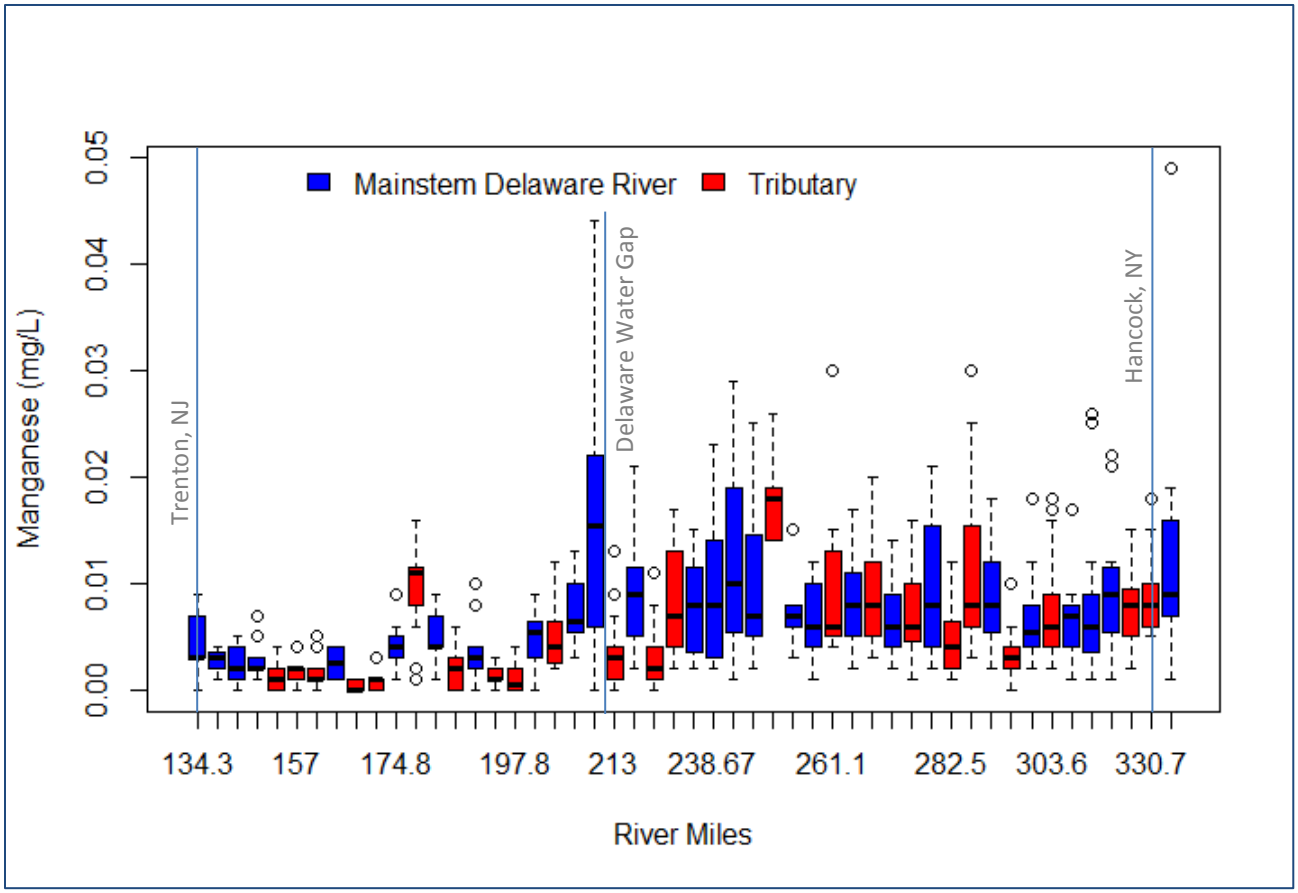

Figure 7: Box and whisker plot of Manganese concentrations ordered by River Mile for ICPs and BCPs.

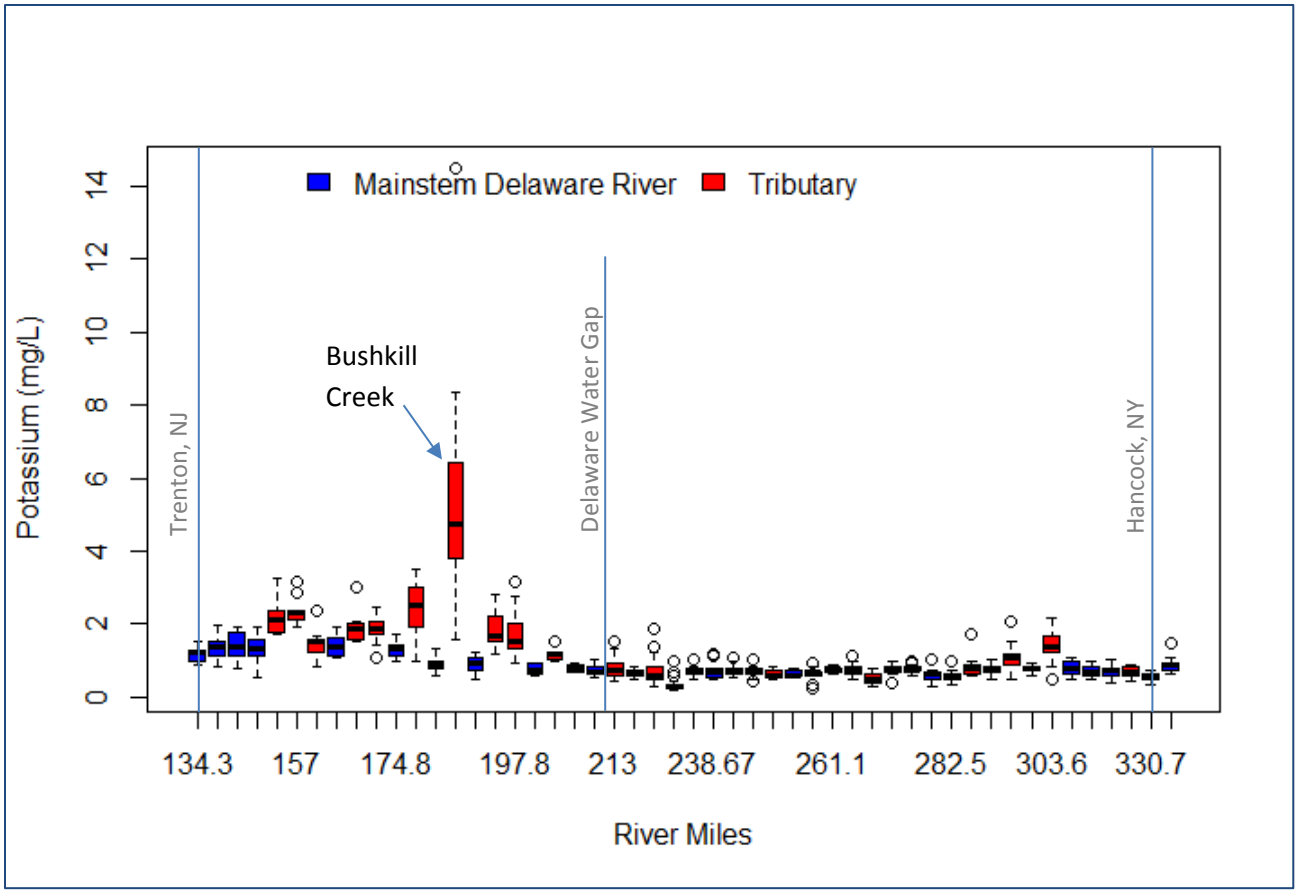

Figure 8: Box and whisker plot of potassium concentrations ordered by River Mile for ICPs and BCPs.

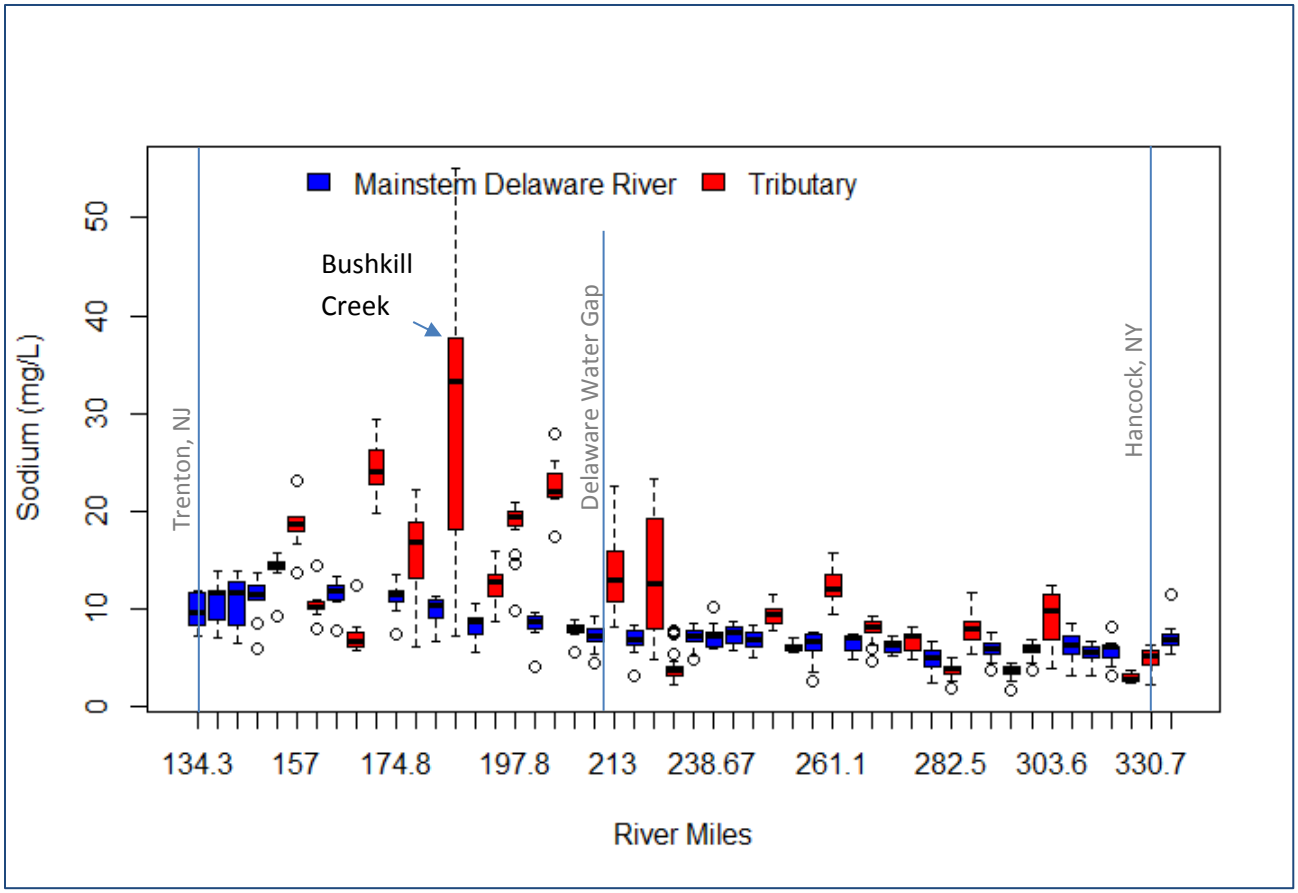

Figure 9: Box and whisker plot of sodium concentrations ordered by River Mile for ICPs and BCPs.

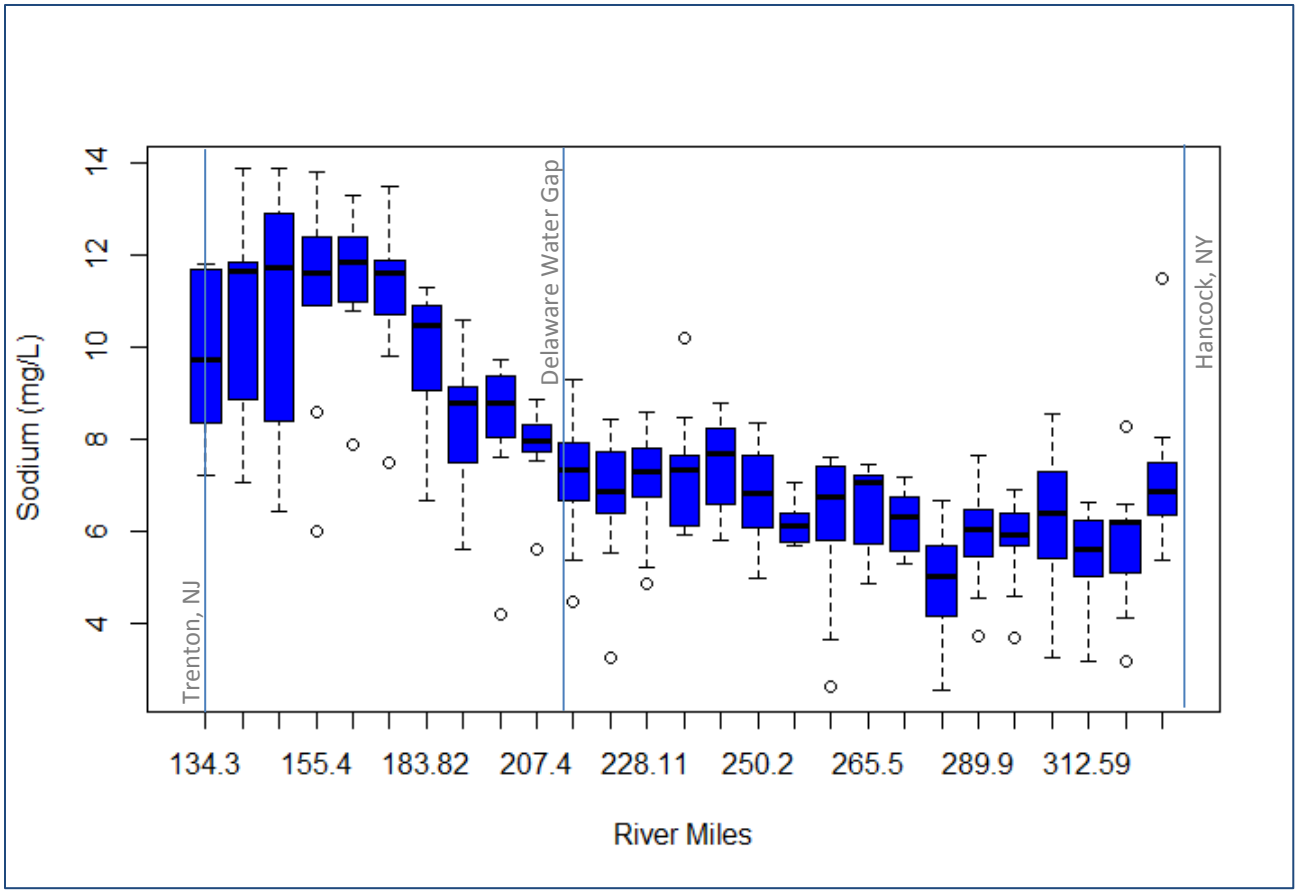

Figure 10: Box and whisker plot of sodium concentrations ordered ICPs only, highlighting the longitudinal structure.

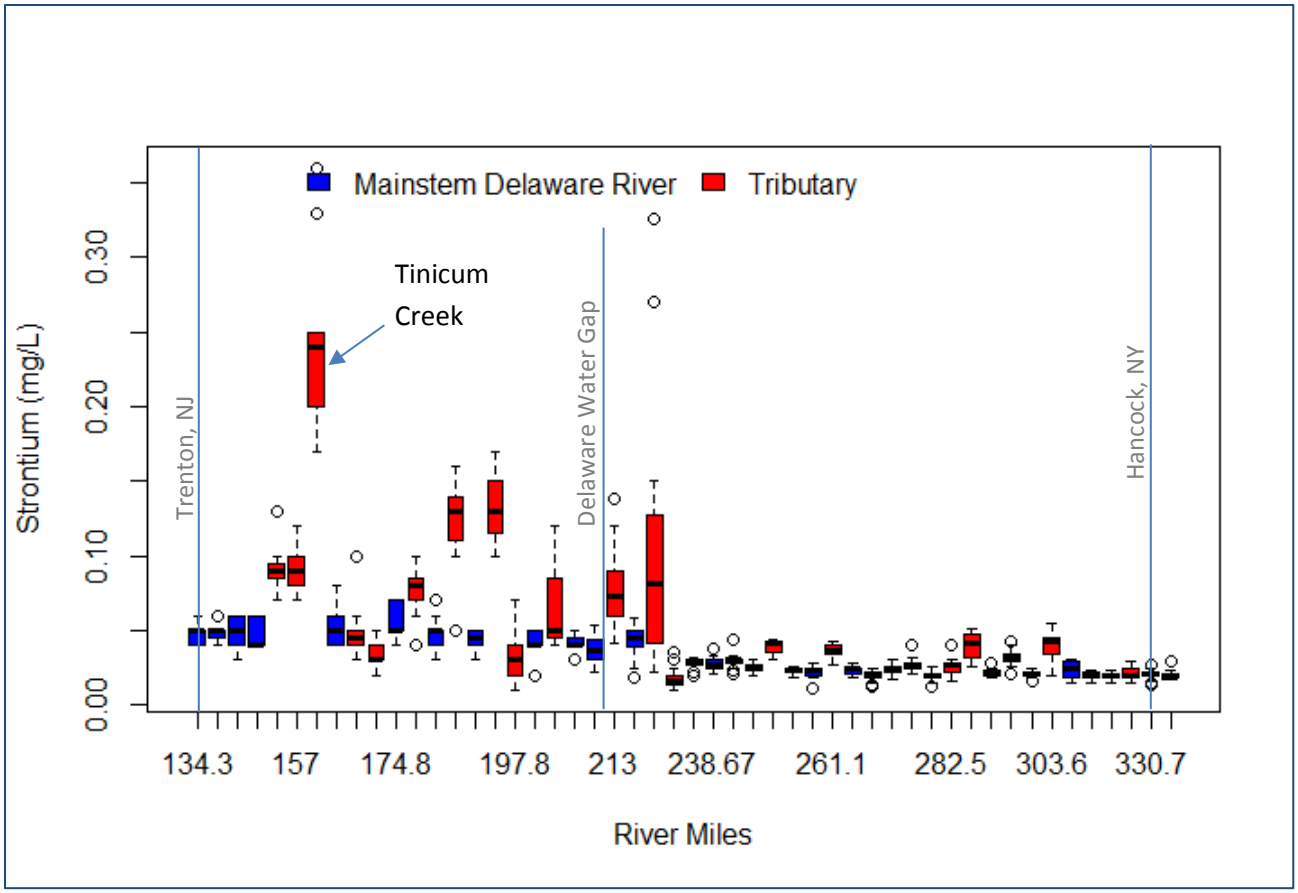

Figure 11: Box and whisker plot of strontium concentrations ordered by River Mile for ICPs and BCPs.

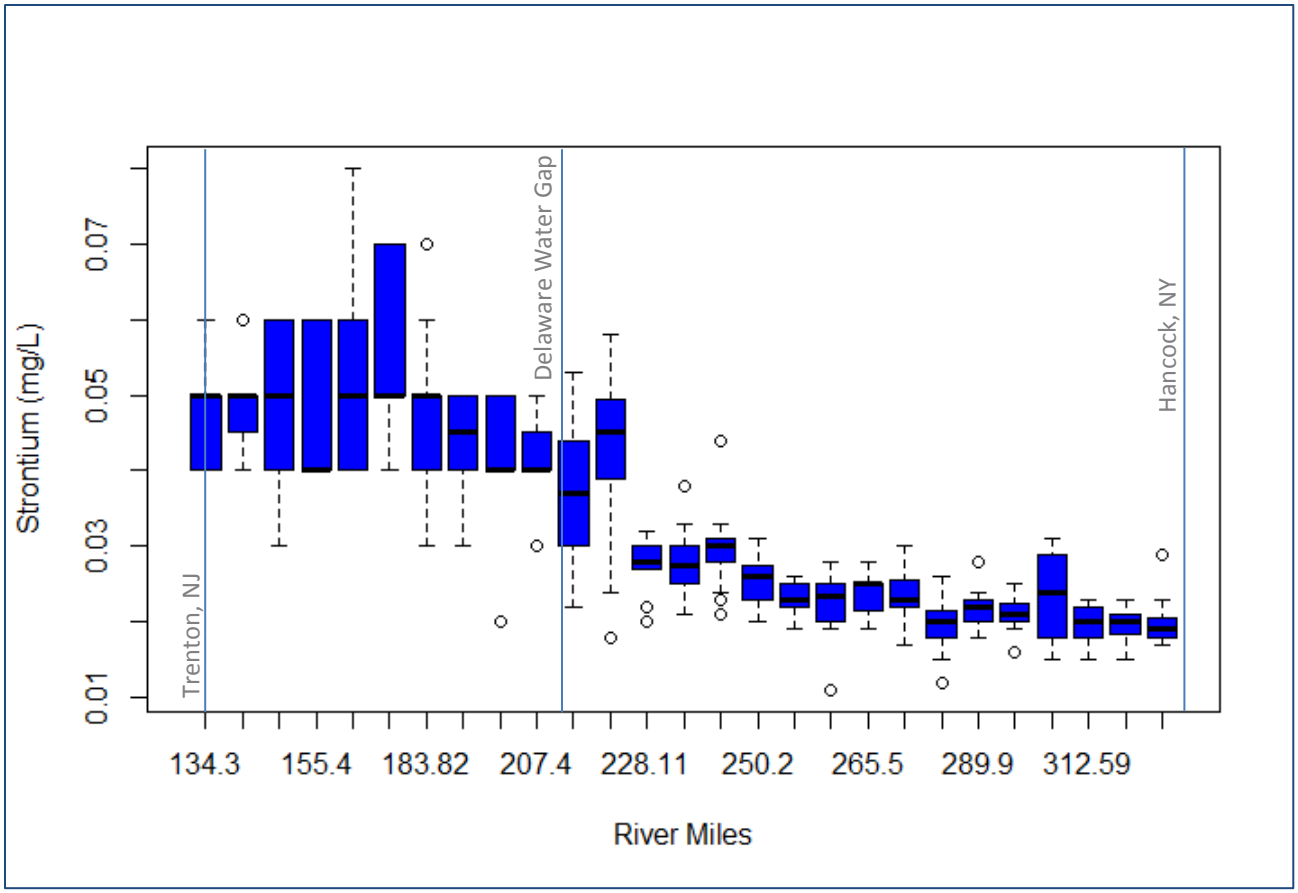

Figure 12: Box and whisker plot of strontium concentrations ordered ICPs only, highlighting the longitudinal structure.

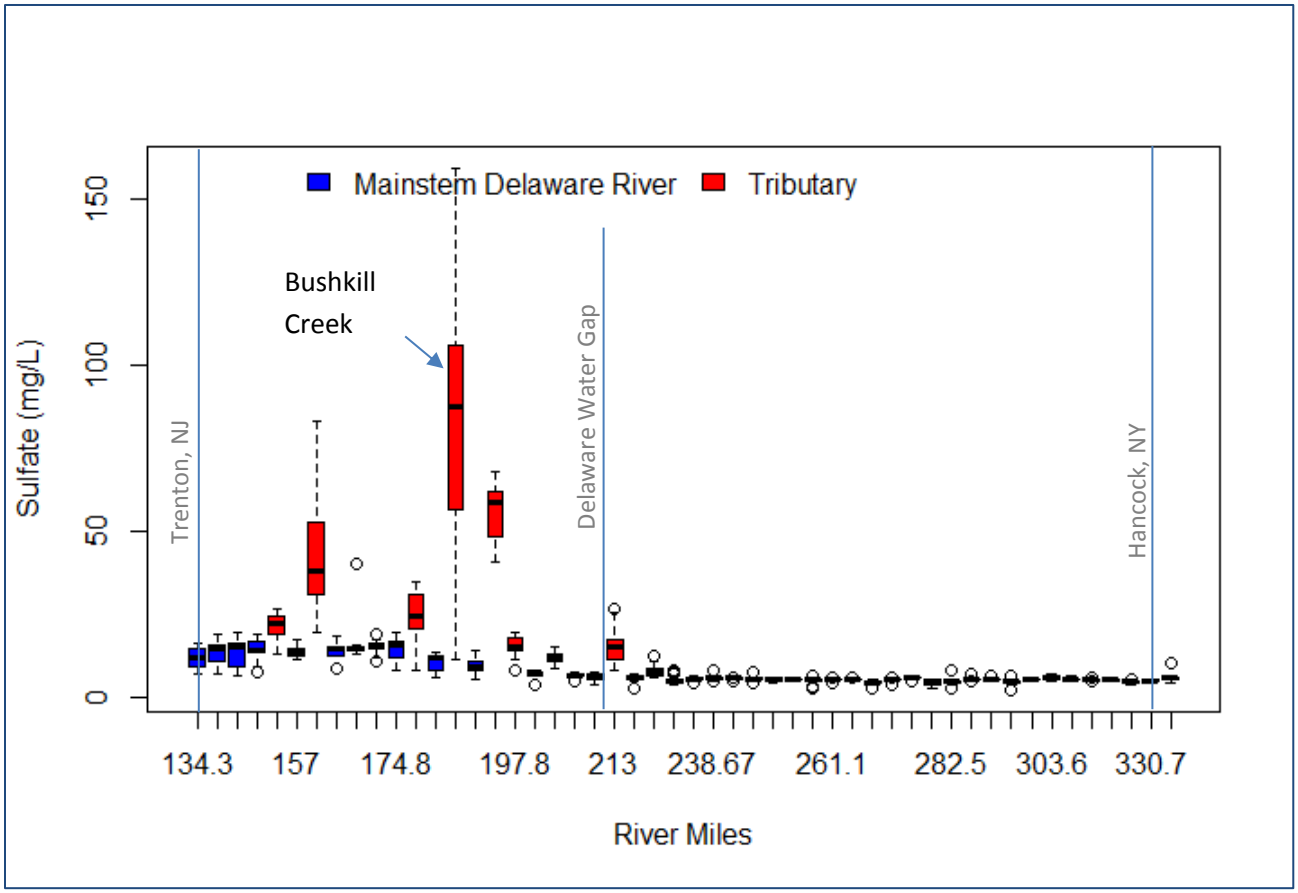

Figure 13: Box and whisker plot of sulfate concentrations ordered by River Mile for ICPs and BCPs.

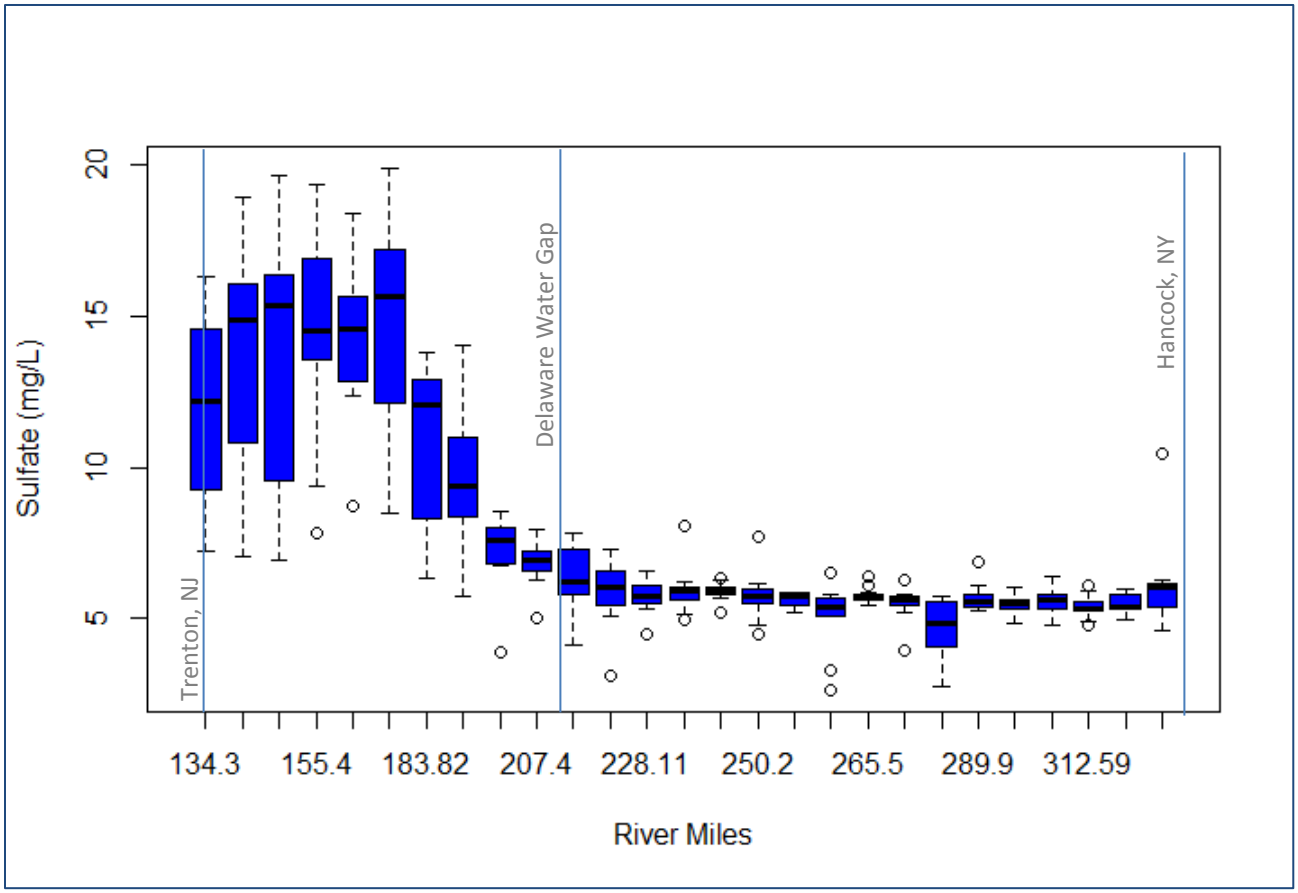

Figure 14: Box and whisker plot of sulfate concentrations ordered ICPs only, highlighting the longitudinal structure.

Continuous Monitoring for Conductivity and Temperature

DRBC deployed HOBO® monitors in six locations (Figure 15) in the Upper Delaware watershed (the Delaware River at Callicoon, West Branch Lackawaxen, as well as Equinunk, Oquaga, Shehawken, and the Middle Branch Dyberry creeks) to collect continuous water quality data to provide a better understanding of baseline conductivity and temperature ranges over a variety of flows and conditions before any natural gas development activities begin in the basin. Significant changes in conductivity can indicate the presence of a discharge or other type of pollution in the stream. The data collected from the HOBO® monitors (Table 1) allows DRBC to better differentiate between conductivity spikes that may arise due to natural gas drilling-related activities versus background conditions such as road salt run-off. From this work, the DRBC now has a year-round specific conductivity data set at key water quality management locations, which will be useful for comparison to post-gas development specific conductivity values and for setting thresholds that might indicate that a spill has occurred if natural gas drilling commences in the Delaware River Basin in the future.

Photographic Documentation of Monitoring Effort

Photos of conductivity monitoring are available at:

https://www.flickr.com/photos/drbc1961/albums/72157633083581809

Table 1: Specific Conductivity (µS/cm) for monitoring locations in the Upper Delaware watershed

	Delaware River at Callicoon	West Branch Lackawaxen	Equinunk Creek	Middle Branch Dyberry Creek	Shehawken Creek	Oquaga Creek
Coordinates	N 41.75668 W 75.05727	N 41.67344 W 75.37606	N 41.84219 W 75.22625	N 41.73431 W 75.32313	N 41.94175 W 75.28793	N 41.05953 W 75.42691
10th Percentile	55.2	57.2	50.5	47.1	57.2	72.2
25th Percentile	64.5	67.5	55.2	51.9	62.7	93.2
Median	70.1	76.8	58.2	55.7	70.0	111.1
75th Percentile	78.7	87.6	61.7	61.2	75.7	142.9
90th Percentile	87.4	95.3	68.2	75.3	88.5	169.3

Figure 15: Six HOBO® monitoring locations in the Upper Delaware watershed

For additional information see Status of Baseline Monitoring in the Delaware River Basin before Natural Gas Development presentation to Monitoring Advisory Committee (MAC) January 9, 2013.

http://www.state.nj.us/drbc/library/documents/MACC/01092013/mac_drbc-monitoring-nat-gas010913.pdf

Macroinvertebrate Biomonitoring

One advantage of biomonitoring is that it integrates all the stresses at a given monitoring site. If a spill occurred in a flowing stream, chemistry samples collected days or hours after the spill might not show any evidence of the spill having occurred. However, the biological community at that location could continue to exhibit signs of the impact for many months. In addition, biological communities are sensitive to milder changes associated with land disturbance and impacted flow and temperature regimes. Thanks to a grant by the Haas Foundation, DRBC compiled all available biomonitoring data in the upper portion of the basin to see where there were gaps in the data. Then DRBC staff collected new biological monitoring samples at 103 locations in PA and NY in the spring and summer of 2011 (Figure 16) where 5-7 sites were sampled per watershed – 35 sites in PA and 68 in NY. Each sample had replicates. These new samples provide a strong baseline from which to define pre-gas drilling biological conditions.

Overall, the biomonitoring data from the Upper Delaware Basin demonstrates a rich and diverse assemblage of benthic macroinvertebrates (see Appendix B for results from each sampling location). Habitat conditions were generally good to very good, leading to suitable conditions for a well-balanced macroinvertebrate profile at each site. In addition, water quality conditions likewise appeared to reflect reasonable baseline conditions for the region, reflecting a largely forested landscape with relatively sparse current development, yet with a longer history of forest clearing and more intensive agriculture land use in the relatively distant past. Some individual sites exhibited exceptional diversity and/or a noteworthy complement of sensitive invertebrate taxa. The data from other sites, however, show more typical ranges for the assemblage of invertebrates, and to some extent reflects some alteration of the invertebrate fauna because of human activities. It is also worth noting that the samples collected in September 2011 followed a period of intense rainfall and significant runoff. Although reasonable samples were obtained from the New York tributaries sampled in September 2011, confirmation of these data and results may be warranted by re-sampling during a period with more stable antecedent flows.

The primary goal with the invertebrate biomonitoring program was to complement the network of existing biomonitoring stations so that a more complete and representative suite of samples could be used to evaluate any future industrial activity associated with natural gas development. The 103 samples collected during this effort, combined with the existing state and federal biomonitoring results from these same watersheds, should provide a robust and relatively complete baseline from which to assess any future intensive development within these watersheds.

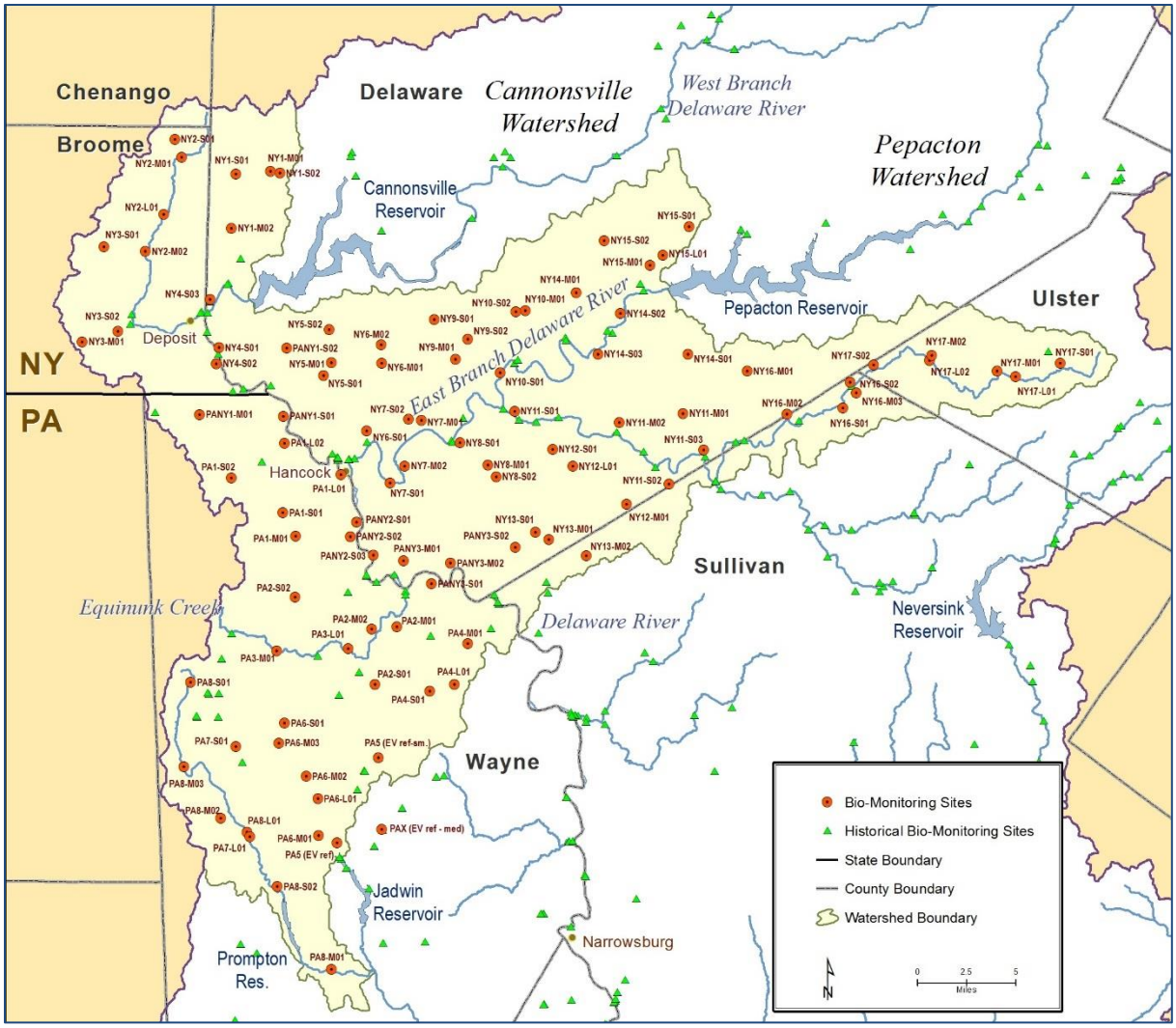

Figure 16: Biomonitoring at 28 watersheds sampled in 2011

Toxicity Tests

This study evaluated toxicity test methods and species to measure baseline ambient water conditions, to monitor cumulative effects of natural gas development in surface water, and to monitor wastewater from treatment plants receiving flow back/production water. Additional information was needed on methodologies and procedures to demonstrate compliance with the applicable basinwide effluent limitations and basinwide stream quality objectives in current and proposed DRBC water quality regulations when applied to toxicity in low hardness and low alkalinity surface waters of the basin that will be potentially exposed to releases of flowback/production water. The goal was to develop appropriate toxicity tests with sensitive species and endpoints. In this project, DRBC worked with Stroud Water Research Center and American Aquatic Testing, Inc. to strengthen the protection of basin water quality by evaluating appropriate tests to measure baseline ambient water conditions and their use in

assessing any potential impacts from natural gas development through the characterization of toxicity in effluents and surface waters in upper-basin tributaries. Standard whole effluent toxicity test methods and test procedures using standard test species and non-standard methods with native mayfly species were used. Benthic macroinvertebrates were chosen for this toxicity study because benthic macroinvertebrates are an ecologically important group of aquatic organisms that are commonly included in water quality assessment programs. The presence or conspicuous absence of certain macroinvertebrate species at a site is a meaningful record of environmental conditions during the recent past. Among the aquatic macroinvertebrates, mayflies were chosen for this study because they are known to be relatively sensitive to changes in water quality and play an important role in the commonly used EPT Index. Although mayflies represent an important and vulnerable group of organisms inhabiting streams and rivers they are not generally included in standard toxicity tests of effluents and receiving waters.

Surface water and produced water samples, that were analyzed for physical-chemical parameters such as dissolved solids, ions, metals, organics, and radiochemistry, were included in the toxicity tests. The test species were exposed to ambient waters and produced water in varying dilutions. Test duration times were species specific. Standard test endpoints of survival, growth and reproduction as well as additional endpoints for mayfly of development time and population growth rate were recorded. The range of hardness in the water samples used in the study (19 to 105 mg/L) did not adversely affect any of the test species for the endpoints measured in the test methods. Ambient water collected from Dyberry Creek, Delaware River, West Branch of the Lackawaxen River, Lackawaxen River and White Clay Creek (reference site in proximity to the lab) did not cause significant toxicity to any of the six species tested based on the endpoints measured. This result was expected because the study area does not contain impaired waters (Table 2). Not surprisingly, since the produced water used had a high chloride concentration of 121,000 mg/L, all of the test species measured significant toxicity with LC50 endpoints < 2% and IC25 endpoints ≤ 1% in the sample of produced water tested (Table 3). The advantages to ambient water toxicity testing are that it integrates point sources as well as non-point sources; it aggregates the effects of mixtures; it measures toxicants with no chemical specific water quality standards and/or are not being monitored by chemical analysis; and finally, it allows for sites exhibiting toxicity to be targeted for additional evaluation. For additional information, see reports in Monitoring to Establish Baseline Conditions in the Upper Delaware Basin in Advance of Potential Natural Gas Development: Baseline Monitoring Toxicity Tests at http://www.state.nj.us/drbc/programs/natural/baseline-monitoring.html#5

Photographic Documentation of Monitoring Effort

The toxicity sampling album is available at:

https://www.flickr.com/photos/drbc1961/albums/72157633102252429/with/8595178011/

Table 2: Chronic toxicity tests in ambient stream water

Test Species (Test Duration)	Endpoint	Dyberry Creek	Del R @Callicoon	West Branch Lackawaxen River	Lackawaxen River@ Honesdale	White Clay Creek
Hardness (mg/L)		22	19	26	28	105
Pimephales promelas (screening level) (7d)	NOEC	<100% [1]	<100% [2]	100%	100%	100%
Ceriodaphnia dubia (screening level) (7d)	NOEC	100%	100%	100%	100%	100%
Pseudokirchneriella subcapitata (screening level) (96h)	NOEC	<100% [3]	<100% [3]	100%	<100% [3]	<100% [3]
Centroptilum triangulifer (30 to 60d)	Surv	50%[4]	75%[4]	80%[4]	40%[4]	65%[4]
Procloeon rivulare (30 to 60d)	Surv	10%[4]	16%[4]	22%[4]	26%[4]	8%[4]
Pseudocloeon frondale (30 to 60d)	Surv	4%[4]	8%[4]	2%[4]	38%[4]	4%[4]

NOEC – No Observed Effect Concentration, SURV – survivorship , [1] - Not a biologically significant effect. Survival is 100%. Growth exceeds acceptable level at 0.25 mg. [2] - Fungal infection observed. [3] - Not a biologically significant effect. Mean cell density exceeded acceptable level of $1x10^6$ cells/ml. [4] - No statistically significant difference among ambient source waters within species.

Table 3: Toxicity tests of a natural gas drilling produced water sample

	acute tests			chronic tests		
Test Species	Endpoint (Test Duration)	Dyberry Creek Water	White Clay Creek Water	Endpoint (Test Duration)	Dyberry Creek Water	White Clay Creek Water
Pimephales promelas	LC50 (96h)	0.63%	0.97%	IC25 (7d)	0.04% growth	0.08% growth
Ceriodaphnia dubia	LC50 (48h)	0.59%	1.0%	IC25 (7d)	0.5% reproduction	0.55% reproduction
Pseudokirchneriella subcapitata	NA	NA	NA	IC25 (96h)	0.08% growth	0.06% growth
Centroptilum triangulifer 1st instar	LC50 (48h)	1.764%	1.988%	IC25 (30 to 60d)	0.289% growth[1]	0.690% growth[1]
Centroptilum triangulifer middle instar	LC50 (48h)	1.704%	1.496%	IC25 (30 to 60d)	NA	NA
Procloeon rivulare 1st instar	LC50 (48h)	0.782%	0.735%	IC25 (30 to 60d)	0.711% F 1.020% M growth[1]	0.690% F 0.678% M growth[1]
Pseudocloeon frondale 1st instar	LC50 (48h)	0.251%	0.272%	IC25 (30 to 60d)	0.370% F 0.292% M growth[1]	0.491% F 0.428% M growth[1]

LC50-lethal concentration to 50% of population; IC25-inhibitory concentration to 25% of population; F–female; M-male

[1] -Additional endpoints (mortality, development time and population growth rate) are reported for mayfly species in Stroud WRC report.

Radiochemistry Monitoring

The oil and gas industry, and the regulatory agencies that oversee them, have long recognized that naturally occurring radioactive materials (i.e., NORMs) can be exposed through natural gas extraction processes. On February 26, 2011, the *New York Times* (NYT) published an article and provided a supplemental spreadsheet documenting radioisotope activities in spent hydraulic fracturing water, a product of natural gas development activity. The Delaware River Basin Commission (DRBC) compared the NYT data set to its own surface water quality standard for gross alpha and found that all but one of the measurements were above DRBC's standard. The highest level measured in the NYT data set was over 13,000 times the DRBC criterion. Reviews of the National Water Quality Data Portal in 2011 showed that basin radiochemistry data was very sparse.

