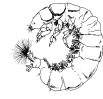




**NJ Department of Environmental Protection
Water Monitoring and Standards**



AMBIENT BIOMONITORING NETWORK



Lower Delaware Water Region

**Watershed Management Areas 17, 18, 19, and 20
Round 3 (2006-2007) Benthic Macroinvertebrate Data
Volume 1 of 2**



October 2010

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

NJ Department of Environmental Protection
Bob Martin, Commissioner



NJ Department of Environmental Protection

Water Resource Management
John Plonski, Assistant Commissioner

Water Monitoring and Standards
Leslie J. McGeorge, Administrator

Bureau of Freshwater & Biological Monitoring
Alfred L. Korndoerfer, Jr., Chief

October 2010

AMBIENT BIOMONITORING NETWORK

Lower Delaware Water Region

Watershed Management Areas 17, 18, 19, and 20

Round 3 (2006-2007) Benthic Macroinvertebrate Data

Volume 1 of 2

Water Monitoring Report Prepared By:

Water Monitoring & Standards
Bureau of Freshwater and Biological Monitoring

Sampling and Data Analysis:

Victor Poretti, Project Manager-Sampling Coordination
Dean Bryson, Project Manager-Laboratory Operations
Thomas Miller
Anna Signor

Report Preparation:

Thomas Miller

Map Preparation:

John Sell

Edited By:

Alfred Korndoerfer
Leslie McGeorge
Alena Baldwin-Brown

[cover photo: Site AN0168, Haynes Creek at Himmelein Rd, Burlington County, NJ.]



AMBIENT BIOMONITORING NETWORK

Watershed Management Areas 17, 18, 19, and 20

Lower Delaware Water Region

Round 3 (2006-2007) Benthic Macroinvertebrate Data

Volume 1 of 2

TABLE OF CONTENTS

	page
Executive Summary	1
Introduction	3
Rationale for Biological Monitoring	3
Advantages of Using Benthic Macroinvertebrates	3
Limitations of Biological Monitoring	3
Benthic Macroinvertebrates Usually Indicative of Good Water Quality	4
Benthic Macroinvertebrates Usually Indicative of Poor Water Quality	5
Study Design	6
Data Quality Objectives	6
Site Selection	6
Field and Laboratory Methods	7
Sample Collection	7
Sample Processing and Sorting	8
Macroinvertebrate Identification and Quality Control	8
Data Analysis	8
Multimetric Index Development	9
High Gradient and Low Gradient Streams	9
Pinelands Streams	10
Trend Analysis	11
Supplemental Analyses/Evaluation Methods	11
Morphological Abnormalities	11
Habitat Assessment	12
Chemical Monitoring	12

Results and Discussion	14
Summary of Statewide AMNET Data	14
Results & Trends	15
Regional Results	16
Evaluation by WMA	17
Watershed Management Area # 17	17
Watershed Management Area # 18	18
Watershed Management Area # 19	19
Watershed Management Area # 20	20
Macroinvertebrate Abnormalities	21
Causes and Conditions of Impairment Condition	22
Habitat Assessment vs. Biological Assessment	22
Additional Information	23
REFERENCES	24

Table 1

Ambient Biomonitoring Network Watershed Management Areas 17, 18, 19, and 20

Lower Delaware River Region

Round 3 (2006-2007) Benthic Macroinvertebrate Data

Volume 1 of 2

EXECUTIVE SUMMARY

Biological monitoring of freshwater systems in New Jersey provides an effective means of gauging long-term trends in surface water quality throughout the State. The Ambient Biomonitoring Network (AMNET) is one of the major ongoing monitoring programs. This statewide network of over 760 AMNET stations employs sampling and taxonomic analysis of in-stream macroinvertebrate communities to assess the ecological condition at each station. An integrated index of "biometrics", based on community composition and pollution tolerance levels of individual taxa, is used to assign assessment ratings.

Previously, a single statewide index, the New Jersey Impairment Score (NJIS), was used in assigning one of three assessment ratings, non-impaired, moderately impaired, and severely impaired. The NJIS was limited in that it used family level taxonomic identification for calculating scores and did not account for geographical differences in macroinvertebrate community structures. To resolve these limitations, three indices are now used for assessments; High Gradient Macroinvertebrate Index (HGMI), Coastal Plain Macroinvertebrate Index (CPMI), and Pinelands Macroinvertebrate Index (PMI). These indices account for the State's geographically different regions and use genus level taxonomic identification for calculating scores. The higher level of identification allows for more accurate results at four assessment rating levels (rather than the three previously used); "excellent", "good", "fair", and "poor". The results are considered reflective of the water and/or habitat quality at each site. This information is used by the Department, primarily in assessing progress toward the goals of the Clean Water Act via the Integrated Water Quality Monitoring and Assessment Report. AMNET data are also integral for designation of Category 1 waters, based on exceptional ecological significance.

Results are reported separately for each of New Jersey's five major drainage basins or "Water

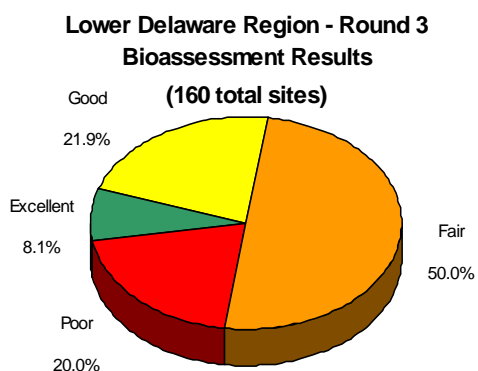


Figure 1

Regions" (Lower Delaware, Upper Delaware/Northwest, Northeast, Raritan, and Atlantic), each encompassing several sub-basins ("Watershed Management Areas"). The Water Regions, with an average of 153 AMNET sites each, are sampled in consecutive years on a five-year rotational basis. The most recent results, and Round by Round comparisons, can be found at:

<http://www.state.nj.us/dep/wms/bfbm/amnetRnd4.html>

The present study area comprises the Lower Delaware Water Region, which encompasses all sub-basins draining to the tidal Delaware River (i.e. from Trenton Falls downstream) and Delaware Bay drainage down to the Maurice River and its tributaries (primarily in Cumberland County). The study area of the present report includes WMA #'s 17 (Delaware Bay tributaries), 18 (lower tidal Delaware River tributaries), 19 (Rancocas Creek system), and 20 (upper tidal Delaware River tributaries). This report presents the results for the biological monitoring conducted from May 2006 - June 2007. The sampling of this Region marks the third round of data collection for this basin.

For the Lower Delaware Water Region, the results obtained in the current round are similar to those of the previous (second round) sampling. Currently, of 160 AMNET sites in the Lower Delaware Water Region, 13 (8.1%) were found "excellent", 35 (21.9%) "good", 80 (50.0%) "fair", and 32 (20.0%) "poor". (See Figure 1).

Results from the current (Round 3) sampling are compared to those from the same sites sampled in the earlier round (Round 2). For the purposes of comparing rounds, Round 2 results were re-assessed using the new indices. Of the 160 total AMNET sites presently sampled in the Lower Delaware Water Region, Round 3 samplings yielded a higher percentage of "fair" (50.0 %) sites than did the second round sampling (45.6%). Conversely, the percentage of "excellent" (8.1%), "good" (21.9%), and "poor" (20.0%) sites observed in the Round 3 sampling has improved since the Round 2 sampling (9.4%, 24.4%, and 20.6% respectively). Figure 2 displays the percentage of change in rating among the same 159 AMNET sites in the Lower Delaware Water Region that were sampled during the second round study period, and again during the current (Round 3) study period. The green indicates sites that have undergone a positive change, yellow indicates no change, and red indicates a negative change. Positive change is defined as an improved rating from the previous Round's rating, while a negative change is defined as a downgraded rating from the previous Round.

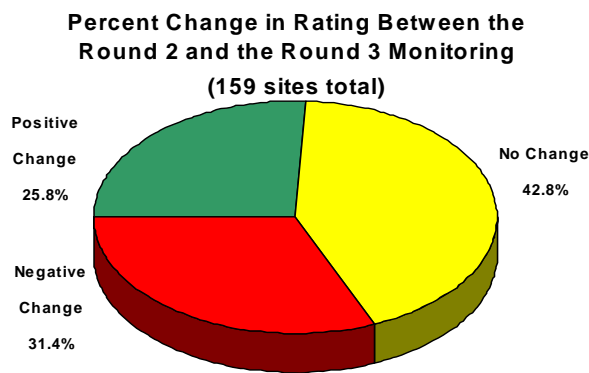


Figure 2

As reflected in the present study results, human land uses and practices, superimposed on the undisturbed physical terrain, play a major role in controlling the degree of pollution or degradation in a stream system. The relationship between benthic macroinvertebrate community impairment has been statistically related to different physiographic land types, land uses and other anthropogenic factors, on a statewide basis*. These findings strongly indicate that human land uses and practices play a major role in the degree of pollution or degradation in a stream system.

To determine what factors are contributing to impairments, or changes in impairment ratings, the Department has established a Stressor Identification (SI) process. The purpose of the Stressor Identification (SI) process as developed by USEPA is to identify the principle stressor(s), including but not limited to specific pollutants, responsible for the degraded biological condition. Identifying whether the principal stressor(s) is a *pollutant* or, if a specific pollutant(s) cannot be identified, is due to generic *pollution* is the first step towards deciding whether a TMDL or other appropriate management measures will be taken to remediate the impairment. At present, no sites in the Lower Delaware region have undergone the SI process.

* Kennen, J.G. 1998. Relation of benthic macroinvertebrate community impairment to basin characteristics in New Jersey streams. Fact Sheet FS-057-98. U.S. Geological Survey. West Trenton, NJ

INTRODUCTION

Rationale for Biological Monitoring

Biological monitoring of freshwater systems in New Jersey provides an effective means of gauging long-term trends in surface water quality throughout the State. The Ambient Biomonitoring Network (AMNET) is one of the major ongoing monitoring programs. This statewide network of over 760 AMNET stations employs sampling and taxonomic analysis of in-stream macroinvertebrate communities to assess the ecological condition at each station. An integrated index of "biometrics", based on community composition and pollution tolerance levels of individual taxa, is used to assign assessment ratings. Biological monitoring, as referenced in this report, pertains to the collection and analysis of stream macroinvertebrate communities as indicators of water or habitat quality. Macroinvertebrates are larger-than-microscopic, primarily benthic (bottom-dwelling) fauna, which are generally ubiquitous in freshwater and estuarine environments, and play an integral role in the aquatic food web. Insects (largely immature forms) are especially characteristic of freshwaters; other major groups include worms, mollusks (snails, clams) and crustaceans (scuds, shrimp, crayfish, etc.). They are more readily collected and quantified than either fish or periphyton communities. Species comprising the in-stream community occupy various niches, based on functional adaptation or feeding mode (e.g. predators, filter or detritus feeders, scavengers); their presence and relative abundance is governed by environmental conditions (which may determine available food supply), and by pollution tolerance levels of the respective taxa. The overall community thus is holistically reflective of conditions in its environment. Assessments of ambient water / habitat quality can then be made based upon standardized procedures, which can show perturbations measured as changes or differences in community structure [1]. While development of a "multitrophic" approach, to include finfish and periphyton communities with invertebrates, is being investigated, the primary means of assessment to date has been through macroinvertebrate community analysis.

Advantages of Using Benthic Macroinvertebrates:

1. They are good indicators of localized conditions of water quality due to their limited mobility. As such, they are well suited for the assessment of site-specific pollution impacts.
2. They are sensitive to environmental impacts from both point and non-point sources of pollution.
3. They integrate the effects of short-term environmental variations, such as oil spills and intermittent discharges.
4. Sampling is relatively easy and inexpensive.
5. They are holistic indicators of overall water quality, even for substances that may be present but at lower than detectable levels.
6. They are normally abundant in New Jersey waters as well as aquatic environments in general.
7. They serve as the primary food source for many species of commercially and recreationally important fishes.
8. Unlike chemical monitoring, where impacts to the environment tend to be by inference, not direct determination, they provide a direct measure of water quality in a manner consistent with the goals of the Clean Water Act.
9. They can be used to assess nonchemical impacts to the aquatic habitat, such as by thermal pollution, excessive sediment loading (siltation), or eutrophication.
10. To the general public, impacts to resident benthic macroinvertebrate communities are more tangible measurements of water quality than more esoteric listings of chemical test results.
11. When monitored together with relevant chemical/physical parameters, benthic macroinvertebrate communities can be used to identify sources of impairment.

Limitations of Biological Monitoring:

Biological monitoring cannot replace chemical monitoring, toxicity testing, and other standard environmental measurements. Each of these tools provides the analyst with specific information available only through its respective methodology.

The following illustrations provide an overview of the major macroinvertebrate indicator groups employed in making biological water quality assessments.

Benthic Macroinvertebrates Usually Indicative of Good Water Quality



Mayfly nymphs are often abundant wherever the water is clean. They are sensitive to various types of water pollution, including low dissolved oxygen, ammonia, biocides, and metals.

Stonefly nymphs are usually found only in cool, well-oxygenated waters free of pollution. Though not usually found in the numbers characteristic of mayflies, the presence of even a few stoneflies is indicative of good water quality.



Most caddisfly larvae, many of which build portable cases of stones, sticks, sand, and other detritus, are intolerant of water pollution.

Aquatic beetles are common in well-oxygenated, swiftly running waters; many species are referred to as “riffle beetles.” They are usually indicative of clean water since they are sensitive to wetting agents (soaps and detergents) and other



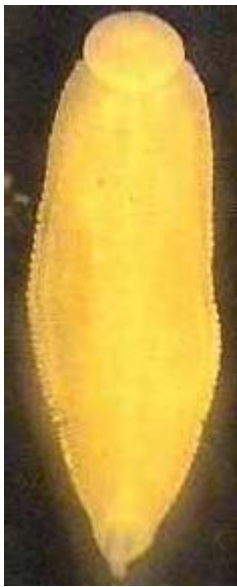
All photographs taken by D.Bryson, NJDEP

Benthic Macroinvertebrates Usually Indicative of Poor Water Quality

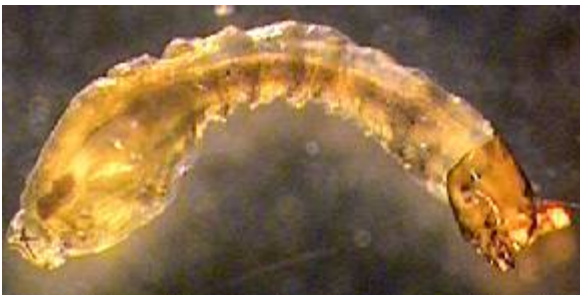


Midges (chironomids) are among the most common of aquatic invertebrates. They occupy a variety of aquatic habitats, including lakes, ponds, bogs, rivers, creeks, and marshes. They even exploit manmade habitats such as sewage treatment plants, water treatment plants, fish pools, irrigation ditches, and birdbaths. Many species are very tolerant of pollution.