From January 2014 through May 2015, the Delaware River Basin Commission (DRBC) collected surface water samples from a total of 32 Interstate Control Points (ICPs; mainstem Delaware River), Boundary Control Points (BCPs; tributaries to the Delaware) and other tributary monitoring points for radiochemistry analysis (Figure 17). Table 4 shows coordinates for each sampling location. This work was performed with financial support from the William Penn Foundation under Grant #56-13. Samples were analyzed by the New Jersey Department of Health Laboratory for the following parameters:

- Gross alpha & gross beta (evaporation), NJDHSS ECLS-R-GA & GB
- Radium -226 + Radium-228, NJDHSS ECLS-RA-RA226/228

This report documents the results of the sampling and analysis effort and its relevance toward documenting baseline radiochemistry conditions in the mainstem Delaware River and select tributaries. Details on sampling and analysis are contained in the project Quality Assurance Project Plan (QAPP) dated October 4, 2013.

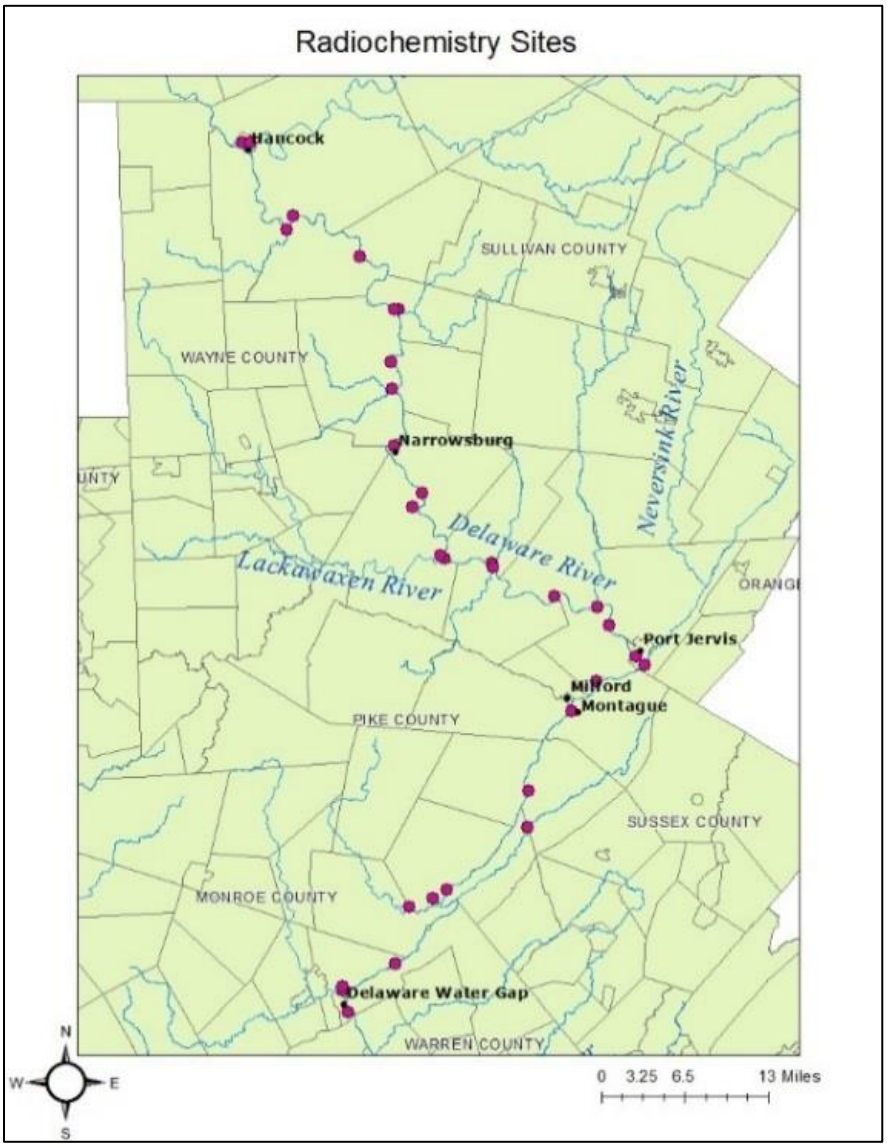

Figure 17: Baseline radiochemistry sampling sites

Table 4: Radiochemistry Sampling Locations and Coordinates

Sample Location Name	Latitude	Longitude
West Branch Delaware River	41.9525	-75.29121
East Branch Delaware River	41.95199	-75.28016
Delaware River at Lordville	41.86917	-75.21444
Equinunk Creek	41.85333	-75.22528
Delaware River at Kellems Bridge	41.82333	-75.11417
Delaware River at Callicoon	41.76472	-75.06167
Callicoon Creek	41.76418	-75.05563
Delaware River at Damascus	41.705	-75.0675
Calkins Creek	41.67361	-75.06528
Delaware River at Narrowsburg	41.60944	-75.06222
Ten Mile River	41.55606	-75.019541
Masthope Creek	41.5401	-75.03384
Lackawaxen River	41.48639	-74.99222
Delaware River at Roebling Bridge	41.48196	-74.98566
Delaware River at Barryville	41.47694	-74.91389
Shahola Creek	41.47222	-74.91319
Delaware River at Pond Eddy	41.43944	-74.82028
Mongaup River	41.42694	-74.75611
Delaware River at Millrift	41.40639	-74.73917
Delaware River at Port Jervis	41.37167	-74.69778
Neversink River at Port Jervis	41.36111	-74.68556
Delaware River at DEWA Boundary	41.34361	-74.75778
Delaware River at Montague	41.30917	-74.79556
Delaware River at Dingmans	41.219691	-74.860184
Flatbrook Creek	41.17871	-74.86159
Delaware River at Bushkill Access	41.10833	-74.98194
Little Bushkill Creek	41.09778	-75.00417
Bushkill Creek	41.08861	-75.03833
Delaware River at Smithfield Beach	41.02444	-75.05972
Marshalls Creek	40.99861	-75.13833
Brodhead Creek	40.993385	-75.137787
Delaware River at Kittatinny Access	40.96951	-75.12939

Baseline Radiochemistry Outputs and Outcomes

Under this project, DRBC characterized baseline radiochemistry at water quality control points, before the potential introduction of technologically-enhanced naturally occurring radioactive materials (TENORMs) associated with gas extraction using hydraulic fracturing techniques. In all, 163 water samples (including field blanks and replicates) were collected and analyzed for alpha emitters, beta emitters, radium-226, and radium-228. A link to the analytical results are provided in Appendix C of this report. This effort will provide a baseline for water quality protection over the long term.

Monitoring over the Flow Regime

Prior to initiation of this project, we did not know if radiochemistry activity measurements would vary with flow condition. As such we sought to sample over a range of flow conditions, so as not to limit sampling to either high or low flow conditions. Figure 18, below, shows flow conditions reported by the US Geological Survey (USGS) at gage 01427510 on Delaware River at Callicoon, NY (a representative site for the overall monitoring region) on each sample collection day plotted against the probability of exceedance curve for this site for the period from 1974 through 2015. This graph demonstrates that monitoring spanned the majority of the flow range, from 90% probability of exceedance at low flow to 10% probability of exceedance at high flow, with relatively even distribution of monitoring events within that range. This figure also shows the estimated flow on sampling days when the presence of ice made exact determination of flow impossible.

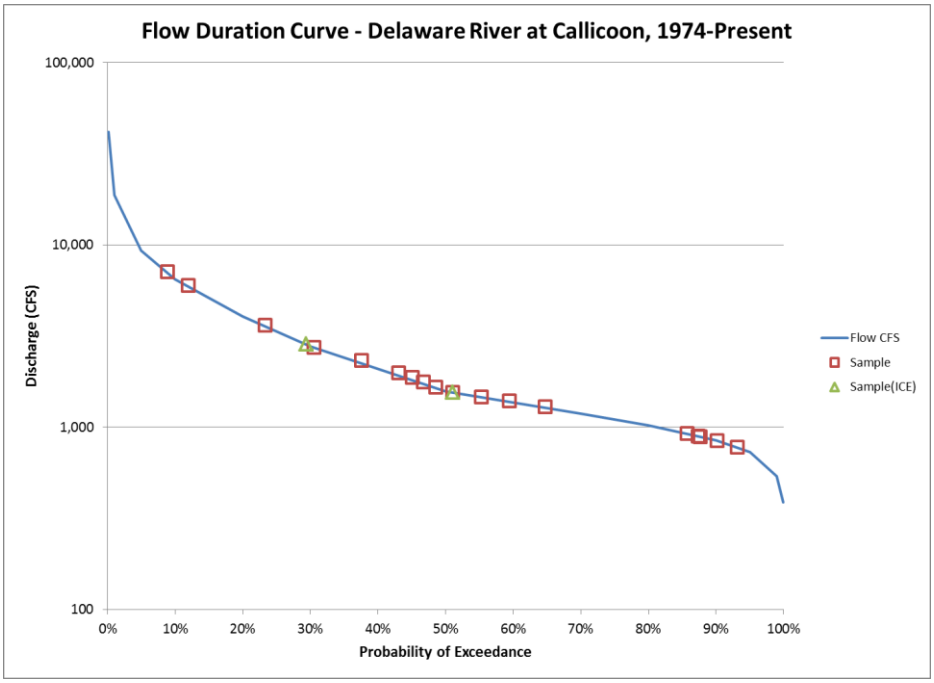

Figure 18: Flow on radiochemistry monitoring Days at the USGS Delaware River at Callicoon Gage 01427510 plotted against the probability of exceedance curve for this location.

Summary of Radiochemistry Results

Activity measurements for the four radiochemistry parameters collected on the mainstem Delaware River were compared to the flow at Callicoon NY on the sampling day to see if any relationship with flow was apparent. Figure 19 shows no apparent relationship with flow for any of four radiochemistry analytes

suggesting that values within the observed ranges are similarly likely during high or low flow. It is noteworthy that at low ambient levels, activity measurement results below zero are possible. This is especially evident with Radium-226 and Radium-228.

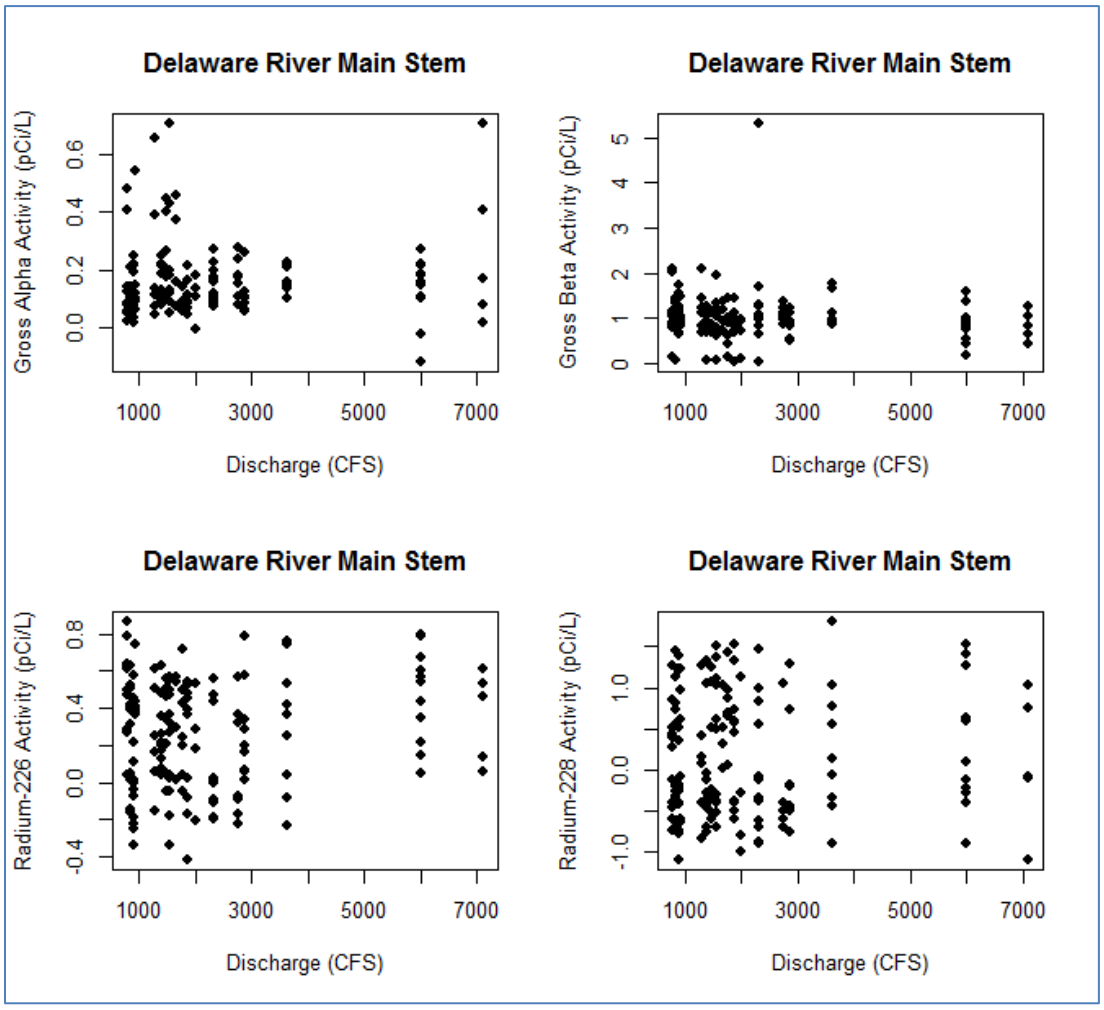

Figure 19: Activity measurements for four radiochemistry parameters collected on the mainstem Delaware River compared to discharge at the USGS Callicoon, NY Gage on the monitoring day.

Similarly, mainstem Delaware River activity measurements were plotted against the River Mile (miles upstream from the mouth of Delaware Bay) to determine if any increase or decrease in activity measurements was apparent longitudinally along the river, associated either with localized loading or dilution. Results shown in Figure 20 suggested comparable activity measurements for all four radiochemistry parameters along the length of the monitored portion of the Delaware River.

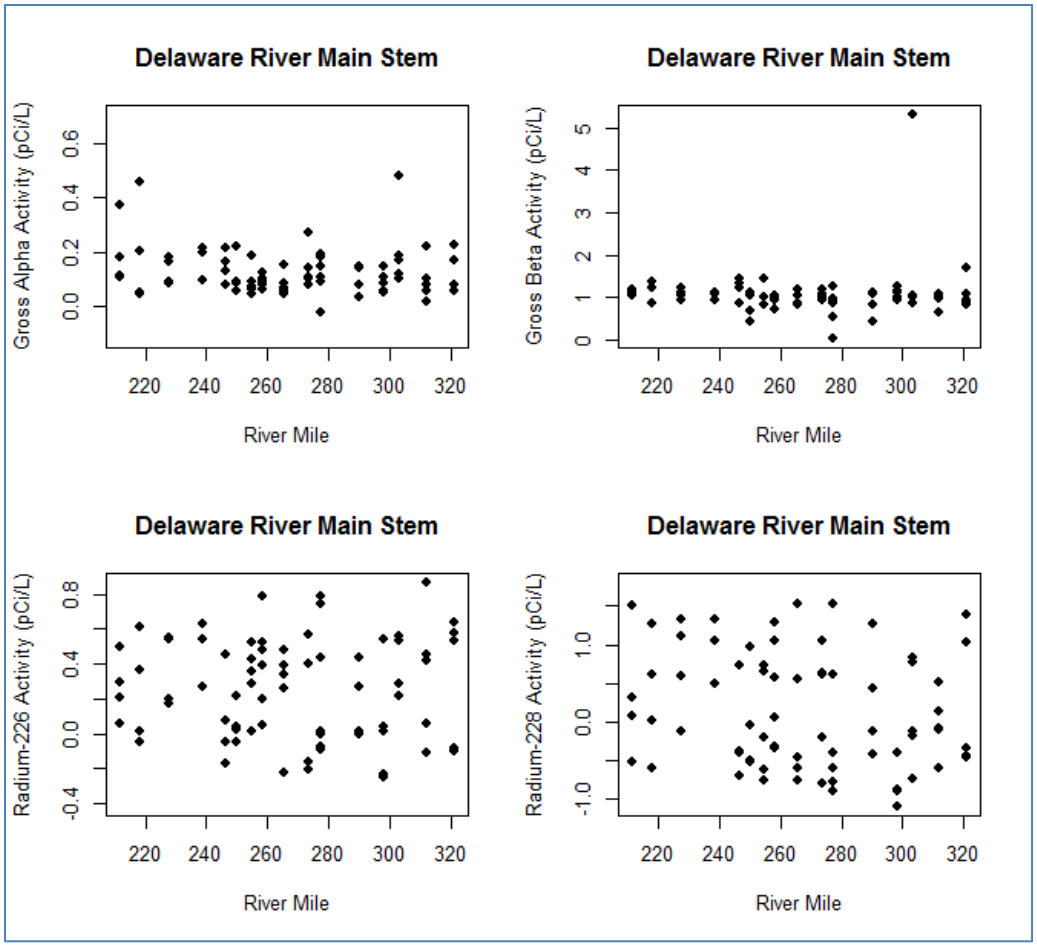

Figure 20: Activity Measurements for four radiochemistry parameters collected on the mainstem Delaware River compared to the river mile of the monitoring location.

Box and whisker plots of the activity measurement of the four radiochemistry parameters for tributary, mainstem Delaware, and field blank samples were developed. Field blanks consist of clean laboratory water rinsed over all sample collection equipment and bottles which would come into direct contact with analytical samples. For this project, field blanks were blinded (provided a sample ID which would not allow identification as a blank by the laboratory) and submitted as routine analytical samples. This process is used to assess whether cross-contamination from field sampling equipment is evident and to compare differences between surface water and blank samples. Figure 21 below shows no appreciable difference between samples collected from mainstem Delaware River or Tributary sample locations for any of the four radiochemistry parameters. For Gross Beta, the results show that surface water samples are elevated above field blank results. For other radiochemistry results, however, the field blanks are either comparable to surface water samples or actually exceed surface water samples in the case of Radium-228.

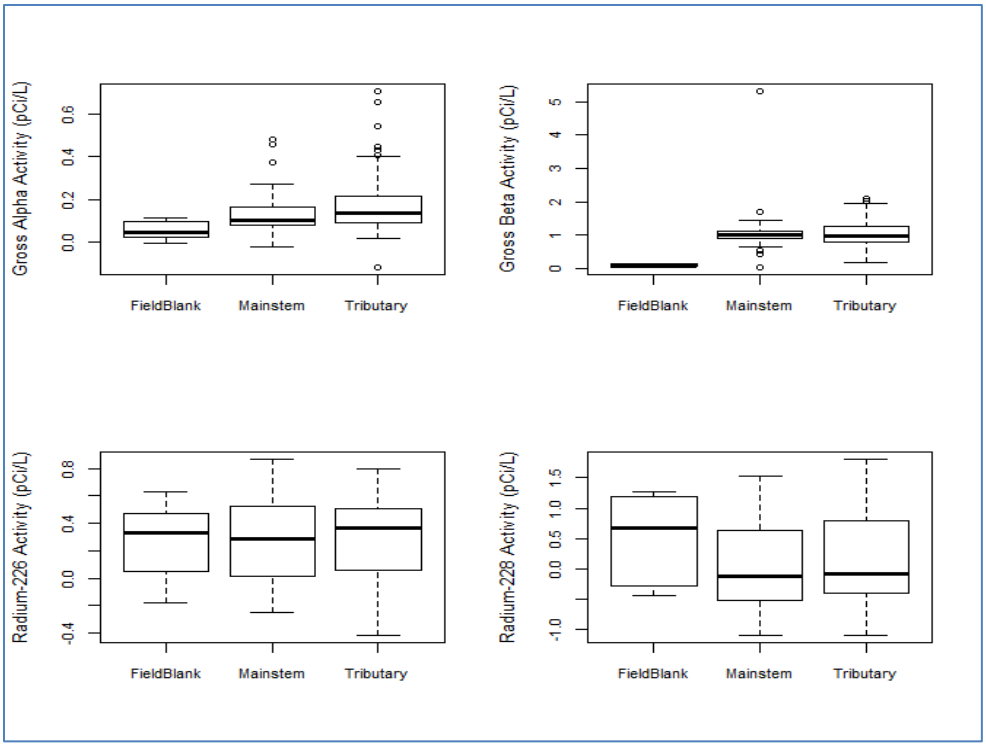

Figure 21: Box and whisker plots of activity measurements for four radiochemistry parameters in field blanks, tributary, and mainstem Delaware River surface water samples.

Interpretation of Low Activity Level Measurements

Reporting of ambient radiochemistry activity measurements in surface water is inherently different than traditional wet chemistry measurement. The typical heuristics used to assess the quality of traditional wet chemistry monitoring are a poor fit for interpreting radiochemistry monitoring quality. Reporting of negative activity values and field blanks results comparable to surface water results required interpretation from the analytical laboratory. We conferred with radiochemistry lab staff in January 2015 to better understand the results up to that point.

For each of the four radiochemistry parameters reported by the lab, results were reported as the measure activity level (in pCi/L) plus or minus an uncertainty range. Based on the methods documented in ECLS-R-Ra226/Ra228, negative activity counts are possible when sample activity is very low. As per consultation with the lab, the likeliest interpretation of both low (including negative) activity levels and similarity between blanks and surface water samples is that all samples are reflecting background ambient radiation. Localized inputs of additional radiation therefore are not evident in surface water results.

Comparison of Results to DRBC Surface Water Quality Standards

DRBC adopted surface water quality standards in the mainstem Delaware River, published as Water Quality Regulations in our Administrative Manual –Part III and as part of the Code of Federal Regulations at 18 CFR PART 410 (DRBC 2013). In water quality management Zones 1A, 1B, and 1C (corresponding to the monitoring region for this project) alpha emitters are not to exceed 3 pCi/L and beta emitters are not to exceed 1000 pCi/L. A review of the reported results shows that all results in all locations are well below the DRBC water quality standards. DRBC has not adopted any standards for Radium-226 or Radium-228.

Conclusions

Monitoring results acquired under this program have allowed DRBC to establish a solid radiochemistry baseline for comparison with future radiochemistry levels, including levels occurring after commencement of natural gas extraction. With the funding provided under this grant, appropriate analytical methods and field protocols were identified and selected, monitoring and analysis was performed, and results were interpreted. Monitoring was performed through the portions of the Delaware River basin likely to see impacts of natural gas development should that activity commence.

Photographic Documentation of Monitoring Effort

A full set of photos documenting radiochemistry sample collection, conductivity logger deployment and maintenance, and toxicity testing can be found on the DRBC Flickr pages. Many photos include recorded coordinates to facilitate mapping. The relevant monitoring albums are available at:

https://www.flickr.com/photos/drbc1961/albums/72157633083581809

https://www.flickr.com/photos/drbc1961/albums/72157639883618534

https://www.flickr.com/photos/drbc1961/albums/72157633102252429

Appendix A: Archived Sample Reanalysis Results

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
1343 ICP	ICP	134.3	Delaware River at Calhoun St Bridge, Trenton	5/26/2009	20.4	36.6	97	55.2	13.3	17.72	NA	12.19	0.011	0.02	12	0.005	1.25	4.22	0.003	9.73	0.05
1343 ICP	ICP	134.3	Delaware River at Calhoun St Bridge, Trenton	6/25/2009	15.2	25.9	71.25	37.8	11.2	14.31	NA	9.29	0.007	0.021	10.1	0.008	0.88	3.03	0.009	8.35	0.04
1343 ICP	ICP	134.3	Delaware River at Calhoun St Bridge, Trenton	7/22/2009	24.8	48.5	132.13	70.6	2.65	21.49	NA	14.57	0.004	0.014	9.18	0.003	1.29	5.98	0.003	11.7	0.05
1343 ICP	ICP	134.3	Delaware River at Calhoun St Bridge, Trenton	8/12/2009	13.4	20.6	61.05	34.4	32.69	13.2	NA	7.23	0.005	0.02	8.21	0.009	0.99	2.21	0.007	7.22	0.04
1343 ICP	ICP	134.3	Delaware River at Calhoun St Bridge, Trenton	9/17/2009	22.4	51.5	115.75	78	3.25	22.01	NA	16.32	0.009	0.016	13.3	0.004	1.54	6.59	0	11.8	0.06
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	5/26/2009	21.3	37	97.2	53.6	10.65	19.16	NA	12.54	0.009	0.017	10.4	0.003	1.23	4.22	0.003	10.1	0.05
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	6/25/2009	14.7	26.3	72.68	38.8	11.25	13.82	NA	9.15	0.005	0.018	8.74	0.006	0.85	2.99	0.004	7.64	0.04
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	7/22/2009	24.1	48.8	116.7	72	3.8	21.46	NA	14.8	0.005	0.017	11	0.003	1.38	5.99	0.003	11.9	0.05
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	8/12/2009	13.1	20.5	59.23	30	46.55	12.79	NA	7.06	0.005	0.081	8.16	0.01	1.08	2.17	0.003	7.07	0.04
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	9/17/2009	21.3	51.3	113.23	74.4	2.95	21.72	NA	16.06	0.008	0.012	11.2	0.003	1.47	6.57	NA	11.8	0.06
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	5/18/2010	21.2	48	108.02	72.2	3.65	21.78	NA	14.95	0.007	0.016	11.8	0.004	1.33	5.99	0.004	11.5	0.05
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	6/22/2010	20.8	54.1	118.88	79	3.1	22.29	NA	16.15	0.011	0.015	11.9	0.004	1.56	6.75	0.001	11.8	0.05
1418 ICP	ICP	141.8	Delaware River at Washington Crossing Bridge	7/20/2010	24.4	61.2	134.98	94.6	6.45	26.67	NA	18.97	0.013	0.01	9.78	0.004	1.98	7.76	0.001	13.9	0.05
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	5/26/2009	21.2	38.1	97.1	55	9.5	12.64	NA	8.11	0.009	0.015	7.46	0.004	0.78	2.92	0.002	6.85	0.04
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	6/25/2009	15.4	26.6	72.47	39.4	10.4	14.78	NA	9.57	0.01	0.019	9.66	0.008	0.9	3.11	0.005	8.39	0.04
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	7/22/2009	23.6	49.1	110.23	72	3.8	21.57	NA	14.81	0.003	0.031	8.94	0.003	1.38	5.94	0	12.1	0.05
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	8/12/2009	12.1	19.1	58.71	33.8	83.29	11.29	NA	6.94	0.016	0.017	8.08	0.008	1.15	2.12	0.004	6.45	0.03
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	9/17/2009	21.1	48.9	113.75	72	2.35	21.34	NA	15.62	0.007	0.012	10.9	0.002	1.42	6.24	0	11.5	0.05
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	5/18/2010	22.7	47.7	108.28	77	3.95	22.45	NA	15.09	0.006	0.02	13.8	0.006	1.3	5.97	0.004	11.6	0.06
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	6/22/2010	20.7	54.7	117.6	80.2	2.45	21.69	NA	15.75	0.01	0.019	13.6	0.002	1.44	7.03	0.001	11.9	0.06
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	7/20/2010	24.8	62.1	137.48	97.6	7.7	26.74	NA	19.64	0.011	0.01	10.4	0.004	1.94	7.86	0.001	13.9	0.06
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	8/23/2010	23.8	55.8	124.65	87.8	3.25	24.75	NA	18.44	0.005	0.018	14.2	0.003	1.76	7.33	0.003	12.9	0.06
1487 ICP	ICP	148.7	Delaware River at Lambertville Bridge	9/27/2010	24.2	52.4	112.4	73.2	1.05	24.87	NA	16.4	0.007	0.007	6.48	0.006	1.82	6.67	0.002	13.4	0.04
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	5/14/2009	23.1	38.1	131.32	59.6	4.65	22.84	NA	13.59	0.01	0.019	12.9	0.006	1.19	5.14	0.003	12.3	0.06
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	6/11/2009	19.9	34.6	89.58	51	10.6	11.46	NA	7.86	0.009	0.016	9.48	0.003	0.56	2.69	0.002	6.02	0.04
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	8/6/2009	15.5	27.2	75.7	41	10.8	14.92	NA	9.38	0.008	0.055	9.47	0.007	1.04	3.31	0.005	8.61	0.04
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	9/24/2009	21.5	54.1	119.35	78.2	2.7	22.34	NA	16.99	0.005	0.016	12	0.005	1.55	6.85	0.002	12.7	0.06
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	5/17/2010	21.1	46	107.03	70.2	2.8	21.6	NA	14.5	0.004	0.012	8.68	0.002	1.15	5.88	0.002	11.4	0.04
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	6/21/2010	20.8	52.1	115.72	74.6	3	20.5	NA	14.64	0.003	0.01	8.89	0	1.35	6.35	0.001	10.9	0.04
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	7/19/2010	23.8	61.1	135.95	94.4	5.15	23.64	NA	16.89	0.011	0.012	10.7	0.005	1.78	6.83	0.001	12.4	0.05
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	8/23/2010	22.9	57.9	127.95	83.8	2.35	25.82	NA	19.38	0.004	0.016	13.2	0.002	1.91	7.74	0.002	13.8	0.06
1554 ICP	ICP	155.4	Delaware River at Bulls Island Footbridge	9/27/2010	23	51	108.38	72	0.65	22.72	NA	14.41	0.006	0.009	6.56	0.005	1.57	5.99	0.007	11.6	0.04
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	5/14/2009	30	34.5	141.98	69.8	1.5	31.32	NA	22.25	0.005	0.104	17.9	0.006	1.7	7.12	0	15.7	0.1
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	6/11/2009	27.8	40.5	133.75	71.8	5.45	26.73	NA	17.45	0.005	0.095	15.6	0.009	1.82	6.06	0.002	13.8	0.09
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	9/24/2009	17	33.9	102.43	54.2	9.05	17.11	NA	13.12	0.005	0.079	11.6	0.015	3.27	4.83	0.002	9.37	0.07
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	5/17/2010	29.2	41.9	145	82	10.2	28.96	NA	21.36	0.003	0.1	13.6	0.001	1.7	6.88	0	14.5	0.09
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	6/21/2010	30.6	50.2	150.29	86.8	9.7	31.41	NA	22.55	0.003	0.073	13.6	NA	2.03	7.64	NA	14.7	0.09
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	7/19/2010	28.5	53.3	153.83	96.6	2	31.54	NA	25.22	0.007	0.07	12.1	0.003	2.48	7.63	0	15.1	0.09
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	8/23/2010	28.1	57.7	155.25	95.6	1.45	31.89	NA	24.35	0.005	0.11	21.3	0	2.23	8.3	NA	14.4	0.13
1556 BCP	BCP	155.6	Paunnacussing Creek, PA	9/27/2010	29.1	66.9	159.33	102.6	1.85	30.53	NA	26.55	0.006	0.054	8.98	0.003	2.3	8.35	0.004	14.6	0.08
1570 BCP	BCP	157	Tohickon Creek, PA	5/14/2009	44.6	41.8	146.17	70.8	0.65	42.11	NA	17.41	0.006	0.019	15.2	0.008	2.13	6.89	0.002	23.2	0.12
1570 BCP	BCP	157	Tohickon Creek, PA	6/11/2009	26.8	50.6	143.47	64.6	28.8	25.49	NA	11.75	0.01	0.064	13.5	0.053	3.15	6.06	0.002	16.7	0.1
1570 BCP	BCP	157	Tohickon Creek, PA	8/6/2009	35.1	49.9	135.1	70	2.75	32.91	NA	14.41	0.007	0.012	11.9	0.009	2.3	6.67	0	18.7	0.1
1570 BCP	BCP	157	Tohickon Creek, PA	9/24/2009	24.3	56	128.75	73.4	2.75	24.73	NA	15.78	0.006	0.015	10.3	0.011	2.88	6.27	0.002	13.8	0.09
1570 BCP	BCP	157	Tohickon Creek, PA	5/17/2010	32.9	42.8	120.83	66	2.1	33.59	NA	13.55	0.006	0.013	9.44	0.006	1.99	5.9	0.002	18	0.07
1570 BCP	BCP	157	Tohickon Creek, PA	6/21/2010	33.5	44.8	125.37	65.6	2.2	34.04	NA	12.84	0.003	0.007	9	0.001	1.9	6.29	0	18	0.08
1570 BCP	BCP	157	Tohickon Creek, PA	7/19/2010	34.1	47.4	130.9	71	1.4	37.61	NA	14.59	0.012	0.006	6.93	0.004	2.29	6.42	0.001	19.5	0.07
1570 BCP	BCP	157	Tohickon Creek, PA	8/23/2010	37.7	53	135.65	74.8	1.7	37.63	0.48	12.42	0.004	0.008	8.84	0	2.35	7.16	0.001	19.5	0.09
1570 BCP	BCP	157	Tohickon Creek, PA	9/27/2010	36.8	52.9	126.85	71.4	0.6	39.08	NA	11.82	0.006	0.006	6.27	0.005	2.35	6.81	0.004	19.1	0.08
1616 BCP	BCP	161.6	Tinicum Creek, PA	5/14/2009	18.3	49	127.86	82	0.35	17.36	NA	28.25	0.007	0.029	17.7	0.007	1.1	8.26	0.001	10.7	0.22
1616 BCP	BCP	161.6	Tinicum Creek, PA	6/11/2009	16.5	57	117.95	81	2.2	12.35	NA	19.47	0.003	0.02	11.6	0.003	0.81	6.2	0.001	8.01	0.17
1616 BCP	BCP	161.6	Tinicum Creek, PA	8/6/2009	12.7	53.5	130.27	83.6	0.3	12.11	NA	32.2	0.005	0.084	17.4	0.003	1.44	7.63	0.001	10.2	0.2
1616 BCP	BCP	161.6	Tinicum Creek, PA	9/24/2009	13.4	69.4	146.87	102.4	1.25	13.21	NA	38.32	0.005	0.025	15	0.006	1.58	9.66	0.002	10.7	0.24
1616 BCP	BCP	161.6	Tinicum Creek, PA	5/17/2010	16.4	60.3	133.95	100	1.1	15.48	NA	31.25	0.005	0.025	11.2	0.004	1.22	8.66	0.001	10.1	0.17
1616 BCP	BCP	161.6	Tinicum Creek, PA	6/21/2010	14.6	68.5	150.67	65.2	0.6	15.34	NA	41.6	0.007	0.017	14.9	0.005	1.66	10.2	0	10.2	0.25
1616 BCP	BCP	161.6	Tinicum Creek, PA	7/19/2010	15.1	63.7	172.82	132.6	1.6	13.64	NA	52.88	0.009	0.018	14.9	0.002	1.55	8.88	0.001	9.41	0.25
1616 BCP	BCP	161.6	Tinicum Creek, PA	8/23/2010	16	68.6	195.2	137	1.25	14.38	NA	66.71	0.005	0.043	25.8	0	1.56	12.1	0.004	10.9	0.36
1616 BCP	BCP	161.6	Tinicum Creek, PA	9/27/2010	20.6	70.3	210.85	154	0.55	19.31	NA	83.33	0.008	0.032	17.4	0.004	2.36	13.9	0.005	14.4	0.33
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	5/13/2009	23.2	37.1	101.48	58	4.3	22.07	NA	13.04	0.009	0.019	11.5	0.008	1.15	4.85	0.004	11.8	0.05

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	6/10/2009	17.8	87.1	145.67	109.2	3.95	20.18	NA	12.87	0.007	0.015	10.8	0.005	1.16	4.96	0.002	11	0.05
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	7/8/2009	20.4	41.5	99.32	60.6	2.6	19.97	NA	12.39	0.003	0.039	8.9	0.005	1.11	4.76	0.001	11.5	0.04
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	8/5/2009	15.8	26.3	76.85	38	18.8	13.56	NA	8.72	0.009	0.017	7.35	0.005	1.06	3.02	0.002	7.91	0.04
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	9/22/2009	21.6	50.2	111.65	73.2	1.7	21.82	NA	15.06	0.006	0.011	9.15	0.005	1.44	6.32	0.001	12	0.04
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	5/12/2010	20.7	48.2	109.1	75	2.3	19.04	NA	14.15	0.013	0.014	11.5	0.005	1.27	5.55	0.003	10.8	0.05
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	6/9/2010	23.5	60.9	132.28	89.2	1.9	24.92	NA	18.43	0.005	0.022	18.4	0.017	1.5	7.55	0.004	12.4	0.08
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	7/14/2010	23.1	57.4	126.54	90.2	5.4	23.67	NA	17.73	0.012	0.019	16	0.003	1.9	7.44	0.003	13.3	0.07
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	8/18/2010	21.6	50.5	114.2	77.2	1.2	21.35	NA	15.21	0.008	0.017	14.6	0.002	1.64	6.65	0.001	11.9	0.06
1677 ICP	ICP	167.7	Delaware River at Upper Black Eddy	9/15/2010	23.4	52.1	113.5	75.6	0.75	23.45	NA	15.63	0.004	0.014	8.94	0.002	1.62	6.67	0.004	13.1	0.05
1737 BCP	BCP	173.7	Cooks Creek, PA	5/13/2009	16.5	73.7	147.2	110.4	1.8	16.01	NA	15.23	0.003	0.006	7.57	0.005	1.51	10.7	0	8.29	0.04
1737 BCP	BCP	173.7	Cooks Creek, PA	6/24/2009	27.4	102.6	228.4	164.2	3.2	24.23	NA	40.62	0.005	0.005	16.7	0.004	3.01	11.6	0.001	12.5	0.1
1737 BCP	BCP	173.7	Cooks Creek, PA	7/8/2009	13.3	104.1	153.15	135	1.45	13.62	NA	15.02	0.004	0.004	7.43	0.003	1.67	12.2	0	7.17	0.03
1737 BCP	BCP	173.7	Cooks Creek, PA	8/5/2009	15.3	78.8	140.73	98.6	2.15	13.36	NA	13.95	0.006	0.011	9.93	0.003	2.08	9.24	NA	7.61	0.05
1737 BCP	BCP	173.7	Cooks Creek, PA	9/22/2009	12.7	103.2	152.49	128.8	0.5	12.69	NA	14.27	0.002	0.006	8.38	0.004	1.83	12.4	0	6.77	0.04
1737 BCP	BCP	173.7	Cooks Creek, PA	5/12/2010	12.1	73.1	128.71	98.8	12.57	12.85	NA	13.16	0.004	0.012	10.6	0.004	1.51	8.9	0	6.76	0.05
1737 BCP	BCP	173.7	Cooks Creek, PA	6/9/2010	11.4	111.2	161	137	1.05	12.6	NA	15.31	0	0.005	7.19	0	1.56	13.4	0	6.11	0.03
1737 BCP	BCP	173.7	Cooks Creek, PA	7/14/2010	11.8	93	145.23	161.4	7.05	12.61	NA	14.71	0.002	0.013	11.6	0.001	2	11.1	0	6.24	0.05
1737 BCP	BCP	173.7	Cooks Creek, PA	8/18/2010	10.3	121.1	172.95	146.6	2.8	12.16	NA	16.17	0.004	0.016	18.4	NA	1.94	15.1	0.001	5.97	0.06
1737 BCP	BCP	173.7	Cooks Creek, PA	9/15/2010	10.5	127.6	173.35	160.4	0.7	10.73	NA	15.03	0.003	0.006	12.1	0	1.91	15.7	0.001	5.72	0.04
1746 BCP	BCP	174.6	Musconetcong River, NJ	5/27/2009	53.9	116.5	231.28	156.2	5	53.53	NA	15.14	0.003	0.004	10.1	0.004	1.76	16	0	24.3	0.03
1746 BCP	BCP	174.6	Musconetcong River, NJ	6/10/2009	65.2	96	231.22	134.4	27.1	63.25	NA	13.05	0.002	0.004	7.67	0.002	1.87	13.4	0.001	29.4	0.03
1746 BCP	BCP	174.6	Musconetcong River, NJ	6/24/2009	50.2	91.1	202.15	122.8	14.65	41.33	NA	10.85	0.004	0.006	10.2	0.004	1.08	10.9	0.001	20.6	0.03
1746 BCP	BCP	174.6	Musconetcong River, NJ	8/5/2009	63.4	92.1	224.92	127.8	14.95	56.57	NA	12.27	0.005	0.007	12	0.005	1.68	12.3	0	27.5	0.04
1746 BCP	BCP	174.6	Musconetcong River, NJ	8/11/2009	57.6	120	237.35	166.8	2.8	52.9	NA	15.51	0.007	0.006	14.5	0.006	2.11	16.5	0.003	24.9	0.04
1746 BCP	BCP	174.6	Musconetcong River, NJ	5/12/2010	49.2	100.3	212.75	145.6	6.45	54.38	NA	15.4	0.002	0.004	8.59	0.002	1.43	14.2	0	24	0.03
1746 BCP	BCP	174.6	Musconetcong River, NJ	5/19/2010	50.1	101.6	215.67	146.6	5.6	54.83	NA	16.34	0.006	0.008	14.6	0.006	1.64	15.1	0.003	24.7	0.04
1746 BCP	BCP	174.6	Musconetcong River, NJ	6/9/2010	49.8	133.3	251.8	181.6	3.22	51.49	NA	16.33	0.002	0.004	8	0	1.72	19	0	23.5	0.03
1746 BCP	BCP	174.6	Musconetcong River, NJ	6/23/2010	48.1	131	242.9	178	6.8	51.2	NA	16.68	0.008	0.007	18.9	0.002	1.93	18.6	0	23	0.05
1746 BCP	BCP	174.6	Musconetcong River, NJ	7/14/2010	45.8	108	218.87	90	15.05	48.61	NA	14.78	0.003	0.008	11.7	0.003	2.01	15.9	0.001	22.7	0.04
1746 BCP	BCP	174.6	Musconetcong River, NJ	7/21/2010	40.6	132.9	239.3	187.6	1.1	45.87	NA	14.82	0.004	0	4.71	0.001	1.8	16	NA	19.8	0.02
1746 BCP	BCP	174.6	Musconetcong River, NJ	8/18/2010	51.4	134.1	256.25	182.6	3.15	56.37	NA	17.46	0.001	0.001	7.45	0	1.97	19.3	NA	23.3	0.03
1746 BCP	BCP	174.6	Musconetcong River, NJ	8/25/2010	59.8	111.3	239.15	159.6	5.05	59.18	NA	15.2	0.005	0.009	16.6	0.005	2.27	16.8	NA	28.2	0.05
1746 BCP	BCP	174.6	Musconetcong River, NJ	9/15/2010	59.7	135.4	265.8	190.8	2.2	65.71	NA	19.43	0.005	0.008	20.3	0.005	2.48	20.9	0.001	28.8	0.05
1746 BCP	BCP	174.6	Musconetcong River, NJ	9/28/2010	48.3	137.3	244.85	180.4	0.65	51	NA	17.19	0.005	0	6.29	0.003	2.16	18.2	0.001	21.4	0.02
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	5/13/2009	22.2	37	99.13	62.6	4.15	20.02	NA	12.62	0.009	0.017	11	0.007	1.11	4.42	0.005	11.1	0.05
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	6/10/2009	17	29.6	75.95	41	7.8	19.63	NA	12.15	0.007	0.019	11.6	0.005	1.11	4.39	0.003	10.7	0.05
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	7/8/2009	37.5	39.3	95.68	56.2	2.45	17.26	NA	11.36	0.003	0.013	8.47	0.003	0.98	4.16	0.004	9.8	0.04
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	8/5/2009	14.6	25.5	74.02	38.4	14.45	12.79	NA	8.47	0.008	0.018	8.1	0.007	0.99	2.77	0.006	7.49	0.04
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	9/22/2009	25.3	129.8	211.07	174.8	1.2	20.38	NA	15.67	0.006	0.012	10.1	0.005	1.31	5.79	0.002	11.6	0.05
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	5/12/2010	20.8	48.2	112.69	76.2	2.25	20.38	NA	16.56	0.004	0.022	17.5	0.005	1.35	6.31	0.009	11.7	0.07
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	6/9/2010	22.5	56.1	126.2	83.4	2.2	23.34	NA	17.23	0.011	0.018	14.4	0.003	1.44	7.16	0.001	12.8	0.07
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	7/14/2010	22.9	55.1	131.53	88.8	4.4	25.74	NA	19.91	0.005	0.02	14.9	0.002	1.73	7.52	0.004	13.5	0.07
1748 ICP	ICP	174.8	Delaware River at Riegelsville Bridge	8/18/2010	20.8	46.4	110.25	69.8	1.85	22.35	NA	17.3	0.005	0.021	15.7	0.002	1.64	6.04	0.003	11.9	0.07
1837 BCP	BCP	183.66	Lehigh River, PA	5/13/2009	26.4	39.9	122.03	70.2	3.95	24.98	NA	19.35	0.004	0.013	11.2	0.001	1.68	6.37	0.011	13.4	0.06
1837 BCP	BCP	183.66	Lehigh River, PA	6/10/2009	28.1	54	144.53	86.2	6.1	11.13	NA	8.12	0.01	0.013	8.17	0.006	0.96	2.77	0.008	6.09	0.04
1837 BCP	BCP	183.66	Lehigh River, PA	6/24/2009	19.7	36.8	106.85	60.8	8.65	19.78	NA	17.78	0.006	0.07	13.3	0.004	1.31	5.37	0.009	10.8	0.07
1837 BCP	BCP	183.66	Lehigh River, PA	8/5/2009	24.4	45.7	127.68	75.4	7.9	22.08	NA	19.81	0.018	0.017	16	0.003	1.84	6.52	0.008	12.4	0.08
1837 BCP	BCP	183.66	Lehigh River, PA	8/11/2009	26.6	51.8	137.52	82.4	3.85	23.97	NA	21.72	0.01	0.018	16.4	0.007	2.18	7.47	0.016	12.9	0.08
1837 BCP	BCP	183.66	Lehigh River, PA	5/12/2010	25.3	58.7	145.96	98.6	6.03	25.08	NA	24.31	0.013	0.019	20.1	0.002	2.02	8.82	0.014	13.5	0.09
1837 BCP	BCP	183.66	Lehigh River, PA	5/19/2010	24.7	61.9	147.38	100	5.25	27.59	NA	24.8	0.014	0.018	18.1	0.007	2.12	8.78	0.011	14.2	0.08
1837 BCP	BCP	183.66	Lehigh River, PA	6/9/2010	29.9	84.7	186.1	132.6	2.1	32.94	NA	33.18	0.005	0.009	9.22	0.001	2.61	12.1	0.001	16.8	0.06
1837 BCP	BCP	183.66	Lehigh River, PA	6/23/2010	31.4	86.3	NA	131.2	2.3	34.13	NA	32.34	0.011	0.018	17.9	0.004	3	12.5	0.008	18.2	0.08
1837 BCP	BCP	183.66	Lehigh River, PA	7/14/2010	30.8	81.8	184.99	124.6	13	31.81	NA	29.7	0.006	0.02	18.1	0.003	2.88	11.8	0.011	17.5	0.08
1837 BCP	BCP	183.66	Lehigh River, PA	7/21/2010	35.2	89	204.45	145.4	1.95	38.73	NA	35.02	0.006	0.018	11.4	0.003	3.42	12.8	0.002	19.8	0.07
1837 BCP	BCP	183.66	Lehigh River, PA	8/18/2010	33.6	88.4	187.55	121.4	1.15	35.17	NA	29.16	0.011	0.022	24	0.004	3.03	12	0.012	19.7	0.1
1837 BCP	BCP	183.66	Lehigh River, PA	8/25/2010	30.8	68	160.87	104.6	1.9	31.18	NA	24.48	0.01	0.016	17.4	0.005	2.5	10.2	0.006	17.2	0.07
1837 BCP	BCP	183.66	Lehigh River, PA	9/15/2010	33.8	76	176.15	115.2	1.75	34.74	NA	27.34	0.009	0.021	24.6	0.006	3.05	11.8	0.013	19.7	0.1
1837 BCP	BCP	183.66	Lehigh River, PA	9/28/2010	37.5	95.8	203.58	140.2	0.45	38.04	NA	32.24	0.006	0.02	22.2	0.003	3.52	14.2	0.011	22.2	0.09
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	5/13/2009	20.6	32.1	87.48	48	2.95	19.38	NA	9.74	0.006	0.02	11.2	0.008	0.84	3.56	0.006	10.5	0.05