Aquatic sowbugs, or freshwater isopods, are abundant in waters enriched with organic nutrients and low in dissolved oxygen. They are commonly observed in the recovery areas below sewage treatment plants.



Leeches and other segmented worms are very common in our lakes and streams, though not often noticed. They are tolerant of poor water quality and severe pollution.



Black fly larvae are filter feeders, capturing and ingesting plankton and bacteria from the surrounding water with specialized antennae. Some species are very tolerant of poor water quality and thus can be used as indicators of pollution.

STUDY DESIGN

Data Quality Objectives

The major goal of AMNET is to provide a long-term, cost-efficient means of gauging the quality of surface waters and watershed areas throughout the State. This is accomplished through biological sampling and analysis from a network of stream sites that adequately represents New Jersey's five major drainage basins and NJDEP's Watershed Management Areas (WMA). Administratively, a total of 21 WMA's have been delineated within New Jersey's five basins. Each major basin constitutes a "Water Region"; a major sub-basin forms each WMA. Within each WMA are several smaller sub-basins, delineated by the United States Geological Survey (USGS) as "hydrologic units," scale 11 (HUC11). The present study area comprises the Lower Delaware Water Region, which encompasses all sub-basins draining to the tidal Delaware River (i.e. from Trenton Falls downstream) and Delaware Bay drainage down to the Maurice River and its tributaries (primarily in Cumberland County). The study area of the present report includes WMA #'s 17 (Delaware Bay tributaries), 18 (lower tidal Delaware River tributaries), 19 (Rancocas Creek system), and 20 (upper tidal Delaware River tributaries) (see Maps 1 – 13, Volume 2). The standard sampling interval of five years, reflects a realistic temporal lag between cessation of an environmental perturbation and recovery of the impacted biological community. The Integrated Water Quality Monitoring and Assessment Report [2], which re-examines changes in New Jersey's stream systems on a two-year cycle, has indicated that five years is an optimum period for long-term biomonitoring. An ample network of stations is required for the creation of a long-term database, which in turn, is necessary for trend analysis and operation of water quality predictive models.

The AMNET program is designed to monitor a Water Region's complement of stations within a 12 to 15 month time period (depending on the size of the Water Region) giving DEP's modelers and planners a snapshot of ambient biological impacts during that continuous time interval. Usually, the sampling time interval starts at the beginning of the State's Fiscal Year in July. Sampling continues from that point, but only during the sampling index months of April - November, until all of the sites of the respective Water Region are visited. Sampling is curtailed through the coldest months (December to March), because of difficulties encountered in obtaining representative samples during this period.

SITE SELECTION

Sites were selected essentially to provide representative coverage of each Water Region, as well as the entire State. To ensure enough flow for sampling, sites on "first-order" streams are situated at least three miles downstream of headwaters (first order streams are those with no tributaries). Since most streams at this level have very little (or only intermittent) flow, most of the AMNET sites are situated on second-order streams (with only first-order streams as tributaries) and higher (with a greater hierarchy of tributaries). All sites are located in reasonably accessible and primarily wadeable segments, proceeding downstream to the head-of-tide. Sites are numbered in approximate upstream to downstream order, for the tributaries and mainstem of each major sub-basin. This is continued in an approximate north to south order within the Lower Delaware Water Region.

To maximize data correlation, AMNET, wherever possible, incorporates existing stations of the Ambient Surface Water Chemical Monitoring Network, which is administered jointly by NJDEP and the USGS [3]. Furthermore, so as to gauge the effects of major tributaries and larger lakes, many AMNET sites are located near their confluence or outlet. An attempt is made when selecting sites to obtain a sample

representative of the stream's total water quality. Sites are placed downstream of features such as: known sources of contamination (e.g. point-source discharges, agricultural operations); significant natural features such as wetlands, parks or wildlife management areas when it is determined that these features have a dominant impact (positively or negatively) on the stream.

Exact AMNET site locations were determined via the Global Positioning System (GPS) using Trimble Pathfinder units and the appropriate correction sources utilized by NJDEP. All positions were logged into the DEP's Geographical Information System (GIS) (see Maps 1 – 13, Appendix A, Volume 2). For the first round of AMNET, a total of 119 sites had been established for the AMNET sampling in the lower Delaware study area (1990-1996) [4]. This area (shown in Figure 3) included only the sub-basins

draining to the tidal Delaware River and Delaware Bay from Newton Creek in Camden County to Fishing Creek in lower Cape May. With the establishment of Water Regions by the NJDEP, the more recently created Upper and Lower Delaware Regions were divided by the "head-of-tide" at Trenton Falls; the upper tidal sub-basins from Cooper River (Camden County) to Crosswicks Creek, nearer Trenton, became part of the Lower Delaware Water Region. A total of 198 sites were established for the second round of AMNET sampling in the Lower Delaware Water Region [5]. This region encompasses all sub-basins draining to the tidal Delaware River (i.e. from Trenton Falls downstream) and Delaware Bay drainage down to the Maurice River and its

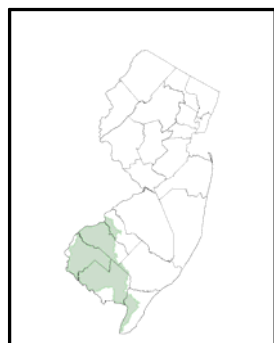


Figure 3

Map of Round 1 study area

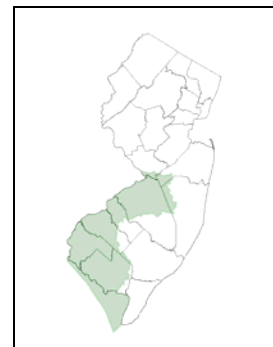


Figure 4

Map of Round 3 study area

tributaries (primarily in Cumberland County) (see Figure 4). The present Lower Delaware study area (Figure 4) includes a total of 160 sampling sites (see Table 2, Volume 2). A total of 38 sites were not assessed for Round 3 because they were either inaccessible or were determined to be under tidal influence, and were therefore not assessed using the current indices. The indices used for assessments in the Coastal Plain, the PMI and CPMI, are not calibrated for use in freshwater tidal areas. Currently, no methods exist for assessing these freshwater tidal streams and rivers. Those sites not assessed are: AN0726A (access road closed, site dropped from program), AN0126, AN0130, AN0131, AN0134, AN0142, AN0161, AN0171, AN0174, AN0176R, AN0176S, AN0180, AN0181, AN0184, AN0185, AN0653, AN0659, AN0660, AN0663, AN0664, AN0665, AN0667, AN0671, AN0672, AN0684, AN0685, AN0689, AN0702, AN0703, AN0704, AN0706, AN0707, AN0715, AN0718, AN0719, AN0720, AN0755, and AN0764.

FIELD & LABORATORY METHODS

Benthic macroinvertebrate sampling and analysis is performed in accordance with the NJDEP Field Procedures Manual [6], Rapid Bioassessment Protocol (RBP) guidelines of the USEPA [7] and Standard Operating Procedures (SOP) (see http://www.state.nj.us/dep/wms/bfbm/download/AMNET_SOP.pdf) of the NJDEP Aquatic Biomonitoring Laboratory [8]. As detailed in the SOP and in the quality assurance work plan [9], a thorough quality control program, with emphasis on macroinvertebrate taxonomy, is practiced.

Sample Collection

In general, a "multi-habitat" approach is used, focusing on the more productive habitat types [7]. The usual sampling device is a D-frame kick net of 800 x 900 um mesh size and one foot width (a Surber sampler or Ponar dredge may be employed when conditions require). In high-gradient streams, where the predominant substrate is cobble, the riffle/run area is the preferred sampling habitat; other likely habitat types are sampled when present. The kick net is held firmly against the hard bottom, and an area approximately one foot upstream of the net is disturbed using feet and/or hands. This procedure is repeated, sampling all velocity/depth regimes at the site, including at least one riffle-run-riffle sequence (if present). In the low-gradient Coastal Plain streams, bottoms generally consist of sand or mud without dominant cobble/riffle areas; therefore, a variety of stable substrates including woody debris, submerged macrophytes and portions of banks, are sampled. The "jab and sweep" method [10] is employed; a minimum of 20 jabs/sweeps are taken, proportioned approximately to the numbers of each habitat type present. In all cases, stream distance sampled approaches, but does not exceed, 100 Meters. Level of effort is consistent for all sites. Where possible, sampling is done upstream of bridges, sufficiently removed from the influence of any associated channel alterations. The entire sample is sieved using a #30 mesh sieve bucket, put into wide-mouthed (1-L) jars, and preserved with 5 to 10% formalin (to 20% in cases of excessive organic loading). Both the sieve bucket and net are examined for adhering organisms. Any found are removed with forceps and placed into the sample jar. During the field operations, qualitative observations of habitat, surrounding land use, potential pollution sources, and presence of other aquatic biota are recorded (Appendix D, Volume 2); a visual-based qualitative habitat assessment [7] is also performed (see Supplemental Analyses/Evaluation Methods). These observations/evaluations, however do not factor into the final bioassessment rating. Also, basic physical/chemical parameters are measured (pH, dissolved oxygen, specific conductivity, and temperature) at each site and reported on the data sheets.

Sample Processing and Sorting

In the laboratory, after rinsing in a #30 mesh sieve to remove the preservative, the composited sample is evenly distributed in a light-colored pan marked with grids of equal size. Using low-power magnification (6.3x), all organisms greater than 2mm in size are then removed from each randomly selected grid until a total of at least 100 organisms is obtained. Colonial groups (e.g. Bryozoa and Porifera), vertebrates, and terrestrial organisms are not included in the subsample. Organisms retained are reasonably intact to allow for accurate identification.

Macroinvertebrate Identification and Quality Control

The individuals from the subsample are identified to the lowest practicable taxonomic level, usually genus or species, using 7 to 30X stereozoom and 40 to 400X compound magnification. Leica Model MZ6 stereomicroscopes and Leica Models DMLS and DME compound microscopes are currently used.

A computerized digital camera system projects and records microscope images of selected specimens to aid in their identification. A comprehensive collection of taxonomic keys and other references, including functional (or niche) descriptions and pollution tolerance classifications for most species, is maintained. An indexed list of these is given in the Laboratory SOP [8]. Pertinent new reference material is added when available. Taxonomists confer with each other regarding species in question. The International Taxonomic Information System (ITIS) (www.itis.gov) is monitored for possible changes in nomenclature or groupings. Consultation with other scientists in the field, particularly from agencies involved in similar programs (e.g. New York Department of Environmental Conservation, USGS, USEPA), provides added assistance and confirmation when needed. For verification, 10% of the samples are sent

to a qualified independent consultant for parallel identifications. A macroinvertebrate specimen reference collection is also maintained.

Data Analysis

Biological impairment may be caused by several major factors such as organic enrichment, habitat degradation, or toxicological effects. It may be manifested in several aspects of the benthic macroinvertebrate community; these include absence of pollution-sensitive taxa, especially the EPT group, i.e., Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies); excessive dominance of pollution-tolerant taxa such as Chironomidae (midges) and Oligochaeta (worms); low overall taxa numbers, or other perceptible differences in community structure relative to a reference condition.

The data analysis is an important part of the RBP protocol, developed under USEPA auspices as an expedient and cost-effective monitoring tool. It recognizes the use of community metrics and the pollution indicator concept. "Biometrics" measure different components of community structure, including population and functional parameters, each with a different range of sensitivity to pollution stresses [1, 11]. The use of a variety of biometrics assures a more robust or valid assessment; therefore, an anomaly in any one metric is less likely to invalidate the study findings. The results are integrated through common scoring criteria, derived from an established comparable database, to determine a final numerical rating and consequent biological assessment category (see Table 1). This provides the analyst with an easily communicated evaluation of relative impairment, referred to in this report as the "bioassessment rating." For RBP protocols, results are based on 100 organism sub-samples. Scoring criteria for RBP protocols [1] are calibrated for genus level taxonomy, giving four final rating categories ("excellent", "good", "fair", and "poor").

Multimetric Index Development

Previously, a single statewide index, the New Jersey Impairment Score (NJIS), was used in assigning one of three assessment ratings - non-impaired, moderately impaired, and severely impaired. The NJIS was limited in that it used family level taxonomic identification for calculating scores and did not account for geographical differences in macroinvertebrate community structures. To resolve these limitations, three indices are now used for assessments; High Gradient Macroinvertebrate Index (HGMI), Coastal Plain Macroinvertebrate Index (CPMI), and Pinelands Macroinvertebrate Index (PMI). These indices account for the State's geographically different regions and use genus level taxonomic identification for calculating scores. The higher level of identification allows for more resolute and accurate results at four assessment rating levels (rather than the three previously used); "excellent", "good", "fair", and "poor". The results are considered reflective of the water and/or habitat quality at each site. This information is used by the Department, primarily in assessing progress toward the goals of the Clean Water Act via the Integrated Water Quality Monitoring and Assessment Report. AMNET data are also integral for designation of Category 1 waters, based on exceptional ecological significance.

New Jersey's benthic macroinvertebrate communities can be statistically grouped into three distinct structures based on geographical regions: high gradient (above the Fall Line), low gradient (Coastal Plain excluding the Pinelands), and Pinelands. To accurately assess biological conditions, a multimetric index was developed using genus-level taxonomic identifications for each distinct region

using guidelines outlined in USEPA *Rapid Bioassessment Protocols (RBP) for Use in Wadeable Streams and Rivers* (see <http://www.epa.gov/bioindicators/html/rbps.html>) [7]. All current assessments use one of the three genus level indices.

High Gradient and Low Gradient Streams

Two of the indices (see Table 1) to be employed in New Jersey, the High Gradient Macroinvertebrate Index (**HGMI**) [12] and Coastal Plain Macroinvertebrate Index (**CPMI**) [13], were developed using guidelines outlined in USEPA *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers* [7]. The resolution of index scoring thresholds was further enhanced by establishing a graphical relationship between the scores for each index and the tiers these scores represent in the context of a Biological Condition Gradient (BCG). The final index scoring thresholds serves to assess each site from two perspectives: the condition of the macroinvertebrate community and the regulatory use attainment.