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	6/10/2009	19.9	34.6	89.58	51	10.6	16.58	NA	8.3	0.007	0.016	8.97	0.006	0.76	3.04	0.004	9.05	0.04
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	7/8/2009	16.6	32.9	33.7	46.2	1.6	11.8	NA	6.73	0.005	0.015	8.36	0.005	0.58	2.52	0.004	6.71	0.04
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	8/5/2009	14	19.2	59.65	30.2	13.4	11.5	NA	6.35	0.008	0.022	7.84	0.007	0.78	1.93	0.009	6.66	0.03
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	9/22/2009	17.9	38.2	86	52	0.8	18.77	NA	12.89	0.004	0.012	8.83	0.004	1	4.31	0.001	10.9	0.05
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	5/12/2010	18.1	39.7	95.67	61.4	2	17.02	NA	12.35	0.002	0.023	13.9	0.002	0.9	4.21	0.009	9.65	0.06
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	6/9/2010	18.9	41.5	96.15	59.6	2.15	20.13	NA	12.06	0.004	0.022	14.2	0.002	0.98	4.4	0.007	11.3	0.07
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	7/14/2010	18.4	41.8	98.38	67.6	5.5	19.55	NA	13.82	0.01	0.01	8.73	0.006	1.32	4.73	0.003	10.7	0.05
1838 ICP	ICP	183.82	Delaware River at Northhampton St Bridge	9/15/2010	19.1	35	83.25	51.8	1.4	18.8	NA	12.91	0.004	0.016	10.8	0.001	1.29	4.1	0.004	11.1	0.05
1841 BCP	BCP	184.1	Bushkill Creek, PA	5/27/2009	30.8	125.5	274.07	198.2	3.7	29.62	NA	54.86	0.005	0.004	18.7	0.002	5.06	15.4	0	15	0.13
1841 BCP	BCP	184.1	Bushkill Creek, PA	6/10/2009	20	38.4	97.25	56	6.65	13.53	0.47	11.3	0.004	0.014	11.6	0.009	1.57	8.85	0	7.34	0.05
1841 BCP	BCP	184.1	Bushkill Creek, PA	7/7/2009	31.5	137.5	279.33	216.4	1.25	31.81	NA	52.38	0.004	0.005	18.9	0.003	3.81	17.4	0.001	16.8	0.11
1841 BCP	BCP	184.1	Bushkill Creek, PA	8/4/2009	31	123.4	275.57	199.8	2.5	28.95	NA	58.81	0.006	0.008	23.6	0.003	3.67	15.6	0.002	19.2	0.13
1841 BCP	BCP	184.1	Bushkill Creek, PA	8/11/2009	26.4	87.3	210.55	132.2	2.7	23.9	NA	45.25	0.008	0.015	19.7	0.004	3.78	10.4	0.006	17.3	0.1
1841 BCP	BCP	184.1	Bushkill Creek, PA	5/11/2010	31.9	125.2	342.49	209.4	1.6	31.52	NA	98.12	0.009	0.012	24.9	0.008	7.59	16.8	0.003	33.4	0.16
1841 BCP	BCP	184.1	Bushkill Creek, PA	5/19/2010	24.8	98.6	275.55	158.2	7.25	24.79	NA	87.62	0.008	0.011	20	0.008	3.41	12.4	0.004	33.6	0.12
1841 BCP	BCP	184.1	Bushkill Creek, PA	6/8/2010	105.9	158.3	424.2	247.6	4.45	35.56	NA	119.64	0.034	0.005	18	0.048	8.36	20.8	0	42.9	0.14
1841 BCP	BCP	184.1	Bushkill Creek, PA	6/23/2010	36.1	161.5	382.48	246.8	6.4	37.11	NA	92.67	0.008	0.004	20.7	0.001	4.22	20.9	NA	33.3	0.11
1841 BCP	BCP	184.1	Bushkill Creek, PA	7/13/2010	33.8	167.8	386.82	276	1.4	34.42	NA	93.08	0.003	0.005	18.9	0	4.14	22.2	0	34.3	0.11
1841 BCP	BCP	184.1	Bushkill Creek, PA	7/21/2010	20.8	153.5	225.6	263.6	2.1	39.55	NA	159.44	0.006	0.002	12.2	0.004	14.5	20.7	0	55.1	0.14
1841 BCP	BCP	184.1	Bushkill Creek, PA	8/17/2010	34.1	162.1	353.9	253.2	3.95	34.86	NA	75.79	0.005	0.008	29.2	0	7.76	22.2	0.004	23.9	0.16
1841 BCP	BCP	184.1	Bushkill Creek, PA	8/25/2010	36.3	163.9	409.15	252.2	2.75	34.95	NA	113.72	0.006	0.007	29.3	0.001	5.24	21.7	0.003	41.3	0.15
1841 BCP	BCP	184.1	Bushkill Creek, PA	9/14/2010	34.4	161.1	385.32	252.2	4.1	37.8	NA	138.63	0.005	0.005	19.4	NA	5.26	22.2	NA	51.2	0.12
1841 BCP	BCP	184.1	Bushkill Creek, PA	9/28/2010	33.6	162.8	342.3	239	2.75	37.18	NA	79.79	0.009	0.009	30.4	0.002	4.75	21.9	0.002	26.7	0.14
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	6/9/2009	17.2	29	75.18	41.8	2.55	16.27	NA	8.61	0.005	0.02	9.77	0.004	0.68	2.93	0.004	8.82	0.04
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	6/24/2009	12.9	20.5	64.53	32.4	11.95	12.27	NA	9.4	0.007	0.062	8.74	0.009	0.75	2.16	0.008	7.49	0.04
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	7/7/2009	17	29.7	101.75	42.4	0.8	10.35	NA	5.74	0.006	0.016	7.29	0.005	0.49	1.89	0.003	5.6	0.03
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	8/4/2009	11.5	17.3	59.5	27.2	41.1	10.44	NA	6.67	0.019	0.021	7.71	0.014	0.9	1.67	0.01	6.11	0.03
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	8/11/2009	13.1	16.3	54.6	26.8	45.75	11.99	NA	6.28	0.002	0.018	6.84	0.003	0.73	1.58	0.003	6.79	0.03
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	5/11/2010	17.5	33.1	71.53	52.8	1.5	14.39	NA	8.53	0.005	0.022	12	0.006	0.74	2.95	0.002	7.91	0.05
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	5/19/2010	17.6	36.1	82.16	54.6	3.2	17.25	NA	9.39	0.005	0.016	8.58	0.005	0.84	3.52	0.004	8.98	0.04
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	6/8/2010	18.8	40.2	93.35	60.4	1.45	18.99	NA	11	0.008	0.013	9.14	0.002	0.95	4.11	0	10.3	0.05
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	6/23/2010	16.3	35	83.02	51	1.55	17.77	NA	11.54	0.009	0.015	9.54	0.005	1.06	3.55	0.002	9.16	0.05
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	7/21/2010	24	37	96.7	61.6	1.5	20.77	NA	14.05	0.006	0.006	7.18	0.003	1.25	3.83	0.003	10.6	0.05
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	8/17/2010	16.3	34.1	35.72	50.6	1.6	17.19	NA	11.3	0.023	0.012	7.95	0	1.03	3.46	0.001	8.76	0.05
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	8/25/2010	15.7	23.3	63.4	35.4	8.65	14.31	NA	8.38	0.005	0.024	9.32	0.004	1.06	2.27	0.002	8.16	0.05
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	9/14/2010	17.5	30.9	73.3	44.2	1.35	18.47	NA	9.38	0.003	0.01	6.21	NA	0.96	3.13	0.002	9.02	0.04
1891	ICP	189.1	Delaware River at Sandt's Eddy Access	9/28/2010	17.3	31.1	69.65	43.8	1.05	17.54	NA	10.32	0.005	0.023	11.8	0.002	1.14	3.14	NA	9.29	0.05
1907 BCP	BCP	190.65	Martins Creek, PA	5/27/2009	23.2	44.1	165.57	107.2	1.35	22.74	NA	49	0.008	0.013	27.8	0.006	1.39	7.65	0.001	11.5	0.13
1907 BCP	BCP	190.65	Martins Creek, PA	6/9/2009	23.9	45.4	175.1	109.4	3.15	18.19	NA	41.04	0.007	0.013	23	0.012	1.16	5.79	0.001	8.83	0.11
1907 BCP	BCP	190.65	Martins Creek, PA	6/24/2009	23.9	43.6	169.77	107.6	3.05	23.72	NA	46.58	0.006	0.014	24.9	0.008	1.6	7.52	0.003	12.8	0.12
1907 BCP	BCP	190.65	Martins Creek, PA	8/4/2009	23.2	52	167.43	109.6	2.35	21.96	NA	48.64	0.007	0.013	23.7	0.007	1.54	7.86	0.001	11.1	0.11
1907 BCP	BCP	190.65	Martins Creek, PA	8/11/2009	28.3	55.1	196.95	129	0.75	26.58	NA	61.89	0.01	0.018	31.5	0.003	2.11	9.42	0.001	13.5	0.14
1907 BCP	BCP	190.65	Martins Creek, PA	5/11/2010	22.7	42.5	154.58	117.8	1.55	22.97	NA	58.37	0.009	0.016	32.4	0.004	1.51	8.51	0.003	12	0.15
1907 BCP	BCP	190.65	Martins Creek, PA	5/19/2010	18.3	42.1	143.33	97.6	6.05	18.84	NA	44.78	0.004	0.013	20.9	0.004	1.23	6.72	0.003	9.6	0.1
1907 BCP	BCP	190.65	Martins Creek, PA	6/8/2010	24	51.4	195	130.2	1.05	24.41	NA	62.78	0.008	0.015	31.7	0	1.67	9.48	0.001	12.8	0.15
1907 BCP	BCP	190.65	Martins Creek, PA	6/23/2010	43.3	51.8	179.8	118.6	1.55	25.7	NA	54.18	0.009	0.013	25.7	0.004	1.98	8.3	0.001	13.1	0.13
1907 BCP	BCP	190.65	Martins Creek, PA	7/13/2010	24.5	52.2	195.81	135.6	0.85				0.012	0.015	32.3	0.005	2.26	9.23	0.002	13.6	0.15
1907 BCP	BCP	190.65	Martins Creek, PA	7/21/2010	39.7	55.8	197.13	142	0.95	19.85	NA	61.09	0.008	0.01	21.4	0.002	1.63	7.29	0	9.94	0.11
1907 BCP	BCP	190.65	Martins Creek, PA	8/17/2010	24	56.3	186.62	126.2	1.05	24.77	NA	58.76	0.006	0.017	31.7	0.001	2.21	9.04	0.002	14	0.15
1907 BCP	BCP	190.65	Martins Creek, PA	8/25/2010	25.9	58	194.55	130.6	1.85	27.46	NA	66.4	0.008	0.016	34.9	0.001	2.34	9.18	0	14.5	0.17
1907 BCP	BCP	190.65	Martins Creek, PA	9/14/2010	28	57.4	201.4	132.4	1.55	30.37	NA	67.89	0.006	0.015	28.1	0	2.61	9.56	0.001	15.9	0.14
1907 BCP	BCP	190.65	Martins Creek, PA	9/28/2010	24	55.4	172.68	115.2	2.6	26.56	NA	60.46	0.006	0.015	28.2	0.004	2.8	8.67	0.002	13.6	0.13
1978 BCP	BCP	197.8	Pequest River, NJ	5/27/2009	39	176.5	261.48	202.2	11.9	31.89	NA	12.01	0.002	0.001	7.71	0.002	0.98	16.3	0	15.6	0.02
1978 BCP	BCP	197.8	Pequest River, NJ	6/9/2009	39.8	177.3	263.27	206.8	10.6	39.23	NA	14.68	0.003	0.001	7.29	0.004	1.21	19.3	0	19.5	0.02
1978 BCP	BCP	197.8	Pequest River, NJ	6/24/2009	37.1	170.3	256.97	194.4	18.6	33.19	NA	11.36	0.002	0.007	7.49	0.005	1.11	15.3	0	18.2	0.02
1978 BCP	BCP	197.8	Pequest River, NJ	8/4/2009	36.5	165.1	251.47	193	11.5	19.67	NA	8.13	0.005	0.005	15.4	0.01	0.91	11.1	0.001	9.8	0.04
1978 BCP	BCP	197.8	Pequest River, NJ	8/11/2009	40.7	193.5	283.08	217.8	4.3	38.2	NA	14.24	0.003	0.003	18	0	1.42	21.4	0	19	0.05
1978 BCP	BCP	197.8	Pequest River, NJ	5/11/2010	40.3	186.6	276.95	223.8	4.95	42.61	NA	15.83	0.005	0.004	13.4	0.004	1.53	21.3	0.002	21	0.03
1978 BCP	BCP	197.8	Pequest River, NJ	5/19/2010	41.3	171	258.82	203.6	13.7	44.14	NA	14.64	0.004	0.005	15.4	0.008	1.49	19.8	0.004	21	0.04

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
1978 BCP	BCP	197.8	Pequest River, NJ	6/8/2010	40.1	204.5	294.92	242	5.55	40.93	NA	15.5	0.001	0	8.29	NA	1.68	22.5	NA	19.8	0.03
1978 BCP	BCP	197.8	Pequest River, NJ	6/23/2010	35.9	193.6	279.97	225.4	4.55	40.48	NA	14.84	0.007	0	7.84	0.014	1.67	21.1	0	19.2	0.03
1978 BCP	BCP	197.8	Pequest River, NJ	7/13/2010	34.6	155	259.63	217.6	3	35.45	NA	19.1	0.003	0.005	15.9	0.003	1.54	16.2	0.001	14.7	0.04
1978 BCP	BCP	197.8	Pequest River, NJ	7/21/2010	37	189.8	286.7	246.6	1.6	44.06	NA	17.66	0.005	0	4.38	0.004	2.32	21.1	NA	20	0.02
1978 BCP	BCP	197.8	Pequest River, NJ	8/17/2010	40.7	206.4	289.8	243.2	1.65	45.62	NA	19.56	0.002	0.004	15.4	0	2.32	23.4	0	19	0.04
1978 BCP	BCP	197.8	Pequest River, NJ	8/25/2010	41.5	185	281.15	226.2	1.75	41.9	0.56	18.49	0.004	0.003	14.1	0.003	2.75	21.8	NA	19.4	0.04
1978 BCP	BCP	197.8	Pequest River, NJ	9/14/2010	43.6	197.5	297.5	240.8	3.45	47.34	0.49	19.27	0.003	0	4.16	0.003	3.16	22.9	0.003	21	0.01
1978 BCP	BCP	197.8	Pequest River, NJ	9/28/2010	38.3	42.6	134.77	70	6.25	42.03	NA	17.43	0.008	0.01	13.1	0.006	1.6	2.85	0.002	20	0.07
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	6/9/2009	15.4	22	65.55	39.8	2.3	14.06	NA	6.78	0.005	0.018	7.81	0.004	0.63	1.91	0.007	7.62	0.04
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	7/7/2009	15.6	23	65.63	33	0.63	15.83	NA	6.87	0.006	0.02	8.16	0.007	0.69	2.1	0.005	9.04	0.04
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	8/4/2009	11.4	13.8	52.35	21.6	35.9	7.14	NA	3.91	0.01	0.015	4.67	0.015	0.59	0.97	0.009	4.19	0.02
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	5/11/2010	16.3	24.2	68.15	38.8	1.15	15.73	NA	7.69	0.006	0.021	10	0.003	0.68	2.29	0.006	8.45	0.05
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	6/8/2010	18.5	27.6	75.38	44.4	2.2	17.89	NA	7.97	0.007	0.021	10	0.004	0.77	2.53	0.002	9.75	0.05
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	7/13/2010	16.7	26.4	72.17	40.8	NA	18.88	NA	8.53	0.002	0.019	9.14	0.001	0.93	2.66	0.006	9.56	0.05
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	8/17/2010	15	23.6	62.1	33.6	1.65	17.15	NA	8.01	0.002	0.02	8.08	0.002	0.95	2.24	0.004	8.54	0.04
1978 ICP	ICP	197.84	Delaware River at Belvidere Bridge	9/14/2010	16.7	25.1	65.15	35.6	1	16.97	NA	7.51	0.002	0.016	7.24	0.002	0.91	2.29	0	9.18	0.04
2070 BCP	BCP	207	Paulins Kill, NJ	6/9/2009	43.9	123.3	216.69	148	6	40.9	NA	12.35	0.003	0.002	6.66	0.005	1	12.1	0.003	21.3	0.04
2070 BCP	BCP	207	Paulins Kill, NJ	7/7/2009	40	119.5	211.4	142.2	4.45	37.82	NA	10.5	0.004	0.004	11.4	0.011	1.18	11.5	0.005	21.7	0.05
2070 BCP	BCP	207	Paulins Kill, NJ	8/11/2009	50.3	116.4	217.42	138.8	6.05	32.63	NA	8.62	0.005	0.004	11.4	0.009	0.96	9.04	0.002	17.4	0.05
2070 BCP	BCP	207	Paulins Kill, NJ	5/11/2010	40.6	129.6	212.2	155	4.2	40.41	NA	13.59	0.012	0.012	38.6	0.007	1.18	14.2	0.004	22.7	0.12
2070 BCP	BCP	207	Paulins Kill, NJ	6/8/2010	46.8	148.8	245.05	174.4	4.4	47.95	NA	12.89	0.001	0.002	6.61	0.003	1.25	15.5	0.002	25.1	0.04
2070 BCP	BCP	207	Paulins Kill, NJ	7/13/2010	52.5	131.9	248.48	178.2	2.1	44.03	NA	11.38	0.004	0.005	14.5	0.005	1.11	12	0.008	22.1	0.07
2070 BCP	BCP	207	Paulins Kill, NJ	8/17/2010	58.7	142	265.86	189.2	2.3	55.37	NA	15.48	0.004	0.006	19.5	0.01	1.55	16.6	0.012	28	0.1
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	6/9/2009	14.4	15.4	58.6	26.6	2.4	13.88	NA	6.82	0.004	0.023	7.39	0.004	0.67	1.49	0.01	7.54	0.04
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	7/7/2009	14.4	16.2	56.95	25.8	1.35	14.07	NA	6.31	0.006	0.023	7.35	0.007	0.67	1.43	0.007	8.15	0.04
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	8/4/2009	10.8	12.3	51.6	21.2	23.9	9.38	NA	5	0.014	0.02	5.77	0.015	0.83	1.12	0.01	5.6	0.03
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	5/11/2010	14.6	17.2	57.4	30	0.8	14.12	NA	7.03	0.008	0.024	8.37	0.008	0.74	1.58	0.013	7.91	0.04
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	6/8/2010	15.9	22.1	66.4	36.4	1.85	17.51	NA	7.97	0.002	0.019	7.29	0.002	0.77	1.82	0.006	8.87	0.05
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	7/13/2010	15.2	19.3	61.28	32.8	1.35	15.62	NA	7.03	0.005	0.023	8.79	0.002	0.9	1.77	0.005	8.47	0.05
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	8/17/2010	14.3	19.2	55.97	31.6	0.65	15.32	NA	7.39	0.004	0.02	7.45	0.002	0.93	1.74	0.003	7.93	0.04
2074 ICP	ICP	207.4	Delaware River at Portland Foot Bridge	9/14/2010	14.6	19.1	56.9	29.8	1.15	14.75	NA	6.83	0.003	0.019	7.1	0.003	0.86	1.64	0.006	8.04	0.04
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	5/19/2009	12.3	9.5	48.25	17.2	10.35	10.83	NA	5.53	0.013	0.023	5.46	0.012	0.64	1.03	0.011	6.47	0.025
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	6/2/2009	10	11.5	41.7	17.6	5.15				0.004	0.019	5.44	0.002	0.56	1.12	0.022	5.39	0.022
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	7/21/2009	15.8	17.3	54.6	27	1.3	12.48	NA	5.92	0.004	0.023	7.26	0.004	0.65	1.44	0.012	7.32	0.037
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	8/4/2009	9.7	12.2	46.73	21.2	21.87	7.34	NA	4.14	0.003	0.022	5.38	0.008	0.67	1	0.033	4.5	0.023
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	9/15/2009	16.1	17.7	58.85	31	0.75	11.32	NA	5.66	0.003	0.021	7.52	0.009	0.61	1.39	0.02	6.75	0.038
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	5/4/2010	11.9	13.9	47.55	24.6	0.7				0.005	0.024	6.9	0.004	0.57	1.4	0.022	6.68	0.034
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	5/18/2010	12.3	15.6	50.75	29.2	4.3	13.17	NA	6.71	0.003	0.025	7.47	0.005	0.64	1.44	0.017	7.09	0.037
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	6/8/2010	16.1	20.4	0.75	33.4	4.2	15.91	NA	7.48	0.004	0.02	6.72	0.004	0.77	1.78	0.02	8.87	0.047
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	6/22/2010	14.1	18.8	58.25	29.4	1.2	15.11	NA	7.84	0.004	0.023	7.85	0.003	0.7	1.6	0.044	7.6	0.044
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	7/13/2010	15.5	20.7	62.64	33.2	1.8	15.42	NA	7.26	0.003	0.021	8.34	0.002	0.87	1.78	0.005	8.24	0.05
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	7/20/2010	17.2	18.7	35.72	34.6	1.5	16.81	NA	7.32	0.005	0.021	8.49	0.001	0.82	1.72	0.014	9.3	0.053
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	8/24/2010	14.7	18	51.17	26.2	0.9	13.38	NA	6.08	0	0.029	7.43	0.002	1.05	1.6	0	7.69	0.037
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	9/14/2010	14.2	18.2	55.6	29.4	0.9	14.06	NA	6.28	0.004	0.021	6.81	0.002	0.75	1.65	0.006	7.93	0.03
2115 ICP	ICP	211.5	Delaware River Kittatinny Access, NJ	9/28/2010	15.8	19.1	52.07	28	7.45	13.49	NA	6.2	0.002	0.024	7.99	NA	0.82	1.67	0.006	7.38	0.038
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	5/19/2009	22.1	35.7	108.92	58.4	1.8	20.29	NA	15.06	0.003	0.005	13.2	0.004	0.49	2.49	0.003	9.91	0.072
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	5/19/2009	34.8	23.9	94.4	44.8	2	30.86	NA	11.19	0.004	0.01	10.7	0.002	0.72	2.34	0.004	15.5	0.05
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	6/2/2009	23.5	40.6	118.03	67.6	2.65				0.002	0.005	14.7	0.002	0.51	2.73	0.001	10.8	0.08
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	6/2/2009	32.6	27.5	107.05	49.8	2.3				0.001	0.009	11	0.001	0.8	2.52	0.001	16	0.053
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	7/21/2009	24.4	51.3	131.12	77.8	0.7	19.17	NA	15.21	0.002	0.005	14.9	0.002	0.45	2.5	0	8.95	0.083
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	7/21/2009	37	29.7	123.15	51	1.6	27.6	NA	9.75	0.003	0.011	11.2	0	0.66	2.1	0.002	14.2	0.049
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	8/4/2009	20	35.9	101.3	54.6	1.7	16.71	NA	11.32	0.003	0.008	13.8	0.009	0.59	2.17	0.003	8.17	0.065
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	8/4/2009	25.6	18.7	82.33	34.2	2.3	21.12	NA	8.06	0.003	0.013	8.64	0.01	0.68	1.8	0.007	11.2	0.042
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	9/15/2009	22.3	41.8	111.89	66.6	0.44	19.09	NA	15.28	0.003	0.005	13.4	0.004	0.78	2.66	NA	10	0.075
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	9/15/2009	33.8	27.8	103.95	49.6	1.1	28.46	NA	11.72	0.006	0.013	14.5	0.01	0.84	2.63	0.004	16.1	0.06
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	5/11/2010	30.2	24.7	100.28	51.4	1.05	28.71	NA	11.81	0.003	0.014	13.2	0.001	0.66	2.24	0.009	13.4	0.054
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	5/11/2010	19.4	37.4	102.97	63	1.5	20.14	NA	17.04	0.002	0.007	15.3	0.001	0.47	2.44	0.003	9.13	0.073
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	5/19/2010	27.1	24	90.49	47	3	26.68	NA	10.69	0.003	0.014	12	0.006	0.71	2.22	0.013	13.9	0.055
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	5/19/2010	17.9	31.8	91.58	54.8	3.05	17.33	NA	13.39	0.003	0.008	16	0.005	0.5	2.2	0.013	8.72	0.071

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	6/8/2010	32.5	33.6	118.63	60.4	1.95	33.96	NA	13.28	0.005	0.012	13.8	0.002	0.75	2.29	0.006	14.5	0.06
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	6/8/2010	22	50	126	78.8	30.75	22.4	NA	16.8	0.006	0.007	20	0.003	0.59	2.82	0.003	10.9	0.103
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	6/23/2010	32	32.2	107.98	54.8	2.05	32.49	NA	12.43	0.005	0.013	15	0.004	0.95	2.62	0.003	17.3	0.067
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	6/23/2010	19.2	47.6	112.28	73.4	2.85	20.45	NA	15.75	0.005	0.006	17.5	0.003	0.5	2.73	0.002	10.8	0.096
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	7/13/2010	36	38.5	134.6	70.4	1.4	25.77	NA	10.77	0.004	0.011	13	0.003	0.83	2.16	0.004	13.6	0.06
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	7/13/2010	24.9	62.4	154.07	106.2	3.75	24.37	NA	21.24	0.009	0.01	17.7	0.002	0.74	3.2	0.006	12.1	0.114
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	7/21/2010	26.2	41.4	139.9	75.4	1.15	35.99	NA	15.41	0.005	0.011	14.7	0.001	1.06	2.89	0.002	19.4	0.074
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	7/21/2010	23.5	58.2	144.22	96.4	1.95	25.34	NA	19.09	0.002	0.003	14	0.003	0.81	3.12	0.001	12.3	0.09
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	8/17/2010	38.8	41.3	145.1	73.6	1.8	40.22	NA	16.43	0.006	0.013	18.9	0.001	1.26	3.18	0.005	21.4	0.087
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	8/17/2010	25.3	68.3	161.35	107	2.45	25.86	NA	25.5	0.005	0.006	21.5	0.001	0.8	3.51	0.001	12.8	0.138
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	8/25/2010	37.7	37.3	131.58	62.4	1.3	38.13	NA	14.84	0.005	0.012	13.8	0.003	1.17	3.11	0.004	22	0.07
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	8/25/2010	23.6	60.1	143.97	93.4	3.2	23.69	NA	19.76	0.005	0.004	16.9	0.004	0.76	3.35	0.001	12.9	0.1
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	8/25/2010	24.9	72.2	157.1	104.4	2.45	25.88	NA	24.43	0.004	0.003	15.8	0.001	1.2	3.53	0	12.9	0.119
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	9/14/2010	42.8	45.8	152.4	77.6	1.85	40.23	NA	17.57	0.006	0.013	16.8	0.004	1.32	3.25	0.003	22.6	0.08
2130 (A) BCP	BCP	213	Marshalls Creek, PA (Brodhead Trib)	9/14/2010	25.7	69.6	160.2	109.2	2.1	26.04	NA	26.78	0.003	0.003	15.3	0.001	0.95	3.66	0	13.2	0.12
2130A (B) BCP	BCP	213	Brodhead Creek, PA; at Route 402	9/28/2010	38.6	42.1	133.1	67.4	6.05	39.57	NA	16.49	0.004	0.012	14.9	0.001	1.54	3	0.002	20.8	0.081
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	5/19/2009	12.4	9.5	47.17	16.2	19.61	10.51	NA	5.32	0.009	0.024	5.14	0.017	0.63	0.97	0.016	6.33	0.024
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	6/2/2009	9.9	11.6	44.6	19.4	6.05				0.023	0.02	6.58	0.003	0.53	1.2	0.014	5.65	0.028
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	7/21/2009	14.5	18.7	58.82	27.4	0.95	11.71	NA	5.83	0.007	0.024	7.49	0.006	0.63	1.55	0.004	6.74	0.05
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	8/4/2009	10.5	11.9	46.43	18	22.79	5.39	NA	3.14	0.003	0.017	3.95	0.008	0.47	0.76	0.009	3.25	0.018
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	9/15/2009	14.3	17.6	53.83	28	0.7	9.69	NA	5.09	0.007	0.018	6.52	0.003	0.51	1.28	0.005	5.53	0.038
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	5/4/2010	12.5	14.5	49.48	27	1.25				0.002	0.026	7.33	0.005	0.55	1.54	0.021	6.63	0.049
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	5/18/2010	13.2	16.9	53.45	28.4	0.85	15.14	NA	7.3	0.007	0.032	7.57	0.006	0.74	1.7	0.01	7.71	0.055
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	6/8/2010	13.7	21.3	59.7	32.8	2.25	14.2	NA	6.93	0.004	0.023	6.72	0.003	0.75	1.96	0.011	7.99	0.058
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	6/22/2010	12.8	17.5	52.82	28.2	2	13.8	NA	6.92	0.004	0.018	6.8	0.003	0.69	1.61	0.012	6.89	0.045
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	7/13/2010	14.1	17.4	57.31	30.4	0.9	14.07	NA	6.56	0.004	0.02	6.96	0	0.79	1.71	0.002	7.61	0.046
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	7/20/2010	14.8	17.6	54.95	30.2	0.95	13.52	NA	6.06	0.005	0.019	7.37	0.001	0.68	1.51	0.006	7.79	0.044
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	8/10/2010	14.2	19.1	55.05	29.2	1.05	13.97	0.47	6.29	0.005	0.022	8.47	0.003	0.73	1.94	0.009	8.44	0.05
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	8/24/2010	13.6	17.1	50.03	26.8	4.6	13.44	NA	5.87	0.004	0.028	8.19	0.004	0.85	1.71	0.002	8.24	0.04
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	9/14/2010	14.1	20.5	51.4	29.8	3.7	11.22	NA	5.43	0.004	0.018	6.54	0.002	0.61	1.62	0.006	6.48	0.04
2814 BCP	ICP	218.36	Delaware River Smithfield Access, Smithfield Beach Access Area	9/28/2010	14.2	20.3	52.5	29.2	1.25	13.16	NA	6.14	0.002	0.025	7.77	NA	0.75	1.77	0.005	6.92	0.047
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	5/20/2009	35.2	98.9	167.5	113	2.1	35.7	NA	9.11	0.005	0.01	13.1	0.014	0.57	7.94	0.001	19.3	0.142
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	5/20/2009	13.3	15.8	55.12	24.6	1.35	11.53	NA	7.11	0.006	0.024	6.56	0.008	0.32	1.87	0.004	6.49	0.031
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	6/3/2009	14.8	21.5	61.36	31	1.05				0.003	0.023	7.5	0.002	0.45	2.5	0.001	7.93	0.039
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	6/3/2009	27.8	119.1	189.8	137.4	10.65				0	0.004	10	0.005	0.71	8.52	NA	19.2	0.128
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	7/22/2009	14.9	22.1	64.53	31.8	0.9	13.14	NA	6.49	0.006	0.023	7.06	0.005	0.36	2.28	0.002	7.34	0.038
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	7/22/2009	40	118.2	200.6	137.2	1.95	36.47	NA	7.41	0.003	0.007	9.89	0.005	0.73	8.05	NA	18.9	0.127
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	8/5/2009	9.7	12.2	47.25	19.6	1.8	8.8	NA	6.37	0.006	0.021	6.32	0.02	0.31	1.67	0.004	5.9	0.029
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	8/5/2009	29.8	85.5	154.28	96.6	2.95	25.42	NA	6.03	0.004	0.012	11.6	0.022	0.6	5.38	0	14.9	0.111
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	9/16/2009	15.5	24.7	65.65	36.6	0.35	13.38	NA	6.96	0.003	0.023	7.7	0.004	0.51	2.81	0.002	8.09	0.044
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	9/16/2009	41.1	129	212.13	154	0.5	37.93	NA	8.38	0.002	0.004	8.04	0.004	0.84	9.79	NA	20.6	0.122
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	5/5/2010	8.9	10.8	43.22	27.2	1.3	8.6	NA	6.26	0.003	0.023	5.18	0.013	0.31	1.46	0.008	5.33	0.024
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	5/5/2010	31.6	94.6	166.3	112.6	5.25	30.02	NA	6.95	0.003	0.011	13.3	0.007	0.54	6.55	0.001	16.48	0.124
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	5/19/2010	28.7	88	155.73	103	8.3	29.01	NA	6.55	0.005	0.009	9.77	0.014	0.6	5.57	0.001	16.1	0.099
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	5/19/2010	7.9	10.4	43.2	19	3.15	8.11	NA	6.07	0.01	0.017	4.96	0.016	0.36	1.31	0.005	4.85	0.022
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	6/9/2010	12.9	25.3	66.4	36.6	1.4	14.33	NA	7.4	0.003	0.019	5.92	0.004	0.5	2.8	0.002	8.01	0.037
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	6/9/2010	36.5	138.3	220.68	162.8	1.65	39.42	NA	8.62	0.003	0.004	7.07	0.003	0.76	10.2	0	20.4	0.108
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	6/23/2010	14.4	26.5	67.17	40.4	2.45	15.43	NA	7.72	0.003	0.024	6.79	0.004	0.56	2.83	0.003	8.08	0.041
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	6/23/2010	36.6	134.7	217.27	161.6	2.15	35.6	NA	8.02	0.001	0.007	9.41	0.004	0.73	9.12	0.001	17.4	0.127
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	7/14/2010	20.7	27.9	80.13	44.6	6.05	18.98	NA	7.68	0.005	0.023	6.99	0.006	0.73	3.13	0.004	10.3	0.044
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	7/14/2010	34.1	124.6	208.24	162.4	5.35	34.45	NA	8.19	0.001	0.004	5.97	0.004	1.23	9.38	NA	17.4	0.105
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	7/21/2010	15.5	31.4	70.88	47.6	0.75	15.03	NA	7.48	0.004	0.02	6.47	0.003	0.55	3.43	0.003	9.17	0.048
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	7/21/2010	38.9	143.7	229.78	183.6	0.85	38.01	NA	8.55	0.003	0.007	9.11	0.001	0.94	10.7	0	20.1	0.15
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	8/11/2010	41.6	169.3	260.55	201.8	0.7	42.28	NA	8.62	0.001	0.003	5.86	0.002	1	14.5	0.001	22.9	0.12
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	8/11/2010	17.7	37.3	79.53	49.8	0.95	14.51	NA	6.64	0.003	0.027	8.94	0.004	0.51	3.61	0.005	8.38	0.063
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	8/25/2010	12.3	23.8	63.5	34.8	2.55	10.21	NA	8.36	0.002	0.028	9.45	0.005	0.54	2.82	0.011	6.84	0.049
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	8/25/2010	35.8	120.1	203.25	147.4	16.4	34.86	NA	12.63	0.003	0.025	28.8	0.004	1.15	10.3	0.006	18.4	0.326
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	9/15/2010	14.1	80.8	69.4	42	0.7	13.1	NA	8.75	0.003	0.015	6.36	0.003	0.6	3.64	0.001	8.01	0.05
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	9/15/2010	45.2	150.1	244	180	2.1	45.95	NA	10.81	0.002	0.004	6.55	0	1.38	12.3	0	23.3	0.13

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
2253A BCP	BCP	225.3	Big Flatbrook DEWA boundry, NJ	9/29/2010	16.4	33.4	69.83	44.4	0.4	14.19	NA	8.26	0.001	0.033	10.9	0.005	0.93	3.49	0.006	8.19	0.065
2253B BCP	BCP	225.3	Little Flatbrook DEWA boundry, NJ	9/29/2010	39.4	146.3	225.43	172.4	1.5	39.04	NA	12.49	0.003	0.016	21.9	0.005	1.89	11.6	0.002	20	0.27
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	5/19/2009	7.8	4	35.35	12.8	1.85	5.96	NA	5.29	0.005	0.009	2.93	0.033	0.23	1.08	0.013	3.62	0.012
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	5/19/2009	10.8	5	37.05	13.4	1.9	6.62	NA	5.57	0.003	0.01	3.48	0.024	0.26	1.06	0.006	3.71	0.015
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	6/2/2009	8.2	5.5	40.05	13.2	1.85				0.002	0.008	3.5	0.025	0.36	1.29	0.011	4.05	0.013
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	6/2/2009	4.9	4.6	32.65	10.8	1.25				0	0.008	3.07	0.02	0.22	0.99	0.002	2.96	0.012
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	7/21/2009	9	6.6	42.43	16.8	0.85	6.73	NA	4.42	0.008	0.009	3.59	0.021	0.2	1.25	0.009	3.51	0.015
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	7/21/2009	5.3	5.8	32.5	14.6	0.85	5.02	NA	5.16	0.004	0.01	3.29	0.014	0.19	0.99	0.002	2.95	0.015
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	8/4/2009	6.8	4.3	43.2	14	2.15	5.53	NA	3.91	0.009	0.01	3.31	0.103	0.28	1.11	0.015	3.15	0.014
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	8/4/2009	5	3.6	35.12	10	3.1	3.8	NA	4.19	0.006	0.01	2.68	0.055	0.27	0.83	0.004	2.27	0.012
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	9/15/2009	8.8	5.4	43.23	15.4	0.65	7.42	NA	4.45	0.005	0.009	3.77	0.046	0.28	1.41	0.012	3.93	0.016
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	9/15/2009	6.9	6.3	34.68	13.8	0.9	5.69	NA	5.3	0.004	0.01	3.67	0.014	0.31	1.08	0.002	3.35	0.017
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	5/4/2010	8.5	4.9	33.8	17	2.65				0.008	0.008	2.75	0.03	0.22	1.01	0.014	3.22	0.01
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	5/4/2010	4.9	4	28.3	13.4	2.2				0.002	0.026	6.2	0.002	0.69	1.31	0.006	5.42	0.023
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	5/18/2010	4.8	4.9	28.6	13.4	1.3	5.08	NA	5.96	0.005	0.01	3.05	0.011	0.31	0.95	0.004	2.9	0.014
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	6/8/2010	7.5	6.5	36.15	16.4	1.15	7.34	NA	5.22	0.005	0.009	3.78	0.013	0.27	1.43	0.013	3.84	0.016
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	6/8/2010	6	7.2	32.2	15.6	0.7	5.45	NA	5.04	0.005	0.009	3.56	0.011	0.3	1.06	0.004	3.26	0.016
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	6/22/2010	6.9	5.1	34.51	14.6	1.47	5.86	NA	4.46	0.004	0.008	3.02	0.022	0.23	1.13	0.016	2.95	0.012
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	6/22/2010	5.1	6.1	32.85	14.4	1.5	6.1	NA	5.49	0.003	0.008	3.37	0.013	0.31	1.03	0.005	3.32	0.015
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	7/13/2010	7.7	8.6	38.62	18.8	0.8	7.87	NA	5.22	0.004	0.008	4.15	0.005	0.29	1.62	0.009	3.79	0.017
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	7/13/2010	7.8	9.8	39.43	19.6	0.65	7.8	NA	5.68	0.006	0.008	4.74	0.004	0.43	1.37	0.003	4.43	0.021
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	7/20/2010	8	8.7	37.6	21.2	0.85	7.71	NA	4.97	0.004	0.01	4.32	0.006	0.31	1.59	0.013	4.14	0.019
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	7/20/2010	8.8	4.4	37.1	20.4	0	7.66	NA	5.79	0.005	0.011	4.97	0.006	0.4	1.38	0.006	4.66	0.024
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	8/10/2010	6.5	7.8	32.33	17.2	0.7	6.05	NA	4.24	0.002	0.009	4.04	0.008	0.22	1.49	0.015	3.76	0.02
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	8/10/2010	13.3	14.9	47.87	26	0.07	11.14	NA	7.16	0.003	0.012	6.72	0.005	0.59	1.84	0.007	7.48	0.03
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	8/24/2010	8.2	8.5	32.57	17.4	1.05	6.59	NA	4.76	0.003	0.008	4.07	0.006	0.28	1.6	0.015	3.42	0.017
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	8/24/2010	6.1	9.5	32.7	16.8	1.25	5.6	NA	5.75	0.003	0.007	3.49	0.001	0.32	1.04	0.004	3.02	0.016
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	9/14/2010	8.5	10.1	37	19.4	0.3	7.76	NA	5.63	0.004	0.009	5	0.005	0.3	1.88	0.015	4.07	0.02
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	9/14/2010	14	14.2	49.7	29.4	0.9	11.7	NA	7.67	0.006	0.012	7.01	0.004	0.69	1.9	0.005	7.65	0.03
2269B BCP	BCP	226.9	Little Bushkill Creek DEWA boundry PA	9/28/2010	8.8	11.4	35.43	20.4	0.45	7.36	NA	5.6	0.002	0.008	4.72	0.005	0.4	1.81	0.017	3.71	0.021
2269A BCP	BCP	226.9	Buchkill Creek DEWA boundry PA	9/28/2010	12.5	15.5	53.03	27.2	0.25	11.88	NA	8.37	0.001	0.014	7.18	0.004	1	1.99	0.005	7.8	0.035
2281 ICP	ICP	228.11	Delaware River Bushkill Access	5/19/2009	12.1	9	45	18.2	17.6	10.46	NA	5.31	0.01	0.022	5.09	0.014	0.59	0.94	0.015	6.39	0.022
2281 ICP	ICP	228.11	Delaware River Bushkill Access	6/2/2009	11.2	10.7	43.85	18.6	6.85				0.003	0.019	5.3	0.003	0.48	1.03	0.011	5.22	0.02
2281 ICP	ICP	228.11	Delaware River Bushkill Access	7/21/2009	14	17.2	55.14	25.2	1.1	11.6	NA	5.34	0.006	0.025	7.07	0.005	0.61	1.32	0.007	6.6	0.03
2281 ICP	ICP	228.11	Delaware River Bushkill Access	8/4/2009	10.8	11.8	47.15	19.2	18.85	8.29	NA	4.52	0.003	0.022	5.37	0.009	0.69	1.03	0.013	4.89	0.022
2281 ICP	ICP	228.11	Delaware River Bushkill Access	9/15/2009	15.5	15.7	53.68	25.8	0.7	11.93	NA	5.55	0.004	0.019	6.25	0.003	0.65	1.33	0.002	6.91	0.027
2281 ICP	ICP	228.11	Delaware River Bushkill Access	5/4/2010	13.2	12.4	168.52	23.2	1.6				0.001	0.026	6.49	0.006	0.6	1.3	0.015	7.3	0.028
2281 ICP	ICP	228.11	Delaware River Bushkill Access	5/18/2010	13.2	14.4	49.24	26.6	0.71	13.27	NA	6.41	0.005	0.026	7	0.004	0.67	1.36	0.012	7.44	0.031
2281 ICP	ICP	228.11	Delaware River Bushkill Access	6/8/2010	14.2	16.7	55.68	28	1.7	14.29	NA	6.23	0.004	0.022	6.41	0.003	0.8	1.47	0.011	8.05	0.031
2281 ICP	ICP	228.11	Delaware River Bushkill Access	6/22/2010	12.4	15.4	51.35	26.8	1.8	14.31	NA	6.56	0.003	0.017	6.17	0.001	0.73	1.39	0.008	7.25	0.027
2281 ICP	ICP	228.11	Delaware River Bushkill Access	7/13/2010	14.2	16.7	53.05	28.6	0.65	14.3	NA	6.1	0.004	0.018	6.22	NA	0.82	1.51	0.003	7.74	0.028
2281 ICP	ICP	228.11	Delaware River Bushkill Access	7/20/2010	14.5	16.7	49.22	29.6	0.9	14.63	NA	6.05	0.005	0.018	6.93	0.001	0.75	1.46	0.002	8.28	0.032
2281 ICP	ICP	228.11	Delaware River Bushkill Access	8/10/2010	15.2	16.5	53.45	29.8	1.2	14.13	NA	5.71	0.004	0.021	7.95	0.001	0.75	1.59	0.004	8.61	0.03
2281 ICP	ICP	228.11	Delaware River Bushkill Access	8/24/2010	13.7	15.3	48.2	24.8	18.7	12.46	NA	5.51	0.001	0.03	6.69	0	0.84	1.48	0.009	7.17	0.028
2281 ICP	ICP	228.11	Delaware River Bushkill Access	9/14/2010	13.8	16.8	48.3	27.2	1.2	13.39	NA	5.95	0.012	0.022	7.09	0.003	0.75	1.59	0.004	7.89	0.03
2281 ICP	ICP	228.11	Delaware River Bushkill Access	9/28/2010	14	18.1	49.4	26.8	0.4	13.16	NA	5.74	0.001	0.025	7.64	0.003	1.03	1.53	0.002	7.5	0.03
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	5/20/2009	12.5	9.2	54.42	17.4	6.1	10.57	NA	5.51	0.008	0.023	5.12	0.007	0.48	0.98	0.014	5.96	0.022
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	6/3/2009	12.3	12.3	47.83	19.4	5.85				0.002	0.02	5.5	0.001	0.54	1.14	0.009	6.14	0.021
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	8/5/2009	14.8	16.5	54.57	26.4	7.95	13.34	NA	5.91	0.006	0.026	7.42	0.004	0.65	1.44	0.009	7.56	0.033
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	8/19/2009	12.1	11.6	46.4	19.2	11	15.9	NA	8.05	0.006	0.035	8.36	0.012	1.15	1.85	0.023	10.2	0.038
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	5/5/2010	13.8	11.6	49.05	25.4	2	13.1	NA	6.04	0.001	0.027	6.21	0.006	0.63	1.29	0.02	7.5	0.027
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	5/19/2010	14.2	13.3	48.59	25.8	1.2	11.22	NA	5.16	0.003	0.026	5.99	0.005	0.56	1.07	0.015	6.1	0.026
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	6/9/2010	14	15.6	54.12	25.8	2.1	11.53	NA	4.97	0.005	0.017	5.68	0.003	0.66	1.21	0.003	6.42	0.025
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	6/23/2010	13.4	15.7	51.08	24.4	2.7	13.29	NA	6.11	0.004	0.017	5.58	0.002	0.71	1.29	0.007	6.77	0.025
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	7/14/2010	14.7	16.2	54.45	28.4	3.75	13.95	NA	6	0.004	0.018	6.23	0.003	0.78	1.47	0.003	7.53	0.027
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	7/21/2010	14.1	15.2	51.07	27.8	0.95	14.64	NA	5.98	0.007	0.017	7.05	0.002	0.75	1.44	0.002	8.49	0.032
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	8/11/2010	13.6	16.5	50.78	25.8	1.15	13.46	NA	6.24	0.004	0.017	7.7	0.004	0.78	1.61	0.002	8.39	0.03
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	8/25/2010	11	13.9	53.01	22.4	11.83	9.81	NA	5.63	0.002	0.03	6.45	0.011	1.16	1.24	0.007	5.95	0.028
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	9/15/2010	13.4	16.6	49.2	24.8	NA	12.79	NA	5.81	0.006	0.019	6.52	0.002	0.78	1.62	0.003	7.66	0.03