The final index scores were derived in coordination with staff from Water Monitoring and Standards' Bureau of Freshwater and Biological Monitoring, Water Monitoring and Standards' Bureau of Water Quality Standards and Assessment, USEPA, United States Geological Survey (USGS), and the Delaware River Basin Commission (DRBC). For each index, four descriptive categories were established at break points along the statistical distribution of scores from reference to degraded conditions, coordinated to the BCG to increase the accuracy; "excellent", "good", "fair", and "poor" (see Table A1). "Excellent" and "good" fall into the acceptable regulatory range of fully attaining the aquatic life use. "Fair" and "poor" fall below the acceptable regulatory range and are considered impaired, from a Federal Clean Water Act (CWA) perspective, and not attaining the use.

Pinelands Streams

The Pinelands Macroinvertebrate Index (**PMI**) [14] was developed using the same USEPA guidelines and coordination as above. However, since a BCG was not developed, and not necessary from a regulatory standpoint, a graphical relationship between index scores and the BCG tiers was not generated. As with the high and low gradient indices, four descriptive categories were established at break points along the statistical distribution of scores from reference to degraded conditions "excellent", "good", "fair", and "poor" (see Table A1). For waters with a Surface Water Classification of "PL", "excellent" and "good" are classified as reference or natural conditions of Pineland waters and fall into the acceptable regulatory range of fully attaining the aquatic life use. "Fair" and "poor" fall below the acceptable regulatory range of PL waters and are considered impaired, from a CWA perspective, and not attaining the use.

The unique chemical, physical, and biological properties characteristic of waters contained within the Pinelands area are also present for varying distances outside this jurisdictional delineation. To assess these Pinelands-like waters outside the Pinelands boundary, the Department delineated a 5 kilometer buffer around the Pinelands Area and will apply the PMI to this region. Pinelands-like waters outside the jurisdictional delineation, however, have a Surface Water Classification of FW2 and not PL. From a regulatory standpoint, FW2 waters are held to a somewhat lower level of biological expectation than the Outstanding National Resource Waters (ONRW) waters contained within the PL designated area. Because of this lower regulatory expectation for FW2 waters, the PMI category of "fair" and above will be regarded as fully attaining the aquatic life use, i.e. biologically *nonimpaired* from a regulatory perspective. FW2 waters in this buffer region assessed as "poor" will be regarded as *impaired* and not supporting the aquatic life use.

Table A1: Descriptive and regulatory thresholds for Fresh Water High Gradient (Highlands, Ridge and Valley, Piedmont), Low Gradient (Coastal Plain, Excluding Pinelands Waters) and Pinelands Waters.

High Gradient Macroinvertebrate Index (HGMI) (Highlands, Ridge and Valley, Piedmont)		
Assessment category	Index Score	Regulatory Threshold
Excellent	63 - 100	Full Attainment
Good	< 63-42	Full Attainment
Fair	< 42-21	Non-Attainment
Poor	< 21	Non-Attainment
Coastal Plain Macroinvertebrate Index (CPMI)		
Assessment category	Index Score	Regulatory Threshold
Excellent	22 - 30	Full Attainment
Good	20 - 12	Full Attainment
Fair	10 - 6	Non-Attainment
Poor	< 6	Non-Attainment
Pinelands Macroinvertebrate Index (PMI)		
Assessment category	Index Score	Regulatory Threshold
Excellent	63 - 100	Full Attainment
Good	< 63-56	Full Attainment
Fair	< 56-34	Non-Attainment(PL) Full Attainment(FW2)
Poor	< 34	Non-Attainment

Trend Analysis

In evaluating the current AMNET data against that of the previous round, a significant improvement or decline is considered to have occurred if the difference in AMNET scores have changed the bioassessment rating. A complete list of site-by-site comparisons is presented in Table 2, Volume 2 where a (+) indicates a significant improvement, a (-) indicates a significant decline, and a (/) indicates no change in rating. If a site was only sampled once in concurrent rounds, the change will have "nd" meaning there was "no data" available for a comparison.

SUPPLEMENTAL ANALYSES / EVALUATION METHODS

Morphological Abnormalities

Occasionally, morphological abnormalities have been found in individual macroinvertebrates recovered in WM&S/BFBM's AMNET collections. These deformities have been most readily detected in the Chironomidae (midges), where they occur primarily in the head appendages (antennae) and mouth parts (mentum and mandibles). While the incidence has been most frequent in the chironomids (especially those species categorized as detritivores, herbivores or periphyton feeders), abnormalities have also been observed in individuals of other taxonomic groups. Although this is not a factor in the data analysis, such

features are noted as they may signify possible contaminants or stressful conditions in the respective drainages.

Abnormalities observed in the course of identification are noted; these results are summarized by sample site in Table 3, Volume 2. For Chironomidae, the data are displayed as # of chironomids with abnormalities per # of chironomids examined. For all other taxa, just the number of individuals with abnormalities is presented. Photographic examples of abnormalities in midge larvae and amphipods (scuds) are presented in Appendix B, Volume 2.

Habitat Assessment

The physical attributes of habitat play an integral role in the health of the macroinvertebrate community. Where stations are physically comparable, differences in impairment can be attributed to water quality factors; however, physical habitat degradation alone can account for biological impairment in a stream [1]. Parameters evaluated include in-stream substrate, channel morphology, bank structural features, and riparian vegetation. The area evaluated includes the sample site and its immediate surroundings, particularly upstream, usually within a 100 – 200 foot radius. The visual-based qualitative habitat assessment results in one of four condition categories: optimal, suboptimal, marginal or poor, as outlined in the USEPA criteria [7].

The habitat assessment is separated into two basic approaches; one designed for high gradient streams and one designed for low gradient streams [7]. Examples of assessment forms for each approach can be found in Appendix C, Volume 2. Streams in the northern regions of New Jersey are generally considered to be “high gradient” streams, having substrates of rock and cobble of various sizes, and with relatively swift flow. Those in the Coastal Plain and Pinelands regions of southern New Jersey are considered as “low gradient” streams, having slower flow and more homogeneous substrates, primarily of sand or gravel and finer sediments. Habitat assessments may be temporarily downgraded by adverse weather conditions, such as excessive rainfall or prolonged drought. It should also be noted that habitat assessments are performed independently of the macroinvertebrate community analysis; thus, they do not factor into the final impairment score, but are used primarily as supplementary information.

Chemical Monitoring

WM&S' Bureau of Water Quality Standards and Assessment (WM&S/BWQSA) is responsible for the development, adoption, and administration of New Jersey's Surface Quality Standards (SWQS) and Ground Water Quality Standards (GWQS) [15]. This includes the development of water quality criteria to protect aquatic life and human health, the assignment of stream classifications to reflect existing and designated uses, and the promulgation of antidegradation policies to protect and maintain the quality of surface and ground waters of the State. The SWQS are used by many DEP programs including: the New Jersey Pollutant Discharge Elimination System Program in the Division of Water Quality, Site Remediation Program, and the Division of Land Use Regulation (including the Stream Encroachment Program).

The SWQS form the basis for monitoring the degree of impairment of surface water bodies and for calculating total maximum daily loads (TMDLs), which represent the assimilative capacity of surface water for a given parameter of concern. The development of TMDLs includes balancing the impacts from point sources, non-point sources and natural background conditions. TMDLs are developed on a watershed basis to aid watershed management planning efforts.

WM&S/BWQSA is also responsible for conducting and coordinating water quality assessments of all waters of the State. These assessments are reported through the New Jersey Integrated Water Quality Monitoring and Assessment Report (Integrated Report). [2] Historically, the Department summarized statewide water quality in a biennial report entitled, "New Jersey's Water Quality Inventory Report" (also known as the "305(b) Report") and proposed a separate "303(d) list" or "List of Impaired Waters". The current USEPA format for these reports (instituted in 2002) integrates the reporting requirements of Sections 303(d) and 305(b) of the Federal Clean Water Act into one comprehensive, integrated water quality monitoring and assessment report.

To prepare the Integrated Report, WM&S/BWQSA compiles available monitoring data from various agencies and organizations that collect measurements from the State's streams. The physical/chemical data is compared to water quality criteria outlined in the SWQS. Values for each measured parameter are evaluated and used to determine whether the waterway is in "full attainment of aquatic life use" or in "non-attainment of aquatic life use" based upon the levels outlined in those standards.

AMNET results were compared to WM&S/BWQSA's use attainment designations as assessed using physical / chemical specific criterion. A list of AMNET sites corresponding to stream segments, designated by BWQSA (between Round 2 and Round 3) as "non-attainment of aquatic life use" based upon physical/chemical criterion, can be found in Table 5, Volume 2. Out of 160 sites in the Lower Delaware Water Region, chemical sampling was performed on 89 sites between Round 2 - Round 3 as part of the various water monitoring networks conducted by WM&S. All 89 sites were designated as "non-attainment of aquatic life use" for at least one physical / chemical parameter in the 2006 Integrated Report. Of these sites, 5 were "excellent", 20 were "good", 40 were "fair" and 24 sites were "poor" for biological impairments (see Table 5, Volume 2). The most common exceedances were for pH, Dissolved Oxygen (DO), Total Phosphorus (Tot Phos), Total Suspended Solids (TSS), Turbidity, and Temperature. Special attention should be given to the nonimpaired sites that demonstrated exceedances of standards. Continued degradation of the water quality will likely downgrade the nonimpaired assessment in the future.

The Department will attempt to identify the potential sources of impairment using the Stressor Identification (SI) process. The purpose of the Stressor Identification (SI) process is to identify the principle stressor(s), including but not limited to specific pollutants, responsible for the degraded biological condition. Identifying whether the principal stressor(s) is a *pollutant** or due to more generic landscape changes caused by human activities, is the first step towards deciding whether a pollutant(s) specific TMDL or other appropriate management measures will be taken to remediate the impairment. At present, no sites in this Basin have undergone the SI process.

* As defined in the N.J. Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and the Federal Water Pollution Control Act, aka "Clean Water Act" (33 U.S.C. 1251-1376)

RESULTS AND DISCUSSION

Summary of Statewide AMNET Data

The current study marks the third round of sampling for the Lower Delaware Basin AMNET study. Data were collected between May 2006 – June 2007. For the purpose of comparing rounds, Round 2 results were re-assessed using the new indices. Only the non-tidal sites were assessed in both rounds of data. The Lower Delaware Basin has shown considerable changes since the previous rounds by virtue of using the more geographically specific assessment. The percentage of Round 3 sites considered non-impaired using the NJIS was 15.6% . Using the new multimetric assessments, the percentage of Round 3 sites in the non-impaired range (“excellent” or “good”) has risen to 30.0%. The use of the PMI in particular can be attributed for this change in assessment. By using genus level taxonomic identifications to calculate scores, and accounting for the unique macroinvertebrate community of the Pinelands, a significantly more accurate assessment has been made. The percent of “fair” sites has shown a slight increase, while the percent of “excellent”, “good”, and “poor” sites has shown a slight decline (based on the 160 same sites). The table below presents the proportions of “excellent”, “good”, “fair”, and “poor” AMNET sites for all New Jersey Water Regions in the second and third AMNET rounds.

Region	Number of sites				Total sites
	Excellent	Good	Fair	Poor	
Third round					
Upper Delaware	33 (23.4%)	48 (34.0%)	43 (30.5%)	17 (12.1%)	141
Northeast	8 (7.8%)	13 (12.7%)	56 (54.9%)	25 (24.5%)	102
Raritan	27 (20.8%)	38 (29.2%)	64 (40.0%)	31 (23.8%)	160
Atlantic	53 (27.0%)	44 (22.4%)	77 (39.3%)	22 (11.2%)	196
Lower Delaware	13 (8.1%)	35 (21.9%)	80 (50.0%)	32 (20.0%)	160
Second round					
Upper Delaware	45 (32.9%)	43 (31.4%)	40 (29.2%)	9 (6.7%)	137
Northeast	12 (11.8%)	13 (12.8%)	51 (50.0%)	26 (25.5%)	102
Raritan	30 (18.6%)	44 (27.3%)	52 (32.3%)	35 (21.7%)	161
Atlantic	50 (25.4%)	41 (20.8%)	77 (39.1%)	29 (14.7%)	197
Lower Delaware	15 (9.4%)	39 (24.4%)	73 (45.6%)	33 (20.6%)	160

Results and Trends

Overall, the bioassessment ratings for each of the monitoring stations are best estimates of the in-stream biological impairment based upon the data obtained in the current AMNET survey. Detailed taxonomic and statistical data, bioassessment ratings, habitat assessment scores and observations for each AMNET site are given in Table 2 and Appendix D, Volume 2.

Figure 5 depicts the overall results for the Round 3 study in the Lower Delaware Water Region. Of the 160 monitoring stations sampled during this study period, 13 (8.1 %) were found “excellent”, 35 (21.9%) “good”, 80 (50.0%) “fair”, and 32 (20.0%) “poor” (see Table 2, Volume 2).

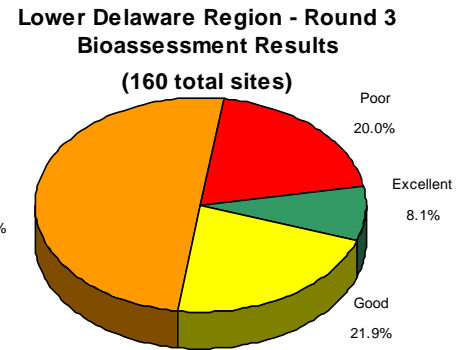


Figure 5

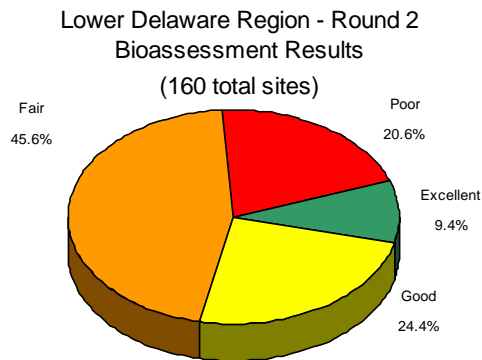


Figure 6

Figure 6 shows the results obtained from 160 non-tidal AMNET sites within the Lower Delaware Water Region that were sampled during the previous (Round 2) Lower Delaware study (see “Site Selection” & Table 2, Volume 2). While the results for Round 3 were similar to those for Round 2, for the current sampling period the percentage of “fair” sites were slightly higher, and the percentage of “excellent”, “good” and “poor” sites were slightly lower. [5]

Figure 7 displays the percentage of change in rating among the same 159 AMNET sites in the Lower Delaware Water Region that were sampled during the second round study period [5], and again during the current (Round 3) study period (see “Site Selection” & Table 2, Volume 2). The green indicates sites that have undergone a positive change, yellow indicates no change, and red indicates a negative change. Positive change is defined as an improved rating from the previous Round’s rating, while a negative change is defined as a downgraded rating from the previous Round (see Table 2, Volume 2).

Percent Change in Rating Between the Round 2 and the Round 3 Monitoring (159 sites total)

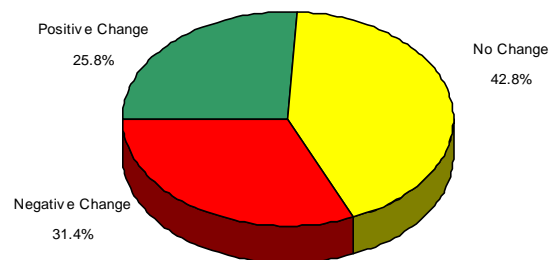


Figure 7

Regional Results

A USGS study, using data generated from NJDEP's AMNET program [16], statistically related levels of impairment to physiographic land types, corresponding land uses, and other anthropogenic factors on a statewide scale. A non-impaired community was most positively related to the area of forested and undeveloped land in its watershed upstream, and to the total underlying terrain in the steeper gradient ecoregions of northwestern New Jersey (i.e. Reading Prong/Highlands). Conversely, an impaired community was most positively related to the area of urban land, and to the total volume of wastewater (point source) discharge [16]. The table below presents the proportion of “excellent”, “good”, “fair”, and “poor” AMNET sites, based on the current data, in each of the Lower Delaware Watershed Management Areas.

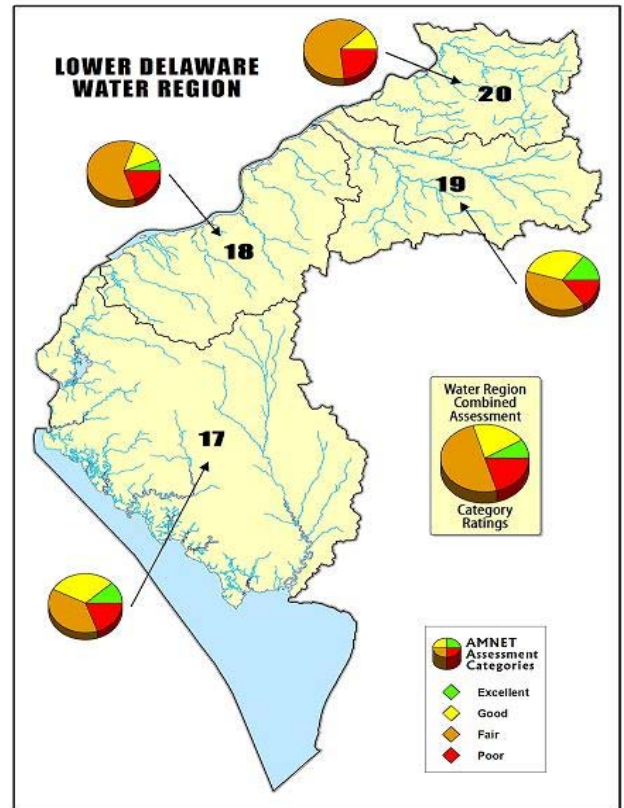


Figure 8

WMA	Sub-basins	Excellent	Good	Fair	Poor	Total sites
17	Delaware Bay tributaries	7 (11.1%)	15 (23.8%)	29 (46.0%)	12 (19.0%)	63
18	lower tidal Delaware River tributaries	2 (5.6%)	6 (16.7%)	24 (66.7%)	4 (11.1%)	36
19	Rancocas Creek system	3 (8.6%)	11 (31.4%)	13 (37.1%)	8 (22.9%)	35
20	upper tidal Delaware River tributaries	1 (3.8%)	3 (11.5%)	14 (53.8%)	8 (30.8%)	26
Totals:		13 (8.1%)	35 (21.9%)	80 (50.0%)	32 (20.0%)	160

Figure 8 illustrates the proportions of “excellent”, “good”, “fair”, and “poor” sites in each WMA of the Lower Delaware Water Region for the current AMNET round.

Evaluation by WMA

Watershed Management Area #17 includes a total of 63 AMNET sites in the Maurice, Salem, and Cohanse River watersheds in Cumberland, Gloucester, and Salem Counties (see Maps 10, 11, 12, & 13, Volume 2). Eleven sites - AN0702, AN0703, AN0704, AN0706, AN0707, AN0715, AN0718, AN0719, AN0720, AN0755, and AN0764 - were not sampled because they were determined to be freshwater tidal sites

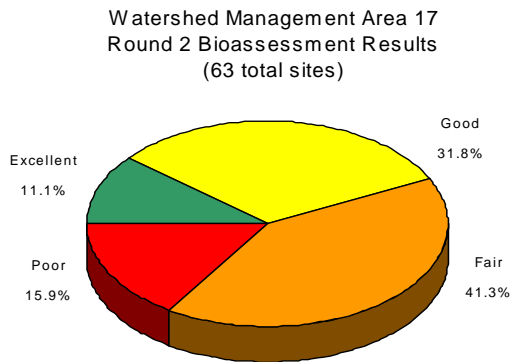


Figure 10

11.1% (7 sites) “excellent”, 23.8% (15 sites) “good”, 46.0% (29 sites) “fair”, and 19.0% (12 sites) “poor”. Figure 10 depicts the results obtained from 63 sites sampled during the earlier (Round 2) survey [5]. Comparing the current results to the earlier results, a significant improvement is seen at 12 sites and a significant decline at 19 sites (see Table 2, Volume 2). Comparing the same 63 sites, the number of “fair”, and “poor” sites is slightly higher than the earlier data, and the number of “good” sites have declined, with the number of “excellent” sites remaining the same. The majority (80.9%) of habitat scores are in the suboptimal range, with 15.9% receiving an optimal score and 3.2% receiving a marginal score. Abnormalities in chironomid larvae and other invertebrate families were found at nine sites (two on Still Run and Indian Run and one each on Two Penny Run, Game Ck, Alloway Ck, Burnt Mill Run, and Muddy Run) (see Maps 10, 11, 12 & 13, Table 3, Volume 2). Five of these sites displayed chronic abnormalities (see Table 3, Volume 2). The table below presents a synopsis of AMNET data for WMA #17; AMNET site locations and bioassessment ratings within WMA #17 are shown in Figure 11.

WMA # 17 Combined Results Table

Bio Rating	Round 2		Round 3		Habitat Assessment	Round 3	
Excellent	7	11.1%	7	11.1%	Optimal	10	15.9%
Good	20	31.8%	15	23.8%	Suboptimal	51	80.9%
Fair	26	41.3%	29	46.0%	Marginal	2	3.2%
Poor	10	15.9%	12	19.0%	Poor	---	---
Total sites	63		63			63	

Watershed Management Area 17
Round 3 Bioassessment Results
(63 total sites)

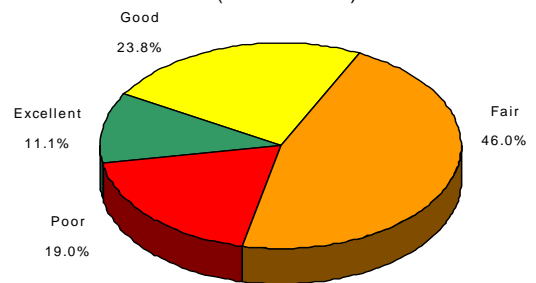


Figure 9

and NJ’s protocol states that only “non-tidal” streams

are sampled. Site AN0726A was inaccessible due to a permanent road closure. This site was dropped from the AMNET program. Figure 9 shows the current site rating summaries for WMA #17 with

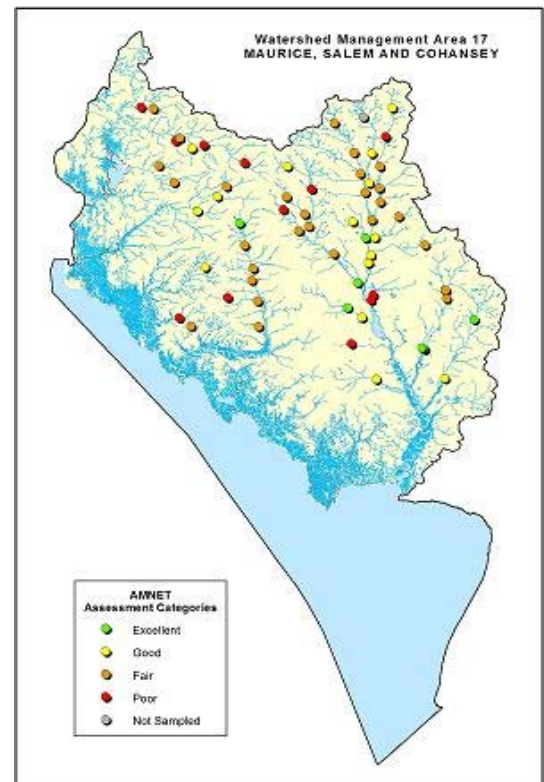


Figure 11

Watershed Management Area #18 includes a total of 36 AMNET sites in Pennsauken creek, Cooper River, Big Timber, Mantua, and Raccoon creeks watersheds, in Burlington, Camden, Gloucester, and Salem Counties (see Maps 6, 7, 8, & 9, Volume 2). 16 sites - AN0180, AN0181, AN0184, AN0185, AN0653, AN0659, AN0660, AN0663, AN0664, AN0665, AN0667, AN0671, AN0672, AN0684, AN0685, and AN0689 - were not sampled because they were determined to be freshwater tidal sites and NJ's protocol states that only "non-tidal" streams are sampled.

Figure 12 shows the current site rating summaries for WMA # 18: 5.6% (2 sites) "excellent", 16.7% (6 sites) "good", 66.7% (24 sites) "fair" and 11.1% (4 sites) "poor". Figure 13 depicts the results obtained from 36 sites sampled during the earlier (Round 2) survey [5]. Comparing the

current (Round 3) results to the earlier (Round 2) results, a significant improvement is apparent at 16 sites while 7 sites exhibited a decline in impairment rating (see Table 2, Volume 2). Comparing the same 36 sites, the number of "excellent" and "fair" sites increased slightly, while the number of "poor" sites decreased slightly, with the number of "good" sites remaining the same since the earlier sampling (see Table 2, Volume 2). The majority (77.8%) of habitat scores are in the suboptimal range with 13.9% receiving a marginal and 8.3% receiving an optimal score.

Abnormalities in chironomid larvae and other invertebrate families were found at eight sites (two on S Br Pennsauken and S Br Cooper Rivers, and one each on S Br Newton Ck, Edwards Run, Pargy Ck, and Raccoon Ck) (see Maps 6, 7, 8, & 9, Table 3, Volume 2). One of these sites displayed chronic abnormalities (see Table 3, Volume 2). The table below

presents a synopsis of AMNET data for WMA #18; AMNET site locations and bioassessment ratings within WMA #18 are shown in Figure 14.

Watershed Management Area 18
Round 3 Bioassessment Results
(36 total sites)

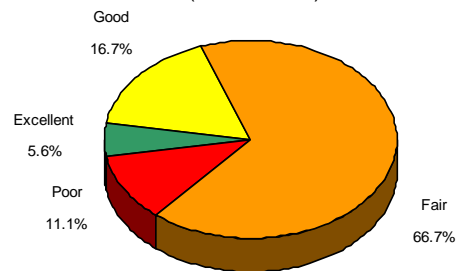


Figure 12

Watershed Management Area 18
Round 2 Bioassessment Results
(36 total sites)

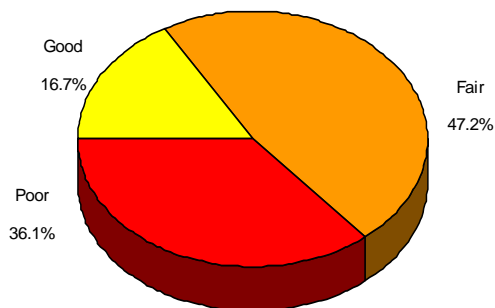


Figure 13

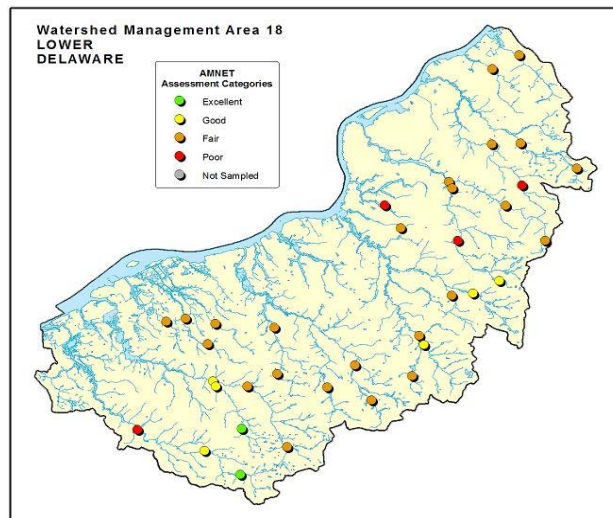


Figure 14

WMA # 18 Combined Results Table

Bio Rating	Round 2		Round 3		Habitat Assessment	Round 3	
Excellent	---	---	2	5.6%	Optimal	3	8.3%
Good	6	16.7%	6	16.7%	Suboptimal	28	77.8%
Fair	17	47.2%	24	66.7%	Marginal	5	13.9%
Poor	13	36.1%	4	11.1%	Poor	---	---
Total sites	36		36			36	

Watershed Management Area #19 includes a total of 35 AMNET sites in the the Rancocas Creek watershed, in Burlington and Camden Counties (see Maps 4 & 5, Volume 2). Figure 15 shows the current site rating summaries for WMA # 19: 8.6% (3 sites) “excellent”, 31.4% (11 sites) “good”, 37.1% (13 sites) “fair”, and 22.9% (8 site) “poor”. Four sites - AN0161, AN0171, AN0174, and AN0176S - were not sampled because they were determined to be freshwater tidal sites and NJ’s protocol states that only “non-tidal” streams are sampled.