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
2387 ICP	ICP	238.67	Delaware River Dingmans Access Area, PA	9/29/2010	15.2	17.7	47.13	27.2	0.5	12.98	NA	5.66	0.009	0.025	7.36	NA	0.55	1.59	0.009	7.22	0.028
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	5/20/2009	12.6	9.4	46.49	18.2	5.9	11.35	NA	5.92	0.006	0.025	5.37	0.011	0.53	1.02	0.029	6.25	0.023
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	6/3/2009	11.3	11.7	44.3	20	5.3				0.004	0.021	5.86	0.002	0.55	1.18	0.008	5.82	0.021
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	7/22/2009	14.1	15.2	54.13	24.4	2.95	13.48	NA	5.92	0.005	0.026	6.96	0.004	0.63	1.36	0.011	7.55	0.031
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	8/5/2009	12	12.1	46.5	20	11.9	10.52	NA	5.23	0.008	0.023	5.87	0.007	0.69	1.12	0.029	6.03	0.024
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	9/16/2009	15.9	15.1	52.45	24.8	0.55	13.21	NA	5.9	0.004	0.025	7.59	0.005	0.79	1.42	0.004	7.83	0.031
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	5/5/2010	12.9	12	47.14	22.6	1.5				0	0.027	6.18	0.005	0.65	1.28	0.02	6.95	0.027
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	5/19/2010	13.9	12.5	48.82	25.4	2.1	13.68	NA	6.26	0.004	0.029	6.68	0.005	0.64	1.32	0.019	7.53	0.031
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	6/9/2010	15.7	14.5	55.77	24.4	1.6	15.58	NA	6.04	0.004	0.027	6.3	0.004	0.83	1.4	0.011	8.78	0.031
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	6/23/2010	13.1	14.3	49.92	21.6	2.3	13.76	NA	6.09	0.004	0.023	6.29	0.002	0.64	1.31	0.009	7.68	0.029
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	7/14/2010	14.2	15.5	53.17	27.8	1.2	14.14	NA	6.03	0.003	0.032	7.38	0.002	0.77	1.5	0.017	8.27	0.033
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	7/21/2010	14.1	15.7	50.45	27.4	2.95	14.23	NA	6	0.005	0.022	7.38	0.002	0.74	1.47	0.003	8.2	0.033
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	8/10/2010	15	18.6	55.15	29	1.15	13.86	NA	6.36	0.004	0.022	8.33	0.001	0.8	1.66	0.007	8.01	0.044
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	8/11/2010	13.9	16.2	51.27	25.8	1.3	13.52	NA	5.7	0.004	0.018	7.49	0.007	0.77	1.61	0.001	8.32	0.03
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	8/25/2010	11.1	14.1	46.83	23.2	7.1	10.2	NA	5.67	0.006	0.028	6.69	0.008	0.96	1.24	0.005	6.28	0.03
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	9/15/2010	13.4	16.5	46	25.2	5	13.38	NA	5.83	0.005	0.022	6.8	0.002	0.77	1.5	0.006	7.69	0.029
2464 ICP	ICP	246.38	Millford Beach Acces, Montague gage	9/29/2010	15.2	17.5	48.7	26.4	1.1	14.63	NA	5.91	0.005	0.026	7.35	0.005	1.09	1.59	0.019	8.46	0.03
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	5/20/2009	10.9	9	44.3	19.2	6.55	9.02	NA	5.41	0.005	0.021	4.85	0.006	0.48	0.91	0.017	5.01	0.02
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	6/3/2009	9.9	11.5	43.15	19.6	4.55				0.001	0.019	5.73	0.001	0.58	1.18	0.007	5.69	0.02
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	7/22/2009	13.2	14.2	51.02	23.2	1.5	9.43	NA	4.49	0.005	0.02	5.47	0.002	0.44	1	0.008	5.16	0.022
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	8/5/2009	12	12.2	44.97	20	9.9	13.8	NA	7.71	0.004	0.03	7.35	0.009	1.01	1.62	0.025	8.26	0.031
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	9/16/2009	14.6	15.2	51	24.2	0.75	12.47	NA	5.87	0.004	0.022	7.16	0.003	0.78	1.44	0.004	7.33	0.028
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	5/5/2010	12	11.5	45.07	21.2	2.4				0.001	0.026	6.02	0.003	0.66	1.25	0.016	6.35	0.024
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	5/19/2010	11.6	12	45.1	23	2.35	11.49	NA	5.96	0.003	0.026	6.13	0.004	0.65	1.23	0.013	6.34	0.026
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	6/9/2010	15.7	13.7	53.9	23.8	1.3	14.79	NA	6	0.004	0.025	6.07	0.003	0.8	1.39	0.005	8.36	0.029
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	6/23/2010	12.2	13.6	48.88	23.2	1.6	13.25	NA	6.17	0.004	0.018	5.72	0.001	0.73	1.29	0.005	6.85	0.024
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	7/14/2010	13.4	14.2	52.07	25.6	1.05	13.24	NA	5.74	0.003	0.023	6.44	0.001	0.73	1.36	0.005	7.23	0.026
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	7/21/2010	13.8	14.6	49.38	26.8	1.05	13.36	NA	5.87	0.006	0.016	6.52	0.002	0.71	1.38	0.003	7.82	0.027
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	8/11/2010	13.5	16	48.05	24.2	1.25	12.59	NA	5.49	0.004	0.011	6.57	0.002	0.69	1.54	0.002	7.75	0.02
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	8/25/2010	10	14.2	44.77	22.8	13.1	9.37	NA	5.72	0.003	0.03	6.55	0.012	1.01	1.26	0.021	5.83	0.026
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	9/15/2010	13.8	15.5	48.2	26.6	1.3	12.74	NA	5.69	0.004	0.02	7.07	0.003	0.77	1.56	0.005	7.53	0.03
2502 ICP	ICP	250.2	Delware River DEWA Northern boundry	9/29/2010	14.9	17.4	48.87	25.6	0.1	11.72	NA	4.8	0.001	0.021	6.53	0.003	0.83	1.31	0.007	6.67	0.026
2536 BCP	BCP	253.64	Neversink River, NY	5/20/2009	20.2	10.9	62.92	20.8	5	17.92	NA	5.96	0.009	0.034	6.27	0.017	0.48	1.19	0.018	10	0.036
2536 BCP	BCP	253.64	Neversink River, NY	6/3/2009	21.9	14.6	68.11	24.8	3.2				0.005	0.036	7.84	0.007	0.73	1.42	0.026	11.6	0.044
2536 BCP	BCP	253.64	Neversink River, NY	7/22/2009	19.8	16.2	64.78	27.4	1.1	14.52	NA	5.31	0.005	0.037	7.28	0.009	0.6	1.23	0.014	8.58	0.043
2536 BCP	BCP	253.64	Neversink River, NY	8/5/2009	15.2	10.2	49.08	17.4	6.69	12.59	NA	4.74	0.002	0.032	5.08	0.015	0.53	0.99	0.019	7.85	0.03
2536 BCP	BCP	253.64	Neversink River, NY	9/16/2009	18.9	14.2	58.9	26	1.65	15.85	NA	5.9	0.003	0.036	7.3	0.009	0.82	1.32	0.014	9.53	0.042
2547 ICP	ICP	254.75	Delaware River Port Jervis Bridge	5/20/2009	11.1	8.7	44.48	17.6	7.1	10.21	NA	5.88	0.008	0.024	5.25	0.007	0.54	0.99	0.007	5.7	0.022
2547 ICP	ICP	254.75	Delaware River Port Jervis Bridge	6/3/2009	10.5	11.7	43.28	19	4.95	9.8	NA	5.85	0.002	0.019	5.78	0.002	0.58	1.16	0.006	5.76	0.019
2547 ICP	ICP	254.75	Delaware River Port Jervis Bridge	7/22/2009	13.2	13.8	48.79	21.6	2.05	11.48	NA	5.43	0.005	0.023	6.21	0.007	0.59	1.23	0.008	6.41	0.025
2547 ICP	ICP	254.75	Delaware River Port Jervis Bridge	8/5/2009	12	11.6	46.37	21.6	8.15	9.89	NA	5.2	0.003	0.023	5.61	0.004	0.72	1.12	0.015	6.14	0.023
2547 ICP	ICP	254.75	Delaware River Port Jervis Bridge	9/16/2009	13.2	14.8	48.95	25	1.1	11.74	0.4	5.73	0.003	0.021	6.35	0.005	0.78	1.43	0.003	7.06	0.026
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	5/20/2009	11.1	9.5	42.13	17.6	4.65	4.49	NA	2.64	0.004	0.014	2.6	0.007	0.23	0.46	0.011	2.62	0.011
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	6/3/2009	10.7	11.8	42.7	19.2	4.8	9.57	NA	5.69	0.002	0.018	5.72	0	0.58	1.16	0.006	5.76	0.019
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	7/22/2009	12.6	14.7	48.15	21.2	0.6	11.72	NA	5.55	0.005	0.024	6.66	0.004	0.64	1.28	0.006	6.75	0.027
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	8/5/2009	11.3	11.7	46.53	19	7.8	10.75	NA	5.34	0.001	0.022	4.89	0.002	0.69	1.2	0.01	6.43	0.022
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	9/16/2009	13.9	15.4	48.57	23.4	0.5	10.28	NA	5.35	0.004	0.02	6.21	0.003	0.62	1.24	0.005	5.82	0.024
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	5/5/2010	12.3	10.9	44.75	21.8	1.9	13.39	NA	6.5	0.002	0.027	5.89	0.002	0.68	1.2	0.012	6.96	0.025
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	5/19/2010	12.5	11.4	45.1	22.2	3.3	12.22	NA	5.82	0.004	0.024	5.65	0.004	0.66	1.16	0.01	6.86	0.024
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	6/9/2010	12.1	14.2	49.95	22.6	1.35	11.25	NA	5.1	0.005	0.02	5.97	0.002	0.58	1.22	0.001	6.69	0.025
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	6/23/2010	13.1	14	47.5	24.6	1.6	12.18	NA	5.66	0.004	0.017	5.66	0.002	0.72	1.26	0.004	6.74	0.023
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	7/14/2010	12	13.8	48.78	24.8	1.35	12.02	NA	5.11	0.003	0.016	5.2	0.003	0.84	1.44	0.006	7.42	0.023
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	7/21/2010	11.8	14.3	48.55	27.8	NA	13.08	NA	5.65	0.006	0.016	6.08	0.001	0.7	1.37	0.003	7.5	0.025
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	8/11/2010	12.8	15.4	48.87	24.6	1	11.94	NA	5.25	0.004	0.011	5.97	0.003	0.7	1.56	0.004	7.56	0.02
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	9/15/2010	13.7	15.4	45.6	23.8	0.8	6	NA	3.28	0.004	0.013	4.38	0.002	0.33	0.88	0.001	3.64	0.02
2584 ICP	ICP	258.4	Delaware River at Millrift; Millrift, Erie RR Bridge	9/29/2010	14.4	16.3	47.57	25	0.55	13.83	NA	5.48	0.001	0.021	6.74	0.002	0.93	1.48	0.006	7.62	0.028
2611 BCP	BCP	261.1	Mongaup River	5/20/2009	30.3	7	78.32	18.8	2.05	28.5	NA	6.36	0.009	0.05	5.68	0.006	0.7	1.12	0.015	15.2	0.038
2611 BCP	BCP	261.1	Mongaup River	6/3/2009	29	7.7	79.95	19.8	1.05	28.24	NA	6.39	0.004	0.046	6.01	0.005	0.76	1.21	0.013	15.7	0.037
2611 BCP	BCP	261.1	Mongaup River	7/22/2009	23.1	9.1	62.5	19.2	1.2	20.45	NA	5.24	0.007	0.044	5.76	0.007	0.63	1.11	0.013	12.1	0.036

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
2611 BCP	BCP	261.1	Mongaup River	8/5/2009	23.9	9.5	66.91	19.2	2.25	24	NA	5.62	0.003	0.049	6.15	0.003	0.81	1.29	0.03	13.85	0.043
2611 BCP	BCP	261.1	Mongaup River	9/16/2009	19	9	65.36	17.6	1.21	16.76	NA	4.71	0.005	0.037	5.38	0.015	0.88	1.05	0.006	9.8	0.035
2611 BCP	BCP	261.1	Mongaup River	5/5/2010	22.6	5.8	60.09	17	2.45	21.58	NA	5.89	0.002	0.041	4.57	0.004	0.69	0.91	0.014	11	0.027
2611 BCP	BCP	261.1	Mongaup River	5/19/2010	21.7	6.4	60.05	20.8	2.5	20.18	NA	5.58	0.006	0.04	4.63	0.005	0.71	0.92	0.01	10.9	0.029
2611 BCP	BCP	261.1	Mongaup River	6/9/2010	21	7.6	61.12	18.4	1	20.73	NA	5.61	0.004	0.045	5.21	0.005	0.67	1.05	0.006	11.9	0.034
2611 BCP	BCP	261.1	Mongaup River	6/23/2010	21.9	7.5	62.88	19.2	1.3	21.8	NA	5.65	0.002	0.04	5.24	0	0.75	1.1	0.004	11.8	0.034
2611 BCP	BCP	261.1	Mongaup River	7/14/2010	22.5	8.6	64	21.6	4	23.18	NA	5.51	0.004	0.036	5.5	0.002	0.78	1.14	0.005	12.9	0.037
2611 BCP	BCP	261.1	Mongaup River	7/21/2010	22.5	8.7	62.42	22.4	NA	22.73	NA	5.66	0.004	0.044	5.8	0.003	0.79	1.15	0.005	13.2	0.04
2611 BCP	BCP	261.1	Mongaup River	8/11/2010	24	9.6	64.43	23.2	1.1	22.61	0.63	5.34	0.003	0.043	6.25	0.003	0.79	1.24	0.006	13.6	0.04
2611 BCP	BCP	261.1	Mongaup River	8/25/2010	22.9	9.2	61.7	21.8	21.8	21.47	NA	5.31	0.002	0.042	6	NA	0.77	1.25	0.004	11.7	0.04
2611 BCP	BCP	261.1	Mongaup River	9/15/2010	23.8	10.9	61.4	21.6	1.7	23.52	NA	5.39	0.004	0.04	6.75	0.003	0.87	1.35	0.005	13.6	0.04
2611 BCP	BCP	261.1	Mongaup River	9/29/2010	24.9	11.3	63.08	22.2	0.3	17.97	NA	4.76	0.001	0.039	5.9	0.002	0.76	1.01	0.005	9.51	0.039
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	5/20/2009	9.2	9.4	38.38	16.8	5.9	8.3	NA	5.7	0.01	0.021	5.05	0.007	0.51	0.94	0.011	4.88	0.02
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	6/3/2009	9.8	11.8	42.73	19	5.5	9.79	NA	5.85	0.001	0.019	5.6	0.002	0.62	1.19	0.008	5.58	0.019
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	7/22/2009	14.1	14.4	51.65	22.2	1.33	12.31	NA	5.61	0.006	0.028	6.96	0.005	0.63	1.31	0.011	7.12	0.028
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	8/5/2009	10	12	43.8	20	8.45	9.07	NA	5.49	0.002	0.021	4.92	0.002	0.67	1.23	0.011	5.48	0.02
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	9/16/2009	15.3	15.1	51.12	24	1.2	12.55	NA	5.77	0.004	0.021	6.04	0.003	0.77	1.39	0.002	7.22	0.025
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	5/5/2010	10.2	11.8	42.03	22.2	2.4	11.03	NA	6.38	0.001	0.025	6.09	0.002	0.65	1.24	0.013	5.86	0.024
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	5/19/2010	11.7	12.5	43.55	23	2.4	11.64	NA	6.11	0.003	0.025	6	0.006	0.7	1.22	0.017	6.19	0.025
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	6/9/2010	11.4	15.7	25.6	39.2	1.75	11.89	NA	5.79	0.005	0.02	6.51	0.003	0.73	1.43	0.007	7.24	0.027
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	6/23/2010	13.7	14	47.96	22.8	2.85	12.95	NA	5.74	0.004	0.021	6.26	0.004	0.73	1.27	0.008	7.01	0.025
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	7/14/2010	13.8	14.5	52.9	25.4	1.25	13.1	NA	5.68	0.002	0.021	5.12	NA	0.85	1.39	0.007	7.43	0.023
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	7/21/2010	13.3	15.6	50.7	26.6	0.1	12.75	NA	5.59	0.004	0.02	6.75	0.002	0.74	1.42	0.005	7.27	0.025
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	8/11/2010	12.7	16.5	50.35	25.6	1.35	12.09	NA	5.47	0.005	0.015	6.22	0.003	0.97	1.65	0.005	7.46	0.025
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	8/25/2010	9.5	13.9	47.65	22.2	9.15	8.95	NA	5.57	0.002	0.025	6.33	0.012	1.13	1.17	0.002	5.46	0.025
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	9/15/2010	12.7	16.1	45.8	25	2	12.1	NA	5.63	0.004	0.017	6.22	0.003	0.82	1.52	0.002	7.17	0.02
2655 ICP	ICP	265.5	Delaware River Pond Eddy, NY; Pond Eddy Bridge	9/29/2010	13.9	17.2	49.22	25	0.65	13.57	NA	5.68	0.002	0.024	6.84	NA	0.81	1.56	0.01	7.05	0.026
2732 BCP	BCP	273.2	Shohola Creek	5/20/2009	15.6	4.6	49.2	13.4	2.45	10.86	NA	4.15	0.004	0.016	2.48	0.026	0.34	0.97	0.019	6.36	0.015
2732 BCP	BCP	273.2	Shohola Creek	6/3/2009	17.1	5.5	45.8	14.4	1.1	16	NA	5.32	0.003	0.015	3.49	0.023	0.42	1.39	0.012	9.31	0.019
2732 BCP	BCP	273.2	Shohola Creek	7/22/2009	14.4	6.3	46.96	14.4	1.05	14.44	NA	4.87	0.004	0.02	3.6	0.024	0.4	1.38	0.012	8.53	0.021
2732 BCP	BCP	273.2	Shohola Creek	8/5/2009	15.1	4.3	52.96	13	2	14.46	NA	4.96	0.002	0.02	3.42	0.042	0.45	1.35	0.016	8.64	0.02
2732 BCP	BCP	273.2	Shohola Creek	9/16/2009	16.9	6.2	47.82	14.4	0.5	14.97	NA	4.64	0.002	0.019	3.5	0.018	0.49	1.48	0.009	8.68	0.022
2732 BCP	BCP	273.2	Shohola Creek	5/19/2010	14.3	12.3	43.65	13.8	2.8	10.5	NA	4.87	0.005	0.017	2.4	0.022	0.34	0.96	0.02	5.91	0.014
2732 BCP	BCP	273.2	Shohola Creek	6/9/2010	14.5	6.6	45.12	19	2.4	7.99	NA	2.97	0.003	0.008	2.03	0.01	0.28	0.8	0.007	4.64	0.012
2732 BCP	BCP	273.2	Shohola Creek	6/23/2010	14.4	6.3	3.6	14.8	1.3	13.89	NA	4.5	0.003	0.01	3.18	0.008	0.45	1.3	0.005	7.63	0.019
2732 BCP	BCP	273.2	Shohola Creek	7/14/2010	14	7.2	43.55	17.4	1.2	13.38	NA	4.41	0.004	0.01	3.33	0.005	0.55	1.39	0.006	8.09	0.02
2732 BCP	BCP	273.2	Shohola Creek	7/21/2010	14.6	8.1	41.5	20.2	0.85	14.3	NA	4.11	0.004	0.01	3.44	0.005	0.51	1.44	0.003	8.2	0.021
2732 BCP	BCP	273.2	Shohola Creek	8/11/2010	15.8	8	43.73	20.2	0.8	14.88	NA	4.35	0.002	0.014	3.56	0.004	0.69	1.57	0.006	8.95	0.023
2732 BCP	BCP	273.2	Shohola Creek	8/25/2010	13.7	7.6	46.43	16	1.45	13.03	NA	5.11	0.001	0.015	3.73	0.012	0.76	1.5	0.009	7.97	0.023
2732 BCP	BCP	273.2	Shohola Creek	9/15/2010	15.1	8.2	45	17.2	1.4	14.96	NA	5.62	0.002	0.015	3.97	0.005	0.62	1.73	0.004	8.96	0.02
2732 BCP	BCP	273.2	Shohola Creek	9/29/2010	15.4	9.4	38.85	20	0.3	14.13	NA	5.36	0.003	0.015	3.74	0.004	0.68	1.67	0.005	7.61	0.024
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	6/3/2009	9.9	12.6	43.02	20.6	4.6	9.43	NA	5.76	0.003	0.021	5.79	0	0.62	1.21	0.009	5.32	0.019
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	7/22/2009	13.2	15.6	46.83	26.2	1.35	11.22	NA	5.64	0.003	0.024	6.65	0.004	0.66	1.3	0.009	6.54	0.026
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	8/5/2009	9.8	12.7	47.75	21	7.55	9.4	NA	5.77	0.001	0.02	5.53	0.001	0.76	1.27	0.011	5.65	0.022
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	9/16/2009	13.5	14.9	46.53	24.8	3.2	10.76	NA	5.43	0.004	0.018	5.75	0.007	0.74	1.33	0.003	6.32	0.024
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	5/5/2010	10.4	12.2	41.35	22	2.65	10.78	NA	6.31	0.001	0.024	6.08	0.002	0.64	1.24	0.014	5.63	0.023
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	5/19/2010	10.9	13.1	42.85	26.4	3.9	9.59	NA	5.23	0.003	0.023	5.66	0.006	0.68	1.11	0.014	5.49	0.023
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	6/9/2010	12	15.8	48.55	25.6	1.6	11.75	NA	5.77	0.005	0.02	6.36	0.002	0.81	1.42	0.006	6.7	0.025
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	6/23/2010	10.8	14.9	45.13	22.8	1.65	10.77	NA	5.43	0.004	0.019	6.38	0.003	0.75	1.32	0.006	5.99	0.024
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	7/14/2010	11.2	13.5	48.35	24.6	2.25	11.59	NA	5.61	0.003	0.02	5.59	0.001	0.89	1.35	0.006	6.58	0.022
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	7/21/2010	13	15.4	46.98	26.4	NA	9.19	NA	3.98	0.003	0.013	4.66	0	0.39	1	0.002	5.47	0.017
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	8/11/2010	11.7	15.6	48.1	25.8	1.2	11.4	NA	5.44	0.003	0.016	5.88	0.002	0.93	1.63	0.004	6.98	0.023
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	8/25/2010	8.8	13.6	47.6	22	9.6	8.76	NA	5.66	0.003	0.026	6.5	0.007	0.98	1.19	0.006	5.34	0.026
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	8/25/2010	11.9	14	50.6	23.6	6.8	11	NA	5.81	0.007	0.026	7.12	0.007	0.85	1.41	0.004	7.2	0.03
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	9/15/2010	11.5	15.8	44.3	24.6	1.8	11.34	NA	5.4	0.003	0.018	5.93	0.003	0.79	1.56	0.002	6.86	0.02
2735 BCP	ICP	273.5	Delaware River Barryville, NY; Barryville Shohola Bridge	9/29/2010	12.6	17.7	43.43	24.8	0.45	12.42	NA	5.74	0.002	0.019	7.28	NA	0.84	1.6	0.005	6.83	0.027
2777 BCP	BCP	277.71	Lackawaxen River	5/19/2009	12.5	11.5	49.2	21.4	5.95	11.01	NA	6.42	0.008	0.018	6.29	0.011	0.61	0.91	0.016	5.94	0.021
2777 BCP	BCP	277.71	Lackawaxen River	6/2/2009	8.9	15	49.17	23	4.1	8.32	NA	5.67	0.009	0.016	7.42	0.011	0.74	1	0.008	5.07	0.025
2777 BCP	BCP	277.71	Lackawaxen River	7/21/2009	6.8	15.2	51.9	27	1.15	13.41	NA	6.45	0.003	0.02	7.8	0.006	0.73	1.15	0.006	7.63	0.028

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
2777 BCP	BCP	277.71	Lackawaxen River	8/4/2009	10	15.5	52.3	23.6	6.25	8.82	NA	5.08	0.003	0.015	6.33	0.006	0.86	0.99	0.016	4.89	0.024
2777 BCP	BCP	277.71	Lackawaxen River	9/15/2009	15.4	14.3	54.16	23.6	1.68	13.18	NA	6.04	0.002	0.015	7.54	0.004	0.74	1.14	0.004	7.61	0.026
2777 BCP	BCP	277.71	Lackawaxen River	5/5/2010	8.9	13.8	46.42	25	2.25	9.23	NA	6.58	0.002	0.022	6.98	0.009	0.7	1.07	0.016	5.3	0.026
2777 BCP	BCP	277.71	Lackawaxen River	5/19/2010	9.8	13.2	46.95	25.4	2.45	10.23	NA	6.32	0.005	0.02	6.9	0.011	0.71	1.08	0.012	6.2	0.028
2777 BCP	BCP	277.71	Lackawaxen River	6/9/2010	12.9	13	52.05	23.6	0.9	12.93	NA	6.31	0.004	0.02	6.89	0.004	0.75	1.1	0.004	7.24	0.026
2777 BCP	BCP	277.71	Lackawaxen River	6/23/2010	12.9	11.6	51.6	22.8	1.55	13.43	NA	6.31	0.001	0.019	6.42	0.001	0.73	1.03	0.003	7.14	0.022
2777 BCP	BCP	277.71	Lackawaxen River	7/14/2010	13.6	12.1	51	24.2	0.85	13.48	NA	6.24	0.001	0.017	5.85	0.003	0.75	1.01	0.006	7.31	0.021
2777 BCP	BCP	277.71	Lackawaxen River	7/21/2010	13.6	13.8	52.76	25.2	1.1	13.79	NA	6.26	0.001	0.017	6.69	0.002	0.76	1.07	0.005	7.48	0.024
2777 BCP	BCP	277.71	Lackawaxen River	8/11/2010	14.8	16.5	54.82	27.4	1.85	13.44	NA	5.7	0.001	0.017	8.05	0.004	0.9	1.22	0.007	7.9	0.032
2777 BCP	BCP	277.71	Lackawaxen River	8/25/2010	8.9	18.9	53.9	28.4	5	8.44	NA	6.36	0.005	0.018	9.42	0.011	0.95	1.2	0.006	5.55	0.04
2777 BCP	BCP	277.71	Lackawaxen River	9/15/2010	14.3	15.2	54.4	24.8	2.2	14.07	NA	5.81	0.002	0.017	7.9	0.003	0.77	1.22	0.001	8.11	0.03
2777 BCP	BCP	277.71	Lackawaxen River	9/29/2010	14.6	14.6	52.88	23.8	1.55	13.94	NA	6.11	0.001	0.017	7.44	0.003	0.96	1.16	0.007	7.32	0.028
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	5/19/2009	7.6	8.1	35.9	17	6.05	5.03	NA	4.22	0.007	0.017	3.7	0.003	0.27	0.74	0.016	2.94	0.015
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	6/2/2009	8.9	11.2	39.97	18.6	4.35	8.36	NA	5.64	0.004	0.019	5.52	0.002	0.55	1.18	0.015	4.88	0.018
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	7/21/2009	15.1	15.1	43.92	21.6	1.67	10.48	NA	5.48	0.004	0.023	6.58	0.012	0.65	1.37	0.01	6.38	0.026
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	8/4/2009	8.1	11	40.1	17.2	11.75	7.11	NA	5	0.017	0.019	4.7	0.005	0.68	1.1	0.018	4.26	0.018
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	9/15/2009	13.2	15.4	47.07	23.2	0.25	6.65	NA	3.94	0.004	0.016	4.8	0.002	0.44	1.02	0.004	3.83	0.018
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	5/4/2010	9.2	12	39	23	1.4	9.53	NA	5.72	0.001	0.024	5.68	0.002	0.63	1.18	0.018	5.09	0.022
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	5/18/2010	10.1	13.6	41.63	24.4	1.35	9.77	NA	5.57	0.003	0.023	5.98	0.002	0.65	1.28	0.021	5.75	0.024
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	6/8/2010	11.3	15.7	47.5	27.2	1.9	6.97	NA	4.1	0.006	0.017	5.18	0.002	0.47	1.04	0.008	4.07	0.02
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	6/22/2010	9.9	15.2	44.3	22.8	0.85	10.24	NA	5.34	0.005	0.013	5.38	0.002	0.75	1.34	0.01	5.82	0.021
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	7/13/2010	10.6	15.4	46.25	25.4	3.35	8.35	NA	4.25	0.004	0.016	4.98	0	0.73	1.23	0.007	5.05	0.02
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	7/20/2010	10.5	15.7	46.27	25.2	0.6	7.99	NA	3.93	0.003	0.01	3.99	0.002	0.49	1.09	0.003	4.61	0.016
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	8/10/2010	12	14.9	46.63	24.2	0.75	8.88	NA	4.74	0.004	0.017	5.83	0.002	0.7	1.32	0.004	5.58	0.02
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	8/24/2010	8.7	13.6	48.2	22.8	14.1	3.89	NA	2.78	0.003	0.017	3.25	0.011	0.46	0.62	0.003	2.56	0.012
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	9/14/2010	10.7	15.5	46.6	23	1.2				0.003	0.017	5.63	0.001	0.64	1.4	0.002	5.67	0.02
2792 ICP	ICP	279.21	Delaware River Barryville gage, USGS Barryville Gage 01428500	9/28/2010	12	17.5	49.45	25.6	0.45	11.53	NA	5.59	0.001	0.019	6.61	0.003	1.03	1.63	0.004	6.66	0.023
2825 BCP	BCP	282.5	Masthope Creek	5/20/2009	5.6	6.8	37.97	13.4	2.6	3.72	NA	4.21	0.011	0.016	2.63	0.042	0.38	0.79	0.01	2.69	0.016
2825 BCP	BCP	282.5	Masthope Creek	6/3/2009	6.3	9.6	36.4	16.8	1.05	5.86	NA	5.19	0.005	0.02	4.04	0.014	0.5	1.2	0.003	3.86	0.024
2825 BCP	BCP	282.5	Masthope Creek	7/21/2009	13.3	10.1	34.81	15.6	0.98	6.02	NA	4.83	0.004	0.022	4.16	0.007	0.41	1.21	0.003	3.99	0.027
2825 BCP	BCP	282.5	Masthope Creek	8/5/2009	10.7	11.2	38.95	22	1.55	5.56	NA	4.81	0.004	0.023	4.26	0.009	0.51	1.26	0.006	4	0.027
2825 BCP	BCP	282.5	Masthope Creek	9/16/2009	6.4	8.7	34.17	15.2	0.35	5.5	NA	4.7	0.001	0.022	4.08	0.009	0.59	1.23	0.002	3.75	0.027
2825 BCP	BCP	282.5	Masthope Creek	5/5/2010	4	6.1	29.15	15.8	2.95	4.49	NA	5.55	0.004	0.021	3.14	0.02	0.48	0.97	0.012	2.89	0.019
2825 BCP	BCP	282.5	Masthope Creek	5/19/2010	4	6.7	31.33	14.6	3.15	4.66	NA	5.18	0.005	0.018	3.25	0.013	0.49	0.98	0.01	3.22	0.02
2825 BCP	BCP	282.5	Masthope Creek	6/9/2010	4.7	10.7	33.23	18	1.4	2.58	NA	2.69	0.002	0.013	2.46	0.007	0.36	0.69	0.002	1.86	0.016
2825 BCP	BCP	282.5	Masthope Creek	6/23/2010	5.5	11.8	33.25	18.6	1.6	5.58	NA	4.56	0.002	0.021	4.36	0.002	0.6	1.34	0.004	3.94	0.028
2825 BCP	BCP	282.5	Masthope Creek	7/14/2010	5.5	13.4	42.22	20.2	0.8	5.43	NA	5.02	0.001	0.02	3.76	0.003	0.75	1.44	0.002	4.24	0.026
2825 BCP	BCP	282.5	Masthope Creek	7/21/2010	6.1	14.6	35.13	20.8	0.25	5.52	NA	4.64	0.001	0.018	3.76	0.001	0.66	1.51	0.001	4.29	0.026
2825 BCP	BCP	282.5	Masthope Creek	8/11/2010	6.7	15.1	36.57	25.2	0.55	4.74	NA	4.32	0.001	0.023	4.43	0.003	0.67	1.38	0.005	4.02	0.029
2825 BCP	BCP	282.5	Masthope Creek	8/25/2010	5.4	10.8	43.3	20.2	12.3	4.89	NA	8.35	0.005	0.023	5.57	0.007	0.65	1.63	0.007	4.07	0.04
2825 BCP	BCP	282.5	Masthope Creek	9/15/2010	5.9	15.8	37.53	22.2	2	5.82	NA	5.24	0.002	0.024	5.2	0.003	0.62	1.62	0.001	4.43	0.03
2825 BCP	BCP	282.5	Masthope Creek	9/29/2010	8.1	14.4	39.9	20.6	2.1	7.21	NA	5.56	0.003	0.028	5.81	0.009	0.98	1.79	0.006	5.02	0.04
2842 BCP	BCP	284.2	Ten Mile River	5/19/2009	11.6	5.4	45.73	13.8	4.05	10.28	NA	5.44	0.008	0.034	3.52	0.04	0.65	1.02	0.025	5.99	0.026
2842 BCP	BCP	284.2	Ten Mile River	6/2/2009	15.1	7.9	51.03	17.2	2.2	12.21	NA	5.09	0.012	0.03	4.1	0.016	0.6	1.17	0.008	6.76	0.029
2842 BCP	BCP	284.2	Ten Mile River	7/21/2009	14.4	9.9	49.7	18.2	1.6	12.93	NA	4.87	0.007	0.039	4.97	0.019	0.62	1.36	0.006	7.53	0.039
2842 BCP	BCP	284.2	Ten Mile River	8/4/2009	9.7	6.4	47.4	13.4	4.86	8.97	NA	5.26	0.004	0.036	3.78	0.051	0.73	1.06	0.03	5.47	0.027
2842 BCP	BCP	284.2	Ten Mile River	9/15/2009	13.7	8.6	46.5	17.4	0.6	11.48	NA	5.41	0.004	0.038	4.54	0.012	0.67	1.38	0.005	6.62	0.037
2842 BCP	BCP	284.2	Ten Mile River	5/4/2010	12.3	6.9	44.23	17.4	2.5	12.36	NA	6.17	0.003	0.037	3.88	0.018	0.61	1.21	0.022	6.9	0.03
2842 BCP	BCP	284.2	Ten Mile River	5/18/2010	14.1	7.7	45.81	19.8	1.85	13.55	NA	5.78	0.003	0.039	4.38	0.011	0.65	1.32	0.015	8.03	0.034
2842 BCP	BCP	284.2	Ten Mile River	6/8/2010	14.4	10.7	52.25	21	0.9	14.34	NA	5.8	0.005	0.04	5.2	0.009	0.78	1.59	0.008	8.07	0.043
2842 BCP	BCP	284.2	Ten Mile River	6/22/2010	15.9	10.7	53.18	21	0.85	15.34	NA	5.69	0.003	0.037	5.1	0.004	0.8	1.63	0.006	8.17	0.042
2842 BCP	BCP	284.2	Ten Mile River	7/13/2010	14.7	11.6	50.12	23.8	0.25	15.06	NA	5.73	0.003	0.037	5.26	0.002	0.84	1.74	0.006	8.29	0.043
2842 BCP	BCP	284.2	Ten Mile River	7/20/2010	16.1	12.2	53.5	24.4	0.3	16.5	NA	5.53	0.001	0.038	5.28	0.001	0.84	1.79	0.004	9.08	0.045
2842 BCP	BCP	284.2	Ten Mile River	8/10/2010	17	12.2	53.27	24.6	0.6	16.15	NA	5.56	0.002	0.044	5.91	0.003	0.97	1.92	0.008	9.53	0.05
2842 BCP	BCP	284.2	Ten Mile River	8/24/2010	19.6	10.6	72.6	21.8	9.8	15.52	NA	6.96	0.003	0.049	6.06	0.025	1.7	1.82	0.016	11.7	0.051
2842 BCP	BCP	284.2	Ten Mile River	9/14/2010	20.2	14.3	60.95	24.6	1.2	19.47	NA	6.31	0.002	0.045	6.66	0.004	0.92	2.16	0.003	11	0.05
2842 BCP	BCP	284.2	Ten Mile River	9/28/2010	20.5	14.9	55.9	25.8	0.6	16.52	NA	5.55	0.001	0.044	5.9	0.005	0.98	1.76	0.006	8.53	0.049
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	5/19/2009	7.4	8.5	35.2	16	4.9	6.51	NA	5.36	0.007	0.02	4.68	0.005	0.49	0.9	0.009	3.72	0.018
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	6/2/2009	9.3	11.6	43.1	18.6	1.35	8.04	NA	5.45	0.027	0.018	6.14	0.003	0.59	1.15	0.008	4.82	0.018