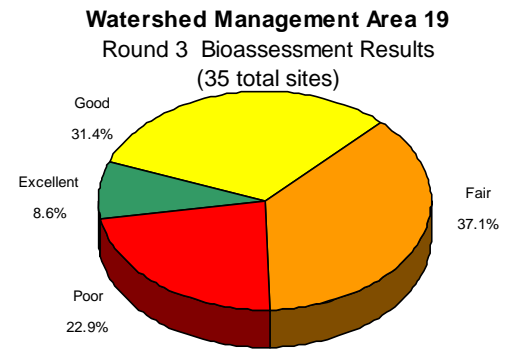


Figure 15

Figure 16 depicts the results obtained from 35 sites sampled during the earlier (Round 2) survey [5]. Comparing the current to the earlier results, a significant improvement is seen at 8 sites, and a significant decline, at 15 sites (see Table 2, Volume 2). Comparing the same 35 sites, the number of “good” and “poor” sites increased slightly from that of the earlier sampling, and the number “excellent” and “fair” sites is slightly decreased (see Table 2, Volume 2). The majority of sites (62.8%) received a suboptimal habitat score, with 28.6% receiving an optimal score and 8.6% with a

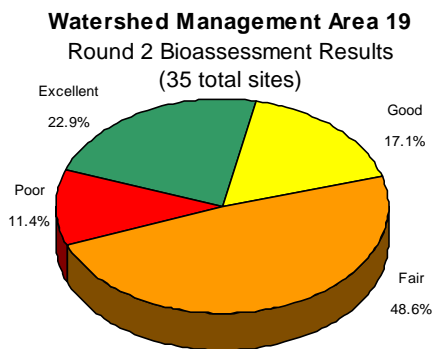


Figure 16

marginal score. Abnormalities in chironomid larvae and other invertebrate families were found at seven sites (Pole Bridge Br, Mt Misery Bk, Indian Run, Jade Run, Little Ck, UNT to Barton Run, and Sharps Run) (Maps 4 & 5, Table 3, Volume 2). None of these sites displayed chronic abnormalities (see Table 3, Volume 2). The table below presents a synopsis of AMNET data for WMA #19; AMNET site locations and bioassessment ratings within WMA # 19 are shown in Figure 17.

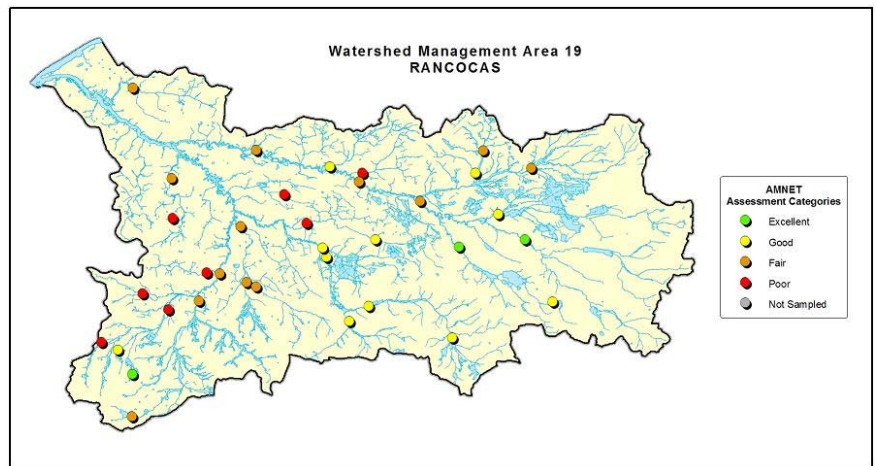


Figure 17

WMA # 19 Combined Results Table

Bio Rating	Round 2		Round 3		Habitat Assessment	Round 3	
	Count	Percentage	Count	Percentage		Count	Percentage
Excellent	8	22.9%	3	8.6%	Optimal	10	28.6%
Good	6	17.1%	11	31.4%	Suboptimal	22	62.8%
Fair	17	48.6%	13	37.1%	Marginal	3	8.6%
Poor	4	11.4%	8	22.9%	Poor	---	---
Total sites	35		35			35	

Watershed Management Area #20 includes a total of 26 AMNET sites in the Assiscunk, Crosswicks, and Doctors Creek watersheds, in Burlington, Mercer, Monmouth, and Ocean Counties (see Maps 2 & 3, Volume 2). Five sites - AN0126, AN0130, AN0131, AN0134 and AN0142 - were not sampled because the sites were determined to be freshwater tidal sites and NJ’s protocol states that only “non-tidal” streams are sampled. Figure 18 shows the current site rating summaries for WMA # 20: 3.8% (1 site) “excellent”, 11.5% (3 sites) “good”, 53.8% (14 sites) “fair” and 30.8% (8 sites) “poor”. Figure 19 depicts the results obtained from 26 sites sampled during the earlier (Round 2) survey [5]. Comparing the current to the earlier results, a significant improvement is seen at five sites and a significant decline at nine sites (see Table 2, Volume 2). Comparing the same 26 sites, the number of “excellent”, “fair” and “poor” sites increased slightly from that of the earlier sampling, and the number of “good” sites is slightly reduced (see Table 2, Volume 2). All of the sites received a suboptimal habitat score. Abnormalities in chironomid larvae and other invertebrate

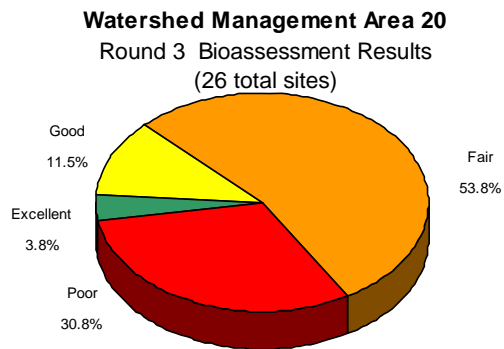


Figure 18

Figure 19 depicts the results obtained from 26 sites sampled during the earlier (Round 2) survey [5]. Comparing the current to the earlier results, a significant improvement is seen at five sites and a significant decline at nine sites (see Table 2, Volume 2). Comparing the same 26 sites, the number of “excellent”, “fair” and “poor” sites increased slightly from that of the earlier sampling, and the number of “good” sites is slightly reduced (see Table 2, Volume 2). All of the sites received a suboptimal habitat score. Abnormalities in chironomid larvae and other invertebrate

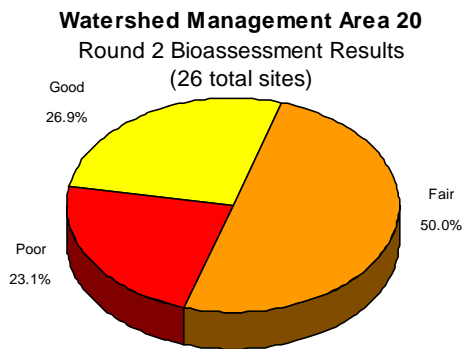


Figure 19

families were found at ten sites (three on Crafts Ck and one each on South Run, Ivanhoe Bk, Pleasant Run, Doctors Ck, Back Ck, N Br Barkers Bk, and Barkers Bk) (see Maps 2 & 3, Table 3, Volume 2).

Four of these sites displayed chronic abnormalities (see Table 3, Volume 2). The table below presents a synopsis of AMNET data for WMA #20; AMNET site locations and bioassessment ratings within WMA # 20 are shown in Figure 20.

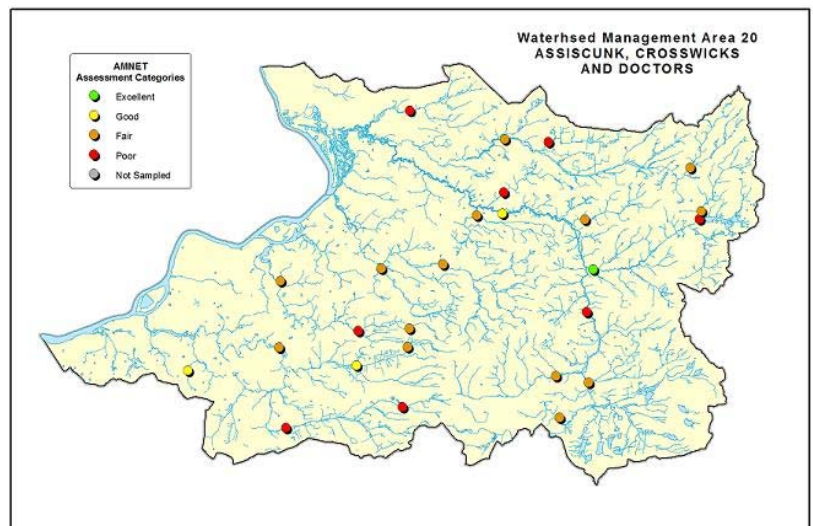


Figure 20

WMA # 20 Combined Results Table

Bio Rating	Round 2		Round 3		Habitat Assessment	Round 3	
	Count	Percentage	Count	Percentage		Count	Percentage
Excellent	---	---	1	3.8%	Optimal	---	---
Good	7	26.9%	3	11.5%	Suboptimal	26	100.0%
Fair	13	50.0%	14	53.8%	Marginal	---	---
Poor	6	23.1%	8	30.8%	Poor	---	---
Total sites	26		26			26	

Macroinvertebrate Abnormalities

Occasionally, morphological abnormalities have been found in individual macroinvertebrates recovered in WM&S/BFBM's AMNET collections. These deformities have been most often detected in larval organisms belonging to the insect family Chironomidae (midges), where they occur primarily in the head appendages (antennae) and mouthparts (mentum and mandibles).

Abnormalities have also been observed in individuals of other taxonomic groups (such as Amphipoda), but they are most often noted in the mouthparts and antennae of Chironomidae because these features are key characteristics used in identification. Chironomidae larvae often comprise a large component of the benthic community of a stream or river, particularly in those affected by human disturbances, and they are part of the diet of predatory invertebrates and fish. As a result, chironomids are an important transfer vector linking the movement of contaminants from sediments to higher trophic levels [17].

Hamilton and Saether [18] noted deformed specimens (Chironomidae) occurred in areas of industrial or agricultural chemical input, but not in areas receiving only domestic effluents. Subsequent studies have supported this finding. But the presence of deformed organisms in a sample is difficult to interpret. Not all genera appear to react to the presence of contaminants in the same manner [19].

Most of the research has been focused on a few genera. The North Carolina Division of Environmental Management [20] has developed an index to evaluate deformities, using the frequency and severity of deformities observed in Chironomidae larvae of just the genus *Chironomus*.

Secondly, morphological deformities undoubtedly occur in Chironomidae larvae living in uncontaminated environments. Even robust, healthy populations of any fauna are likely to include a certain proportion of physiologically weaker individuals which, for various reasons, may be more prone or genetically predisposed to malformation [19]. With a lack of baseline data of deformities in more pristine environments, the level at which these deformities becomes significant is somewhat uncertain. Currently, although not an indicator of specific contaminants, the occurrence of abnormal chironomid larvae can serve as an economical and long-term monitor of the benthic environment, and can suggest where more intensive bioassays and chemical testing would be most effectively employed [21].

Bearing in mind that the primary focus of the AMNET sampling is not to find morphological abnormalities, a listing of all AMNET sites in the Lower Delaware Water Region exhibiting these deformities is presented in Table 3, Volume 2. The data are displayed as # of chironomids with abnormalities per # of chironomids examined. For all other taxa, just the number of individuals with abnormalities is presented. The significance of these abnormalities has not been statistically evaluated. Deformities are called "chronic" if they were observed in more than one round of sampling at a given site. Also, the presence of abnormalities is not factored into the index scoring, but used to identify sites where additional investigations are needed.

A decrease in the number of abnormalities is seen more in the current sampling than in the previous (Round 2) sampling [5]. From the current sampling of 160 sites, 34 (21.3%) contained organisms with abnormalities (Maps 2 - 13, Volume 2). Ten of the sites exhibited a "chronic" presence of abnormalities (Table 3, Volume 2). Notably, the majority of these "chronic" sites are situated in areas where a higher percentage of urban and/or agricultural land use occurs (Maps 2 - 13, Volume 2). Further study is needed to establish the significance of the presence of abnormalities.

Causes and Conditions of Impairment

Biological impairment, as determined through RBP analysis, is manifested by alterations or differences in macroinvertebrate community structure, compared to a reference or "ideal" condition. In an impaired situation, taxa of pollution-tolerant groups (such as worms and midges) tend to dominate over pollution-intolerant forms (e.g., mayflies, stoneflies, etc.), with an overall depression in species diversity. Such discrepancies are typically due to degraded instream environmental conditions, which may be caused by various human activities or land uses and, in some cases, by natural features or events. Environmental factors that may adversely affect stream biology, including both chemical and physical parameters, are listed below:

1. Degraded habitat (see Table 4, Volume 2)
 - a. lack of stable and varied substrate
 - b. lack of bank vegetation/canopy (= poor bank stability, lack of shade)
 - c. excessive sedimentation (= poor substrate and water clarity)
 - d. lack of streamflow (= low water level, low dissolved oxygen, possible sedimentation, undesirable vegetation)
2. Eutrophication (= excessive nutrients promoting undesirable vegetation or algal blooms, and increased turbidity)
3. Domestic (organic) waste (promotes hypoxia, turbidity, eutrophication)
4. Physiochemical water quality factors which, alone or in combination, can have adverse effects
 - a. higher than normal temperature
 - b. excessive turbidity
 - c. lack of dissolved oxygen
 - d. presence of toxicants (in various chemical forms)

Inter-related human activities or practices, land uses, and natural features or events contributing to degraded stream quality:

1. Deforestation/development/construction (largely via runoff from non-point sources)
2. Urbanization/industrialization (largely via runoff from non-point sources)
3. Agricultural operations (largely via runoff from non-point sources)
4. Municipal or industrial wastewater discharge (from point source)
5. Artificial channelization or habitat alteration
6. Upstream impoundment, lake or pond
7. Drought conditions

Habitat Assessment vs. Biological Assessment

The relationship between habitat assessment scores and corresponding biological assessment scores were plotted, and a coefficient of determination (R^2) value calculated for each WMA (Appendix C, Volume 2). The R^2 has a value ranging from zero to one, and is a fraction of the variance shared by two variables graphed along an X and Y axis. For example, if $R^2 = 0.59$, then 59% of the variance in X can be explained by the variance in Y, or vice versa. The higher the R^2 value, the more likely the variance in one variable can be explained by the variance of another. In this case the variables are habitat assessments vs. biological assessment. The R^2 values were calculated to determine if general trends in habitat degradation could explain general trends in biological impairment. For all sites in the Lower Delaware Water Region, an overall R^2 value of 0.1307 was calculated when comparing the

assessments. This can be interpreted that for all sites in this region, a strong direct correlation between assessments existed 13% of the time. An R^2 value was also calculated, individually, for the four WMA's in this Water Region. The R^2 values for WMA 17, 18, 19, and 20, were 0.13, 0.02, 0.34, and 0.06 respectively. Again, this indicates that a strong direct correlation between habitat and biological impairment existed 2% - 34% of the time.