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	7/21/2009	11.1	14.6	43.7	22	2.32	10.08	NA	5.33	0.005	0.023	6.26	0.002	0.62	1.29	0.012	5.95	0.024
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	8/4/2009	8.5	11.6	40.13	19	10.55	7.7	NA	5.37	0.003	0.021	5.65	0.003	0.71	1.17	0.011	4.56	0.02
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	9/15/2009	11.7	15.2	46.62	24	0.4	10.64	NA	5.65	0.003	0.021	6.28	0.002	0.79	1.51	0.006	6.5	0.024
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	5/4/2010	9.3	13.2	39.05	24.2	1.96	9.9	NA	5.83	0.001	0.025	6.07	0.001	0.64	1.29	0.012	5.16	0.022
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	5/18/2010	10.4	13.3	41.17	24	3.05	10.45	NA	5.8	0.003	0.024	6.02	0.004	0.71	1.29	0.014	5.96	0.023
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	6/8/2010	11.2	16.1	48.6	24.8	3.2	11.19	NA	5.64	0.004	0.021	5.78	0.004	0.83	1.48	0.015	6.46	0.023
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	6/22/2010	10.3	15.9	44.97	23.6	2.05	11.46	NA	6.08	0.006	0.02	6.14	0.002	0.76	1.36	0.018	5.78	0.023
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	7/13/2010	10.4	14.8	47.8	26.8	4.2				0.003	0.021	5.77	0	0.87	1.44	0.007	6.32	0.022
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	7/20/2010	11.2	15.2	45.58	25.6	1.6	11.19	NA	5.29	0.002	0.013	4.76	NA	0.81	1.47	0.005	6.48	0.019
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	8/10/2010	11.5	15.1	46.4	26.8	1.65	11.08	NA	5.45	0.004	0.022	6.4	0	0.87	1.54	0.007	6.48	0.022
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	8/24/2010	9.6	13.1	45.2	22	22.8	9.06	NA	5.77	0.011	0.024	6.86	0.008	0.97	1.31	0.005	6.04	0.02
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	9/14/2010	11.7	15.7	46.35	23.6	2	10.81	NA	5.53	0.004	0.02	6.12	0.001	0.79	1.62	0.003	6.52	0.02
2899 ICP	ICP	289.9	Delaware River Narrowsburg, NY; Narrowsburg Bridge	9/28/2010	12.1	17.8	45.05	25.4	0.95	14.06	NA	6.89	0.002	0.027	8.15	NA	1.04	2.07	0.002	7.64	0.028
2956 BCP	BCP	295.6	Calkins Creek	5/19/2009	5.8	15.2	42.67	21	2.8	4.65	NA	4.97	0.01	0.024	6.33	0.014	0.79	0.97	0.004	3.15	0.026
2956 BCP	BCP	295.6	Calkins Creek	6/2/2009	5.9	19.7	44.8	24.6	1.1	5.18	NA	5	0.004	0.026	6.76	0.007	0.91	1.18	0.002	3.68	0.029
2956 BCP	BCP	295.6	Calkins Creek	7/20/2009	6.8	26.8	53.5	32.6	1.58	6.37	NA	4.48	0.006	0.027	7.14	0.005	1.04	1.45	0	4.19	0.035
2956 BCP	BCP	295.6	Calkins Creek	8/4/2009	4.4	16	45.92	21.8	4.05	3.69	NA	4.17	0.007	0.026	6.9	0.02	1.07	1.01	0.004	2.6	0.027
2956 BCP	BCP	295.6	Calkins Creek	9/15/2009	6.6	22.7	48.65	28	0.78	2.47	NA	2.33	0.005	0.022	4.93	0.006	0.49	0.67	0.002	1.74	0.021
2956 BCP	BCP	295.6	Calkins Creek	5/4/2010	5	16.5	40.08	25.4	2.35	4.77	NA	5.38	0.002	0.032	7.3	0.013	0.77	1.09	0.01	3.16	0.03
2956 BCP	BCP	295.6	Calkins Creek	5/18/2010	5.3	19.1	42.83	28.2	3.25	5.24	NA	5.13	0.005	0.028	7	0.006	0.87	1.15	0.004	3.57	0.031
2956 BCP	BCP	295.6	Calkins Creek	6/8/2010	5.7	24.6	47.2	30	4.5	5.41	NA	4.82	0.004	0.028	6.48	0.003	1.07	1.35	0.003	3.73	0.031
2956 BCP	BCP	295.6	Calkins Creek	6/22/2010	6	24.7	49.3	31	1.35	6.82	NA	5.26	0.005	0.027	7.2	0	1.15	1.44	0.002	3.96	0.034
2956 BCP	BCP	295.6	Calkins Creek	7/13/2010	6.8	27.6	51.97	37.8	1	6.69	NA	4.69	0.005	0.029	7.56	0.002	1.15	1.51	0.002	4.53	0.039
2956 BCP	BCP	295.6	Calkins Creek	7/20/2010	7	26.2	49.92	34.2	2.7	9	NA	4.58	0.003	0.02	5.76	0.003	1.31	1.53	0.001	4.27	0.032
2956 BCP	BCP	295.6	Calkins Creek	8/10/2010	8.5	27	51.75	33.8	1.25	6.42	NA	4.83	0.003	0.025	5.91	0.003	1.17	1.48	0.003	4.24	0.032
2956 BCP	BCP	295.6	Calkins Creek	8/24/2010	7.1	17.7	56.8	27.8	13.5	6.49	NA	6.71	0.004	0.033	8.75	0.04	2.08	1.13	0.006	3.99	0.034
2956 BCP	BCP	295.6	Calkins Creek	9/14/2010	7.2	26.2	50.1	32	0.9	6.41	NA	5.5	0.003	0.025	7.05	0.005	1.15	1.56	0.001	4.32	0.04
2956 BCP	BCP	295.6	Calkins Creek	9/28/2010	7.2	25.6	47.95	31.6	1.8	6.14	NA	5.06	0.004	0.037	8.89	0.015	1.52	1.51	0.004	3.65	0.043
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	5/18/2009	7.4	8.1	35.6	14.4	15.25	6.26	NA	4.87	0.014	0.017	4.29	0.01	0.59	0.81	0.007	3.68	0.016
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	6/1/2009	8.4	10.8	38.5	18	4	7.91	NA	5.62	0.004	0.016	5.05	0.002	0.59	1.1	0.007	5.05	0.016
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	7/20/2009	11.1	14.6	44.65	22.4	1.52	10.25	NA	5.32	0.003	0.025	6.33	0.003	0.62	1.29	0.005	6.17	0.024
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	8/3/2009	8.2	10.9	37.17	17	16.55	7.47	NA	5.33	0.004	0.02	4.82	0.004	0.78	1.13	0.01	4.6	0.019
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	9/14/2009	11.2	15.3	47.93	23.8	0.35	10.55	NA	5.65	0.003	0.018	5.7	0.001	0.79	1.48	0.005	6.46	0.022
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	5/4/2010	16.2	15.7	59.02	27.4	2.05	10.23	NA	5.85	NA	0.026	6.25	NA	0.72	1.31	0.005	5.65	0.022
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	5/18/2010	10.3	14	40.97	23.8	2.55	10.46	NA	5.68	0.004	0.027	6.65	0.003	0.72	1.29	0.012	5.93	0.025
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	6/8/2010	11	16.1	46.92	24.4	2.9	11.09	NA	5.48	0.005	0.023	6.77	0.002	0.8	1.47	0.018	6.37	0.025
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	6/22/2010	10.6	15.8	44.25	23.8	1.7	11.58	NA	6.06	0.005	0.02	6.26	0.002	0.74	1.41	0.008	5.79	0.023
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	7/13/2010	11	15.1	47.25	25.8	1.95	11.24	NA	5.44	0.003	0.017	4.88	0.001	0.9	1.48	0.004	6.63	0.02
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	7/20/2010	11.9	16.1	49.07	27.4	1.8	11.73	NA	5.33	0.004	0.019	5.44	0.002	0.91	1.53	0.006	6.92	0.022
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	8/10/2010	11.7	15.3	46.83	25.8	1.75	10.64	NA	5.25	0.001	0.02	5.23	0	0.84	1.49	0.004	6.23	0.02
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	8/24/2010	10.2	12.7	47.67	21.8	28.1	8.49	NA	5.04	0.006	0.025	6.32	0.006	0.82	1.22	0.004	5.74	0.02
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	9/14/2010	11	15.5	46.1	24.4	1.55	11.03	NA	5.5	0.003	0.019	5.66	0.002	0.8	1.6	0.002	6.56	0.02
2984 ICP	ICP	298.4	Delaware River Damascus, PA; Damascus-Cochecton Bridge	9/28/2010	11.9	17.7	42.8	25.8	1.25	11.61	NA	5.53	0.001	0.019	6.1	0.128	0.86	1.42	NA	5.71	0.021
3036 ICP	BCP	303.6	Callicoon Creek	5/18/2009	12.6	11.7	53.3	20.2	8.1	11.75	NA	5.42	0.025	0.033	6.2	0.018	1.11	1.13	0.011	6.76	0.032
3036 ICP	BCP	303.6	Callicoon Creek	6/1/2009	17.6	15	59.92	25.6	1.88	14.85	NA	5.9	0.006	0.038	6.87	0.007	1.2	1.33	0.007	8.93	0.034
3036 ICP	BCP	303.6	Callicoon Creek	6/1/2009	17.6	15	59.92	25.6	1.88	7.07	NA	5.03	0.006	0.02	4.45	0.007	0.47	0.8	0.008	3.99	0.02
3036 ICP	BCP	303.6	Callicoon Creek	7/20/2009	16.4	20.5	60.82	28.6	1.67	14.79	NA	5.39	0.006	0.047	8.08	0.01	1.23	1.47	0.004	8.78	0.043
3036 ICP	BCP	303.6	Callicoon Creek	8/3/2009	9.5	12	50.67	18.8	32.5	7.91	NA	4.86	0.006	0.027	5.52	0.017	1.27	1.03	0.018	4.97	0.026
3036 ICP	BCP	303.6	Callicoon Creek	9/14/2009	18.3	22.4	62.84	35	0.7	16.46	NA	6.18	0.005	0.04	7.7	0.004	1.49	1.66	0.004	10	0.043
3036 ICP	BCP	303.6	Callicoon Creek	5/4/2010	10.1	13.3	38.38	23	2.21	17.18	NA	6.48	0	0.044	8.06	0.001	1.23	1.41	0.009	9.02	0.039
3036 ICP	BCP	303.6	Callicoon Creek	5/18/2010	18.8	17.6	59.22	30.4	1.95	18.42	NA	6.44	0.004	0.053	8.73	0.006	1.31	1.54	0.016	10.4	0.045
3036 ICP	BCP	303.6	Callicoon Creek	6/8/2010	20.5	22.9	77.05	36	0.8	19.28	NA	6.29	0.006	0.046	8.66	0.004	1.47	1.78	0.006	11.2	0.048
3036 ICP	BCP	303.6	Callicoon Creek	6/22/2010	18.2	22	68.98	31.6	1.05	20.4	NA	6.9	0.005	0.041	8.29	0.001	1.4	1.72	0.004	9.94	0.044
3036 ICP	BCP	303.6	Callicoon Creek	7/13/2010	24.4	25.6	84.78	43.4	1.45	21.41	NA	6.54	0.002	0.033	6.1	0.001	1.7	1.91	0.003	12.2	0.04
3036 ICP	BCP	303.6	Callicoon Creek	7/20/2010	19.8	24	79	37.4	21.9	20.58	NA	6.5	0.005	0.031	7.01	0.006	2.17	1.8	0.004	11.9	0.044
3036 ICP	BCP	303.6	Callicoon Creek	8/10/2010	22.3	32	84.17	45	1.75	21.85	NA	5.38	0.002	0.038	6.45	0.005	1.69	2.12	0.003	12.5	0.05
3036 ICP	BCP	303.6	Callicoon Creek	8/24/2010	12.2	15.4	61.2	25.4	10.9	11.27	NA	5.33	0.004	0.04	7.09	0.026	1.69	1.36	0.017	6.87	0.037
3036 ICP	BCP	303.6	Callicoon Creek	8/24/2010	10.3	12.7	46.5	22	26.2	9.14	NA	5.36	0.011	0.02	6.51	0.007	0.84	1.27	0.003	6.14	0.02
3036 ICP	BCP	303.6	Callicoon Creek	9/14/2010	22.4	25.8	76.4	37.6	1.15	21.91	NA	6.91	0.002	0.04	7.85	0.004	1.63	2.06	0.002	12.5	0.05

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
3036 ICP	BCP	303.6	Callicoon Creek	9/28/2010	21.4	26.9	72.22	36	0.95	21.1	NA	7.13	0.002	0.059	10.3	0.006	1.98	1.96	0.008	11.49	0.055
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	5/18/2009	5.8	7.3	37.45	14	17.03	5.44	NA	4.9	0.012	0.017	4.16	0.009	0.49	0.79	0.008	3.26	0.015
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	6/1/2009	8.4	10.7	38.1	18.4	2.95	8.02	NA	5.74	0.003	0.018	5.13	0.002	0.55	1.15	0.009	4.82	0.017
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	7/20/2009	12.1	15	44.05	24.2	1.12	11.65	NA	5.42	0.005	0.031	6.89	0.003	0.81	1.35	0.004	7.08	0.03
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	8/3/2009	8.1	10.8	40.37	17.2	14.7	6.86	NA	4.82	0.003	0.018	4.75	0.005	0.61	1.03	0.007	4.09	0.016
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	9/14/2009	13.2	17	46.67	29	0.65	12.07	NA	5.8	0.004	0.024	6.68	0.004	0.97	1.53	0.005	7.3	0.028
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	5/4/2010	12.6	14.2	49.27	25.6	1.95	10.89	NA	5.71	0	0.032	6.67	0.006	0.8	1.22	0.009	5.86	0.027
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	5/18/2010	9.4	14.4	45.82	23.2	2.95	9.96	NA	5.74	0.002	0.021	5.72	0.001	0.64	1.33	0.007	5.44	0.022
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	6/8/2010	11	15.1	47.85	24.8	4.05	10.39	NA	5.34	0.005	0.021	6.65	0.002	0.74	1.41	0.017	6.04	0.023
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	6/22/2010	12.8	16.7	52.27	24.8	1.95	14.15	NA	6.31	0.005	0.027	6.85	0.002	0.92	1.47	0.008	7.03	0.029
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	7/13/2010	10.7	14.7	46.77	25	2.25	11.12	NA	5.49	0.004	0.022	5.83	0.002	0.82	1.52	0.007	6.65	0.022
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	7/20/2010	10.8	14.7	45.83	26	1.1	10.56	NA	5.24	0.002	0.014	5.05	0.001	0.73	1.46	0.004	6.12	0.018
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	8/10/2010	13	17.1	51.92	27.2	1.45	12.71	NA	5.42	0.001	0.019	5.25	0.001	1.02	1.64	0.004	7.37	0.025
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	9/14/2010	15	18.6	54.75	27.4	1.65	14.17	NA	6.42	0.003	0.026	6.6	0.002	1.05	1.78	0.003	8.55	0.03
3037 ICP	ICP	303.7	Delaware River at Callicoon, NY; Callicoon Bridge	9/28/2010	14.8	21	31.7	29	1.25	13.81	NA	5.88	0.002	0.03	7.67	NA	1.08	1.76	0.001	7.65	0.031
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	5/18/2009	5.8	7.8	33.03	14.8	11.94	5.44	NA	5.14	0.013	0.017	4.14	0.007	0.47	0.8	0.01	3.19	0.015
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	6/1/2009	8.6	10.8	38.08	18.8	4.65	7.79	NA	5.34	0.003	0.018	5.04	0.002	0.57	1.11	0.008	4.49	0.016
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	7/20/2009	10.4	14.3	37.58	25.4	1.08	9.27	NA	5.3	0.003	0.023	5.89	0.003	0.6	1.28	0.005	5.69	0.022
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	8/3/2009	7.3	10.5	37.7	16.6	12.8	6.54	NA	4.79	0.005	0.018	4.93	0.004	0.65	1.03	0.008	3.92	0.017
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	9/14/2009	11.3	14.7	46.25	24.4	0.6	10	NA	5.52	0.003	0.019	6.42	0.003	0.67	1.42	0.005	5.83	0.022
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	5/3/2010	9.4	12	38.05	22	2.05	9.61	NA	6.08	0.001	0.022	5.86	0.002	0.61	1.24	0.012	5.04	0.02
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	5/17/2010	8.8	12.2	38.4	24	1.3	9.48	NA	5.72	0.002	0.015	4.74	0.002	0.57	1.19	0.006	5.13	0.019
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	6/7/2010	10	15	47.18	26	3.2	9.8	NA	5.26	0.004	0.021	6.48	0.003	0.75	1.38	0.025	5.63	0.023
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	6/21/2010	9.4	15.2	42.57	22.4	2.05	10.46	NA	5.9	0.005	0.016	6.07	0	0.7	1.34	0.026	5.39	0.021
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	7/12/2010	9.7	14.6	47.57	25.6	3.35	10.75	NA	5.55	0.006	0.016	5.26	0.003	0.85	1.42	0.006	6.25	0.019
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	7/19/2010	10.8	15.4	96.43	26.6	1.8	10.21	NA	4.88	0.003	0.009	4.44	0	0.85	1.55	0.004	6.65	0.017
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	8/9/2010	11.8	14.5	47.6	24.8	1.55	10.74	NA	5.46	0.001	0.018	5.54	0	0.89	1.48	0.003	6.27	0.019
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	8/23/2010	8.6	13.4	44	21.6	21.3	8	NA	5.25	0.005	0.027	5.99	0.006	0.82	1.2	0.003	5	0.022
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	9/13/2010	11.2	15.4	43.35	23.2	1.9	10.1	NA	5.32	0.005	0.017	5.6	0.004	0.75	1.57	0.001	6.24	0.02
3126 ICP	ICP	312.59	Delaware River Kellams Bridge	9/27/2010	12.2	17.5	45.86	25	2.5	11.47	NA	5.58	0.001	0.021	7.11	0.002	0.97	1.64	0.001	6.58	0.023
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	5/18/2009	6.2	8.2	33.2	16.4	8.95	5.48	NA	4.98	0.011	0.018	4.15	0.007	0.41	0.82	0.012	3.2	0.015
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	6/1/2009	8.2	11	38.03	17.8	4.25	8.35	NA	5.72	0.004	0.019	5.23	0.001	0.58	1.2	0.011	4.92	0.017
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	7/20/2009	11	13.6	42.5	20.4	0.87	9.79	NA	5.34	0.002	0.022	5.71	0.004	0.56	1.27	0.006	5.81	0.021
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	8/3/2009	8.6	10.5	39.88	17.8	9.35	7.11	NA	4.95	0.002	0.019	4.87	0.004	0.62	1.08	0.01	4.11	0.016
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	9/14/2009	11.8	14.7	46.65	24.8	0.8	10.38	NA	5.57	0.002	0.017	5.8	0.002	0.76	1.48	0.004	6.24	0.021
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	5/3/2010	9.4	12.6	38.45	23.4	1.35	9.48	NA	5.9	0	0.023	6.02	0.001	0.59	1.32	0.012	5.22	0.021
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	5/17/2010	9.2	13.1	39.78	23	1.15	9.49	NA	5.96	0.001	0.019	5.57	0.002	0.54	1.23	0.009	5.16	0.02
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	6/7/2010	11	14.6	45.8	24	3.55	10.54	NA	5.34	0.004	0.022	6.68	0.001	0.82	1.45	0.021	6.26	0.023
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	6/21/2010	10.1	13.8	42.4	21.4	2.55	10.28	NA	5.73	0.002	0.021	5.71	0.001	0.64	1.24	0.022	5.09	0.019
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	7/12/2010	11.6	14.7	47.93	24.8	2.4	11.09	NA	5.39	0.004	0.017	5.37	0.002	0.76	1.4	0.01	6.24	0.019
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	7/19/2010	11.3	15.4	46.85	26.2	1.15	10.7	NA	5.3	0.002	0.012	5.01	0	0.78	1.45	0.005	6.26	0.018
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	8/9/2010	10.8	15.2	46.78	24.6	1.8	10.58	NA	5.32	0.001	0.019	5.44	NA	0.84	1.52	0.004	6.25	0.019
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	8/23/2010	10.6	14.5	46.9	23.4	5.6	10.22	NA	5.87	0.006	0.03	6.9	0.002	0.81	1.52	0.007	6.61	0.02
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	9/13/2010	11.2	14.8	46.9	23.8	4	9.86	NA	5.21	0.003	0.016	5.49	0.002	0.72	1.54	0.001	6.19	0.02
3216 ICP	ICP	321.6	Delaware River at Lordville, NY; Lordville Bridge	9/27/2010	2	17.3	46.4	25	3.6	14.91	NA	5.9	0.002	0.016	6.8	0.002	1.03	1.8	0.007	8.29	0.022
3225 BCP	BCP	322.5	Equinuck Creek	5/18/2009	5.2	11.2	34.68	17.6	3.05	4.19	NA	4.87	0.01	0.016	5.71	0.009	0.46	0.67	0.005	2.41	0.017
3225 BCP	BCP	322.5	Equinuck Creek	6/1/2009	4	11.8	34.38	16.8	1.32	4.25	NA	4.71	0.005	0.016	5.82	0.005	0.53	0.72	0.005	2.55	0.017
3225 BCP	BCP	322.5	Equinuck Creek	7/20/2009	5	19	40.07	24.2	0.57	4.28	NA	4.06	0.003	0.021	7.5	0.004	0.53	0.91	0.009	2.72	0.025
3225 BCP	BCP	322.5	Equinuck Creek	8/3/2009	5.4	15.1	38.13	20.4	2	4.35	NA	4.05	0.002	0.018	6.51	0.005	0.67	0.79	0.008	2.46	0.02
3225 BCP	BCP	322.5	Equinuck Creek	9/14/2009	6.6	20.3	42.6	27.6	1.2	5.55	NA	4.06	0.003	0.019	7.57	0.002	0.72	0.94	0.01	3.39	0.025
3225 BCP	BCP	322.5	Equinuck Creek	5/3/2010	4.2	14	31.45	22.6	1.45	4.26	NA	4.93	0	0.017	6.29	0.004	0.61	0.76	0.005	2.63	0.018
3225 BCP	BCP	322.5	Equinuck Creek	5/17/2010	4.1	14.9	34.98	22.6	1.1	4.68	NA	4.97	0.002	0.019	6.81	0.004	0.6	0.84	0.008	2.74	0.022
3225 BCP	BCP	322.5	Equinuck Creek	6/7/2010	4.9	18.7	39.4	26	0.85	5.02	NA	4.26	0.004	0.018	7.51	0.003	0.7	0.96	0.008	2.95	0.025
3225 BCP	BCP	322.5	Equinuck Creek	6/21/2010	4.3	16.1	35.02	21.8	0.7	4.67	NA	4.93	0.002	0.016	6.35	0.003	0.64	0.8	0.012	2.49	0.02
3225 BCP	BCP	322.5	Equinuck Creek	7/12/2010	4.8	21	39.85	26.2	0.5	4.97	NA	4.71	0.002	0.016	5.81	0.001	0.85	1	0.008	3.4	0.02
3225 BCP	BCP	322.5	Equinuck Creek	7/19/2010	5.4	21.1	38.8	29.2	0.7	4.99	NA	4.67	0.001	0.005	3.1	0	0.82	1.02	0.002	3.47	0.015
3225 BCP	BCP	322.5	Equinuck Creek	8/9/2010	6	22.2	42.37	31.4	1	5.69	NA	5.05	0.001	0.015	5.65	0.001	0.88	1.09	0.006	3.72	0.021
3225 BCP	BCP	322.5	Equinuck Creek	8/23/2010	5.9	17.5	44.35	27	4.15	5.03	NA	5.77	0.009	0.025	8.72	0.011	0.87	1.03	0.013	2.87	0.029
3225 BCP	BCP	322.5	Equinuck Creek	9/13/2010	6.2	22.2	41	27.6	1.35	4.42	NA	4.91	0.002	0.01	4.57	0	0.54	1.01	0.003	3.15	0.02

All units mg/L

Station	ICP BCP	RM	LocName	Date	Cl Original	Alk Original	TDS Original	Hardness Original	TSS Original	Cl Archive	Br Archive	Sulfate Archive	Al Archive	Ba Archive	Ca Archive	Fe Archive	K Archive	Mg Archive	Mn Archive	Na Archive	Sr Archive
3225 BCP	BCP	322.5	Equinuck Creek	9/27/2010	5.6	22	39.42	27	0.3	5.54	NA	5.61	0.001	0.022	8.49	0.004	0.88	1.11	0.015	3.53	0.028
3307 BCP	BCP	330.7	East Branch Delaware River	5/18/2009	5.7	6.1	30.25	14.8	7.65	4.73	NA	4.81	0.011	0.018	4	0.004	0.32	0.74	0.008	2.83	0.015
3307 BCP	BCP	330.7	East Branch Delaware River	6/1/2009	6.2	12.4	33.33	24.4	3.95	6.26	NA	5.28	0.004	0.019	4.86	0.004	0.49	0.99	0.01	3.77	0.016
3307 BCP	BCP	330.7	East Branch Delaware River	7/20/2009	8.7	12.6	37.9	19.4	0.8	7.93	NA	5.05	0.005	0.023	5.63	0.006	0.48	1.08	0.006	4.78	0.021
3307 BCP	BCP	330.7	East Branch Delaware River	8/3/2009	4.8	7.2	29.25	12.6	7.4	3.85	0.41	4.48	0.003	0.018	3.79	0.008	0.41	0.69	0.008	2.37	0.014
3307 BCP	BCP	330.7	East Branch Delaware River	9/14/2009	9.8	13	39.8	23.4	NA	8.5	NA	5.31	0.002	0.019	5.49	0.003	0.57	1.25	0.006	5.17	0.021
3307 BCP	BCP	330.7	East Branch Delaware River	5/3/2010	7.5	11	35.85	20.8	0.9	8.22	NA	5.66	0.001	0.028	5.93	0.002	0.46	1.11	0.014	4.36	0.022
3307 BCP	BCP	330.7	East Branch Delaware River	5/17/2010	8.3	11.3	35.15	23.4	0.8	7.97	NA	5.18	0.005	0.021	5.28	0.008	0.41	1.02	0.009	4.24	0.02
3307 BCP	BCP	330.7	East Branch Delaware River	6/7/2010	9.6	13.6	42.58	22.2	2.8	9.63	NA	5.19	0.004	0.023	6.4	0.001	0.63	1.23	0.015	5.61	0.024
3307 BCP	BCP	330.7	East Branch Delaware River	6/21/2010	8.7	13.5	38.52	20.8	1.8	9.3	NA	5.7	0.001	0.018	5.41	0.001	0.57	1.13	0.018	4.63	0.02
3307 BCP	BCP	330.7	East Branch Delaware River	7/12/2010	8.7	14.3	42.18	24	3.15	10.35	NA	5.79	0.005	0.014	5.31	NA	0.63	1.35	0.005	5.62	0.021
3307 BCP	BCP	330.7	East Branch Delaware River	7/19/2010	10	15	44.1	26	1.3	10.12	NA	5	0.003	0.014	4.51	0	0.63	1.26	0.006	5.76	0.019
3307 BCP	BCP	330.7	East Branch Delaware River	8/9/2010	11.1	15.3	45	24.8	1.5	11.03	NA	5.37	0.002	0.015	5.26	0.003	0.66	1.37	0.007	6.26	0.022
3307 BCP	BCP	330.7	East Branch Delaware River	8/23/2010	10	13.1	44.8	20.4	20	9.42	NA	4.84	0.002	0.035	5.88	0.002	0.63	1.14	0.006	5.97	0.023
3307 BCP	BCP	330.7	East Branch Delaware River	9/13/2010	11.6	15.6	42.8	26.6	1.3	10.74	NA	5.4	0.004	0.021	5.9	0	0.55	1.39	0.005	6.16	0.025
3307 BCP	BCP	330.7	East Branch Delaware River	9/27/2010	12.9	16.8	44.74	25	0.85	12.02	NA	5.59	0	0.024	7.35	0.001	0.75	1.45	0.01	6.36	0.027
3312 ICP	ICP	331.2	West Branch Delaware River	5/18/2009	10.4	10.1	42.6	17.4	4.38	9.49	NA	6.3	0.007	0.019	5.09	0.005	0.62	1.31	0.01	5.71	0.018
3312 ICP	ICP	331.2	West Branch Delaware River	6/1/2009	12.4	12.9	49.48	21.8	6.08	11.78	NA	6.25	0.002	0.019	5.7	0.002	0.75	1.55	0.014	6.89	0.018
3312 ICP	ICP	331.2	West Branch Delaware River	7/20/2009	14.5	16.6	54.23	24.6	1.38	13.63	NA	6.16	0.002	0.016	5.41	0.002	0.77	1.78	0.005	8.06	0.019
3312 ICP	ICP	331.2	West Branch Delaware River at Hancock	8/3/2009	12.4	15	50.1	22.6	4.65	19.62	NA	10.47	0.003	0.027	8	0.003	1.5	2.82	0.007	11.5	0.029
3312 ICP	ICP	331.2	West Branch Delaware River	9/14/2009	15.1	16.2	54.3	32.2	2.55	9.45	NA	4.92	0.003	0.017	6.25	0.007	0.73	1.43	0.002	5.81	0.019
3312 ICP	ICP	331.2	West Branch Delaware River at Hancock	5/3/2010	11.7	14.7	48.05	25	1.6	11.86	NA	6.13	NA	0.022	6.33	NA	0.82	1.64	0.019	6.71	0.019
3312 ICP	ICP	331.2	West Branch Delaware River	5/17/2010	11.8	15.6	47.8	27.8	1.35	12.12	NA	6.04	0.002	0.022	6.51	0.004	0.71	1.65	0.018	6.82	0.022
3312 ICP	ICP	331.2	West Branch Delaware River	6/7/2010	12.5	16.9	54.4	26.4	2.55	12.31	NA	5.65	0.004	0.02	6.1	0.003	0.92	1.74	0.009	7.34	0.021
3312 ICP	ICP	331.2	West Branch Delaware River at Hancock	6/21/2010	11.9	16.1	51.83	26.2	4.4	13.24	NA	6.16	0.001	0.019	6.01	0.002	0.95	1.76	0.016	7	0.02
3312 ICP	ICP	331.2	West Branch Delaware River at Hancock	7/12/2010	12.2	16.3	52.12	29.8	2.45	13.92	NA	6.12	0.001	0.013	4.89	0	0.99	1.93	0.007	7.77	0.018
3312 ICP	ICP	331.2	West Branch Delaware River at Hancock	7/19/2010	11.1	15.3	50.78	29	2.25	11.23	NA	5.41	0.002	0.018	5.41	0.001	0.92	1.68	0.009	6.64	0.018
3312 ICP	ICP	331.2	West Branch Delaware River	8/9/2010	11.1	14.2	47.47	25.6	1.8	10.4	NA	5.36	0.001	0.019	5.26	0.002	0.9	1.52	0.007	6.1	0.017
3312 ICP	ICP	331.2	West Branch Delaware River	8/23/2010	12.7	14.6	52.6	22.6	10.2	11.55	NA	5.38	0.005	0.023	6.87	0.003	0.88	1.58	0.016	7.63	0.02
3312 ICP	ICP	331.2	West Branch Delaware River	9/13/2010	11.4	15	46.2	24	7.8	8.71	NA	4.64	0.005	0.011	5.84	0.004	0.66	1.38	0.001	5.37	0.02
3312 ICP	ICP	331.2	West Branch Delaware River at Hancock	9/27/2010	12.9	18.5	47.4	26.4	8.1	12.3	NA	5.71	0.001	0.016	7.39	0.001	1.08	1.79	0.049	7.04	0.023

Appendix B: Baseline Results for Macroinvertebrate Sites

Baseline Results for Benthic Macroinvertebrate Sites

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New York State tributaries

Stream & Site Name:	**Laurel Creek**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**PANY1-S02**	
Coordinates for Sampling Location:	**42.03316** latitude	**-75.34238** longitude
Sampling Date:	**16-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Stenonema modestum	10	0.10
Baetis tricaudatus	9	0.09
Baetis flavistriga	7	0.07
Dolophilodes sp.	7	0.07
Ephemerella sp.	6	0.06
Acroneuria sp.	5	0.05
Cheumatopsyche sp.	5	0.05
Hydropsyche slossonae	5	0.05
Isonychia sp.	5	0.05
Leuctra sp.	5	0.05
Optioservus ovalis	5	0.05
Polypedilum aviceps	5	0.05
Psephenus herricki	5	0.05
Hydropsyche sparna	3	0.03
Lepidostoma sp.	3	0.03
Micropsectra sp.	2	0.02
Stenelmis sp.	2	0.02
Diphetor hageni	1	0.01
Epeorus sp.	1	0.01
Hexatoma sp.	1	0.01
Microtendipes pedellus gr.	1	0.01
Microtendipes rydalensis gr.	1	0.01
Pagastia orthogonia	1	0.01
Polycentropus sp.	1	0.01
Sialis sp.	1	0.01
Tallaperla sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Blue Mill Stream**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**PANY2-S03**	
Coordinates for Sampling Location:	**41.88380** latitude	**-75.25680** longitude
Sampling Date:	**19-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Baetis tricaudatus	34	0.34
Cheumatopsyche sp.	9	0.09
Hydropsyche ventura	9	0.09
Ephemerella sp.	7	0.07
Optioservus ovalis	6	0.06
Diplectrona sp.	5	0.05
Acroneuria carolinensis	3	0.03
Dolophilodes sp.	3	0.03
Glossosoma sp.	3	0.03
Leucrocuta sp.	3	0.03
Tallaperla sp.	3	0.03
Ectopria sp.	2	0.02
Nigronia serricornis	2	0.02
Stenonema sp.	2	0.02
Dicranota sp.	1	0.01
Epeorus sp.	1	0.01
Hexatoma sp.	1	0.01
Lepidostoma sp.	1	0.01
Paraleptophlebia sp.	1	0.01
Parametriocnemus sp.	1	0.01
Psychomyia flavida	1	0.01
Pteronarcys proteus	1	0.01
Rheocricotopus sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Houlihan Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**PANY3-S02**	
Coordinates for Sampling Location:	**41.88758** latitude	**-75.11704** longitude
Sampling Date:	**27-Jul-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Cheumatopsyche sp.	17	0.17
Leucrocuta sp.	13	0.13
Hydropsyche sparna	11	0.11
Hydropsyche sp.	10	0.1
Dolophilodes sp.	6	0.06
Polypedilum aviceps	5	0.05
Acroneuria carolinensis	3	0.03
Diamesa sp.	3	0.03
Hexatoma sp.	3	0.03
Paraleptophlebia sp.	3	0.03
Dicranota sp.	2	0.02
Heptagenia sp.	2	0.02
Micropsectra sp.	2	0.02
Stenonema sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Undetermined Chloroperlidae	2	0.02
Agnetina capitata	1	0.01
Baetis flavistriga	1	0.01
Baetis tricaudatus	1	0.01
Boyeria vinosa	1	0.01
Eurylophella funeralis	1	0.01
Lepidostoma sp.	1	0.01
Micropsectra/Tanytarsus Complex	1	0.01
Neophylax sp.	1	0.01
Oulimnius latiusculus	1	0.01
Polycentropus sp.	1	0.01
Pteronarcys proteus	1	0.01
Stenacron sp.	1	0.01
Tallaperla sp.	1	0.01
Tanytarsus sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Humphries Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**PANY3-M01**	
Coordinates for Sampling Location:	**41.87790** latitude	**-75.22637** longitude
Sampling Date:	**27-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sparna	17	0.17
Cheumatopsyche sp.	12	0.12
Hydropsyche ventura	9	0.09
Optioservus ovalis	9	0.09
Micropsectra sp.	5	0.05
Acroneuria sp.	4	0.04
Baetis tricaudatus	4	0.04
Diamesa sp.	4	0.04
Dicranota sp.	4	0.04
Baetis flavistriga	3	0.03
Lepidostoma sp.	3	0.03
Microtendipes rydalensis gr.	3	0.03
Oulimnius latiusculus	3	0.03
Diplectrona sp.	2	0.02
Eurylophella funeralis	2	0.02
Agnetina capitata	1	0.01
Antocha sp.	1	0.01
Diphetor hageni	1	0.01
Dolophilodes sp.	1	0.01
Glossosoma sp.	1	0.01
Leuctra sp.	1	0.01
Pagastia orthogonia	1	0.01
Parachaetocladius sp.	1	0.01
Paragnetina immarginata	1	0.01
Paraleptophlebia sp.	1	0.01
Polycentropus sp.	1	0.01
Pteronarcys proteus	1	0.01
Rheotanytarsus pellucidus	1	0.01
Stenonema sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Bouchoux Br**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**PANY3-M02**	
Coordinates for Sampling Location:	**41.87605** latitude	**-75.18064** longitude
Sampling Date:	**27-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	29	0.29
Hydropsyche sparna	19	0.19
Polypedilum aviceps	9	0.09
Dolophilodes sp.	7	0.07
Heptagenia sp.	6	0.06
Baetis tricaudatus	5	0.05
Agnetina capitata	4	0.04
Cheumatopsyche sp.	4	0.04
Hexatoma sp.	3	0.03
Lepidostoma sp.	3	0.03
Glossosoma sp.	2	0.02
Rheocricotopus sp.	2	0.02
Acroneuria sp.	1	0.01
Atherix sp.	1	0.01
Malirekus iroquois	1	0.01
Paraleptophlebia sp.	1	0.01
Stenonema sp.	1	0.01
Sweltsa sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Cold Spring Br**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY1-S01**	
Coordinates for Sampling Location:	**42.16043** latitude	**-75.39205** longitude
Sampling Date:	**11-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Cheumatopsyche sp.	18	0.18
Hydropsyche sp.	14	0.14
Polypedilum aviceps	9	0.09
Malirekus iroquois	7	0.07
Laevapex fuscus	6	0.06
Hexatoma sp.	5	0.05
Micropsectra sp.	5	0.05
Stenonema sp.	5	0.05
Lanthus sp.	4	0.04
Oulimnius latiusculus	4	0.04
Rhyacophila minora	4	0.04
Acroneuria sp.	3	0.03
Dolophilodes sp.	2	0.02
Optioservus ovalis	2	0.02
Sweltsa sp.	2	0.02
Baetis flavistriga	1	0.01
Baetis tricaudatus	1	0.01
Dicranota sp.	1	0.01
Goera sp.	1	0.01
Leucrocuta sp.	1	0.01
Microtendipes rydalensis gr.	1	0.01
Rhyacophila acutiloba	1	0.01
Rhyacophila nigrita	1	0.01
Tallaperla sp.	1	0.01
Tipula sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Steam Mill Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY1-S02**	
Coordinates for Sampling Location:	**42.16118** latitude	**-75.35042** longitude
Sampling Date:	**11-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Cheumatopsyche sp.	9	0.09
Hydropsyche slossonae	9	0.09
Optioservus ovalis	9	0.09
Micropsectra sp.	8	0.08
Agnetina capitata	6	0.06
Microtendipes rydalensis gr.	6	0.06
Polypedilum aviceps	5	0.05
Stenonema modestum	5	0.05
Acroneuria carolinensis	4	0.04
Baetis flavistriga	4	0.04
Baetis intercalaris	3	0.03
Diphetor hageni	3	0.03
Dolophilodes sp.	3	0.03
Hexatoma sp.	3	0.03
Polypedilum sp.	3	0.03
Caenis sp.	2	0.02
Ectopria sp.	2	0.02
Hydropsyche ventura	2	0.02
Isonychia sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Boyeria vinosa	1	0.01
Cordulegaster sp.	1	0.01
Ephemerella sp.	1	0.01
Leuctra sp.	1	0.01
Nigronia serricornis	1	0.01
Optioservus trivittatus	1	0.01
Pagastia orthogonia	1	0.01
Parachaetocladius sp.	1	0.01
Rhyacophila acutiloba	1	0.01
Tallaperla sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**E Br Cold Spring Creek**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY1-M01**	
Coordinates for Sampling Location:	**42.16246** latitude	**-75.35866** longitude
Sampling Date:	**11-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Cheumatopsyche sp.	18	0.18
Isonychia sp.	15	0.15
Stenonema sp.	12	0.12
Hydropsyche sparna	11	0.11
Leuctra sp.	9	0.09
Dolophilodes sp.	8	0.08
Boyeria vinosa	3	0.03
Acroneuria abnormis	2	0.02
Baetis tricaudatus	2	0.02
Dicranota sp.	2	0.02
Microtendipes rydalensis gr.	2	0.02
Optioservus trivittatus	2	0.02
Rhyacophila sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Antocha sp.	1	0.01
Baetis flavistriga	1	0.01
Baetis intercalaris	1	0.01
Caenis sp.	1	0.01
Optioservus ovalis	1	0.01
Pisidium sp.	1	0.01
Polycentropus sp.	1	0.01
Polypedilum flavum	1	0.01
Promoresia tardella	1	0.01
Psephenus herricki	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Cold Spring Creek**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY1-M02**	
Coordinates for Sampling Location:	**42.12118** latitude	**-75.39702** longitude
Sampling Date:	**11-Aug-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Polypedilum aviceps	22	0.22
Stenonema sp.	9	0.09
Agnetina capitata	8	0.08
Isonychia sp.	7	0.07
Micropsectra sp.	7	0.07
Thienemannimyia gr. spp.	7	0.07
Leuctra sp.	6	0.06
Acentrella turbida	5	0.05
Cheumatopsyche sp.	4	0.04
Dolophilodes sp.	4	0.04
Baetis intercalaris	2	0.02
Lepidostoma sp.	2	0.02
Optioservus trivittatus	2	0.02
Plauditus sp.	2	0.02
Acroneuria sp.	1	0.01
Baetis flavistriga	1	0.01
Cricotopus bicinctus	1	0.01
Cricotopus/Orthocladius Complex	1	0.01
Diphetor hageni	1	0.01
Glossosoma sp.	1	0.01
Microtendipes pedellus gr.	1	0.01
Optioservus ovalis	1	0.01
Oulimnius latiusculus	1	0.01
Paraleptophlebia sp.	1	0.01
Rhyacophila sp.	1	0.01
Undetermined Gomphidae	1	0.01
Undetermined Turbellaria	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Upper Unnamed Tributary - Oquaga Cr**
State & County of Site:	**NY - Broome County**
Sampling Site Number:	**NY2-S01**
Coordinates for Sampling Location:	**42.18630** latitude **-75.45285** longitude
Sampling Date:	**14-Jul-2011**

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Polypedilum aviceps	21	0.21
Cheumatopsyche sp.	13	0.13
Tanytarsus sp.	9	0.09
Dolophilodes sp.	8	0.08
Hydropsyche sp.	6	0.06
Leuctra sp.	5	0.05
Acroneuria carolinensis	4	0.04
Baetis flavistriga	4	0.04
Agnetina capitata	3	0.03
Leucrocuta sp.	2	0.02
Microtendipes rydalensis gr.	2	0.02
Oulimnius latiusculus	2	0.02
Rheotanytarsus pellucidus	2	0.02
Stenonema sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Antocha sp.	1	0.01
Baetis tricaudatus	1	0.01
Corynoneura sp.	1	0.01
Dicranota sp.	1	0.01
Drunella sp.	1	0.01
Ectopria sp.	1	0.01
Nigronia serricornis	1	0.01
Optioservus sp.	1	0.01
Paraleptophlebia sp.	1	0.01
Polycentropus sp.	1	0.01
Pteronarcys sp.	1	0.01
Sweltsa sp.	1	0.01
Undetermined Aeshnidae	1	0.01
Undetermined Gomphidae	1	0.01
Undetermined Heptageniidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Oquaga Creek - below lake**
State & County of Site:	**NY - Broome County**
Sampling Site Number:	**NY2-M01**
Coordinates for Sampling Location:	**42.17271** latitude **-75.44557** longitude
Sampling Date:	**10-Aug-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Pisidium sp.	21	0.21
Cheumatopsyche sp.	13	0.13
Dolophilodes sp.	13	0.13
Agnetina capitata	6	0.06
Hexatoma sp.	5	0.05
Dicranota sp.	4	0.04
Lepidostoma sp.	4	0.04
Micropsectra sp.	4	0.04
Polypedilum aviceps	4	0.04
Hydropsyche sp.	3	0.03
Hydropsyche sparna	3	0.03
Acroneuria carolinensis	2	0.02
Isonychia sp.	2	0.02
Leuctra sp.	2	0.02
Optioservus ovalis	2	0.02
Polycentropus sp.	2	0.02
Rhyacophila minora	2	0.02
Baetis tricaudatus	1	0.01
Diplectrona sp.	1	0.01
Ectopria sp.	1	0.01
Epeorus sp.	1	0.01
Microtendipes rydalensis gr.	1	0.01
Rhyacophila carolina?	1	0.01
Rhyacophila fuscula	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Unnamed tributary - Oquaga Cr (lower)**
State & County of Site:	**NY - Broome County**
Sampling Site Number:	**NY2-M02**
Coordinates for Sampling Location:	**42.10363** latitude **-75.48169** longitude
Sampling Date:	**14-Jul-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Isonychia sp.	9	0.09
Baetis flavistriga	7	0.07
Cheumatopsyche sp.	7	0.07
Polypedilum aviceps	7	0.07
Acroneuria sp.	6	0.06
Hexatoma sp.	6	0.06
Leucrocuta sp.	6	0.06
Rheotanytarsus exiguus gr.	5	0.05
Hydropsyche sparna	4	0.04
Thienemannimyia gr. spp.	4	0.04
Dicranota sp.	3	0.03
Hydropsyche morosa	3	0.03
Psephenus herricki	3	0.03
Acentrella turbida	2	0.02
Atherix sp.	2	0.02
Baetis tricaudatus	2	0.02
Dolophilodes sp.	2	0.02
Heptagenia sp.	2	0.02
Hydropsyche slossonae	2	0.02
Leuctra sp.	2	0.02
Microtendipes pedellus gr.	2	0.02
Optioservus trivittatus	2	0.02
Paraleptophlebia sp.	2	0.02
Stylogomphus albystilus	2	0.02
Cricotopus/Orthocladius Complex	1	0.01
Drunella cornutella	1	0.01
Epeorus sp.	1	0.01
Oulimnius latiusculus	1	0.01
Parachaetocladius sp.	1	0.01
Perlesta sp.	1	0.01
Polypedilum sp.	1	0.01
Stenonema sp.	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Oquaga Creek - above Dry Br**	
State & County of Site:	**NY - Broome County**	
Sampling Site Number:	**NY2-L01**	
Coordinates for Sampling Location:	**42.13052** latitude	**-75.46388** longitude
Sampling Date:	**14-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Polypedilum aviceps	12	0.12
Hydropsyche slossonae	7	0.07
Acentrella turbida	6	0.06
Cheumatopsyche sp.	6	0.06
Drunella sp.	6	0.06
Hydropsyche sparna	6	0.06
Stenelmis sp.	6	0.06
Paraleptophlebia sp.	5	0.05
Epeorus sp.	4	0.04
Isonychia sp.	4	0.04
Acroneuria abnormis	3	0.03
Agnetina capitata	3	0.03
Atherix sp.	3	0.03
Hexatoma sp.	3	0.03
Leucrocuta sp.	3	0.03
Leuctra sp.	3	0.03
Optioservus trivittatus	3	0.03
Paragnetina immarginata	3	0.03
Glossosoma sp.	2	0.02
Rhyacophila acutiloba	2	0.02
Dolophilodes sp.	1	0.01
Eukiefferiella brevicalcar gr.	1	0.01
Micropsectra sp.	1	0.01
Optioservus ovalis	1	0.01
Paragnetina media	1	0.01
Polycentropus sp.	1	0.01
Promoresia tardella	1	0.01
Rheotanytarsus pellucidus	1	0.01
Thienemannimyia gr. spp.	1	0.01
Undetermined Gomphidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Marsh Cr headwaters**	
State & County of Site:	**NY - Broome County**	
Sampling Site Number:	**NY3-S01**	
Coordinates for Sampling Location:	**42.10808** latitude	**-75.52203** longitude
Sampling Date:	**7-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Dolophilodes sp.	22	0.22
Leuctra sp.	18	0.18
Hydropsyche sp.	9	0.09
Paraleptophlebia sp.	9	0.09
Acroneuria carolinensis	6	0.06
Micropsectra sp.	6	0.06
Cheumatopsyche sp.	5	0.05
Drunella sp.	4	0.04
Diplectrona sp.	3	0.03
Polypedilum aviceps	3	0.03
Dicranota sp.	2	0.02
Rhyacophila nigrita	2	0.02
Diamesa sp.	1	0.01
Epeorus sp.	1	0.01
Heptagenia sp.	1	0.01
Hexatoma sp.	1	0.01
Lepidostoma sp.	1	0.01
Parametriocnemus sp.	1	0.01
Psilotreta sp.	1	0.01
Stenacron carolina	1	0.01
Thienemannimyia gr. spp.	1	0.01
Undetermined Chloroperlidae	1	0.01
Undetermined Gomphidae	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Unnamed tributary - Fly Creek**
State & County of Site:	**NY - Broome County**
Sampling Site Number:	**NY3-S02**
Coordinates for Sampling Location:	**42.04507** latitude **-75.50826** longitude
Sampling Date:	**7-Jul-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Dolophilodes sp.	12	0.12
Baetis flavistriga	9	0.09
Hydropsyche sp.	9	0.09
Polypedilum aviceps	9	0.09
Baetis tricaudatus	8	0.08
Cheumatopsyche sp.	8	0.08
Paraleptophlebia sp.	7	0.07
Acentrella turbida	5	0.05
Stenonema sp.	4	0.04
Acroneuria carolinensis	3	0.03
Hydropsyche sparna	3	0.03
Dicranota sp.	2	0.02
Epeorus vitreus	2	0.02
Hexatoma sp.	2	0.02
Lepidostoma sp.	2	0.02
Optioservus sp.	2	0.02
Rhyacophila carolina?	2	0.02
Tvetenia bavarica gr.	2	0.02
Amphinemura sp.	1	0.01
Cricotopus sp.	1	0.01
Diplectrona sp.	1	0.01
Drunella sp.	1	0.01
Heptagenia sp.	1	0.01
Leucrocuta sp.	1	0.01
Rheotanytarsus pellucidus	1	0.01
Sublettea sp.	1	0.01
Sweltsa sp.	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Fly Creek**	
State & County of Site:	**NY - Broome County**	
Sampling Site Number:	**NY3-M01**	
Coordinates for Sampling Location:	**42.03750** latitude	**-75.54345** longitude
Sampling Date:	**7-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Cheumatopsyche sp.	40	0.40
Hydropsyche betteni	17	0.17
Baetis intercalaris	14	0.14
Baetis tricaudatus	4	0.04
Chimarra aterrima?	4	0.04
Antocha sp.	3	0.03
Stenonema sp.	3	0.03
Crangonyx sp.	2	0.02
Hydropsyche morosa	2	0.02
Nigronia serricornis	2	0.02
Cricotopus/Orthocladius Complex	1	0.01
Hydropsyche sparna	1	0.01
Macronychus glabratus	1	0.01
Optioservus trivittatus	1	0.01
Paragnetina sp.	1	0.01
Parametriocnemus sp.	1	0.01
Polypedilum flavum	1	0.01
Rheotanytarsus exiguus gr.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Whitaker Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY4-S01**	
Coordinates for Sampling Location:	**42.03357** latitude	**-75.40877** longitude
Sampling Date:	**10-Aug-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Baetis tricaudatus	17	0.17
Diplectrona sp.	12	0.12
Stenonema modestum	10	0.10
Hydropsyche sparna	9	0.09
Pteronarcys proteus	8	0.08
Hydropsyche ventura	6	0.06
Acroneuria carolinensis	5	0.05
Tallaperla sp.	5	0.05
Cheumatopsyche sp.	3	0.03
Dolophilodes sp.	3	0.03
Diphetor hageni	2	0.02
Glossosoma sp.	2	0.02
Malirekus iroquois	2	0.02
Optioservus ovalis	2	0.02
Baetis flavistriga	1	0.01
Ephemerella sp.	1	0.01
Leuctra sp.	1	0.01
Micropsectra sp.	1	0.01
Oulimnius latiusculus	1	0.01
Polycentropus sp.	1	0.01
Psephenus herricki	1	0.01
Rhyacophila fuscula	1	0.01
Rhyacophila torva	1	0.01
Simulium sp.	1	0.01
Stempellinella sp.	1	0.01
Sweltsa sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Undetermined Chironomidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Unnamed Tributary W Br Whitaker Swamp**
State & County of Site:	**NY - Broome County**
Sampling Site Number:	**NY4-S02**
Coordinates for Sampling Location:	**42.02168** latitude **-75.41126** longitude
Sampling Date:	**10-Aug-2011**