The R^2 values suggest that other factors, which may include land use and/or water quality, are likely contributing to the observed biological assessments. Sites with a “fair” or “poor” biological assessment, but with a relatively high habitat assessment score, could be impacted by point and/or nonpoint sources outside the range of the visual based habitat assessment. Also, an intermittent or short term impact may have occurred which left no obvious visual evidence at the site. In these cases, further investigation is needed to determine the source of impairment that is affecting the biota. Some sites assessed with an “excellent” or “good” biological assessment may have a relatively degraded habitat assessment. This could be due to a temporary degradation, such as drought or flooding (near to the time of the assessment), which was not severe enough to effect the biota. It is also possible that a temporary or recent degradation may not have immediate observable effects on the biota. In either case these sites should be studied further to avoid future impairment to the biota. Due to the prevalence of multiple stressors throughout the State, it is further suggested that the relationship between habitat assessments and biological assessments be studied on a site by site basis.

As reflected in the present study results, human land uses and practices, superimposed on the undisturbed physical terrain, play a major role in controlling the degree of pollution or degradation in a stream system [16]. The relationship between benthic macroinvertebrate community impairment has been statistically related to different physiographic land types, land uses and other anthropogenic factors, on a statewide basis [16]. These findings strongly indicate that human land uses and practices play a major role in the degree of pollution or degradation in a stream system. Data analysis from Ayers et al., 2000 [22] for instance, concludes the following:

- 1) Fish and invertebrate communities are commonly impaired in urban streams;
- 2) Invertebrate community impairment was related to total urban land and total wastewater flow upstream of a site;
- 3) Changes in aquatic community structure were statistically related to environmental variables along the urban gradient – that is to say that such things as impervious surfaces were related to a negative response in the aquatic invertebrate community.

Conversely, the same Ayers data analysis also demonstrated that the area of forest and wetland in a stream's drainage basin was a strong mitigating factor in protecting invertebrate community health.

Additional Information

For more information, please contact:

Department of Environmental Protection
Alfred L. Korndoerfer, Jr., Chief
Water Monitoring & Standards
Bureau of Freshwater and Biological Monitoring
P. O. Box 427
Trenton, NJ 08625-0427

web site:
<http://www.state.nj.us/dep/wms/bfbm>

REFERENCES

1. Plafkin, J.L., M.T. Barbour, K.D. Porter, S.K. Gross and R.M. Hughes, 1989. Rapid bioassessment protocols for use in streams and rivers—benthic macroinvertebrates and fish. EPA/44/4-89-002. US Environmental Protection Agency. Washington, D.C.
2. New Jersey Department of Environmental Protection. 2006. New Jersey integrated water quality monitoring and assessment report. Water Monitoring and Standards. Trenton, NJ.
3. New Jersey Department of Environmental Protection. Data report, 1998. New Jersey's modernized ambient chemical monitoring network. Division of Watershed Management. Trenton, NJ.
4. New Jersey Department of Environmental Protection. Data report, 1996. Ambient biomonitoring network, Lower Delaware River basin. Bureau of Water Monitoring. Trenton, NJ.
5. New Jersey Department of Environmental Protection. Data report, 2003. Ambient biomonitoring network Lower Delaware River basin. Bureau of Water Monitoring. Trenton, NJ.
6. New Jersey Department of Environmental Protection. 2005. Field sampling procedures manual. NJDEP. Trenton, NJ.
7. Barbour, M.T., J. Gerritson, B.D. Snyder and J.B. Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and rivers: Periphyton, Benthic Macroinvertebrates, and Fish, 2nd ed. USEPA 841-B-99-002. Chps. 1–11 and appendices.
8. New Jersey Department of Environmental Protection. Laboratory report, 2007. Standard operating procedures, Ambient biological monitoring using benthic macroinvertebrates, Field, lab, and assessment methods. Bureau of Freshwater & Biological Monitoring. Trenton, NJ.
9. New Jersey Department of Environmental Protection. Report, 2005. Work/quality assurance project plan: Ambient Biomonitoring Network (AMNET), Lower Delaware River basin, FY06-07. Bureau of Freshwater and Biological Monitoring. Trenton, NJ.
10. U.S. Environmental Protection Agency. 1997. Field and laboratory methods for macroinvertebrate and habitat assessment of low gradient nontidal streams. Mid-Atlantic Coastal Streams Workgroup, Environmental Services Division, Region 3. Wheeling, WV.
11. Klemm, D.J., P.A. Lewis, F. Fulk and J.M. Lazorchak. 1990. Macroinvertebrate field and laboratory methods for evaluating the biological integrity of surface waters. EPA/600/4-90/030. U.S. Environmental Protection Agency. Cincinnati, OH.
12. Jessup, B., 2007. Development of the New Jersey High Gradient Benthic Index (HGMI). Tetra Tech, Inc. Owings Mills, MD.
13. Maxted, J.R., M.T. Barbour, J. Gerritsen, 2000. Assessment framework for mid-Atlantic coastal plain streams using benthic macroinvertebrates, J.N. American Benthological Society, 19(1):128-144.
14. Jessup, B., S.Moegenburg, D.Bryson, V.Poretti, 2005. Development of the New Jersey Pinelands Macroinvertebrate Index (PMI). Tetra Tech, Inc. Owings Mills, MD & NJDEP. Trenton, NJ.
15. New Jersey Department of Environmental Protection. 2006. Surface and Ground Water Quality Standards. Water Monitoring and Standards. Trenton, NJ.
16. Kennen, J.G. 1998. Relation of benthic macroinvertebrate community impairment to basin characteristics in New Jersey streams. Fact Sheet FS-057-98. U.S. Geological Survey. West Trenton, NJ.
17. Dickman, M., I. Brindle, and M. Benson, 1992. Evidence of teratogens in sediments of the Niagara River Watershed as reflected by chironomid (Diptera: Chironomidae) deformities. Journal of Great Lakes Res. 18(3):467-480.
18. Hamilton, A.L. and O.A. Saether, 1971. The occurrence of characteristic deformities in the chironomid larvae of several Canadian lakes. Canadian Entomologist 103:363-368.
19. Warwick, W.F., 1985. Morphological abnormalities in Chironomidae (Diptera) larvae as measures of toxic stress in freshwater ecosystems: indexing antennal deformities in *Chironomus* Meigen. Canadian Journal of Fisheries and Aquatic Sciences 42:1881-1914.
20. Lenat, David R., 1993. Using mentum deformities of *Chironomus* larvae to evaluate the effects of toxicity and organic loading in streams. Journal of N. Am. Benthol. Soc. 12(3):265-269.
21. Diggins, T.P. and K.M. Stewart, 1993. Deformities of aquatic larval midges (Chironomidae: Diptera) in the sediments of the Buffalo River, New York. Journal of Great Lakes Res. 19(4):648-659
22. Ayers, M., Kennen, J., Stackleberg, P., Kauffman, L. 2000. Building a stronger scientific basis for landuse planning and watershed management effects on water quality and aquatic communities in NJ streams. USGS. West Trenton, NJ.

Table 1

Coastal Plain Macroinvertebrate Index (CPMI)¹

Study area: southern New Jersey, below the geologic fall-line; Middle Atlantic Coastal Plain ecoregion, excluding the Pinelands National Reserve. See figure A1.

Index Metrics

1. Total number of genera
2. Total number of EPT genera
3. Percent Ephemeroptera genera
4. Hilsenhoff Biotic Index
5. Percent Clinger genera

Index Metric	Score			
	6	4	2	0
Number of genera	>25	17-25	9-16	<9
Number of EPT genera	>9	7-9	4-6	<4
% of Ephemeroptera	>29	20-29	10-19	<10
Hilsenhoff Biotic Index	<4.9	4.9-6.0	6.1-7.3	>7.3
% Clingers	>51	34-51	17-33	<17

Assessment Rating	Score
Excellent	22-30
Good	12-20
Fair	10-6
Poor	< 6

Reference

J.R. Maxted, et al. Assessment framework for mid-Atlantic coastal plain streams using benthic macroinvertebrates. J.N. Am. Benthol. Soc. 2000, 19(1):128-144.

Attributes

Excellent: Minimal changes in structure of biological community and minimal changes in ecosystem function. Virtually all native taxa are maintained with some changes to biomass and/or abundance; ecosystem functions are fully maintained within the range of natural variability.

Good: Some evident changes in structure of the biotic community and minimal changes in ecosystem function. Some changes in structure due to loss of some rare native taxa; shifts in relative abundance of taxa but sensitive-ubiquitous taxa are common and abundant; ecosystem functions are fully maintained.

Fair: Moderate to major changes in structure of biological community and moderate changes in ecosystem function. Sensitive taxa are markedly diminished; conspicuously unbalanced distribution of major groups from that expected; organism condition shows signs of physiological stress; system function shows reduced complexity.

Poor: Extreme changes in structure of biological community and major loss of ecosystem function. Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered.

¹ Based on 100 organism subsample, genus level taxonomy

Table 1 (cont)

Pinelands Macroinvertebrate Index (PMI)¹

Study area: southern New Jersey, below the geologic fall-line within the Pinelands National Reserve and extending 5 kilometers outside the Reserve boundary. See figure A1.

Index Metrics

1. Number of Insect genera
2. Number of Non-insect genera
3. Percent Plecoptera (P) and Trichoptera (T)
4. Percent Diptera genera excluding Tanytarsini
5. Percent Mollusca and Amphipoda
6. Beck's Biotic Index
7. Percent Filterers

<u>Assessment Rating</u>	<u>Score</u>
Excellent	≥ 63
Good	< 63-56
Fair	< 56-34
Poor	< 34

Reference

Benjamin Jessup, et al. Report. Development of the New Jersey Pinelands macroinvertebrate index (PMI). TetraTech, Inc. Owings Mills, MD. March, 2005.

Attributes

Excellent: Minimal changes in structure of biological community and minimal changes in ecosystem function.

Virtually all native taxa are maintained with some changes to biomass and/or abundance; ecosystem functions are fully maintained within the range of natural variability.

Good: Some evident changes in structure of the biotic community and minimal changes in ecosystem function. Some changes in structure due to loss of some rare native taxa; shifts in relative abundance of taxa but sensitive-ubiquitous taxa are common and abundant; ecosystem functions are fully maintained.

Fair: Moderate to major changes in structure of biological community and moderate changes in ecosystem function. Sensitive taxa are markedly diminished; conspicuously unbalanced distribution of major groups from that expected; organism condition shows signs of physiological stress; system function shows reduced complexity.

Poor: Extreme changes in structure of biological community and major loss of ecosystem function. Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered.

¹ Based on 100 organism subsample, genus level taxonomy

Table 1 (cont)

High Gradient Benthic Index (HGMI)¹

Study area: northern New Jersey, above the geologic fall-line including the following ecoregions: North Central Appalachians, Central Appalachian Ridges and Valleys, Northeastern Highlands, Northeastern Coastal Zone, and Northern Piedmont. See figure A1.

Index Metrics

1. Total number of genera_{adj} = $26.53 + \text{Metric} - [22.776 + 4.173 \cdot \log_{10}(\text{areasqkm})]$
2. Percent of genera that are not insects
3. Percent sensitive EPT (excluding Hydropyschidae, including Diplectrona)_{adj}
= $37.49 + \text{Metric} - [49.922 - 13.800 \cdot \log_{10}(\text{areasqkm})]$
4. Number of scraper genera_{adj} = $5.44 + \text{Metric} - [3.889 + 1.724 \cdot \log_{10}(\text{areasqkm})]$
5. Hilsenhoff Biotic Index_{adj} = $4.23 + \text{Metric} - [3.407 + 0.918 \cdot \log_{10}(\text{areasqkm})]$
6. Number of New Jersey TALU attribute 2 genera
7. Number of New Jersey TALU attribute 3 genera

ADJ (Adjusted metric value) = Mean_{reference} + Metric_{observed} - Metric_{predicted}, where predictions are based on linear regression analysis of reference metric values on catchment size.

<u>Assessment Rating</u>	<u>Score</u>
Excellent	≥ 63
Good	< 63 - 42
Fair	< 42 - 21
Poor	< 21

Reference

Benjamin Jessup, et al. Report. Development of the New Jersey high gradient macroinvertebrate index (HGMI). TetraTech, Inc. Owings Mills, MD. February, 2007.

Attributes

Excellent: Minimal changes in structure of biological community and minimal changes in ecosystem function. Virtually all native taxa are maintained with some changes to biomass and/or abundance; ecosystem functions are fully maintained within the range of natural variability.

Good: Some evident changes in structure of the biotic community and minimal changes in ecosystem function. Some changes in structure due to loss of some rare native taxa; shifts in relative abundance of taxa but sensitive-ubiquitous taxa are common and abundant; ecosystem functions are fully maintained.

Fair: Moderate to major changes in structure of biological community and moderate changes in ecosystem function. Sensitive taxa are markedly diminished; conspicuously unbalanced distribution of major groups from that expected; organism condition shows signs of physiological stress; system function shows reduced complexity.

Poor: Extreme changes in structure of biological community and major loss of ecosystem function. Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered.