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche ventura	27	0.27
Acroneuria carolinensis	11	0.11
Tallaperla sp.	10	0.1
Dolophilodes sp.	9	0.09
Diplectrona sp.	5	0.05
Pteronarcys proteus	5	0.05
Cheumatopsyche sp.	4	0.04
Optioservus ovalis	4	0.04
Baetis tricaudatus	3	0.03
Stenonema sp.	3	0.03
Ectopria sp.	2	0.02
Micropsectra sp.	2	0.02
Paraleptophlebia sp.	2	0.02
Sweltsa sp.	2	0.02
Diamesa sp.	1	0.01
Dicranota sp.	1	0.01
Epeorus sp.	1	0.01
Hydropsyche sparna	1	0.01
Microtendipes rydalensis gr.	1	0.01
Polypedilum tritum	1	0.01
Rheotanytarsus pellucidus	1	0.01
Rhyacophila sp.	1	0.01
Stenacron carolina	1	0.01
Undetermined Perlodidae	1	0.01
Undetermined Tipulidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Butler Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY4-S03**	
Coordinates for Sampling Location:	**42.06909** latitude	**-75.41740** longitude
Sampling Date:	**10-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Bezzia/Palpomyia sp.	15	0.15
Stenelmis sp.	12	0.12
Optioservus sp.	8	0.08
Psephenus herricki	7	0.07
Hexatoma sp.	6	0.06
Polypedilum aviceps	6	0.06
Dicranota sp.	5	0.05
Tanytarsus sp.	5	0.05
Acerpenna macdunnoughi	3	0.03
Stenonema sp.	3	0.03
Undetermined Lymnaeidae	3	0.03
Undetermined Tanypodinae	3	0.03
Cheumatopsyche sp.	2	0.02
Dolophilodes sp.	2	0.02
Ephemerella sp.	2	0.02
Gyraulus sp.	2	0.02
Acentrella turbida	1	0.01
Cordulegaster sp.	1	0.01
Heterotrissocladius sp.	1	0.01
Hydropsyche sparna	1	0.01
Hydroptila sp.	1	0.01
Nigronia serricornis	1	0.01
Parachaetocladius sp.	1	0.01
Paraleptophlebia sp.	1	0.01
Physa sp.	1	0.01
Rheotanytarsus exiguus gr.	1	0.01
Rhyacophila minora	1	0.01
Simulium sp.	1	0.01
Stempellinella sp.	1	0.01
Stenacron interpunctatum	1	0.01
Undetermined Enchytraeidae	1	0.01
Undetermined Lumbricina	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Dry Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY5-S01**	
Coordinates for Sampling Location:	**42.01336** latitude	**-75.30573** longitude
Sampling Date:	**26-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sparna	26	0.26
Polypedilum aviceps	17	0.17
Cheumatopsyche sp.	14	0.14
Dolophilodes sp.	7	0.07
Acroneuria carolinensis	4	0.04
Leucrocuta sp.	4	0.04
Leuctra sp.	3	0.03
Rhyacophila carolina?	3	0.03
Stenonema sp.	3	0.03
Diplectrona sp.	2	0.02
Hexatoma sp.	2	0.02
Lepidostoma sp.	2	0.02
Microtendipes rydalensis gr.	2	0.02
Polypedilum sp.	2	0.02
Tallaperla sp.	2	0.02
Dicranota sp.	1	0.01
Eurylophella funeralis	1	0.01
Hydropsyche ventura	1	0.01
Neophylax sp.	1	0.01
Parachaetocladius sp.	1	0.01
Paraleptophlebia sp.	1	0.01
Tanytarsus sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Unnamed Tributary - Russell Lake branch**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY5-S02**	
Coordinates for Sampling Location:	**42.04712** latitude	**-75.30034** longitude
Sampling Date:	**26-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sparna	10	0.1
Micropsectra sp.	10	0.1
Hydropsyche ventura	8	0.08
Hydropsyche alhedra	6	0.06
Polypedilum aviceps	6	0.06
Baetis flavistriga	5	0.05
Cheumatopsyche sp.	5	0.05
Dolophilodes sp.	5	0.05
Optioservus ovalis	5	0.05
Diplectrona sp.	3	0.03
Oulimnius latiusculus	3	0.03
Psephenus herricki	3	0.03
Agnetina capitata	2	0.02
Glossosoma sp.	2	0.02
Goera sp.	2	0.02
Microtendipes rydalensis gr.	2	0.02
Rheotanytarsus pellucidus	2	0.02
Rhyacophila fuscula	2	0.02
Sweltsa sp.	2	0.02
Tanytarsus sp.	2	0.02
Tvetenia bavarica gr.	2	0.02
Bezzia/Palpomyia sp.	1	0.01
Dicranota sp.	1	0.01
Hexatoma sp.	1	0.01
Hydropsyche morosa	1	0.01
Optioservus trivittatus	1	0.01
Parachaetocladius sp.	1	0.01
Pisidium sp.	1	0.01
Rhyacophila acutiloba	1	0.01
Simulium sp.	1	0.01
Stempellinella sp.	1	0.01
Tallaperla sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Undetermined Turbellaria	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Sands Creek**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY5-M01**	
Coordinates for Sampling Location:	**42.02269** latitude	**-75.29795** longitude
Sampling Date:	**26-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sp.	15	0.15
Polypedilum aviceps	15	0.15
Baetis flavistriga	9	0.09
Micropsectra sp.	7	0.07
Baetis tricaudatus	6	0.06
Hydropsyche sparna	6	0.06
Leuctra sp.	6	0.06
Dolophilodes sp.	5	0.05
Cheumatopsyche sp.	4	0.04
Rheotanytarsus pellucidus	3	0.03
Simulium sp.	3	0.03
Agnetina capitata	2	0.02
Eukiefferiella pseudomontana gr.	2	0.02
Hexatoma sp.	2	0.02
Optioservus ovalis	2	0.02
Stenonema sp.	2	0.02
Sweltsa sp.	2	0.02
Bezzia/Palpomyia sp.	1	0.01
Diphetor hageni	1	0.01
Epeorus sp.	1	0.01
Isonychia sp.	1	0.01
Lepidostoma sp.	1	0.01
Optioservus trivittatus	1	0.01
Plauditus sp.	1	0.01
Psephenus herricki	1	0.01
Tvetenia bavarica gr.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Snake Creek**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY6-S01**	
Coordinates for Sampling Location:	**41.97266** latitude	**-75.26302** longitude
Sampling Date:	**19-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche ventura	30	0.3
Hydropsyche sparna	17	0.17
Leucrocuta sp.	11	0.11
Baetis tricaudatus	10	0.1
Cheumatopsyche sp.	7	0.07
Hexatoma sp.	4	0.04
Leuctra sp.	4	0.04
Malirekus iroquois	4	0.04
Micropsectra sp.	2	0.02
Pteronarcys proteus	2	0.02
Rhyacophila fuscula	2	0.02
Acroneuria carolinensis	1	0.01
Agnetina capitata	1	0.01
Diplectrona sp.	1	0.01
Heptagenia sp.	1	0.01
Optioservus ovalis	1	0.01
Polypedilum aviceps	1	0.01
Simulium sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Unnamed tributary - Kerryville branch**
State & County of Site:	**NY - Delaware County**
Sampling Site Number:	**NY6-M01**
Coordinates for Sampling Location:	**42.02236** latitude **-75.24875** longitude
Sampling Date:	**16-Aug-2011**

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	40	0.40
Polypedilum aviceps	14	0.14
Stenonema sp.	10	0.10
Hydropsyche sparna	8	0.08
Cheumatopsyche sp.	7	0.07
Rheotanytarsus pellucidus	5	0.05
Lepidostoma sp.	3	0.03
Hydropsyche slossonae	2	0.02
Thienemannimyia gr. spp.	2	0.02
Antocha sp.	1	0.01
Epeorus sp.	1	0.01
Ephemerella sp.	1	0.01
Hexatoma sp.	1	0.01
Isonychia sp.	1	0.01
Leuctra sp.	1	0.01
Parametriocnemus sp.	1	0.01
Simulium sp.	1	0.01
Tanytarsus sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Cadosia Creek**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY6-M02**	
Coordinates for Sampling Location:	**42.03586** latitude	**-75.24891** longitude
Sampling Date:	**16-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Optioservus ovalis	24	0.24
Hydropsyche sparna	16	0.16
Baetis flavistriga	10	0.10
Micropsectra sp.	10	0.10
Cheumatopsyche sp.	5	0.05
Isogenoides sp.	5	0.05
Polypedilum aviceps	5	0.05
Dolophilodes sp.	3	0.03
Stenonema sp.	3	0.03
Acroneuria sp.	2	0.02
Bezzia/Palpomyia sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Acentrella turbida	1	0.01
Antocha sp.	1	0.01
Atherix sp.	1	0.01
Dicranota sp.	1	0.01
Epeorus sp.	1	0.01
Ephemerella sp.	1	0.01
Hexatoma sp.	1	0.01
Isonychia sp.	1	0.01
Optioservus trivittatus	1	0.01
Paragnetina immarginata	1	0.01
Psephenus herricki	1	0.01
Simulium sp.	1	0.01
Tribelos sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Gee Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY7-S01**	
Coordinates for Sampling Location:	**41.93476** latitude	**-75.23978** longitude
Sampling Date:	**28-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	14	0.14
Dolophilodes sp.	10	0.10
Hydropsyche sparna	9	0.09
Optioservus ovalis	9	0.09
Cheumatopsyche sp.	8	0.08
Pagastia orthogonia	8	0.08
Thienemannimyia gr. spp.	7	0.07
Sweltsa sp.	6	0.06
Leuctra sp.	5	0.05
Paraleptophlebia sp.	4	0.04
Heptagenia sp.	3	0.03
Hexatoma sp.	3	0.03
Hydropsyche ventura	3	0.03
Diamesa sp.	2	0.02
Polycentropus sp.	2	0.02
Baetis flavistriga	1	0.01
Chimarra aterrima?	1	0.01
Diphetor hageni	1	0.01
Glossosoma sp.	1	0.01
Hydroptila sp.	1	0.01
Leucrocuta sp.	1	0.01
Microtendipes pedellus gr.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**City Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY7-S02**	
Coordinates for Sampling Location:	**41.98162** latitude	**-75.22197** longitude
Sampling Date:	**28-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	38	0.38
Baetis tricaudatus	11	0.11
Polypedilum aviceps	8	0.08
Baetis flavistriga	7	0.07
Hexatoma sp.	7	0.07
Hydropsyche sparna	6	0.06
Cheumatopsyche sp.	5	0.05
Agnetina capitata	3	0.03
Sweltsa sp.	3	0.03
Dolophilodes sp.	2	0.02
Undetermined Perlodidae	2	0.02
Heptagenia sp.	1	0.01
Leuctra sp.	1	0.01
Optioservus ovalis	1	0.01
Optioservus trivittatus	1	0.01
Parametriocnemus sp.	1	0.01
Polycentropus sp.	1	0.01
Rhyacophila minora	1	0.01
Stenonema modestum	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Tar Hollow**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY7-M01**	
Coordinates for Sampling Location:	**41.97915** latitude	**-75.20961** longitude
Sampling Date:	**19-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sp.	22	0.22
Hydropsyche sparna	17	0.17
Stenonema sp.	10	0.10
Baetis tricaudatus	9	0.09
Cheumatopsyche sp.	8	0.08
Ephemerella sp.	8	0.08
Pteronarcys proteus	4	0.04
Malirekus iroquois	3	0.03
Rhyacophila minora	3	0.03
Dolophilodes sp.	2	0.02
Isogenoides sp.	2	0.02
Optioservus ovalis	2	0.02
Agnetina capitata	1	0.01
Heptagenia sp.	1	0.01
Isoperla sp.	1	0.01
Lepidostoma sp.	1	0.01
Leuctra sp.	1	0.01
Promoresia tardella	1	0.01
Rhyacophila fuscula	1	0.01
Sweltsa sp.	1	0.01
Tallaperla sp.	1	0.01
Undetermined Enchytraeidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Peas Eddy Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY7-M02**	
Coordinates for Sampling Location:	**41.94714** latitude	**-75.22572** longitude
Sampling Date:	**28-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sparna	21	0.21
Polypedilum aviceps	14	0.14
Micropsectra sp.	11	0.11
Pagastia orthogonia	6	0.06
Thienemannimyia gr. spp.	6	0.06
Baetis flavistriga	5	0.05
Rheotanytarsus pellucidus	5	0.05
Antocha sp.	3	0.03
Hexatoma sp.	3	0.03
Acroneuria sp.	2	0.02
Baetis intercalaris	2	0.02
Eukiefferiella pseudomontana gr.	2	0.02
Microtendipes pedellus gr.	2	0.02
Stenonema sp.	2	0.02
Acentrella turbida	1	0.01
Bezzia/Palpomyia sp.	1	0.01
Cheumatopsyche sp.	1	0.01
Cricotopus/Orthocladius Complex	1	0.01
Dolophilodes sp.	1	0.01
Epeorus sp.	1	0.01
Hydropsyche morosa	1	0.01
Lepidostoma sp.	1	0.01
Leucrocuta sp.	1	0.01
Optioservus ovalis	1	0.01
Pteronarcys biloba	1	0.01
Stenelmis sp.	1	0.01
Thienemanniella sp.	1	0.01
Tribelos sp.	1	0.01
Tricorythodes sp.	1	0.01
Undetermined Enchytraeidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Unnamed tributary - Fish Cr**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY8-S01**	
Coordinates for Sampling Location:	**41.96418** latitude	**-75.17151** longitude
Sampling Date:	**28-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Diamesa sp.	24	0.24
Thienemannimyia gr. spp.	12	0.12
Antocha sp.	6	0.06
Micropsectra sp.	6	0.06
Pagastia orthogonia	6	0.06
Acroneuria sp.	4	0.04
Cheumatopsyche sp.	4	0.04
Stenonema sp.	4	0.04
Diphetor hageni	3	0.03
Hydropsyche sparna	3	0.03
Lepidostoma sp.	3	0.03
Microtendipes pedellus gr.	3	0.03
Neophylax sp.	3	0.03
Baetis flavistriga	2	0.02
Bezzia/Palpomyia sp.	2	0.02
Dicranota sp.	2	0.02
Eukiefferiella pseudomontana gr.	2	0.02
Hydroptila sp.	2	0.02
Tallaperla sp.	2	0.02
Undetermined Perlodidae	2	0.02
Hydropsyche morosa	1	0.01
Nigronia serricornis	1	0.01
Optioservus sp.	1	0.01
Stylogomphus albystilus	1	0.01
Undetermined Empididae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Fish Cr - upper**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY8-S02**	
Coordinates for Sampling Location:	**41.93951** latitude	**-75.12577** longitude
Sampling Date:	**27-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Baetis flavistriga	18	0.18
Hydropsyche sparna	14	0.14
Micropsectra sp.	10	0.1
Polypedilum aviceps	10	0.1
Cheumatopsyche sp.	6	0.06
Baetis tricaudatus	5	0.05
Optioservus ovalis	5	0.05
Stenonema modestum	5	0.05
Heptagenia sp.	4	0.04
Dolophilodes sp.	3	0.03
Acroneuria carolinensis	2	0.02
Hydropsyche ventura	2	0.02
Leuctra sp.	2	0.02
Rheotanytarsus sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Acentrella turbida	1	0.01
Drunella sp.	1	0.01
Hexatoma sp.	1	0.01
Leucrocuta sp.	1	0.01
Microtendipes pedellus gr.	1	0.01
Oulimnius latiusculus	1	0.01
Paraleptophlebia sp.	1	0.01
Sweltsa sp.	1	0.01
Tallaperla sp.	1	0.01
Tvetenia bavarica gr.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Fish Creek - middle**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY8-M01**	
Coordinates for Sampling Location:	**41.94820** latitude	**-75.14421** longitude
Sampling Date:	**28-Jul-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Cheumatopsyche sp.	13	0.13
Micropsectra sp.	12	0.12
Polypedilum aviceps	10	0.10
Heptagenia sp.	8	0.08
Leucrocuta sp.	7	0.07
Leuctra sp.	7	0.07
Optioservus ovalis	6	0.06
Baetis flavistriga	5	0.05
Hydropsyche sparna	4	0.04
Agnetina capitata	3	0.03
Lepidostoma sp.	3	0.03
Sweltsa sp.	3	0.03
Thienemannimyia gr. spp.	3	0.03
Acroneuria sp.	2	0.02
Hexatoma sp.	2	0.02
Pagastia orthogonia	2	0.02
Paraleptophlebia sp.	2	0.02
Stenonema vicarium	2	0.02
Baetis intercalaris	1	0.01
Baetis tricaudatus	1	0.01
Diphetor hageni	1	0.01
Drunella sp.	1	0.01
Perlesta sp.	1	0.01
Pteronarcys proteus	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Read Cr - upper**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY9-S01**	
Coordinates for Sampling Location:	**42.05455** latitude	**-75.19724** longitude
Sampling Date:	**16-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Stenonema sp.	22	0.22
Baetis flavistriga	18	0.18
Chimarra aterrima?	17	0.17
Cheumatopsyche sp.	11	0.11
Micropsectra sp.	9	0.09
Hydropsyche sparna	6	0.06
Polypedilum aviceps	3	0.03
Acentrella turbida	2	0.02
Hydropsyche alhedra	2	0.02
Optioservus ovalis	2	0.02
Paragnetina immarginata	2	0.02
Undetermined Perlodidae	2	0.02
Undetermined Turbellaria	2	0.02
Heptagenia sp.	1	0.01
Stenelmis sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**East Br**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY9-S02**	
Coordinates for Sampling Location:	**42.04030** latitude	**-75.16414** longitude
Sampling Date:	**18-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	42	0.42
Dolophilodes sp.	12	0.12
Polypedilum aviceps	7	0.07
Baetis tricaudatus	6	0.06
Undetermined Perlodidae	4	0.04
Acentrella turbida	3	0.03
Baetis flavistriga	3	0.03
Hexatoma sp.	3	0.03
Hydropsyche sp.	3	0.03
Heptagenia sp.	2	0.02
Hydropsyche sparna	2	0.02
Lepidostoma sp.	2	0.02
Simulium sp.	2	0.02
Acroneuria sp.	1	0.01
Cricotopus/Orthocladius Complex	1	0.01
Dicranota sp.	1	0.01
Ephemerella sp.	1	0.01
Neoplasta sp.	1	0.01
Pagastia orthogonia	1	0.01
Rheocricotopus sp.	1	0.01
Tallaperla sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Read Cr - lower**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY9-M01**	
Coordinates for Sampling Location:	**42.02559** latitude	**-75.17620** longitude
Sampling Date:	**18-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	19	0.19
Polypedilum aviceps	11	0.11
Stenonema sp.	11	0.11
Dolophilodes sp.	6	0.06
Hexatoma sp.	5	0.05
Acentrella turbida	4	0.04
Acroneuria carolinensis	4	0.04
Epeorus vitreus	4	0.04
Hydropsyche sparna	4	0.04
Isonychia sp.	4	0.04
Baetis flavistriga	3	0.03
Baetis tricaudatus	3	0.03
Lepidostoma sp.	3	0.03
Microtendipes rydalensis gr.	3	0.03
Rheotanytarsus exiguus gr.	3	0.03
Rheotanytarsus pellucidus	2	0.02
Rhithrogena sp.	2	0.02
Agnetina capitata	1	0.01
Bezzia/Palpomyia sp.	1	0.01
Ephemerella sp.	1	0.01
Hydropsyche slossonae	1	0.01
Leuctra sp.	1	0.01
Optioservus ovalis	1	0.01
Psephenus herricki	1	0.01
Rhyacophila minora	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Morrison Br**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY10-S01**	
Coordinates for Sampling Location:	**42.01567** latitude	**-75.13199** longitude
Sampling Date:	**18-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche slossonae	15	0.15
Acentrella turbida	13	0.13
Dolophilodes sp.	11	0.11
Baetis tricaudatus	7	0.07
Polypedilum aviceps	7	0.07
Baetis flavistriga	6	0.06
Hydropsyche sparna	6	0.06
Pagastia orthogonia	5	0.05
Hydropsyche ventura	4	0.04
Leuctra sp.	4	0.04
Micropsectra sp.	3	0.03
Cheumatopsyche sp.	2	0.02
Cricotopus/Orthocladius Complex	2	0.02
Hexatoma sp.	2	0.02
Optioservus ovalis	2	0.02
Tanytarsus sp.	2	0.02
Antocha sp.	1	0.01
Eukiefferiella pseudomontana gr.	1	0.01
Heptagenia sp.	1	0.01
Lepidostoma sp.	1	0.01
Rheocricotopus sp.	1	0.01
Rheotanytarsus pellucidus	1	0.01
Simulium sp.	1	0.01
Stenonema sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Carcass Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY10-S02**	
Coordinates for Sampling Location:	**42.06049** latitude	**-75.11629** longitude
Sampling Date:	**16-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche slossonae	17	0.17
Cheumatopsyche sp.	16	0.16
Ephemerella sp.	11	0.11
Baetis tricaudatus	8	0.08
Dolophilodes sp.	7	0.07
Stenonema sp.	6	0.06
Hydropsyche ventura	5	0.05
Hydropsyche sparna	4	0.04
Rhyacophila minora	4	0.04
Tallaperla sp.	4	0.04
Baetis flavistriga	2	0.02
Diphetor hageni	2	0.02
Heptagenia sp.	2	0.02
Hexatoma sp.	2	0.02
Optioservus ovalis	2	0.02
Lepidostoma sp.	1	0.01
Leucrocuta sp.	1	0.01
Malirekus iroquois	1	0.01
Paraleptophlebia sp.	1	0.01
Rhithrogena sp.	1	0.01
Sweltsa sp.	1	0.01
Undetermined Gomphidae	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Baxter Brook**		
State & County of Site:	**NY - Delaware County**		
Sampling Site Number:	**NY10-M01**		
Coordinates for Sampling Location:	**42.05958** latitude	**-75.10707** longitude	
Sampling Date:	**16-Sep-2011**		

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche slossonae	31	0.31
Cheumatopsyche sp.	14	0.14
Hydropsyche ventura	8	0.08
Optioservus ovalis	8	0.08
Hexatoma sp.	6	0.06
Baetis tricaudatus	4	0.04
Sweltsa sp.	4	0.04
Hydropsyche sparna	3	0.03
Pteronarcys proteus	3	0.03
Dolophilodes sp.	2	0.02
Isogenoides sp.	2	0.02
Polypedilum aviceps	2	0.02
Acroneuria carolinensis	1	0.01
Baetis flavistriga	1	0.01
Diplectrona sp.	1	0.01
Isonychia sp.	1	0.01
Lepidostoma sp.	1	0.01
Malirekus iroquois	1	0.01
Oulimnius latiusculus	1	0.01
Polycentropus sp.	1	0.01
Pteronarcys biloba	1	0.01
Rhyacophila acutiloba	1	0.01
Simulium sp.	1	0.01
Tvetenia bavarica gr.	1	0.01
Undetermined Tipulidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Twaddle Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY11-S01**	
Coordinates for Sampling Location:	**41.98787** latitude	**-75.11692** longitude
Sampling Date:	**2-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sp.	16	0.16
Baetis tricaudatus	14	0.14
Cheumatopsyche sp.	9	0.09
Pteronarcys proteus	9	0.09
Stenonema vicarium	9	0.09
Heptagenia sp.	7	0.07
Malirekus iroquois	7	0.07
Hexatoma sp.	3	0.03
Lepidostoma sp.	3	0.03
Micropsectra sp.	3	0.03
Tallaperla sp.	3	0.03
Antocha sp.	2	0.02
Rhyacophila carolina?	2	0.02
Apatania sp.	1	0.01
Diamesa sp.	1	0.01
Diphetor hageni	1	0.01
Diplectrona sp.	1	0.01
Glossosoma sp.	1	0.01
Neophylax sp.	1	0.01
Oulimnius latiusculus	1	0.01
Polycentropus sp.	1	0.01
Rheocricotopus sp.	1	0.01
Rhyacophila fuscula	1	0.01
Sweltsa sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Tipula sp.	1	0.01
	Total = 100	invertebrates

Stream & Site Name:	**Cook Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY11-S02**	
Coordinates for Sampling Location:	**41.93429** latitude	**-74.96597** longitude
Sampling Date:	**1-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Ephemerella sp.	14	0.14
Tallaperla sp.	14	0.14
Hydropsyche ventura	12	0.12
Lepidostoma sp.	10	0.10
Baetis tricaudatus	8	0.08
Apatania sp.	7	0.07
Rhyacophila minora	7	0.07
Dolophilodes sp.	4	0.04
Hexatoma sp.	4	0.04
Malirekus iroquois	4	0.04
Micropsectra sp.	4	0.04
Optioservus ovalis	3	0.03
Heptagenia sp.	2	0.02
Cheumatopsyche sp.	1	0.01
Parametriocnemus sp.	1	0.01
Pisidium sp.	1	0.01
Pteronarcys proteus	1	0.01
Rhyacophila fuscula	1	0.01
Simulium sp.	1	0.01
Undetermined Enchytraeidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Horse Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY11-S03**	
Coordinates for Sampling Location:	**41.95919** latitude	**-74.93174** longitude
Sampling Date:	**1-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sp.	39	0.39
Baetis tricaudatus	18	0.18
Baetis flavistriga	5	0.05
Dolophilodes sp.	4	0.04
Heptagenia sp.	4	0.04
Malirekus iroquois	4	0.04
Cheumatopsyche sp.	3	0.03
Leuctra sp.	3	0.03
Diphetor hageni	2	0.02
Hexatoma sp.	2	0.02
Hydropsyche sparna	2	0.02
Tallaperla sp.	2	0.02
Diplectrona sp.	1	0.01
Isoperla sp.	1	0.01
Lepidostoma sp.	1	0.01
Leucrocuta sp.	1	0.01
Micropsectra/Tanytarsus Complex	1	0.01
Neophylax sp.	1	0.01
Optioservus ovalis	1	0.01
Parametriocnemus sp.	1	0.01
Polypedilum aviceps	1	0.01
Polypedilum sp.	1	0.01
Pteronarcys proteus	1	0.01
Undetermined Limnephilidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Russel Brook (middle)**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY11-M01**	
Coordinates for Sampling Location:	**41.98652** latitude	**-74.95204** longitude
Sampling Date:	**1-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Baetis tricaudatus	13	0.13
Hydropsyche slossonae	9	0.09
Lepidostoma sp.	9	0.09
Rhyacophila minora	8	0.08
Apatania sp.	6	0.06
Cheumatopsyche sp.	6	0.06
Dolophilodes sp.	6	0.06
Micropsectra sp.	6	0.06
Hydropsyche ventura	5	0.05
Rhyacophila fuscula	5	0.05
Ephemerella sp.	4	0.04
Hydropsyche sparna	4	0.04
Tallaperla sp.	4	0.04
Epeorus sp.	2	0.02
Heptagenia sp.	2	0.02
Malirekus iroquois	2	0.02
Pteronarcys proteus	2	0.02
Hexatoma sp.	1	0.01
Optioservus ovalis	1	0.01
Pagastia orthogonia	1	0.01
Plauditus sp.	1	0.01
Rheotanytarsus exiguus gr.	1	0.01
Stenonema sp.	1	0.01
Sweltsa sp.	1	0.01

Total = 100 invertebrates

Stream & Site Name:	**Horton Brook**		
State & County of Site:	**NY - Delaware County**		
Sampling Site Number:	**NY11-M02**		
Coordinates for Sampling Location:	**41.97323** latitude	**-75.01666** longitude	
Sampling Date:	**26-Sep-2011**		

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Baetis tricaudatus	19	0.19
Acentrella turbida	9	0.09
Dolophilodes sp.	8	0.08
Ephemerella sp.	8	0.08
Hexatoma sp.	8	0.08
Hydropsyche slossonae	5	0.05
Hydropsyche ventura	5	0.05
Agnetina capitata	4	0.04
Epeorus sp.	3	0.03
Hydropsyche sparna	3	0.03
Isogenoides sp.	3	0.03
Lepidostoma sp.	3	0.03
Polypedilum aviceps	3	0.03
Baetis flavistriga	2	0.02
Diphetor hageni	2	0.02
Optioservus ovalis	2	0.02
Paragnetina immarginata	2	0.02
Rhyacophila minora	2	0.02
Stenonema sp.	2	0.02
Sweltsa sp.	2	0.02
Acroneuria sp.	1	0.01
Malirekus iroquois	1	0.01
Paraleptophlebia sp.	1	0.01
Tallaperla sp.	1	0.01
Undetermined Orthocladiinae	1	0.01
	Total = 100	invertebrates

Stream & Site Name:	**Dry Brook**
State & County of Site:	**NY - Delaware County**
Sampling Site Number:	**NY12-S01**
Coordinates for Sampling Location:	**41.95966** latitude **-75.08052** longitude
Sampling Date:	**17-Aug-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Hydropsyche sp.	14	0.14
Dolophilodes sp.	9	0.09
Baetis flavistriga	8	0.08
Baetis tricaudatus	6	0.06
Cheumatopsyche sp.	6	0.06
Oulimnius latiusculus	5	0.05
Stenonema sp.	5	0.05
Agnetina capitata	4	0.04
Rhyacophila minora	4	0.04
Acroneuria carolinensis	3	0.03
Heptagenia sp.	3	0.03
Optioservus ovalis	3	0.03
Pteronarcys proteus	3	0.03
Eukiefferiella sp.	2	0.02
Leuctra sp.	2	0.02
Pagastia orthogonia	2	0.02
Sweltsa sp.	2	0.02
Tallaperla sp.	2	0.02
Apatania sp.	1	0.01
Baetis intercalaris	1	0.01
Bezzia/Palpomyia sp.	1	0.01
Cambarus sp.	1	0.01
Epeorus sp.	1	0.01
Eurylophella funeralis	1	0.01
Lepidostoma sp.	1	0.01
Leucrocuta sp.	1	0.01
Limnophyes sp.	1	0.01
Parachaetocladius sp.	1	0.01
Paraleptophlebia sp.	1	0.01
Parametriocnemus sp.	1	0.01
Polycentropus sp.	1	0.01
Simulium sp.	1	0.01
Tanytarsus sp.	1	0.01
Undetermined Gomphidae	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Trout Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY12-M01**	
Coordinates for Sampling Location:	**41.91957** latitude	**-75.00787** longitude
Sampling Date:	**17-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Chimarra aterrima?	28	0.28
Hydropsyche sparna	16	0.16
Pisidium sp.	9	0.09
Rheotanytarsus exiguus gr.	6	0.06
Ectopria sp.	4	0.04
Optioservus ovalis	4	0.04
Parachaetocladius sp.	4	0.04
Undetermined Gomphidae	4	0.04
Baetis pluto	2	0.02
Hydropsyche betteni	2	0.02
Isonychia sp.	2	0.02
Polypedilum aviceps	2	0.02
Psephenus herricki	2	0.02
Stenelmis sp.	2	0.02
Acroneuria sp.	1	0.01
Chimarra obscura	1	0.01
Dicranota sp.	1	0.01
Glossosoma sp.	1	0.01
Micrasema sp.	1	0.01
Nigronia serricornis	1	0.01
Oecetis sp.	1	0.01
Paragnetina immarginata	1	0.01
Paragnetina media	1	0.01
Simulium sp.	1	0.01
Tallaperla sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Tricorythodes sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Trout Br - lower**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY12-L01**	
Coordinates for Sampling Location:	**41.94728** latitude	**-75.06044** longitude
Sampling Date:	**17-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	26	0.26
Polypedilum aviceps	15	0.15
Acentrella turbida	13	0.13
Epeorus sp.	3	0.03
Lepidostoma sp.	3	0.03
Optioservus ovalis	3	0.03
Paragnetina immarginata	3	0.03
Psilotreta sp.	3	0.03
Stenonema sp.	3	0.03
Undetermined Perlodidae	3	0.03
Agnetina capitata	2	0.02
Baetis flavistriga	2	0.02
Baetis intercalaris	2	0.02
Brachycentrus solomoni	2	0.02
Diphetor hageni	2	0.02
Glossosoma sp.	2	0.02
Rheotanytarsus pellucidus	2	0.02
Simulium sp.	2	0.02
Baetis tricaudatus	1	0.01
Clinocera sp.	1	0.01
Dicranota sp.	1	0.01
Dolophilodes sp.	1	0.01
Hydropsyche sparna	1	0.01
Leuctra sp.	1	0.01
Plauditus sp.	1	0.01
Polycentropus sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Hoffman Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY13-S01**	
Coordinates for Sampling Location:	**41.89900** latitude	**-75.09732** longitude
Sampling Date:	**17-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Cheumatopsyche sp.	30	0.30
Oulimnius latiusculus	17	0.17
Hydropsyche sp.	11	0.11
Dolophilodes sp.	10	0.10
Hydropsyche sparna	8	0.08
Rhyacophila minora	5	0.05
Polypedilum aviceps	4	0.04
Optioservus ovalis	3	0.03
Baetis tricaudatus	1	0.01
Dicranota sp.	1	0.01
Eurylophella funeralis	1	0.01
Heptagenia sp.	1	0.01
Heterotrissocladius sp.	1	0.01
Hexatoma sp.	1	0.01
Leucrocuta sp.	1	0.01
Micropsectra sp.	1	0.01
Rhyacophila fuscula	1	0.01
Rhyacophila sp.	1	0.01
Stenonema sp.	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**N Br Basket Creek**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY13-M01**	
Coordinates for Sampling Location:	**41.89349** latitude	**-75.08386** longitude
Sampling Date:	**18-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	23	0.23
Polypedilum aviceps	12	0.12
Acentrella turbida	10	0.10
Optioservus ovalis	10	0.10
Dolophilodes sp.	6	0.06
Baetis flavistriga	4	0.04
Cheumatopsyche sp.	4	0.04
Hydropsyche sparna	4	0.04
Baetis tricaudatus	3	0.03
Hydropsyche slossonae	3	0.03
Bezzia/Palpomyia sp.	2	0.02
Isonychia sp.	2	0.02
Lepidostoma sp.	2	0.02
Leucrocuta sp.	2	0.02
Promoresia tardella	2	0.02
Rheocricotopus sp.	2	0.02
Acroneuria sp.	1	0.01
Apatania sp.	1	0.01
Baetis intercalaris	1	0.01
Dicranota sp.	1	0.01
Heptagenia sp.	1	0.01
Oulimnius latiusculus	1	0.01
Paragnetina sp.	1	0.01
Simulium sp.	1	0.01
Stenonema vicarium	1	0.01
	Total = 100 invertebrates	