¹ Based on 100 organism subsample, genus level taxonomy

New Jersey State Boundaries

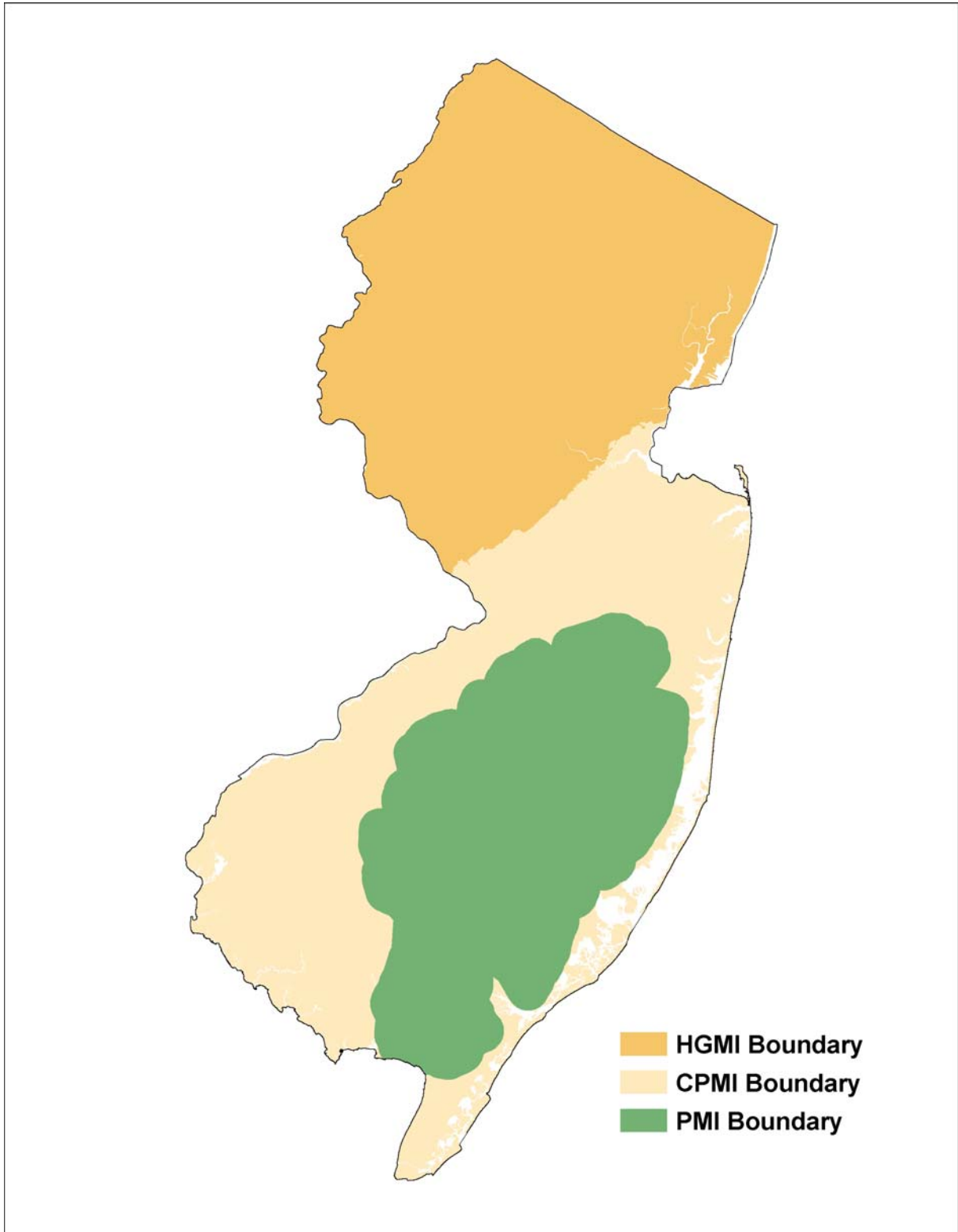


Figure A1. Boundaries for generic level index use.



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



AMBIENT BIOMONITORING NETWORK



Lower Delaware Water Region

**Watershed Management Areas 17, 18, 19, & 20
Round 3 Benthic Macroinvertebrate Data
Volume 2 of 2**



October 2010

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

NJ Department of Environmental Protection
Bob Martin, Commissioner



NJ Department of Environmental Protection

Water Resource Management

John Plonski, Assistant Commissioner

Water Monitoring and Standards

Leslie McGeorge, Administrator

Bureau of Freshwater & Biological Monitoring

Alfred L. Korndoerfer, Jr., Chief

October 2010

AMBIENT BIOMONITORING NETWORK

Lower Delaware Water Region

Watershed Management Areas 17, 18, 19, & 20

Round 3 Benthic Macroinvertebrate Data

Volume 2 of 2

Water Monitoring Report Prepared By:

Water Monitoring & Standards

Bureau of Freshwater and Biological Monitoring

Sampling and Data Analysis:

Victor Poretti, Project Manager-Sampling Coordination

Dean Bryson, Project Manager-Laboratory Operations

Thomas Miller

Anna Signor

Report Preparation:

Thomas Miller

Map Preparation:

John Sell

Edited By:

Alfred Korndoerfer

Leslie McGeorge

Alena Baldwin-Brown

[cover photo: Site AN0168, Haynes Creek at Himmelein Rd, Burlington County, NJ.]



AMBIENT BIOMONITORING NETWORK

Watershed Management Areas 17, 18, 19, & 20

Lower Delaware Water Region

Round 3 Benthic Macroinvertebrate Data

Volume 2 of 2

TABLE OF CONTENTS

	page
MAPS (AMNET Site Locations)	
Lower Delaware Water region	Map 1
Watershed Management Area # 17	Maps 10 - 13
Watershed Management Area # 18	Maps 6 - 9
Watershed Management Area # 19	Maps 4, 5
Watershed Management Area # 20	Maps 2, 3
TABLE 2. Comparative Scores / Ratings	
TABLE 3. Macroinvertebrates Abnormalities	
TABLE 4. Habitat Assessment	
TABLE 5. List of AMNET sites with Parameters that did not attain standards	
APPENDIX A. Station Numbers and Locations	A
APPENDIX B. Pictures of Morphological Abnormalities	B
APPENDIX C. Graphical Comparison of Habitat Score vs. Biological Assessment Rating	C
APPENDIX D. Taxonomic and Statistical Data, Biological Assessments, Habitat Assessment Scores and Observations	D

MAPS

Round 3 Lower Delaware Region AMNET Study WMA's 17, 18, 19, & 20

AMNET site locations and their respective biological ratings, for each major sub-basin, are shown in maps 1-13. Also identified are sites that exhibited significant and chronic macroinvertebrate abnormalities.

Map 1 LOWER DELAWARE WATER REGION

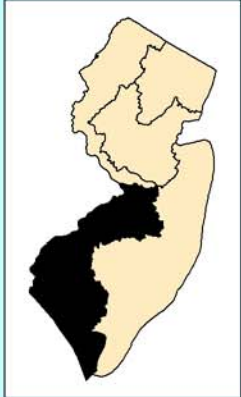
Assiscunk, Crosswicks
and
Doctors

Lower Delaware

Rancocas

Maurice, Salem
and
Cohansey

Delaware
Bay



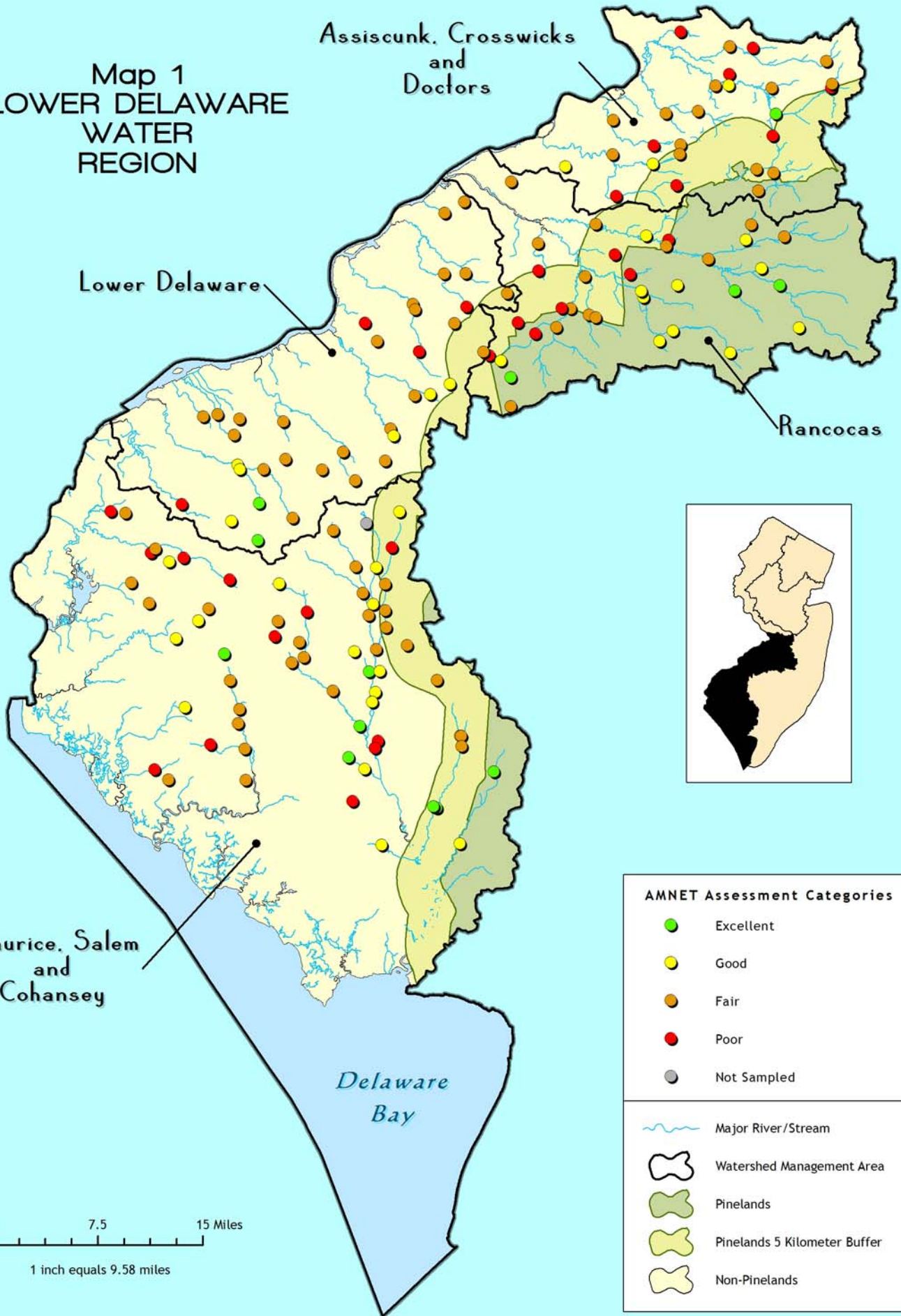
AMNET Assessment Categories

- Excellent
- Good
- Fair
- Poor
- Not Sampled

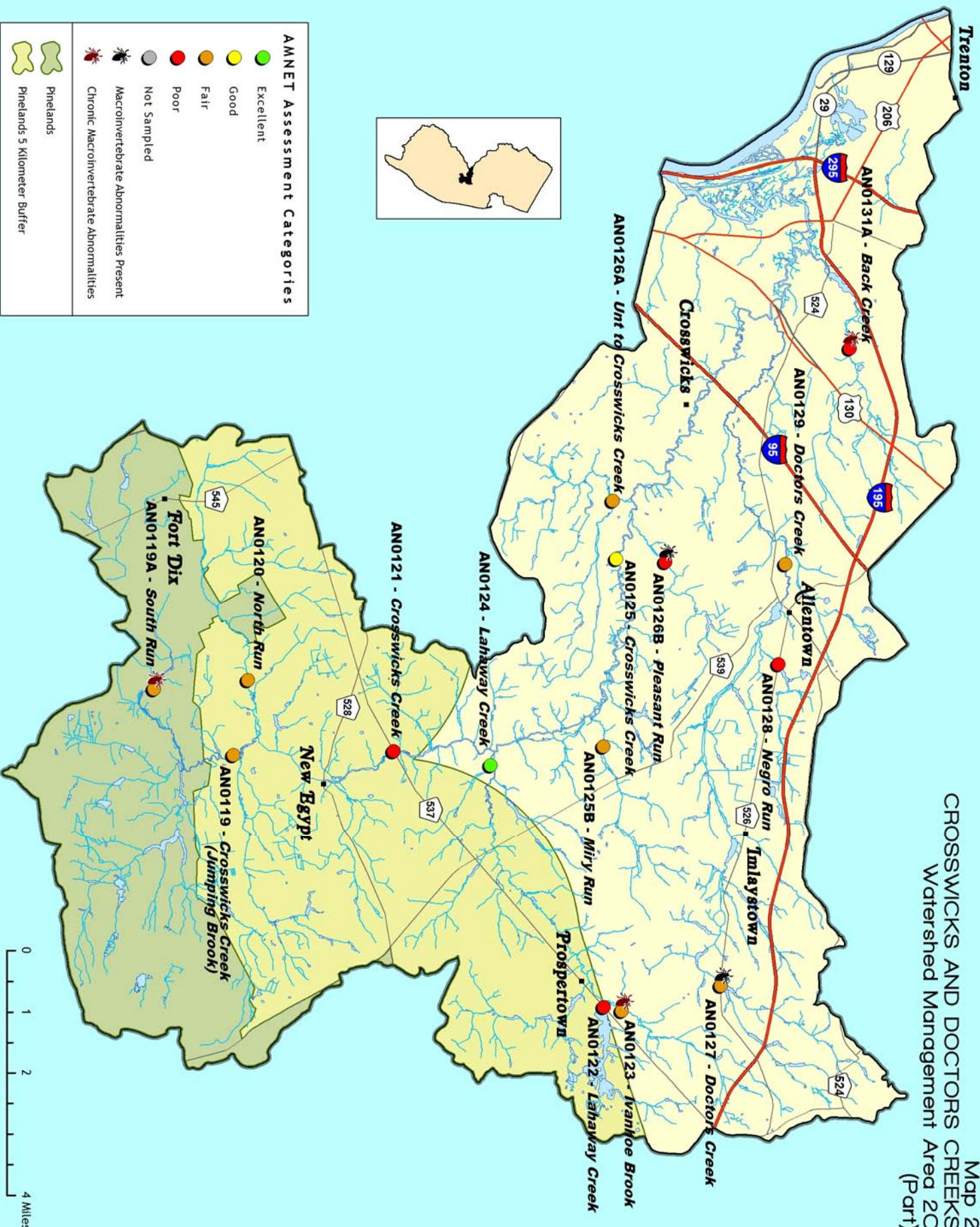
- Major River/Stream
- Watershed Management Area
- Pinelands
- Pinelands 5 Kilometer Buffer
- Non-Pinelands

0 7.5 15 Miles

1 inch equals 9.58 miles



Map 2
 CROSSWICKS AND DOCTORS CREEKS
 Watershed Management Area 20
 (Part)

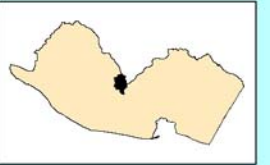


AMNET Assessment Categories

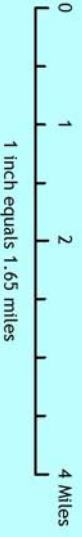
- Excellent
- Good
- Fair
- Poor
- Not Sampled
- Chronic Macroinvertebrate Abnormalities Present
- Chronic Macroinvertebrate Abnormalities

- Pinelands
- Pinelands 5 Kilometer Buffer



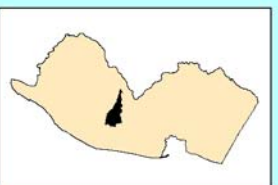


Map 3
 ASSISCUNK, CRAFTS AND BLACKS CREEKS
 Watershed
 Management
 Area
 20
 (Part)