Stream & Site Name:	**E Br Basket Creek**	
State & County of Site:	**NY - Sullivan County**	
Sampling Site Number:	**NY13-M02**	
Coordinates for Sampling Location:	**41.88167** latitude	**-75.04709** longitude
Sampling Date:	**18-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	25	0.25
Polypedilum aviceps	21	0.21
Isonychia sp.	13	0.13
Stenonema sp.	5	0.05
Paragnetina sp.	4	0.04
Cheumatopsyche sp.	3	0.03
Baetis intercalaris	2	0.02
Bezzia/Palpomyia sp.	2	0.02
Ephemerella sp.	2	0.02
Hexatoma sp.	2	0.02
Hydropsyche sparna	2	0.02
Leucrocuta sp.	2	0.02
Optioservus ovalis	2	0.02
Paraleptophlebia sp.	2	0.02
Undetermined Chironomidae	2	0.02
Undetermined Perlodidae	2	0.02
Baetis flavistriga	1	0.01
Dolophilodes sp.	1	0.01
Epeorus sp.	1	0.01
Lepidostoma sp.	1	0.01
Leuctra sp.	1	0.01
Plauditus sp.	1	0.01
Rheocricotopus sp.	1	0.01
Tallaperla sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Campbell Br, Right Fk**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY14-S01**	
Coordinates for Sampling Location:	**42.02940** latitude	**-74.94680** longitude
Sampling Date:	**2-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche ventura	40	0.40
Tallaperla sp.	25	0.25
Malirekus iroquois	4	0.04
Baetis tricaudatus	3	0.03
Hexatoma sp.	3	0.03
Rhyacophila fuscula	3	0.03
Apatania sp.	2	0.02
Dicranota sp.	2	0.02
Ephemerella sp.	2	0.02
Pteronarcys proteus	2	0.02
Cheumatopsyche sp.	1	0.01
Diphetor hageni	1	0.01
Eurylophella funeralis	1	0.01
Heptagenia sp.	1	0.01
Lanthus sp.	1	0.01
Leuctra sp.	1	0.01
Neophylax sp.	1	0.01
Parametriocnemus sp.	1	0.01
Parapsyche apicalis	1	0.01
Rhyacophila minora	1	0.01
Rhyacophila nigrita	1	0.01
Soyedina sp.	1	0.01
Stenacron carolina	1	0.01
Undetermined Limnephilidae	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Barney Hollow**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY14-S02**	
Coordinates for Sampling Location:	**42.05909** latitude	**-75.01377** longitude
Sampling Date:	**13-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sp.	25	0.25
Malirekus iroquois	21	0.21
Baetis tricaudatus	15	0.15
Dolophilodes sp.	4	0.04
Isoperla sp.	4	0.04
Rhyacophila minora	4	0.04
Sweltsa sp.	4	0.04
Diplectrona sp.	3	0.03
Ephemerella sp.	3	0.03
Hexatoma sp.	3	0.03
Epeorus sp.	2	0.02
Parametriocnemus sp.	2	0.02
Tvetenia bavarica gr.	2	0.02
Amphinemura sp.	1	0.01
Brillia sp.	1	0.01
Cheumatopsyche sp.	1	0.01
Heptagenia sp.	1	0.01
Lepidostoma sp.	1	0.01
Optioservus ovalis	1	0.01
Tallaperla sp.	1	0.01
Undetermined Heptageniidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Fuller Hollow**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY14-S03**	
Coordinates for Sampling Location:	**42.02869** latitude	**-75.03588** longitude
Sampling Date:	**2-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sp.	19	0.19
Diplectrona sp.	16	0.16
Baetis tricaudatus	11	0.11
Tallaperla sp.	8	0.08
Acroneuria sp.	7	0.07
Cheumatopsyche sp.	7	0.07
Pteronarcys proteus	6	0.06
Stenonema sp.	5	0.05
Dolophilodes sp.	3	0.03
Hexatoma sp.	3	0.03
Lepidostoma sp.	3	0.03
Paragnetina immarginata	2	0.02
Simulium sp.	2	0.02
Baetis flavistriga	1	0.01
Ectopria sp.	1	0.01
Epeorus vitreus	1	0.01
Leucrocuta sp.	1	0.01
Malirekus iroquois	1	0.01
Optioservus sp.	1	0.01
Rhyacophila minora	1	0.01
Stenelmis sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**E Trout Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY14-M01**	
Coordinates for Sampling Location:	**42.07474** latitude	**-75.05682** longitude
Sampling Date:	**19-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Dolophilodes sp.	17	0.17
Baetis tricaudatus	15	0.15
Cheumatopsyche sp.	15	0.15
Hexatoma sp.	5	0.05
Hydropsyche slossonae	5	0.05
Tallaperla sp.	5	0.05
Stenonema modestum	4	0.04
Diplectrona sp.	3	0.03
Ephemerella sp.	3	0.03
Hydropsyche sp.	3	0.03
Optioservus sp.	3	0.03
Oulimnius latiusculus	3	0.03
Rhyacophila fuscula	3	0.03
Simulium sp.	3	0.03
Agnetina capitata	2	0.02
Isogenoides sp.	2	0.02
Acroneuria carolinensis	1	0.01
Hydropsyche sparna	1	0.01
Isoperla sp.	1	0.01
Paragnetina immarginata	1	0.01
Paraleptophlebia sp.	1	0.01
Rhithrogena sp.	1	0.01
Rhyacophila acutiloba	1	0.01
Rhyacophila minora	1	0.01
Sweltsa sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Tiffany Hollow**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY15-S01**	
Coordinates for Sampling Location:	**42.12240** latitude	**-74.94643** longitude
Sampling Date:	**13-Sep-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Hydropsyche ventura	16	0.16
Cheumatopsyche sp.	13	0.13
Baetis tricaudatus	8	0.08
Eurylophella funeralis	8	0.08
Tallaperla sp.	8	0.08
Acroneuria carolinensis	6	0.06
Agnetina capitata	5	0.05
Diplectrona sp.	4	0.04
Dolophilodes sp.	4	0.04
Baetis flavistriga	3	0.03
Undetermined Perlodidae	3	0.03
Diphetor hageni	2	0.02
Ephemerella sp.	2	0.02
Heptagenia sp.	2	0.02
Leucrocuta sp.	2	0.02
Oulimnius latiusculus	2	0.02
Pisidium sp.	2	0.02
Epeorus sp.	1	0.01
Hexatoma sp.	1	0.01
Lanthus sp.	1	0.01
Lepidostoma sp.	1	0.01
Malirekus iroquois	1	0.01
Optioservus ovalis	1	0.01
Pteronarcys biloba	1	0.01
Pteronarcys proteus	1	0.01
Rhyacophila acutiloba	1	0.01
Rhyacophila carolina?	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Wilson Hollow Br**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY15-S02**	
Coordinates for Sampling Location:	**42.11340** latitude	**-75.02987** longitude
Sampling Date:	**13-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche slossonae	27	0.27
Cheumatopsyche sp.	10	0.10
Stenonema modestum	10	0.10
Baetis tricaudatus	7	0.07
Agnetina capitata	6	0.06
Dolophilodes sp.	6	0.06
Baetis flavistriga	5	0.05
Hydropsyche sparna	4	0.04
Optioservus ovalis	4	0.04
Acroneuria carolinensis	2	0.02
Ephemerella sp.	2	0.02
Eurylophella funeralis	2	0.02
Hexatoma sp.	2	0.02
Cambarus sp.	1	0.01
Diamesa sp.	1	0.01
Glossosoma sp.	1	0.01
Hydroptila sp.	1	0.01
Isogenoides sp.	1	0.01
Isonychia sp.	1	0.01
Lepidostoma sp.	1	0.01
Micropsectra/Tanytarsus Complex	1	0.01
Oulimnius latiusculus	1	0.01
Pteronarcys biloba	1	0.01
Simulium sp.	1	0.01
Stenacron interpunctatum	1	0.01
Sweltsa sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Telford Hollow**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY15-M01**	
Coordinates for Sampling Location:	**42.09391** latitude	**-74.98479** longitude
Sampling Date:	**26-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche slossonae	15	0.15
Lepidostoma sp.	14	0.14
Dolophilodes sp.	7	0.07
Polypedilum aviceps	7	0.07
Agnetina capitata	6	0.06
Baetis flavistriga	6	0.06
Cheumatopsyche sp.	6	0.06
Ephemerella sp.	6	0.06
Baetis tricaudatus	5	0.05
Paragnetina immarginata	4	0.04
Acentrella turbida	3	0.03
Isonychia sp.	3	0.03
Paraleptophlebia sp.	3	0.03
Hydropsyche sparna	2	0.02
Isogenoides sp.	2	0.02
Optioservus sp.	2	0.02
Stenonema modestum	2	0.02
Diplectrona sp.	1	0.01
Eurylophella funeralis	1	0.01
Hexatoma sp.	1	0.01
Isoperla sp.	1	0.01
Rhithrogena sp.	1	0.01
Rhyacophila fuscula	1	0.01
Tvetenia bavarica gr.	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Downs Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY15-L01**	
Coordinates for Sampling Location:	**42.10043** latitude	**-74.97524** longitude
Sampling Date:	**26-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche slossonae	13	0.13
Baetis tricaudatus	10	0.10
Dolophilodes sp.	10	0.10
Baetis flavistriga	8	0.08
Stenonema modestum	8	0.08
Acentrella turbida	7	0.07
Ephemerella sp.	7	0.07
Lepidostoma sp.	7	0.07
Cheumatopsyche sp.	4	0.04
Paragnetina immarginata	3	0.03
Paraleptophlebia sp.	3	0.03
Polypedilum aviceps	3	0.03
Rhyacophila acutiloba	3	0.03
Agnetina capitata	2	0.02
Hexatoma sp.	2	0.02
Hydropsyche sparna	2	0.02
Isonychia sp.	2	0.02
Stenonema vicarium	2	0.02
Brachycentrus solomoni	1	0.01
Nigronia serricornis	1	0.01
Soyedina sp.	1	0.01
Thienemanniella sp.	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Voorhees / Gee Brook**	
State & County of Site:	**NY - Sullivan County**	
Sampling Site Number:	**NY16-S01**	
Coordinates for Sampling Location:	**41.98949** latitude	**-74.79509** longitude
Sampling Date:	**17-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Lepidostoma sp.	23	0.23
Hydropsyche ventura	17	0.17
Cheumatopsyche sp.	6	0.06
Acroneuria sp.	5	0.05
Baetis flavistriga	5	0.05
Micropsectra sp.	5	0.05
Stenonema sp.	5	0.05
Baetis tricaudatus	4	0.04
Hexatoma sp.	4	0.04
Hydropsyche sparna	4	0.04
Heptagenia sp.	3	0.03
Diphetor hageni	2	0.02
Stenelmis sp.	2	0.02
Apatania sp.	1	0.01
Brachycentrus solomoni	1	0.01
Leuctra sp.	1	0.01
Pagastia orthogonia	1	0.01
Paragnetina immarginata	1	0.01
Paraleptophlebia sp.	1	0.01
Parametriocnemus sp.	1	0.01
Procloeon sp.	1	0.01
Rhyacophila minora	1	0.01
Rhyacophila nigrita	1	0.01
Stenonema vicarium	1	0.01
Sweltsa sp.	1	0.01
Tallaperla sp.	1	0.01
Undetermined Chironomidae	1	0.01
Undetermined Orthocladiinae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Mary Smith Brook**	
State & County of Site:	**NY - Sullivan County**	
Sampling Site Number:	**NY16-S02**	
Coordinates for Sampling Location:	**42.00883** latitude	**-74.78770** longitude
Sampling Date:	**17-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Baetis tricaudatus	14	0.14
Baetis flavistriga	11	0.11
Heptagenia sp.	6	0.06
Hydropsyche ventura	6	0.06
Hydropsyche slossonae	5	0.05
Malirekus iroquois	5	0.05
Diamesa sp.	4	0.04
Dicranota sp.	4	0.04
Dolophilodes sp.	4	0.04
Micropsectra sp.	4	0.04
Tallaperla sp.	4	0.04
Agnetina capitata	3	0.03
Ephemerella sp.	3	0.03
Sweltsa sp.	3	0.03
Cheumatopsyche sp.	2	0.02
Drunella sp.	2	0.02
Hexatoma sp.	2	0.02
Pagastia orthogonia	2	0.02
Rhyacophila fuscula	2	0.02
Undetermined Chironomidae	2	0.02
Acentrella turbida	1	0.01
Alloperla sp.	1	0.01
Antocha sp.	1	0.01
Apatania sp.	1	0.01
Diphetor hageni	1	0.01
Lepidostoma sp.	1	0.01
Leuctra sp.	1	0.01
Neophylax sp.	1	0.01
Plauditus sp.	1	0.01
Polycentropus sp.	1	0.01
Pteronarcys proteus	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Spring Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY16-M01**	
Coordinates for Sampling Location:	**42.01652** latitude	**-74.88888** longitude
Sampling Date:	**26-Sep-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Ephemerella sp.	27	0.27
Baetis tricaudatus	18	0.18
Hydropsyche slossonae	13	0.13
Acentrella turbida	8	0.08
Paraleptophlebia sp.	6	0.06
Lepidostoma sp.	5	0.05
Cricotopus/Orthocladius Complex	4	0.04
Hydropsyche ventura	3	0.03
Dolophilodes sp.	2	0.02
Stenonema modestum	2	0.02
Baetis flavistriga	1	0.01
Diphetor hageni	1	0.01
Diplectrona sp.	1	0.01
Hexatoma sp.	1	0.01
Hydropsyche sparna	1	0.01
Isoperla sp.	1	0.01
Parapsyche apicalis	1	0.01
Pteronarcys proteus	1	0.01
Simulium sp.	1	0.01
Stenonema sp.	1	0.01
Tallaperla sp.	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Berry Brook**	
State & County of Site:	**NY - Delaware County**	
Sampling Site Number:	**NY16-M02**	
Coordinates for Sampling Location:	**41.98629** latitude	**-74.84936** longitude
Sampling Date:	**17-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Micropsectra sp.	17	0.17
Agnetina capitata	12	0.12
Baetis tricaudatus	11	0.11
Rheotanytarsus pellucidus	7	0.07
Hexatoma sp.	6	0.06
Lepidostoma sp.	6	0.06
Polypedilum aviceps	5	0.05
Psilotreta sp.	5	0.05
Acentrella turbida	4	0.04
Leucrocuta sp.	4	0.04
Baetis flavistriga	3	0.03
Stenonema sp.	3	0.03
Brachycentrus solomoni	2	0.02
Hydropsyche sparna	2	0.02
Acroneuria abnormis	1	0.01
Atherix sp.	1	0.01
Dolophilodes sp.	1	0.01
Drunella sp.	1	0.01
Glossosoma sp.	1	0.01
Heptagenia sp.	1	0.01
Isonychia sp.	1	0.01
Leuctra sp.	1	0.01
Paragnetina immarginata	1	0.01
Parametriocnemus sp.	1	0.01
Rhyacophila acutiloba	1	0.01
Rhyacophila fuscula	1	0.01
Tanytarsus sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Shin Creek**	
State & County of Site:	**NY - Sullivan County**	
Sampling Site Number:	**NY16-M03**	
Coordinates for Sampling Location:	**42.00013** latitude	**-74.76831** longitude
Sampling Date:	**17-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Brachycentrus solomoni	18	0.18
Agnetina capitata	9	0.09
Baetis tricaudatus	9	0.09
Lepidostoma sp.	9	0.09
Dolophilodes sp.	7	0.07
Micropsectra sp.	5	0.05
Polypedilum aviceps	5	0.05
Acroneuria sp.	4	0.04
Atherix sp.	4	0.04
Baetis flavistriga	4	0.04
Heptagenia sp.	4	0.04
Rheotanytarsus pellucidus	4	0.04
Leucrocuta sp.	2	0.02
Brillia sp.	1	0.01
Cheumatopsyche sp.	1	0.01
Epeorus sp.	1	0.01
Ephemerella sp.	1	0.01
Hexatoma sp.	1	0.01
Nigronia serricornis	1	0.01
Pagastia orthogonia	1	0.01
Polypedilum tritum	1	0.01
Promoresia tardella	1	0.01
Pteronarcys biloba	1	0.01
Pteronarcys proteus	1	0.01
Rhyacophila acutiloba	1	0.01
Rhyacophila minora	1	0.01
Rhyacophila nigrita	1	0.01
Stenonema sp.	1	0.01
Tallaperla sp.	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Gulf of Mexico Brook**	
State & County of Site:	**NY - Ulster County**	
Sampling Site Number:	**NY17-S01**	
Coordinates for Sampling Location:	**42.02218** latitude	**-74.58148** longitude
Sampling Date:	**12-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche sparna	18	0.18
Micropsectra sp.	10	0.10
Tallaperla sp.	9	0.09
Heptagenia sp.	6	0.06
Polypedilum aviceps	5	0.05
Stempellinella sp.	5	0.05
Stenonema sp.	5	0.05
Cheumatopsyche sp.	3	0.03
Lepidostoma sp.	3	0.03
Pagastia orthogonia	3	0.03
Simulium sp.	3	0.03
Arctopsyche ladogensis	2	0.02
Baetis flavistriga	2	0.02
Epeorus sp.	2	0.02
Leuctra sp.	2	0.02
Oulimnius latiusculus	2	0.02
Parametriocnemus sp.	2	0.02
Promoresia tardella	2	0.02
Tanytarsus sp.	2	0.02
Apatania sp.	1	0.01
Atherix sp.	1	0.01
Brachycentrus solomoni	1	0.01
Diamesa sp.	1	0.01
Dolophilodes sp.	1	0.01
Hexatoma sp.	1	0.01
Paraleptophlebia sp.	1	0.01
Plauditus sp.	1	0.01
Polycentropus sp.	1	0.01
Sperchon sp.	1	0.01
Stenonema vicarium	1	0.01
Thienemannimyia gr. spp.	1	0.01
Tvetenia sp.	1	0.01
Undetermined Gomphidae	1	0.01
	Total = 100 invertebrates	

Stream & Site Name:	**Upper Beech Hill Br**	
State & County of Site:	**NY - Ulster County**	
Sampling Site Number:	**NY17-S02**	
Coordinates for Sampling Location:	**42.02162** latitude	**-74.76414** longitude
Sampling Date:	**12-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Baetis flavistriga	9	0.09
Hydropsyche slossonae	9	0.09
Micropsectra sp.	9	0.09
Baetis tricaudatus	8	0.08
Cheumatopsyche sp.	6	0.06
Lepidostoma sp.	6	0.06
Rheotanytarsus pellucidus	6	0.06
Dolophilodes sp.	5	0.05
Tvetenia bavarica gr.	4	0.04
Diamesa sp.	3	0.03
Hydropsyche sparna	3	0.03
Hydropsyche ventura	3	0.03
Polypedilum aviceps	3	0.03
Heptagenia sp.	2	0.02
Hexatoma sp.	2	0.02
Rhyacophila acutiloba	2	0.02
Rhyacophila fuscula	2	0.02
Stenonema sp.	2	0.02
Sweltsa sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Antocha sp.	1	0.01
Atherix sp.	1	0.01
Brachycentrus solomoni	1	0.01
Brillia sp.	1	0.01
Cricotopus/Orthocladius Complex	1	0.01
Diphetor hageni	1	0.01
Epeorus sp.	1	0.01
Microtendipes pedellus gr.	1	0.01
Pagastia orthogonia	1	0.01
Parachaetocladius sp.	1	0.01
Polypedilum sp.	1	0.01
Undetermined Aeshnidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Beecher Brook**	
State & County of Site:	**NY - Ulster County**	
Sampling Site Number:	**NY17-M01**	
Coordinates for Sampling Location:	**42.01601** latitude	**-74.64292** longitude
Sampling Date:	**11-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Hydropsyche slossonae	11	0.11
Brachycentrus solomoni	8	0.08
Dolophilodes sp.	7	0.07
Oulimnius latiusculus	7	0.07
Agnetina capitata	5	0.05
Heptagenia sp.	5	0.05
Micropsectra sp.	5	0.05
Rhyacophila acutiloba	5	0.05
Cheumatopsyche sp.	4	0.04
Tallaperla sp.	4	0.04
Polypedilum aviceps	3	0.03
Rheotanytarsus pellucidus	3	0.03
Baetis flavistriga	2	0.02
Diplectrona sp.	2	0.02
Lepidostoma sp.	2	0.02
Parametriocnemus sp.	2	0.02
Plauditus sp.	2	0.02
Rhyacophila sp.	2	0.02
Stempellinella sp.	2	0.02
Sweltsa sp.	2	0.02
Tanytarsus sp.	2	0.02
Thienemannimyia gr. spp.	2	0.02
Apatania sp.	1	0.01
Baetis tricaudatus	1	0.01
Diamesa sp.	1	0.01
Drunella sp.	1	0.01
Glossosoma sp.	1	0.01
Lanthus sp.	1	0.01
Leuctra sp.	1	0.01
Parachaetocladius sp.	1	0.01
Procloeon sp.	1	0.01
Promoresia tardella	1	0.01
Pteronarcys proteus	1	0.01
Tvetenia bavarica gr.	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Alder Creek**	
State & County of Site:	**NY - Ulster County**	
Sampling Site Number:	**NY17-M02**	
Coordinates for Sampling Location:	**42.03125** latitude	**-74.70466** longitude
Sampling Date:	**12-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Polypedilum aviceps	18	0.18
Baetis tricaudatus	10	0.10
Stenonema sp.	8	0.08
Micropsectra sp.	7	0.07
Atherix sp.	6	0.06
Cheumatopsyche sp.	6	0.06
Lepidostoma sp.	6	0.06
Baetis intercalaris	5	0.05
Dolophilodes sp.	4	0.04
Baetis flavistriga	3	0.03
Leucrocuta sp.	3	0.03
Optioservus ovalis	3	0.03
Paragnetina immarginata	3	0.03
Acroneuria sp.	2	0.02
Heptagenia sp.	2	0.02
Hydropsyche sparna	2	0.02
Acentrella turbida	1	0.01
Apatania sp.	1	0.01
Brachycentrus appalachia	1	0.01
Diphetor hageni	1	0.01
Hydropsyche morosa	1	0.01
Rheotanytarsus exiguus gr.	1	0.01
Rhyacophila acutiloba	1	0.01
Tallaperla sp.	1	0.01
Thienemanniella sp.	1	0.01
Thienemannimyia gr. spp.	1	0.01
Undetermined Orthocladiinae	1	0.01
Undetermined Perlodidae	1	0.01
Total =	100	invertebrates

Stream & Site Name:	**Beaver Kill**	
State & County of Site:	**NY - Ulster County**	
Sampling Site Number:	**NY17-L01**	
Coordinates for Sampling Location:	**42.01192** latitude	**-74.62352** longitude
Sampling Date:	**11-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Brachycentrus solomoni	32	0.32
Polypedilum aviceps	13	0.13
Simulium sp.	10	0.10
Baetis tricaudatus	7	0.07
Hydropsyche slossonae	5	0.05
Rheotanytarsus pellucidus	3	0.03
Stenonema sp.	3	0.03
Agnetina capitata	2	0.02
Baetis flavistriga	2	0.02
Dolophilodes sp.	2	0.02
Heptagenia sp.	2	0.02
Lepidostoma sp.	2	0.02
Micropsectra sp.	2	0.02
Oulimnius latiusculus	2	0.02
Pteronarcys biloba	2	0.02
Sweltsa sp.	2	0.02
Acentrella turbida	1	0.01
Arctopsyche ladogensis	1	0.01
Atherix sp.	1	0.01
Drunella sp.	1	0.01
Eukiefferiella pseudomontana gr.	1	0.01
Paraleptophlebia sp.	1	0.01
Promoresia tardella	1	0.01
Tallaperla sp.	1	0.01
Undetermined Orthocladiinae	1	0.01
Total =	100 invertebrates	

Stream & Site Name:	**Beaver Kill**	
State & County of Site:	**NY - Ulster County**	
Sampling Site Number:	**NY17-L02**	
Coordinates for Sampling Location:	**42.02367** latitude	**-74.70904** longitude
Sampling Date:	**12-Aug-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Brachycentrus solomoni	20	0.2
Dolophilodes sp.	12	0.12
Polypedilum aviceps	9	0.09
Stenonema sp.	9	0.09
Baetis tricaudatus	7	0.07
Drunella sp.	7	0.07
Epeorus vitreus	4	0.04
Micropsectra sp.	4	0.04
Heptagenia sp.	3	0.03
Hexatoma sp.	3	0.03
Agnetina capitata	2	0.02
Ephemerella sp.	2	0.02
Lepidostoma sp.	2	0.02
Optioservus ovalis	2	0.02
Tvetenia vitracies	2	0.02
Acentrella turbida	1	0.01
Atherix sp.	1	0.01
Baetis intercalaris	1	0.01
Eukiefferiella pseudomontana gr.	1	0.01
Hydropsyche morosa	1	0.01
Hydropsyche slossonae	1	0.01
Leuctra sp.	1	0.01
Paragnetina immarginata	1	0.01
Paraleptophlebia sp.	1	0.01
Rheotanytarsus sp.	1	0.01
Serratella serrata	1	0.01
Thienemannimyia gr. spp.	1	0.01
Total =	100 invertebrates	

Baseline Results for Benthic Macroinvertebrate Sites

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Pennsylvania tributaries

Stream & Site Name:	**Faulkner Brook**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PANY1-S01**	
Coordinates for Sampling Location:	**41.98331** latitude	**-75.34491** longitude
Sampling Date:	**27-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Epeorus	40	0.19
Cinygmula	37	0.18
Chironomidae	25	0.12
Neophylax	17	0.08
Amphinemura	11	0.05
Diphetor	10	0.05
Leuctra	10	0.05
Drunella	9	0.04
Paraleptophlebia	8	0.04
Diplectrona	7	0.03
Oulimnius	7	0.03
Ephemerella	3	0.01
Oligochaeta	3	0.01
Prosimulium	3	0.01
Antocha	2	0.01
Baetis	2	0.01
Heptageniidae	2	0.01
Polycentropus	2	0.01
Chloroperlidae	1	0.005
Dicranota	1	0.005
Dubiraphia	1	0.005
Hydropsyche	1	0.005
Isoperla	1	0.005
Optioservus	1	0.005
Perlodidae	1	0.005
Pteronarcys	1	0.005
Pycnopsyche	1	0.005
Rhyacophila	1	0.005

Total = 208 invertebrates

Stream & Site Name:	**Sherman Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PANY1-M01**	
Coordinates for Sampling Location:	**41.98430** latitude	**-75.42757** longitude
Sampling Date:	**27-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Ephemerella	44	0.21
Chironomidae	26	0.12
Epeorus	20	0.10
Paraleptophlebia	18	0.09
Optioservus	9	0.04
Cinygmula	7	0.03
Diphetor	7	0.03
Isoperla	7	0.03
Leucrocuta	7	0.03
Neophylax	7	0.03
Cheumatopsyche	4	0.02
Psephenus	4	0.02
Sphaeriidae	4	0.02
Teloganopsis	4	0.02
Ceraclea	3	0.01
Hydropsyche	3	0.01
Isonychia	3	0.01
Maccaffertium	3	0.01
Acerpenna	2	0.01
Acroneuria	2	0.01
Amphinemura	2	0.01
Cambaridae	2	0.01
Drunella	2	0.01
Glossosoma	2	0.01
Hexatoma	2	0.01
Lanthus	2	0.01
Oligochaeta	2	0.01
Stenacron	2	0.01
Agnetina	1	0.005
Antocha	1	0.005
Baetis	1	0.005
Leuctra	1	0.005
Ostracoda	1	0.005
Oulimnius	1	0.005
Rhithrogena	1	0.005
Sweltsa	1	0.005
Taenionema	1	0.005
Turbellaria	1	0.005
Total =	210	invertebrates

Stream & Site Name:	**Shingle Hollow**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PANY2-S01**	
Coordinates for Sampling Location:	**41.90599** latitude	**-75.27287** longitude
Sampling Date:	**21-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	53	0.24
Epeorus	38	0.17
Cinygmula	21	0.09
Prosimulium	20	0.09
Amphinemura	17	0.08
Ameletus	13	0.06
Ostrocerca	13	0.06
Neophylax	11	0.05
Leuctra	7	0.03
Oulimnius	6	0.03
Ephemerella	5	0.02
Pteronarcys	3	0.01
Rhyacophila	3	0.01
Chloroperlidae	2	0.01
Lepidostoma	2	0.01
Wormaldia	2	0.01
Diplectrona	1	0.004
Drunella	1	0.004
Hexatoma	1	0.004
Malirekus	1	0.004
Neoplasta	1	0.004
Oligochaeta	1	0.004
Paraleptophlebia	1	0.004
Prostoia	1	0.004
Total =	224 invertebrates	

Stream & Site Name:	**Stockport Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PANY2-S02**	
Coordinates for Sampling Location:	**41.89548** latitude	**-75.27895** longitude
Sampling Date:	**21-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Chironomidae	53	0.25
Simulium	28	0.13
Epeorus	26	0.12
Amphinemura	14	0.07
Cinygmula	12	0.06
Paraleptophlebia	11	0.05
Diphetor	9	0.04
Diplectrona	6	0.03
Oulimnius	6	0.03
Ephemerella	5	0.02
Branchiobdellidae	4	0.02
Drunella	4	0.02
Leucrocuta	4	0.02
Leuctra	4	0.02
Hydropsyche	3	0.01
Acroneuria	2	0.01
Isoperla	2	0.01
Oligochaeta	2	0.01
Pteronarcys	2	0.01
Sweltsa	2	0.01
Baetis	1	0.005
Boyeria	1	0.005
Ceratopogonidae	1	0.005
Chloroperlidae	1	0.005
Clinocera	1	0.005
Hydracarina	1	0.005
Neophylax	1	0.005
Optioservus	1	0.005
Ostrocerca	1	0.005
Paragnetina	1	0.005
Polycentropus	1	0.005
Promoresia	1	0.005
Turbellaria	1	0.005
Total =	212 invertebrates	

Stream & Site Name:	**Weston Brook**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PANY3-S01**	
Coordinates for Sampling Location:	**41.86100** latitude	**-75.19901** longitude
Sampling Date:	**18-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	67	0.30
Cinygmula	29	0.13
Epeorus	26	0.12
Paraleptophlebia	15	0.07
Neophylax	10	0.05
Amphinemura	9	0.04
Leuctra	8	0.04
Ephemerella	7	0.03
Chloroperlidae	6	0.03
Sweltsa	6	0.03
Baetis	5	0.02
Oulimnius	5	0.02
Isoperla	4	0.02
Maccaffertium	3	0.01
Prosimulium	3	0.01
Pteronarcys	3	0.01
Diplectrona	2	0.01
Lepidostoma	2	0.01
Rhyacophila	2	0.01
Ameletus	1	0.005
Antocha	1	0.005
Diphetor	1	0.005
Drunella	1	0.005
Hydracarina	1	0.005
Hydropsyche	1	0.005
Nematoda	1	0.005
Pycnopsyche	1	0.005
Stenacron	1	0.005
Turbellaria	1	0.005

Total = 222 invertebrates

Stream & Site Name:	**Unnamed tributary - Starlight Lake inlet**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA1-S01**	
Coordinates for Sampling Location:	**41.91274** latitude	**-75.34528** longitude
Sampling Date:	**22-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Epeorus	57	0.24
Oulimnius	35	0.15
Cinygmula	24	0.10
Chironomidae	20	0.08
Leuctra	17	0.07
Paraleptophlebia	17	0.07
Neophylax	11	0.05
Amphinemura	8	0.03
Drunella	7	0.03
Diphetor	6	0.03
Sweltsa	5	0.02
Chloroperlidae	4	0.02
Ephemerella	4	0.02
Prosimulium	3	0.01
Cheumatopsyche	2	0.01
Hydropsyche	2	0.01
Lepidostoma	2	0.01
Maccaffertium	2	0.01
Oligochaeta	2	0.01
Stenacron	2	0.01
Ameletus	1	0.004
Baetis	1	0.004
Diplectrona	1	0.004
Heptageniidae	1	0.004
Hexatoma	1	0.004
Isoperla	1	0.004
Optioservus	1	0.004
Tabanidae	1	0.004

Total = 238 invertebrates

Stream & Site Name:	**Balls Creek at Scott Center Rd**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA1-S02**	
Coordinates for Sampling Location:	**41.93783** latitude	**-75.39603** longitude
Sampling Date:	**25-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	76	0.34
Oligochaeta	48	0.21
Amphinemura	18	0.08
Cinygmula	14	0.06
Hydracarina	9	0.04
Leuctra	8	0.04
Ephemerella	7	0.03
Oulimnius	7	0.03
Epeorus	6	0.03
Prosimulium	6	0.03
Sphaeriidae	5	0.02
Prostoma	4	0.02
Baetis	3	0.01
Clinocera	2	0.01
Hemerodromia	2	0.01
Neophylax	2	0.01
Nigronia	2	0.01
Ceratopogonidae	1	0.004
Eurylophella	1	0.004
Hydroptila	1	0.004
Prostoia	1	0.004
Rhyacophila	1	0.004
Simulium	1	0.004
Stegopterna	1	0.004

Total = 226 invertebrates

Stream & Site Name:	**Shehawken Creek - below Perch Pond confluence**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA1-M01**
Coordinates for Sampling Location:	**41.89549** latitude **-75.33261** longitude
Sampling Date:	**22-Apr-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Chironomidae	36	0.18
Ephemerella	34	0.17
Epeorus	19	0.10
Paraleptophlebia	16	0.08
Drunella	13	0.07
Teloganopsis	11	0.06
Hydropsyche	10	0.05
Optioservus	8	0.04
Baetis	5	0.03
Prostoia	4	0.02
Acroneuria	3	0.02
Amphinemura	3	0.02
Hexatoma	3	0.02
Leuctra	3	0.02
Neophylax	3	0.02
Oligochaeta	3	0.02
Rhyacophila	3	0.02
Eurylophella	2	0.01
Isonychia	2	0.01
Neoplasta	2	0.01
Prosimulium	2	0.01
Sweltsa	2	0.01
Ameletus	1	0.01
Cheumatopsyche	1	0.01
Diplectrona	1	0.01
Hydracarina	1	0.01
Isoperla	1	0.01
Leucrocuta	1	0.01
Maccaffertium	1	0.01
Oulimnius	1	0.01
Paragnetina	1	0.01
Psephenus	1	0.01
Pteronarcys	1	0.01
Taenionema	1	0.01
Total =	199	invertebrates

Stream & Site Name:	**Shehawken Creek - lower**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA1-L01**	
Coordinates for Sampling Location:	**41.94096** latitude	**-75.28842** longitude
Sampling Date:	**22-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Ephemerella	87	0.37
Drunella	36	0.15
Paraleptophlebia	26	0.11
Epeorus	22	0.09
Isoperla	7	0.03
Chironomidae	6	0.03
Isonychia	6	0.03
Oligochaeta	5	0.02
Optioservus	5	0.02
Eurylophella	4	0.02
Cheumatopsyche	2	0.01
Chloroperlidae	2	0.01
Cinygmula	2	0.01
Maccaffertium	2	0.01
Stenacron	2	0.01
Teloganopsis	2	0.01
Acerpenna	1	0.004
Amphinemura	1	0.004
Ceraclea	1	0.004
Ceratopogonidae	1	0.004
Chelifera	1	0.004
Cultus	1	0.004
Heptageniidae	1	0.004
Hydropsyche	1	0.004
Neophylax	1	0.004
Oulimnius	1	0.004
Paragnetina	1	0.004
Pisidium	1	0.004
Polycentropus	1	0.004
Prosimulium	1	0.004
Psilotreta	1	0.004
Rhithrogena	1	0.004
Sweltsa	1	0.004
Total =	233	invertebrates

Stream & Site Name:	**Balls Creek - lower**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA1-L02**	
Coordinates for Sampling Location:	**41.96373** latitude	**-75.34386** longitude
Sampling Date:	**25-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Ephemerella	75	0.35
Paraleptophlebia	28	0.13
Epeorus	18	0.08
Chironomidae	14	0.06
Drunella	11	0.05
Cinygmula	10	0.05
Chloroperlidae	7	0.03
Hydropsyche	7	0.03
Teloganopsis	7	0.03
Agnetina	5	0.02
Psilotreta	4	0.02
Baetis	3	0.01
Cheumatopsyche	3	0.01
Hexatoma	3	0.01
Isonychia	3	0.01
Isoperla	3	0.01
Sweltsa	3	0.01
Maccaffertium	2	0.01
Rhithrogena	2	0.01
Acroneuria	1	0.005
Amphinemura	1	0.005
Leucrocuta	1	0.005
Oulimnius	1	0.005
Paragnetina	1	0.005
Piscicolidae	1	0.005
Psephenus	1	0.005
Rhyacophila	1	0.005
Total =	216	invertebrates

Stream & Site Name:	**Unnamed tributary - S Br Equinunk Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA2-S01**	
Coordinates for Sampling Location:	**41.78708** latitude	**-75.25421** longitude
Sampling Date:	**14-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	105	0.48
Paraleptophlebia	21	0.10
Leuctra	20	0.09
Stegopterna	12	0.05
Prosimulium	11	0.05
Amphinemura	8	0.04
Sphaeriidae	7	0.03
Oligochaeta	5	0.02
Simulium	4	0.02
Hydropsyche	3	0.01
Stenacron	3	0.01
Stenelmis	3	0.01
Caecidotea	2	0.01
Cheumatopsyche	2	0.01
Clinocera	2	0.01
Hydracarina	2	0.01
Maccaffertium	2	0.01
Rhyacophila	2	0.01
Eurylophella	1	0.005
Nematoda	1	0.005
Nemouridae	1	0.005
Oulimnius	1	0.005
Psilotreta	1	0.005
Total =	219 invertebrates	

Stream & Site Name:	**Kinneyville Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA2-S02**	
Coordinates for Sampling Location:	**41.85095** latitude	**-75.33295** longitude
Sampling Date:	**15-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Prostoia	89	0.44
Amphinemura	39	0.19
Nemouridae	16	0.08
Prosimulium	10	0.05
Cheumatopsyche	9	0.04
Neophylax	9	0.04
Strophopteryx	7	0.03
Chironomidae	5	0.02
Stegopterna	5	0.02
Clinocera	3	0.01
Diplectrona	3	0.01
Oligochaeta	2	0.01
Rhyacophila	2	0.01
Maccaffertium	1	0.005
Nematoda	1	0.005
Prostoma	1	0.005
Sphaeriidae	1	0.005
Total =	203 invertebrates	

Stream & Site Name:	**S Br Equinunk Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA2-M01**	
Coordinates for Sampling Location:	**41.82931** latitude	**-75.23278** longitude
Sampling Date:	**14-Apr-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory**	**Relative Abundance**
Paraleptophlebia	51	0.24
Epeorus	37	0.18
Chironomidae	36	0.17
Ephemerella	21	0.10
Drunella	14	0.07
Prosimulium	8	0.04
Chloroperlidae	6	0.03
Diphetor	5	0.02
Ceratopogonidae	3	0.01
Leucrocuta	3	0.01
Acerpenna	2	0.01
Amphinemura	2	0.01
Eurylophella	2	0.01
Hydropsyche	2	0.01
Isonychia	2	0.01
Isoperla	2	0.01
Rhyacophila	2	0.01
Allocapnia	1	0.005
Baetis	1	0.005
Cheumatopsyche	1	0.005
Hexatoma	1	0.005
Lepidostoma	1	0.005
Leuctra	1	0.005
Maccaffertium	1	0.005
Ostrocerca	1	0.005
Paragnetina	1	0.005
Prostoia	1	0.005
Teloganopsis	1	0.005
Total =	209	invertebrates

Stream & Site Name:	**Kinneyville Cr - lower**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA2-M02**	
Coordinates for Sampling Location:	**41.82758** latitude	**-75.25756** longitude
Sampling Date:	**15-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Chironomidae	35	0.17
Drunella	29	0.14
Paraleptophlebia	24	0.11
Ephemerella	17	0.08
Nemouridae	14	0.07
Prostoia	12	0.06
Oligochaeta	8	0.04
Prosimulium	7	0.03
Heptageniidae	5	0.02
Hexatoma	5	0.02
Cheumatopsyche	4	0.02
Chloroperlidae	4	0.02
Glossosoma	4	0.02
Acroneuria	3	0.01
Ceratopogonidae	3	0.01
Epeorus	3	0.01
Leuctra	3	0.01
Neophylax	3	0.01
Chimarra	2	0.01
Isoperla	2	0.01
Rhyacophila	2	0.01
Strophopteryx	2	0.01
Agnetina	1	0.005
Amphinemura	1	0.005
Antocha	1	0.005
Caenis	1	0.005
Chelifera	1	0.005
Clinocera	1	0.005
Diplectrona	1	0.005
Hydracarina	1	0.005
Hydropsyche	1	0.005
Maccaffertium	1	0.005
Mystacides	1	0.005
Nematoda	1	0.005
Optioservus	1	0.005
Paragnetina	1	0.005
Perlodidae	1	0.005
Psilotreta	1	0.005
Taenionema	1	0.005
Teloganopsis	1	0.005
Total =	209 invertebrates	

Stream & Site Name:	**Equinunk Creek - upper**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA3-M01**
Coordinates for Sampling Location:	**41.81163** latitude **-75.35098** longitude
Sampling Date:	**13-Apr-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Chironomidae	35	0.17
Ephemerella	35	0.17
Drunella	28	0.13
Optioservus	13	0.06
Paraleptophlebia	11	0.05
Maccaffertium	9	0.04
Acroneuria	7	0.03
Oligochaeta	7	0.03
Prostoia	7	0.03
Epeorus	5	0.02
Neophylax	5	0.02
Prosimulium	5	0.02
Clinocera	4	0.02
Hexatoma	4	0.02
Antocha	3	0.01
Cheumatopsyche	3	0.01
Cinygmula	3	0.01
Isoperla	3	0.01
Psephenus	3	0.01
Amphinemura	2	0.01
Eurylophella	2	0.01
Hydracarina	2	0.01
Hydropsyche	2	0.01
Leucrocuta	2	0.01
Agnetina	1	0.005
Chelifera	1	0.005
Dolophilodes	1	0.005
Dubiraphia	1	0.005
Gomphidae	1	0.005
Nematoda	1	0.005
Oulimnius	1	0.005
Rhyacophila	1	0.005
Sphaeriidae	1	0.005
Taenionema	1	0.005
Teloganopsis	1	0.005
Total =	211 invertebrates	

Stream & Site Name:	**Equinunk Creek - lower**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA3-L01**	
Coordinates for Sampling Location:	**41.81308** latitude	**-75.28039** longitude
Sampling Date:	**15-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Drunella	65	0.30
Paraleptophlebia	43	0.20
Chironomidae	27	0.12
Ephemerella	27	0.12
Isoperla	13	0.06
Leucrocuta	11	0.05
Epeorus	5	0.02
Cheumatopsyche	3	0.01
Prostoia	3	0.01
Rhithrogena	3	0.01
Chloroperlidae	2	0.01
Cinygmula	2	0.01
Acroneuria	1	0.005
Branchiobdellidae	1	0.005
Cryptolabis	1	0.005
Hexatoma	1	0.005
Hydracarina	1	0.005
Maccaffertium	1	0.005
Neophylax	1	0.005
Nigronia	1	0.005
Oligochaeta	1	0.005
Optioservus	1	0.005
Paragnetina	1	0.005
Psilotreta	1	0.005
Stenacron	1	0.005
Teloganopsis	1	0.005

Total = 218 invertebrates

Stream & Site Name:	**Unnamed tributary - Audobon preserve**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA4-S01**	
Coordinates for Sampling Location:	**41.78242** latitude	**-75.20059** longitude
Sampling Date:	**18-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	87	0.40
Hyalella	24	0.11
Acerpenna	15	0.07
Sphaeriidae	13	0.06
Ephemerella	10	0.05
Prosimulium	8	0.04
Prostoia	8	0.04
Amphinemura	5	0.02
Diphetor	5	0.02
Oligochaeta	5	0.02
Centroptilum	3	0.01
Ceratopogonidae	3	0.01
Dubiraphia	3	0.01
Eurylophella	3	0.01
Stegopterna	3	0.01
Ameletus	2	0.01
Caenis	2	0.01
Hexatoma	2	0.01
Isoperla	2	0.01
Leptophlebia	2	0.01
Platycentropus	2	0.01
Dytiscidae	1	0.005
Dytiscidae	1	0.005
Erpobdellidae	1	0.005
Habrophlebia	1	0.005
Leptophlebiidae	1	0.005
Limnephilidae	1	0.005
Optioservus	1	0.005
Ostracoda	1	0.005
Oulimnius	1	0.005
Total =	216	invertebrates

Stream & Site Name:	**Salt River Brook**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA4-M01**	
Coordinates for Sampling Location:	**41.81722** latitude	**-75.16364** longitude
Sampling Date:	**18-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	42	0.20
Epeorus	24	0.11
Paraleptophlebia	21	0.10
Cinygmula	18	0.09
Prosimulium	16	0.08
Oulimnius	12	0.06
Acroneuria	11	0.05
Baetis	10	0.05
Amphinemura	6	0.03
Ephemerella	6	0.03
Sweltsa	6	0.03
Isoperla	5	0.02
Leuctra	5	0.02
Oligochaeta	4	0.02
Chloroperlidae	3	0.01
Goera	3	0.01
Diphetor	2	0.01
Heptageniidae	2	0.01
Hexatoma	2	0.01
Hydropsyche	2	0.01
Sphaeriidae	2	0.01
Clinocera	1	0.005
Diplectrona	1	0.005
Eurylophella	1	0.005
Lepidostoma	1	0.005
Nematoda	1	0.005
Neophylax	1	0.005
Psychomyia	1	0.005
Stenacron	1	0.005
Wormaldia	1	0.005
Total =	211	invertebrates

Stream & Site Name:	**Little Equinunk Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA4-L01**	
Coordinates for Sampling Location:	**41.78727** latitude	**-75.17645** longitude
Sampling Date:	**14-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	53	0.25
Prostoia	30	0.14
Drunella	26	0.12
Prosimulium	16	0.08
Oligochaeta	14	0.07
Ephemerella	13	0.06
Optioservus	10	0.05
Clinocera	6	0.03
Epeorus	6	0.03
Neophylax	6	0.03
Nematoda	4	0.02
Hydropsyche	3	0.01
Taenionema	3	0.01
Hydracarina	2	0.01
Paraleptophlebia	2	0.01
Rhyacophila	2	0.01
Teloganopsis	2	0.01
Acerpenna	1	0.005
Acroneuria	1	0.005
Baetis	1	0.005
Cheumatopsyche	1	0.005
Hemerodromia	1	0.005
Maccaffertium	1	0.005
Macronychus	1	0.005
Oulimnius	1	0.005
Prostoma	1	0.005
Simulium	1	0.005
Wormaldia	1	0.005

Total = 209 invertebrates

Stream & Site Name:	**Alder Marsh Brook - within State Game Lands #159**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA5 (EV ref - small)**
Coordinates for Sampling Location:	**41.73355** latitude **-75.25056** longitude
Sampling Date:	**21-Apr-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Prosimulium	64	0.28
Chironomidae	51	0.22
Oligochaeta	33	0.14
Amphinemura	16	0.07
Neophylax	8	0.03
Prostoia	6	0.03
Hydracarina	5	0.02
Drunella	4	0.02
Leuctra	3	0.01
Nematoda	3	0.01
Neoplasta	3	0.01
Rhyacophila	3	0.01
Sphaeriidae	3	0.01
Ameletus	2	0.01
Antocha	2	0.01
Clinocera	2	0.01
Pteronarcys	2	0.01
Baetis	1	0.004
Cheumatopsyche	1	0.004
Chrysops	1	0.004
Cordulegaster	1	0.004
Diplectrona	1	0.004
Ectopria	1	0.004
Epeorus	1	0.004
Ephemera	1	0.004
Ephemerella	1	0.004
Hydropsyche	1	0.004
Lanthus	1	0.004
Lepidostoma	1	0.004
Nemouridae	1	0.004
Nigronia	1	0.004
Optioservus	1	0.004
Ostrocerca	1	0.004
Pseudolimnophila	1	0.004
Pycnopsyche	1	0.004
Tallaperla	1	0.004
Total =	229	invertebrates

Stream & Site Name:	**Big Brook**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**(EV ref - medium)**	
Coordinates for Sampling Location:	**41.68082** latitude	**-75.24709** longitude
Sampling Date:	**13-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Chironomidae	82	0.40
Ephemerella	32	0.16
Teloganopsis	10	0.05
Paraleptophlebia	9	0.04
Diphetor	6	0.03
Epeorus	6	0.03
Cinygmula	5	0.02
Isoperla	5	0.02
Prosimulium	5	0.02
Drunella	4	0.02
Neophylax	4	0.02
Hydropsyche	3	0.01
Maccaffertium	3	0.01
Promoresia	3	0.01
Rhyacophila	3	0.01
Acerpenna	2	0.01
Ceraclea	2	0.01
Prostoia	2	0.01
Agnetina	1	0.005
Amphinemura	1	0.005
Ceratopogonidae	1	0.005
Chimarra	1	0.005
Eurylophella	1	0.005
Hemerodromia	1	0.005
Heptageniidae	1	0.005
Hyalella	1	0.005
Lepidostoma	1	0.005
Nematoda	1	0.005
Neoplasta	1	0.005
Oligochaeta	1	0.005
Optioservus	1	0.005
Paragnetina	1	0.005
Psilotreta	1	0.005
Pteronarcys	1	0.005
Stenacron	1	0.005
Strophopteryx	1	0.005
Sweltsa	1	0.005
Wormaldia	1	0.005
Total =	206 invertebrates	

Stream & Site Name:	**E Br Dyberry Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA5 (EV ref - large)**	
Coordinates for Sampling Location:	**41.67098** latitude	**-75.29098** longitude
Sampling Date:	**6-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	51	0.24
Ephemerella	49	0.23
Drunella	44	0.21
Paraleptophlebia	15	0.07
Isoperla	6	0.03
Prosimulium	5	0.02
Teloganopsis	5	0.02
Antocha	4	0.02
Prostoia	4	0.02
Leuctra	3	0.01
Rhyacophila	3	0.01
Taenionema	3	0.01
Baetis	2	0.01
Cinygmula	2	0.01
Epeorus	2	0.01
Oligochaeta	2	0.01
Optioservus	2	0.01
Acerpenna	1	0.005
Ceratopogonidae	1	0.005
Clinocera	1	0.005
Hexatoma	1	0.005
Hydracarina	1	0.005
Hydropsyche	1	0.005
Isonychia	1	0.005
Maccaffertium	1	0.005
Stenacron	1	0.005
Turbellaria	1	0.005
Total =	212 invertebrates	

Stream & Site Name:	**Unnamed tributary - W Br Dyberry Cr**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA6-S01**
Coordinates for Sampling Location:	**41.75855** latitude **-75.34267** longitude
Sampling Date:	**8-Apr-2011**

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	85	0.40
Cinygmula	18	0.08
Amphinemura	17	0.08
Epeorus	14	0.07
Paraleptophlebia	14	0.07
Ephemerella	10	0.05
Leuctra	7	0.03
Prosimulium	7	0.03
Ameletus	6	0.03
Diplectrona	6	0.03
Diphetor	5	0.02
Neophylax	5	0.02
Lepidostoma	4	0.02
Ceratopogonidae	2	0.01
Cheumatopsyche	2	0.01
Isoperla	2	0.01
Perlidae	2	0.01
Cambarus	1	0.005
Dolophilodes	1	0.005
Ephemera	1	0.005
Eurylophella	1	0.005
Hexatoma	1	0.005
Oligochaeta	1	0.005
Rhyacophila	1	0.005
Sweltsa	1	0.005

Total = 214 invertebrates

Stream & Site Name:	**Cramer Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA6-M01**	
Coordinates for Sampling Location:	**41.67607** latitude	**-75.30884** longitude
Sampling Date:	**31-Mar-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Chironomidae	97	0.51
Epeorus	16	0.08
Paraleptophlebia	10	0.05
Ephemerella	8	0.04
Cinygmula	7	0.04
Ceratopogonidae	6	0.03
Oligochaeta	4	0.02
Prosimulium	4	0.02
Baetis	3	0.02
Isoperla	3	0.02
Strophopteryx	3	0.02
Acroneuria	2	0.01
Amphinemura	2	0.01
Diphetor	2	0.01
Drunella	2	0.01
Hexatoma	2	0.01
Maccaffertium	2	0.01
Nemouridae	2	0.01
Prostoia	2	0.01
Acerpenna	1	0.01
Ameletus	1	0.01
Antocha	1	0.01
Atherix	1	0.01
Clinocera	1	0.01
Lepidostoma	1	0.01
Neophylax	1	0.01
Neoplasta	1	0.01
Optioservus	1	0.01
Paracapnia	1	0.01
Promoresia	1	0.01
Rhyacophila	1	0.01
Teloganopsis	1	0.01
Total =	190	invertebrates

Stream & Site Name:	**Middle Br Dyberry Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA6-M02**	
Coordinates for Sampling Location:	**41.71957** latitude	**-75.32141** longitude
Sampling Date:	**6-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	63	0.30
Prosimulium	29	0.14
Leuctra	19	0.09
Oulimnius	11	0.05
Baetis	10	0.05
Neophylax	9	0.04
Oligochaeta	8	0.04
Amphinemura	7	0.03
Optioservus	5	0.02
Cheumatopsyche	4	0.02
Diplectrona	4	0.02
Ephemerella	4	0.02
Rhyacophila	4	0.02
Hydracarina	3	0.01
Isoperla	3	0.01
Paraleptophlebia	3	0.01
Sphaeriidae	3	0.01
Ceratopogonidae	2	0.01
Cinygmula	2	0.01
Epeorus	2	0.01
Antocha	1	0.005
Chelifera	1	0.005
Dubiraphia	1	0.005
Ephemera	1	0.005
Ferrissia	1	0.005
Hexatoma	1	0.005
Lepidostoma	1	0.005
Maccaffertium	1	0.005
Nemouridae	1	0.005
Nigronia	1	0.005
Pteronarcys	1	0.005
Stegopterna	1	0.005
Total =	207	invertebrates

Stream & Site Name:	**W Br Dyberry Creek - headwaters**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA6-M03**	
Coordinates for Sampling Location:	**41.74394** latitude	**-75.34824** longitude
Sampling Date:	**8-Apr-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Chironomidae	52	0.24
Ephemerella	34	0.16
Prostoia	23	0.11
Amphinemura	13	0.06
Oligochaeta	10	0.05
Prosimulium	10	0.05
Nemouridae	7	0.03
Epeorus	6	0.03
Maccaffertium	6	0.03
Cheumatopsyche	5	0.02
Clinocera	5	0.02
Eurylophella	4	0.02
Paraleptophlebia	4	0.02
Isoperla	3	0.01
Leuctra	3	0.01
Rhyacophila	3	0.01
Sphaeriidae	3	0.01
Stegopterna	3	0.01
Wormaldia	3	0.01
Chelifera	2	0.01
Chimarra	2	0.01
Hexatoma	2	0.01
Hydracarina	2	0.01
Leucrocuta	2	0.01
Neophylax	2	0.01
Promoresia	2	0.01
Diphetor	1	0.005
Dolophilodes	1	0.005
Isonychia	1	0.005
Nematoda	1	0.005
Optioservus	1	0.005
Paranemoura	1	0.005
Psephenus	1	0.005
Teloganopsis	1	0.005
Total =	219	invertebrates

Stream & Site Name:	**W Br Dyberry Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA6-L01**	
Coordinates for Sampling Location:	**41.70318** latitude	**-75.30989** longitude
Sampling Date:	**6-Apr-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Ephemerella	46	0.19
Chironomidae	38	0.16
Optioservus	24	0.10
Paraleptophlebia	22	0.09
Prosimulium	10	0.04
Neophylax	8	0.03
Oulimnius	8	0.03
Rhyacophila	8	0.03
Epeorus	7	0.03
Cinygmula	6	0.03
Oligochaeta	6	0.03
Teloganopsis	6	0.03
Acerpenna	3	0.01
Acroneuria	3	0.01
Cheumatopsyche	3	0.01
Diphetor	3	0.01
Leuctra	3	0.01
Maccaffertium	3	0.01
Prostoia	3	0.01
Taenionema	3	0.01
Amphinemura	2	0.01
Ceratopogonidae	2	0.01
Drunella	2	0.01
Eurylophella	2	0.01
Agnetina	1	0.004
Antocha	1	0.004
Chloroperlidae	1	0.004
Clinocera	1	0.004
Dolophilodes	1	0.004
Gomphidae	1	0.004
Hyalella	1	0.004
Hydracarina	1	0.004
Hydropsyche	1	0.004
Hydroptila	1	0.004
Isoperla	1	0.004
Leucrocuta	1	0.004
Psephenus	1	0.004
Rhithrogena	1	0.004
Stenelmis	1	0.004
Taeniopterygidae	1	0.004
Total =	237 invertebrates	

Stream & Site Name:	**Unnamed tributary - Johnson Creek**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA7-S01**
Coordinates for Sampling Location:	**41.74124** latitude **-75.39033** longitude
Sampling Date:	**13-Apr-2011**

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	83	0.37
Diphetor	23	0.10
Epeorus	14	0.06
Amphinemura	13	0.06
Neophylax	11	0.05
Sphaeriidae	11	0.05
Ephemerella	10	0.04
Oligochaeta	7	0.03
Paraleptophlebia	7	0.03
Leuctra	6	0.03
Lepidostoma	5	0.02
Sweltsa	4	0.02
Acroneuria	3	0.01
Ceratopogonidae	3	0.01
Cinygmula	3	0.01
Simulium	3	0.01
Diplectrona	2	0.01
Isoperla	2	0.01
Antocha	1	0.004
Dolophilodes	1	0.004
Drunella	1	0.004
Eurylophella	1	0.004
Habrophlebia	1	0.004
Hexatoma	1	0.004
Hyalella	1	0.004
Macronychus	1	0.004
Oulimnius	1	0.004
Oxyethira	1	0.004
Prostoia	1	0.004
Rhyacophila	1	0.004
Stenelmis	1	0.004

Total = 223 invertebrates

Stream & Site Name:	**Johnson Creek**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA7-L01**	
Coordinates for Sampling Location:	**41.67833** latitude	**-75.37887** longitude
Sampling Date:	**30-Mar-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Ephemerella	55	0.26
Chironomidae	48	0.23
Epeorus	16	0.08
Oligochaeta	10	0.05
Prostoia	10	0.05
Drunella	8	0.04
Neophylax	8	0.04
Paraleptophlebia	6	0.03
Antocha	5	0.02
Prosimulium	5	0.02
Optioservus	4	0.02
Taenionema	4	0.02
Agnetina	3	0.01
Cheumatopsyche	3	0.01
Leuctra	3	0.01
Acroneuria	2	0.01
Cultus	2	0.01
Lepidostoma	2	0.01
Maccaffertium	2	0.01
Strophopteryx	2	0.01
Baetis	1	0.005
Clinocera	1	0.005
Diphetor	1	0.005
Dubiraphia	1	0.005
Hydropsyche	1	0.005
Isonychia	1	0.005
Isoperla	1	0.005
Leucrocuta	1	0.005
Ostracoda	1	0.005
Paracapnia	1	0.005
Psephenus	1	0.005
Rhithrogena	1	0.005
Sphaeriidae	1	0.005
Stenacron	1	0.005
Teloganopsis	1	0.005

Total = 213 invertebrates

Stream & Site Name:	**W Br Lackawaxen River - headwaters**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA8-S01**	
Coordinates for Sampling Location:	**41.78799** latitude	**-75.43492** longitude
Sampling Date:	**4-Apr-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory**	**Relative Abundance**
Chironomidae	110	0.49
Sphaeriidae	35	0.16
Paraleptophlebia	15	0.07
Oligochaeta	9	0.04
Amphinemura	6	0.03
Eurylophella	6	0.03
Habrophlebia	6	0.03
Prosimulium	6	0.03
Pisidium	5	0.02
Turbellaria	5	0.02
Maccaffertium	4	0.02
Neophylax	4	0.02
Acerpenna	2	0.01
Optioservus	2	0.01
Stenelmis	2	0.01
Acroneuria	1	0.004
Ceraclea	1	0.004
Cheumatopsyche	1	0.004
Dicranota	1	0.004
Hydroptila	1	0.004
Molanna	1	0.004
Paracapnia	1	0.004
Stegopterna	1	0.004
Total =	225	invertebrates

Stream & Site Name:	**Unnamed tributary (Long Pond outlet) - W Br Lackawaxen River**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA8-S02**
Coordinates for Sampling Location:	**41.63884** latitude **-75.34932** longitude
Sampling Date:	**4-Apr-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Chironomidae	43	0.19
Oligochaeta	28	0.13
Amphinemura	15	0.07
Paraleptophlebia	15	0.07
Optioservus	13	0.06
Prostoia	13	0.06
Ephemerella	12	0.05
Prosimulium	11	0.05
Epeorus	9	0.04
Diplectrona	6	0.03
Leuctra	6	0.03
Drunella	5	0.02
Psephenus	5	0.02
Sphaeriidae	5	0.02
Maccaffertium	4	0.02
Acroneuria	3	0.01
Cinygmula	3	0.01
Isoperla	3	0.01
Neophylax	3	0.01
Teloganopsis	3	0.01
Ameletus	2	0.01
Chimarra	2	0.01
Clinocera	2	0.01
Diphetor	1	0.005
Ephemera	1	0.005
Hexatoma	1	0.005
Hydropsyche	1	0.005
Isonychia	1	0.005
Nematoda	1	0.005
Oulimnius	1	0.005
Polycentropus	1	0.005
Psilotreta	1	0.005
Rhyacophila	1	0.005
Total =	221	invertebrates

Stream & Site Name:	**Unnamed tributary (Glass Pond) - W Br Lackawaxen River**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA8-M01**
Coordinates for Sampling Location:	**41.57843** latitude **-75.29600** longitude
Sampling Date:	**31-Mar-2011**

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Chironomidae	49	0.24
Ephemerella	40	0.20
Prostoia	23	0.11
Prosimulium	22	0.11
Nemouridae	10	0.05
Epeorus	8	0.04
Isoperla	8	0.04
Eurylophella	5	0.02
Paraleptophlebia	5	0.02
Acerpenna	4	0.02
Baetis	4	0.02
Diphetor	4	0.02
Clinocera	3	0.01
Dubiraphia	2	0.01
Neophylax	2	0.01
Stegopterna	2	0.01
Acroneuria	1	0.005
Amphinemura	1	0.005
Antocha	1	0.005
Caenis	1	0.005
Ceratopogonidae	1	0.005
Dolophilodes	1	0.005
Drunella	1	0.005
Haploperla	1	0.005
Hydropsyche	1	0.005
Maccaffertium	1	0.005
Rhyacophila	1	0.005
Strophopteryx	1	0.005
Teloganopsis	1	0.005
Wormaldia	1	0.005
Total =	205 invertebrates	

Stream & Site Name:	**Unnamed tributary - W Br Lackawaxen River**
State & County of Site:	**PA - Wayne County**
Sampling Site Number:	**PA8-M02**
Coordinates for Sampling Location:	**41.68888** latitude **-75.40498** longitude
Sampling Date:	**31-Mar-2011**

Macroinvertebrate Taxon	Abundance in Laboratory Subsample	Relative Abundance
Chironomidae	43	0.20
Ephemerella	33	0.16
Paraleptophlebia	27	0.13
Epeorus	17	0.08
Prosimulium	12	0.06
Amphinemura	6	0.03
Antocha	6	0.03
Prostoia	5	0.02
Isoperla	4	0.02
Leuctra	4	0.02
Dicranota	3	0.01
Diphetor	3	0.01
Drunella	3	0.01
Isonychia	3	0.01
Optioservus	3	0.01
Sweltsa	3	0.01
Teloganopsis	3	0.01
Ceratopogonidae	2	0.01
Eurylophella	2	0.01
Hydropsyche	2	0.01
Maccaffertium	2	0.01
Nemouridae	2	0.01
Neophylax	2	0.01
Oligochaeta	2	0.01
Oulimnius	2	0.01
Rhithrogena	2	0.01
Taenionema	2	0.01
Acerpenna	1	0.005
Acroneuria	1	0.005
Ameletus	1	0.005
Cinygmula	1	0.005
Ephemera	1	0.005
Habrophlebia	1	0.005
Hydracarina	1	0.005
Hydroptila	1	0.005
Micrasema	1	0.005
Polycentropus	1	0.005
Rhyacophila	1	0.005
Strophopteryx	1	0.005
Total =	210 invertebrates	

Stream & Site Name:	**W Br Lackawaxen River - upper**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA8-M03**	
Coordinates for Sampling Location:	**41.72610** latitude	**-75.44136** longitude
Sampling Date:	**4-Apr-2011**	

Macroinvertebrate Taxon	**Abundance in Laboratory Subsample**	**Relative Abundance**
Ephemerella	44	0.19
Chironomidae	24	0.11
Drunella	23	0.10
Paraleptophlebia	22	0.10
Epeorus	16	0.07
Neophylax	16	0.07
Optioservus	16	0.07
Teloganopsis	10	0.04
Hydropsyche	6	0.03
Diphetor	5	0.02
Maccaffertium	5	0.02
Acroneuria	3	0.01
Cheumatopsyche	3	0.01
Cinygmula	3	0.01
Leuctra	3	0.01
Oligochaeta	3	0.01
Isoperla	2	0.01
Lepidostoma	2	0.01
Leucrocuta	2	0.01
Promoresia	2	0.01
Psephenus	2	0.01
Rhyacophila	2	0.01
Amphinemura	1	0.004
Clinocera	1	0.004
Dicranota	1	0.004
Ephemera	1	0.004
Micrasema	1	0.004
Nigronia	1	0.004
Ostracoda	1	0.004
Oulimnius	1	0.004
Pteronarcys	1	0.004
Rhithrogena	1	0.004
Sphaeriidae	1	0.004
Sweltsa	1	0.004
Total =	226	invertebrates

Stream & Site Name:	**W Br Lackawaxen River - lower**	
State & County of Site:	**PA - Wayne County**	
Sampling Site Number:	**PA8-L01**	
Coordinates for Sampling Location:	**41.67510** latitude	**-75.37636** longitude
Sampling Date:	**30-Mar-2011**	

Macroinvertebrate Taxon	Abundance in Laboratory	Relative Abundance
Ephemerella	55	0.24
Chironomidae	49	0.21
Prosimulium	23	0.10
Paraleptophlebia	22	0.09
Epeorus	13	0.06
Drunella	9	0.04
Taenionema	8	0.03
Isoperla	6	0.03
Prostoia	5	0.02
Teloganopsis	5	0.02
Leucrocuta	4	0.02
Cheumatopsyche	3	0.01
Paracapnia	3	0.01
Baetis	2	0.01
Ceratopogonidae	2	0.01
Eurylophella	2	0.01
Hydracarina	2	0.01
Hydropsyche	2	0.01
Isonychia	2	0.01
Oligochaeta	2	0.01
Optioservus	2	0.01
Psilotreta	2	0.01
Stenacron	2	0.01
Acerpenna	1	0.004
Cinygmula	1	0.004
Clinocera	1	0.004
Diphetor	1	0.004
Dubiraphia	1	0.004
Psephenus	1	0.004
Sphaeriidae	1	0.004
Turbellaria	1	0.004
Total =	233	invertebrates

Appendix C: Monitoring for Baseline Radiochemistry before Natural Gas Development in the Delaware River Basin

Monitoring for Baseline Radiochemistry before Natural Gas Development in the Delaware River Basin

DELAWARE RIVER BASIN COMMISSION

October 2015

Acknowledgements

This report was prepared by the Delaware River Basin Commission staff: Steven J. Tambini, P.E., Executive Director. John Yagecic was the principal author of the report. Mr. Yagecic is the Supervisor of the Standards & Assessment Section in the Modeling, Monitoring, and Assessment Branch and a licensed professional engineer. Dr. A. Ronald MacGillivray was a contributing author and is the Commission's Environmental Toxicologist. Project support was provided by Dr. Thomas Fikslin, Elaine Panuccio, Eric Wentz, Victoria Trucksess, Jerrell Spotwood, and Jessica Sanko of the Delaware River Basin Commission, and Dr. Bahman Parsa and William Kirk Nemeth of the New Jersey Department of Health, Radioanalytical Services.

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List of Figures

This report describes the results of monitoring baseline radiochemistry before natural gas development in the Delaware River Basin, funded by the William Penn Foundation under Grant #56-13.

Project Description

From January 2014 through May 2015, the Delaware River Basin Commission (DRBC) collected surface water samples from a total of 32 Interstate Control Points (ICPs; mainstem Delaware River), Boundary Control Points (BCPs; tributaries to the Delaware) and other tributary monitoring points for radiochemistry analysis. This work was performed with financial support from the William Penn Foundation under Grant #56-13. Samples were analyzed by the New Jersey Department of Health Laboratory for the following parameters:

- Gross alpha & gross beta (evaporation), NJDHSS ECLS-R-GA & GB
- Radium -226 + Radium-228, NJDHSS ECLS-RA-RA226/228

This report documents the results of the sampling and analysis effort and its relevance toward documenting baseline radiochemistry conditions in the mainstem Delaware River and select tributaries. Details on sampling and analysis are contained in the project Quality Assurance Project Plan (QAPP) dated October 4, 2013.

Figure 1. Baseline Radiochemistry Sampling Locations

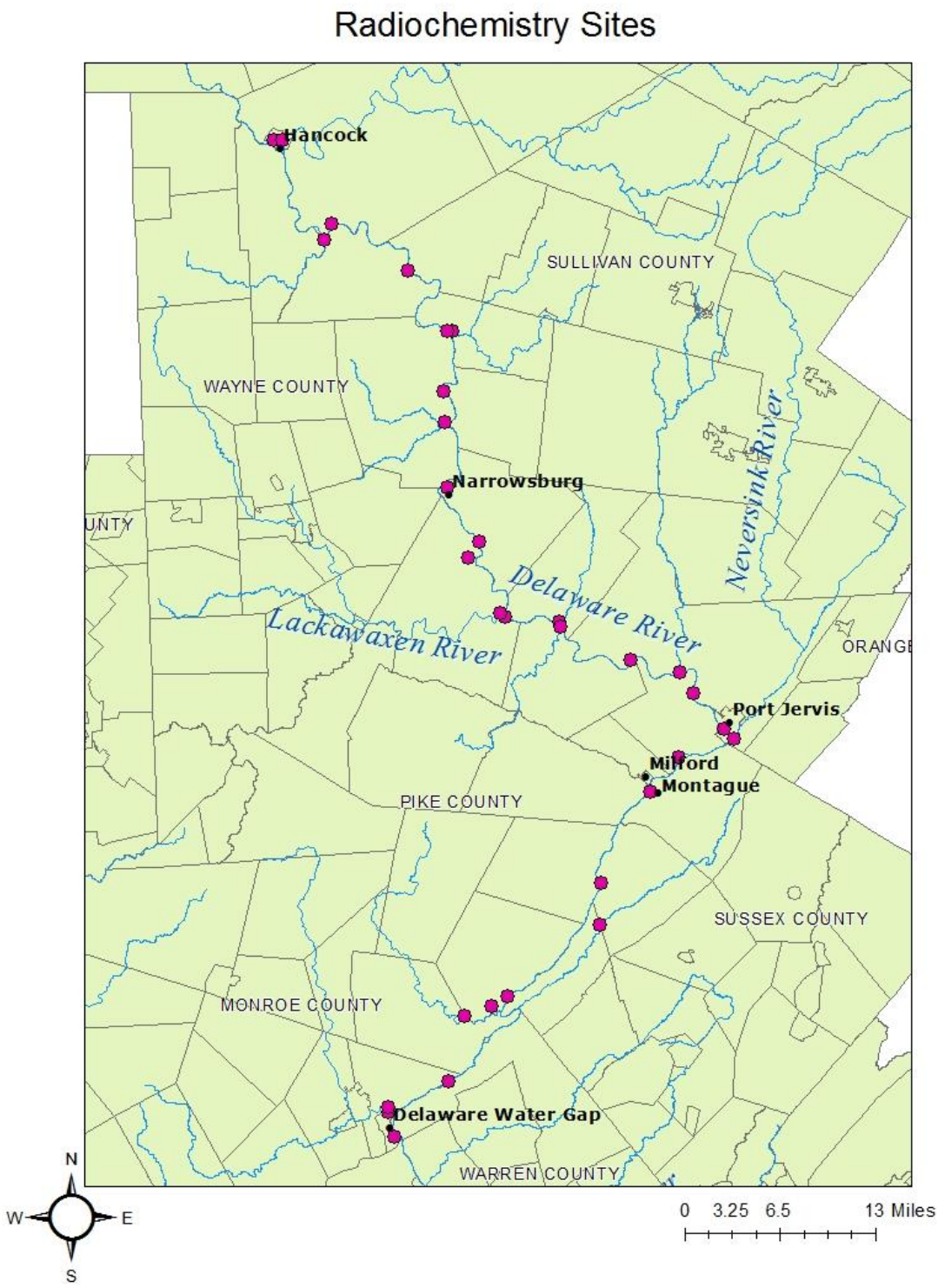


Table 1. Sampling Locations and Coordinates

Sample Location Name	Latitude	Longitude
West Branch Delaware River	41.9525	-75.29121
East Branch Delaware River	41.95199	-75.28016
Delaware River at Lordville	41.86917	-75.21444
Equinunk Creek	41.85333	-75.22528
Delaware River at Kellems Bridge	41.82333	-75.11417
Delaware River at Callicoon	41.76472	-75.06167
Callicoon Creek	41.76418	-75.05563
Delaware River at Damascus	41.705	-75.0675
Calkins Creek	41.67361	-75.06528
Delaware River at Narrowsburg	41.60944	-75.06222
Ten Mile River	41.55606	-75.019541
Masthope Creek	41.5401	-75.03384
Lackawaxen River	41.48639	-74.99222
Delaware River at Roebling Bridge	41.48196	-74.98566
Delaware River at Barryville	41.47694	-74.91389
Shahola Creek	41.47222	-74.91319
Delaware River at Pond Eddy	41.43944	-74.82028
Mongaup River	41.42694	-74.75611
Delaware River at Millrift	41.40639	-74.73917
Delaware River at Port Jervis	41.37167	-74.69778
Neversink River at Port Jervis	41.36111	-74.68556
Delaware River at DEWA Boundary	41.34361	-74.75778
Delaware River at Montague	41.30917	-74.79556
Delaware River at Dingmans	41.219691	-74.860184
Flatbrook Creek	41.17871	-74.86159
Delaware River at Bushkill Access	41.10833	-74.98194
Little Bushkill Creek	41.09778	-75.00417
Bushkill Creek	41.08861	-75.03833
Delaware River at Smithfield Beach	41.02444	-75.05972
Marshalls Creek	40.99861	-75.13833
Brodhead Creek	40.993385	-75.137787
Delaware River at Kittatinny Access	40.96951	-75.12939

Project Outputs and Outcomes

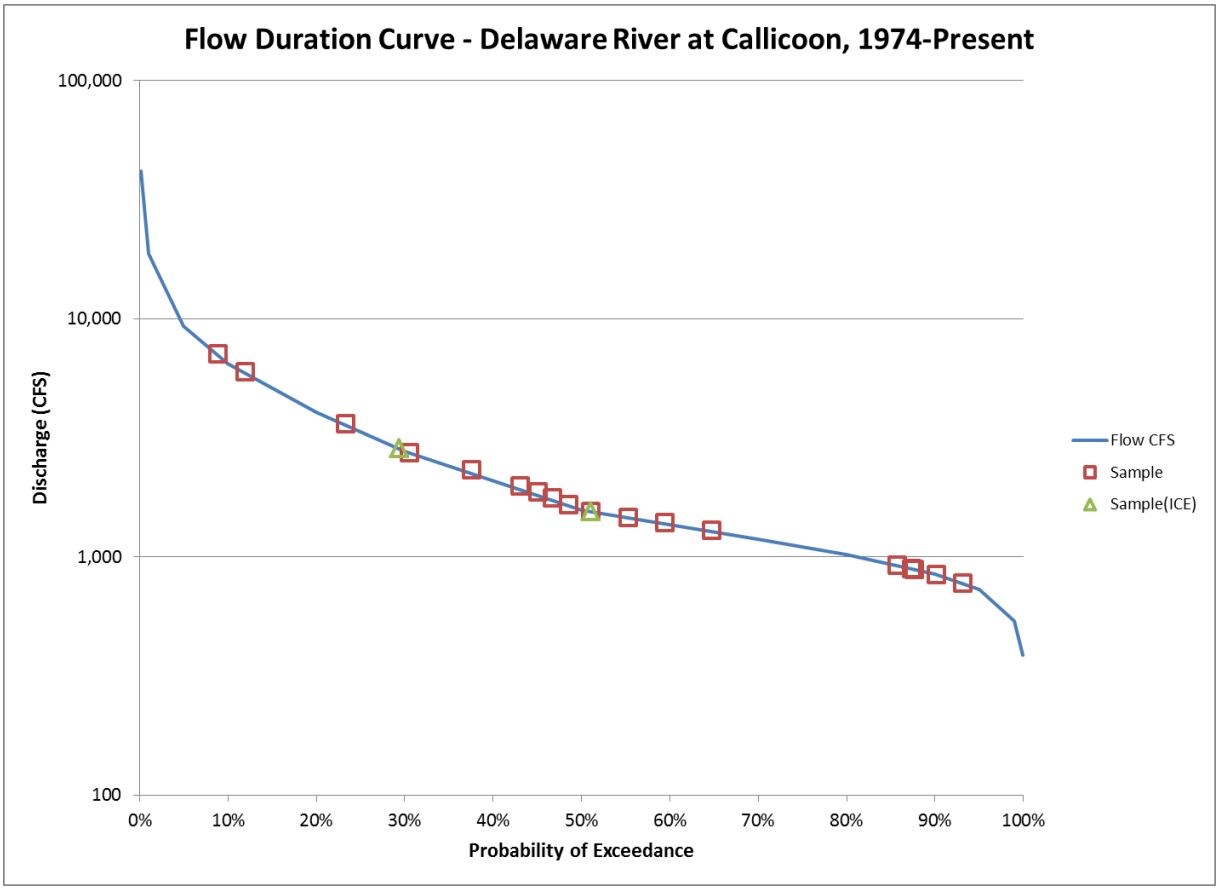
Under this project, DRBC characterized baseline radiochemistry at water quality control points, before the potential introduction of technologically-enhanced naturally occurring radioactive materials (TENORMs) associated with gas extraction using hydraulic fracturing techniques. In all 163 water samples (including field blanks and replicates) were collected and analyzed for alpha emitters, beta emitters, radium-226,

and radium-228. A link to the analytical results are provided in **Appendix A** of this report. This effort will provide a baseline for water quality protection over the long term.

Monitoring over the Flow Regime

Prior to initiation of this project, we did not know if radiochemistry activity measurements would vary with flow condition. As such we sought to sample over a range of flow conditions, so as not to limit sampling to either high or low flow conditions. Figure 2, below, shows flow conditions reported by the US Geological Survey (USGS) at gage 01427510 on Delaware River at Callicoon, NY (a representative site for the overall monitoring region) on each sample collection day plotted against the probability of exceedance curve for this site for the period from 1974 through the present. This graph demonstrates that monitoring spanned the majority of the flow range, from 90% probability of exceedance at low flow to 10% probability of exceedance at high flow, with relatively even distribution of monitoring events within that range. This figure also shows the estimated flow on sampling days when the presence of ice made exact determination of flow impossible.

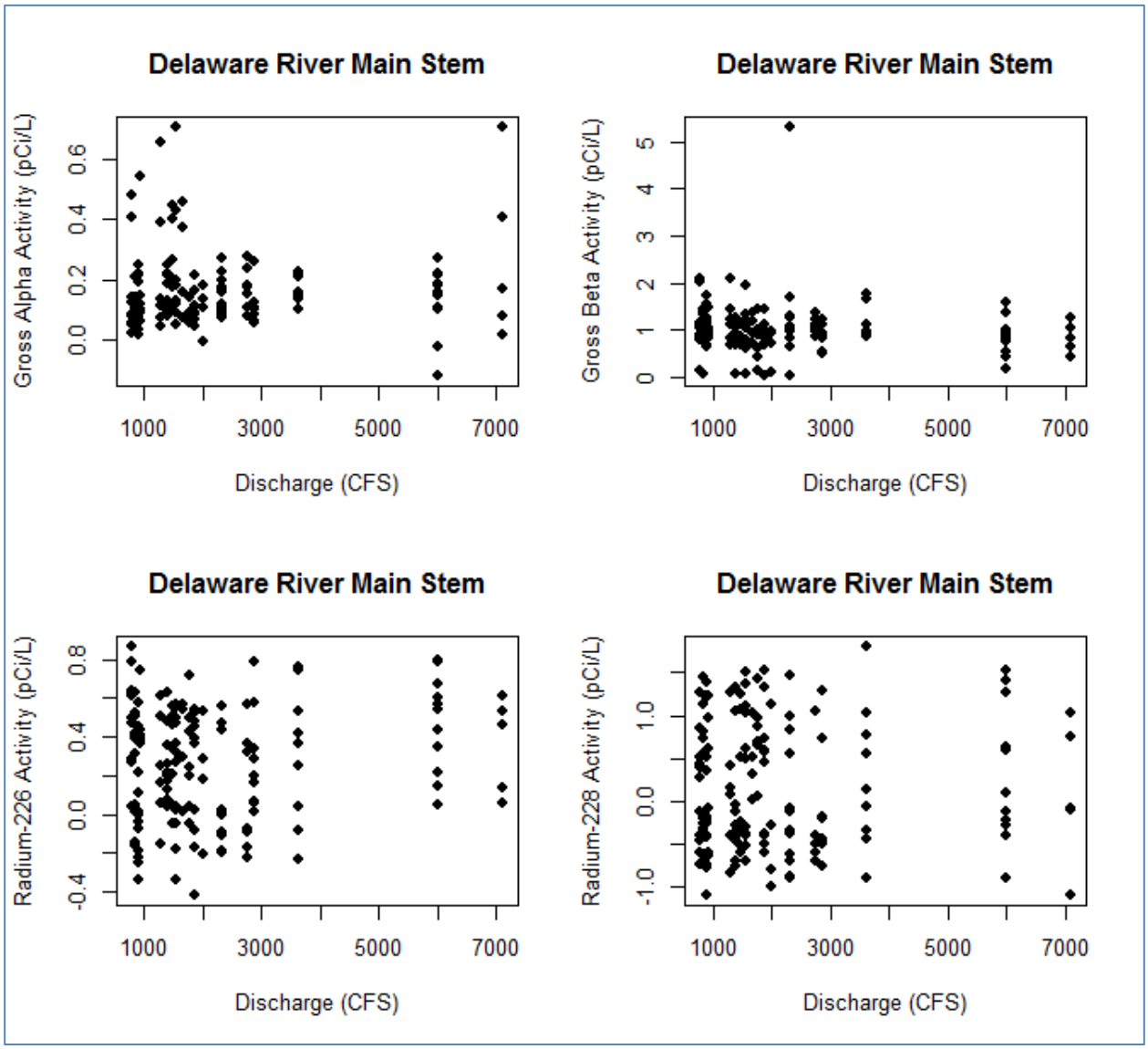
Figure 2. Flow on radiochemistry monitoring Days at the USGS Delaware River at Callicoon Gage 01427510 plotted against the probability of exceedance curve for this location.



Summary of Analytical Results

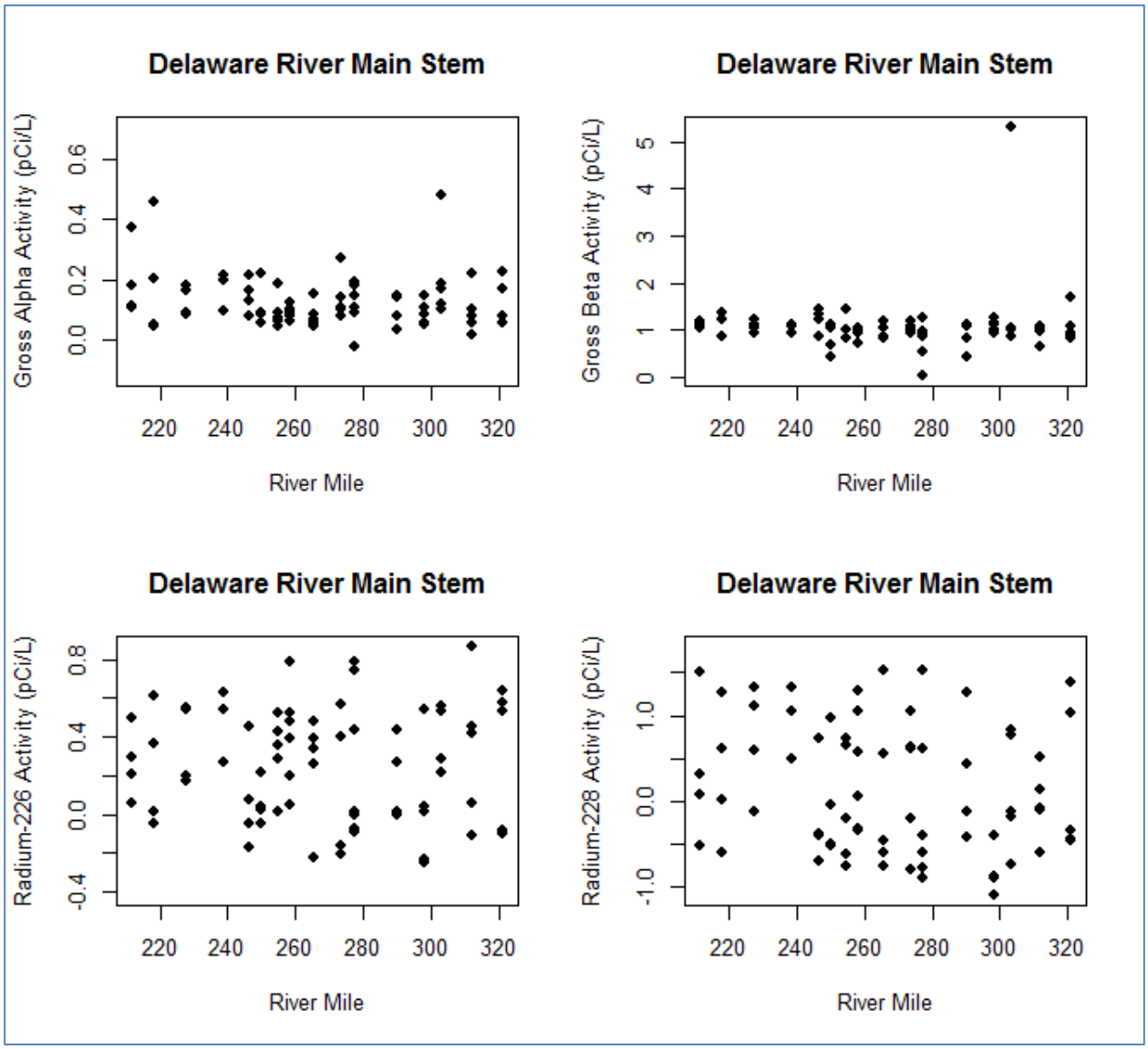
We compared activity measurements for the four radiochemistry parameters collected on the mainstem Delaware River to the flow at Callicoon NY on the sampling day to see if any relationship with flow was apparent. Figure 3 shows no apparent relationship with flow for any of four radiochemistry analytes suggesting that values within the observed ranges are similarly likely during high or low flow. It is noteworthy that at low ambient levels, activity measurement results below zero are possible. This is especially evident with Radium-226 and Radium-228.

Figure 3. Activity measurements for four radiochemistry parameters collected on the mainstem Delaware River compared to discharge at the USGS Callicoon, NY Gage on the monitoring day.



Similarly, we plotted mainstem Delaware River activity measurements against the River Mile (miles upstream from the mouth of Delaware Bay) to determine if any increase or decrease in activity measurements was apparent longitudinally along the river, associated either with localized loading or dilution. Results shown in Figure 4 suggested comparable activity measurements for all four radiochemistry parameters along the length of the monitored portion of the Delaware River.

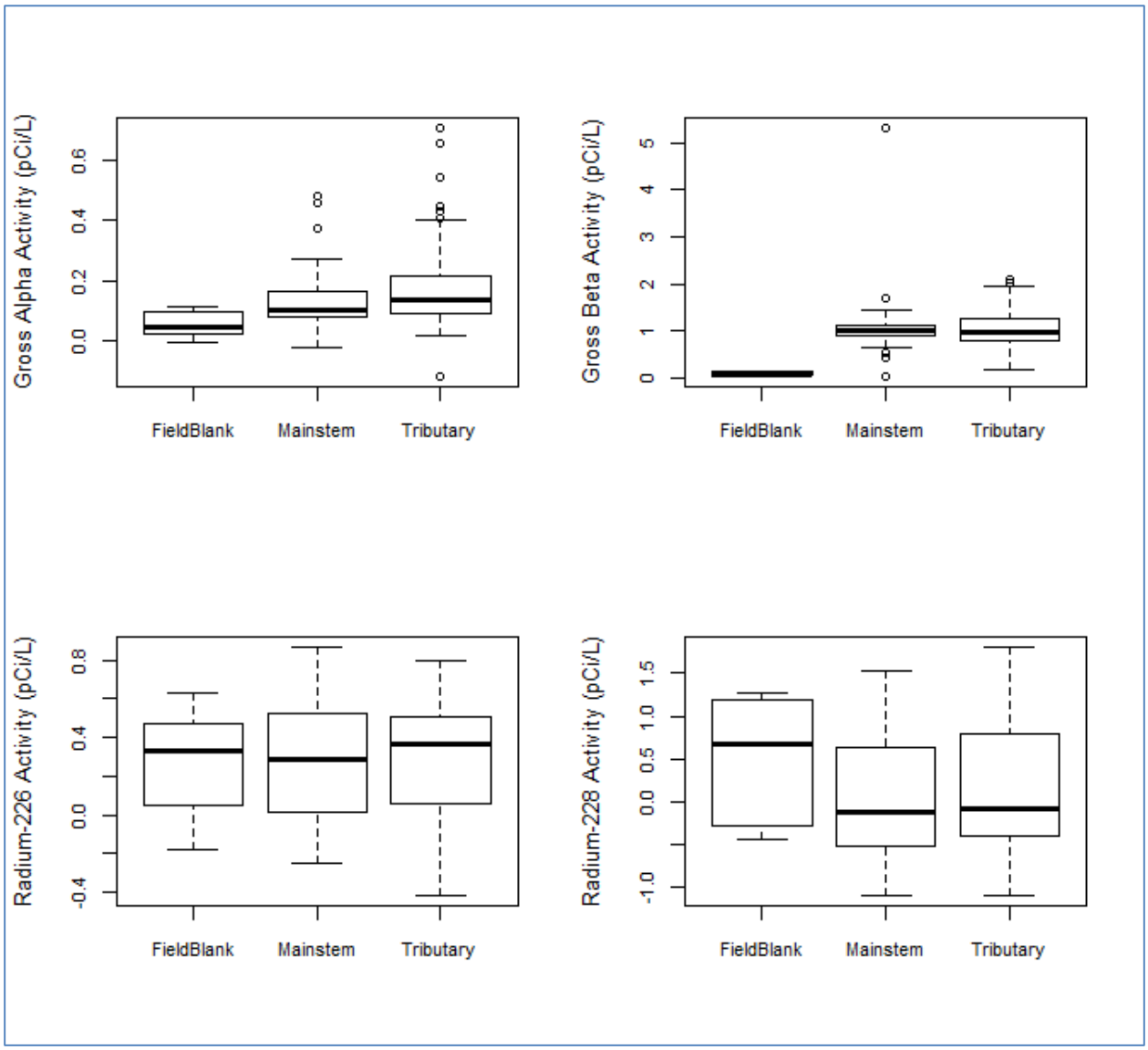
Figure 4. Activity Measurements for four radiochemistry parameters collected on the mainstem Delaware River compared to the river mile of the monitoring location.



We developed box and whisker plots of the activity measurement of the four radiochemistry parameters for tributary, mainstem Delaware, and field blank samples. Field blanks consist of clean laboratory water rinsed over all sample collection equipment and bottles which would come into direct contact with analytical samples. For this project, field blanks were blinded (provided a sample ID which would not allow identification as a blank by the laboratory) and submitted as routine analytical samples. This process is used to assess whether cross-contamination from field sampling equipment is evident and to compare differences between surface water and blank samples. Figure 5 below shows no appreciable difference between samples collected from mainstem Delaware River or Tributary sample locations for any of the four radiochemistry parameters. For Gross Beta, the results show that surface water samples are elevated

above field blank results. For other radiochemistry results, however, the field blanks are either comparable to surface water samples or actually exceed surface water samples in the case of Radium-228.

Figure 5. Box and whisker plots of activity measurements for four radiochemistry parameters for field blanks, tributary, and mainstem Delaware River surface water samples.



Interpretation of Low Activity Level Measurements

Reporting of ambient radiochemistry activity measurements in surface water is inherently different than traditional wet chemistry measurement. The typical heuristics used to assess the quality of traditional wet chemistry monitoring are a poor fit for interpreting radiochemistry monitoring quality. Reporting of negative activity values and field blanks results comparable to surface water results required interpretation from the analytical laboratory. We conferred with radiochemistry lab staff in January 2015 to better understand the results up to that point.

For each of the four radiochemistry parameters reported by the lab, results were reported as the measure activity level (in pCi/L) plus or minus an uncertainty range. Based on the methods documented in ECLS-R-Ra226/Ra228, negative activity counts are possible when sample activity is very low. As per consultation with the lab, the likeliest interpretation of both low (including negative) activity levels and similarity between blanks and surface water samples is that all samples are reflecting background ambient radiation. Localized inputs of additional radiation therefore are not evident in surface water results.

Comparison of Results to DRBC Surface Water Quality Standards

DRBC adopted surface water quality standards in the mainstem Delaware River, published as Water Quality Regulations in our Administrative Manual –Part III and as part of the Code of Federal Regulations at 18 CFR PART 410 (DRBC 2013). In water quality management Zones 1A, 1B, and 1C (corresponding to the monitoring region for this project) alpha emitters are not to exceed 3 pCi/L and beta emitters are not to exceed 1000 pCi/L. A review of the reported results shows that all results in all locations are well below the DRBC water quality standards. DRBC has not adopted any standards for Radium-226 or Radium-228.

Photographic Documentation of Monitoring Effort

A full set of photos documenting radiochemistry sample collection can be found on the DRBC flickr page. Many photos include recorded coordinates to facilitate mapping. The radiochemistry monitoring album is available at:

https://www.flickr.com/photos/drbc1961/sets/72157639883618534/

Two representative photos are shown below.

Photo 1. Field preservation of Radiochemistry samples collected in January 2014.

Photo 2. Bridge sampling for Radiochemistry in May 2014.

Conclusions

Monitoring results acquired under this program have allowed DRBC to establish a solid radiochemistry baseline for comparison with future radiochemistry levels, including levels occurring after commencement of natural gas extraction. With the funding provided under this grant, we've identified and selected appropriate analytical methods and field protocols, performed monitoring and analysis, and interpreted results. Monitoring was performed through the portions of the Delaware River basin likely to see impacts of natural gas development should that activity commence.

References

Administrative Manual –Part III Water Quality Regulations with Amendments through December 4, 2013. Delaware River Basin Commission. http://www.nj.gov/drbc/library/documents/WQregs.pdf Accessed July 15, 2015.

Radioanalytical Services Laboratory Quality Manual (**RSLQM**). Radioanalytical Services. New Jersey Department of Health and Senior Services. Effective July 1, 2013.

Standard Operating Procedure for Ra-226 and Ra-228 in Water Gamma-Ray Spectroscopy Method. ECLS-R-Ra226/Ra228. Radioanalytical Services. New Jersey Department of Health and Senior Services. Revised 5/16/2011.

Appendix A

Link to Analytical Results

Analytical results from this project are posted on the DRBC web site and may be downloaded using the link below:

http://www.nj.gov/drbc/library/documents/BaselineRadiochemResultsAll.xlsx