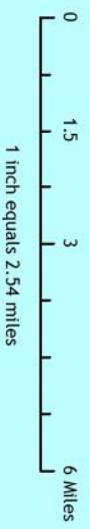


AMNET Assessment Categories	
	Excellent
	Good
	Fair
	Poor
	Not Sampled
	Macroinvertebrate Abnormalities Present
	Chronic Macroinvertebrate Abnormalities
	Pinelands
	Pinelands 5 kilometer Buffer

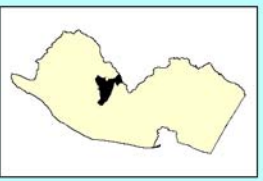
Map 4
RANCOCAS AND NORTH BRANCH RANCOCAS CREEKS
 Watershed Management Area 19
 (Part)



AMNET Assessment Categories	
	Excellent
	Good
	Fair
	Poor
	Not Sampled
	Macroinvertebrate Abnormalities Present
	Chronic Macroinvertebrate Abnormalities
	Pinelands
	Pinelands 5 Kilometer Buffer



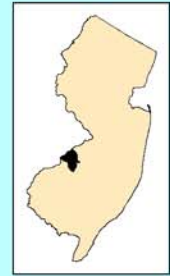
Map 5
 SOUTH BRANCH RANCOCCAS CREEK
 Watershed
 Management
 Area
 19
 (Part)



AN/ET Assessment Categories	
	Excellent
	Good
	Fair
	Poor
	Not Sampled
	Macroinvertebrate Abnormalities Present
	Chronic Macroinvertebrate Abnormalities
	Pinelands
	Pinelands 5 Kilometer Buffer

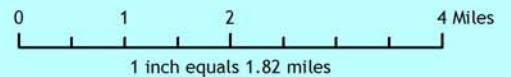


Map 6
 COOPER RIVER,
 PENNSAUKEN AND POMPESTON CREEKS
 Watershed
 Management
 Area
 18
 (Part)



AMNET Assessment Categories

- Excellent
- Good
- Fair
- Poor
- Not Sampled
- Macroinvertebrate Abnormalities Present
- Chronic Macroinvertebrate Abnormalities
- Pinelands 5 Kilometer Buffer



Map 7
NEWTON, BIG TIMBER AND WOODBURY
CREEKS
 Watershed
 Management
 Area
 18
 (Part)



AMNET Assessment Categories

- Excellent
- Good
- Fair
- Poor
- Not Sampled
- Macroinvertebrate Abnormalities Present
- Chronic Macroinvertebrate Abnormalities
- Pinelands 5 Kilometer Buffer



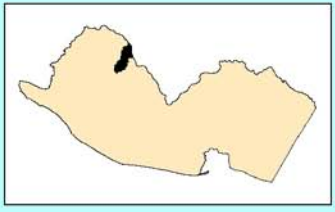
Map 8 MANTUA, REPAUPO AND LITTLE TIMBER CREEKS Watershed Management Area 18 (Part)

AMNET Assessment Categories

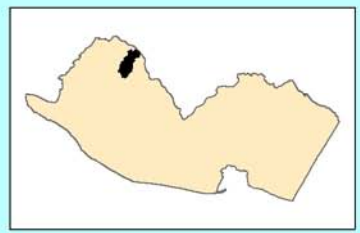
- Excellent
- Good
- Fair
- Poor
- Not Sampled

● Macroinvertebrate Abnormalities Present
● Chronic Macroinvertebrate Abnormalities

 Pinelands 5 Kilometer Buffer



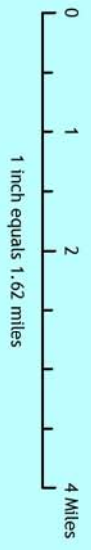
Map 9
RACCOON AND OLDMANS CREEKS
 Watershed
 Management
 Area
 18
 (Part)



AMNET Assessment Categories

- Excellent
- Good
- Fair
- Poor
- Not Sampled

● Macroinvertebrate Abnormalities Present
● Chronic Macroinvertebrate Abnormalities

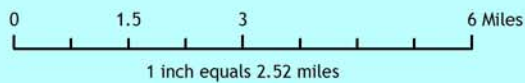


Map 10
 SALEM RIVER AND ALLOWAY CREEK
 Watershed
 Management
 Area
 17
 (Part)



AMNET Assessment Categories

- Excellent
- Good
- Fair
- Poor
- Not Sampled
- Macroinvertebrate Abnormalities Present
- Chronic Macroinvertebrate Abnormalities

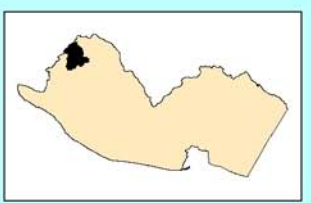


Map 11
 STOW CREEK AND COHANSEY RIVER
 Watershed
 Management
 Area
 17
 (part)



- AMNET Assessment Categories**
- Excellent
 - Good
 - Fair
 - Poor
 - Not Sampled
- Macroinvertebrate Abnormalities Present**
- Chronic Macroinvertebrate Abnormalities

0 1 2 4 Miles
 1 inch equals 2.07 miles



Map 12
 UPPER MAURICE RIVER
 Watershed
 Management
 Area 17
 (Part)

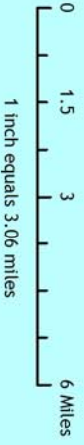
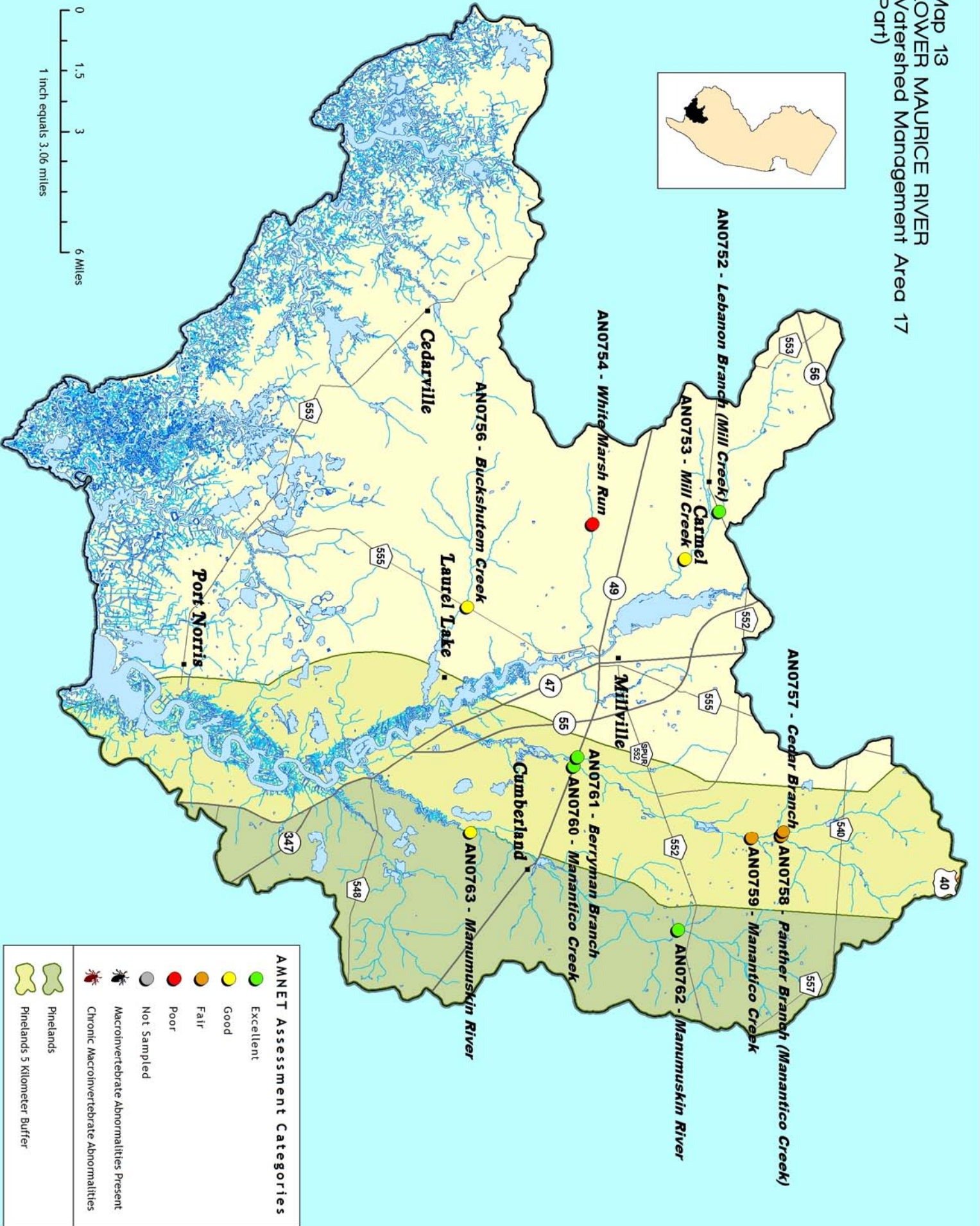
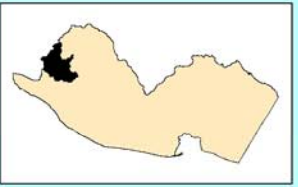


AMNET Assessment Categories

- Excellent
- Good
- Fair
- Poor
- Not Sampled
- Macroinvertebrate Abnormalities Present
- Chronic Macroinvertebrate Abnormalities
- Pinelands
- Pinelands 5 Kilometer Buffer

0 1 2 4 Miles
 1 inch equals 2.45 miles

Map 13
 LOWER MAURICE RIVER
 Watershed Management Area 17
 (Part)



AMNET Assessment Categories	
	Excellent
	Good
	Fair
	Poor
	Not Sampled
	Macroinvertebrate Abnormalities Present
	Chronic Macroinvertebrate Abnormalities
	Pinelands
	Pinelands 5 Kilometer Buffer

New Jersey AMNET Study — Round 3 Lower Delaware Region

Table 2

Comparative Scores / Ratings (see notes)

Watershed Management Areas 17, 18, 19, & 20

Station	Index name	Rnd 2 Score	Rnd 3 Score	Rnd 2 Rating	Rnd 3 Rating	Change in Rating	Rnd 3 Habitat Score	WMA	Station	Index name	Rnd 2 Score	Rnd 3 Score	Rnd 2 Rating	Rnd 3 Rating	Change in Rating	Rnd 3 Habitat Score	WMA
119	PMI	41.59	41.36	Fair	Fair	/	139	20	154	PMI	61.23	62.93	Good	Good	/	173	19
119A	PMI	57.92	48.44	Good	Fair	—	147	20	155	PMI	63.60	58.54	Excellent	Good	—	167	19
120	PMI	49.37	42.18	Fair	Fair	/	120	20	156	PMI	52.26	58.43	Fair	Good	+	163	19
121	PMI	36.57	33.72	Fair	Poor	—	131	20	157	PMI	49.16	27.84	Fair	Poor	—	142	19
122	PMI	23.74	29.94	Poor	Poor	/	144	20	157A	PMI	46.58	58.95	Fair	Good	+	159	19
123	CPMI	6	8	Fair	Fair	/	140	20	158	PMI	57.98	41.65	Good	Fair	—	142	19
124	CPMI	10	22	Fair	Excellent	+	153	20	159	PMI	62.75	49.01	Good	Fair	—	169	19
125	CPMI	6	12	Fair	Good	+	142	20	160	PMI	33.93	46.62	Poor	Fair	+	133	19
125B	CPMI	12	8	Good	Fair	—	128	20	162	PMI	44.63	27.50	Fair	Poor	—	117	19
126A	CPMI	4	8	Poor	Fair	+	126	20	163	PMI	48.91	25.06	Fair	Poor	—	145	19
126B	CPMI	4	4	Poor	Poor	/	118	20	164	PMI	69.05	75.70	Excellent	Excellent	/	152	19
127	CPMI	8	6	Fair	Fair	/	143	20	165	PMI	55.63	57.79	Fair	Good	+	142	19
128	CPMI	6	4	Fair	Poor	—	147	20	166	PMI	36.38	30.10	Fair	Poor	—	154	19
129	CPMI	8	10	Fair	Fair	/	146	20	167	PMI	36.46	38.36	Fair	Fair	/	124	19
131A	CPMI	8	4	Fair	Poor	—	152	20	168	PMI	26.23	37.32	Poor	Fair	+	129	19
132	CPMI	12	10	Good	Fair	—	145	20	169	PMI	52.64	52.53	Fair	Fair	/	118	19
133	CPMI	4	8	Poor	Fair	+	152	20	170	PMI	40.10	33.61	Fair	Poor	—	138	19
135	CPMI	6	10	Fair	Fair	/	123	20	171A	PMI	27.17	22.33	Poor	Poor	/	101	19
136	CPMI	4	4	Poor	Poor	/	139	20	172	PMI	41.90	32.84	Fair	Poor	—	91	19
137	CPMI	20	10	Good	Fair	—	132	20	173	CPMI	6	6	Fair	Fair	/	109	19
138	PMI	40.73	35.31	Fair	Fair	/	115	20	175	CPMI	2	6	Poor	Fair	+	141	19
139	CPMI	10	12	Fair	Good	+	153	20	176	CPMI	2	6	Poor	Fair	+	93	18
140	PMI	29.04	31.58	Poor	Poor	/	144	20	177	CPMI	4	6	Poor	Fair	+	144	18
141	CPMI	14	8	Good	Fair	—	148	20	178	PMI	34.73	43.8	Fair	Fair	/	113	18
141O	CPMI	18	2	Good	Poor	—	139	20	179	CPMI	0	8	Poor	Fair	+	109	18
142C	CPMI	12	12	Good	Good	/	151	20	182	CPMI	2	4	Poor	Poor	/	109	18
143	PMI	66.75	55.78	Excellent	Fair	—	135	19	183	CPMI	2	6	Poor	Fair	+	126	18
144	PMI	45.42	59.59	Fair	Good	+	129	19	186	PMI	36.47	38.34	Fair	Fair	/	120	18
145	PMI	78.79	67.32	Excellent	Excellent	/	177	19	187	CPMI	2	6	Poor	Fair	+	143	18
146	PMI	62.76	60.52	Good	Good	/	168	19	188	CPMI	4	8	Poor	Fair	+	120	18
147	PMI	66.45	66.29	Excellent	Excellent	/	176	19	189	CPMI	0	12	Poor	Good	+	146	18
148	PMI	67.92	51.23	Excellent	Fair	—	158	19	190	CPMI	8	2	Fair	Poor	—	112	18
149	PMI	62.15	53.35	Good	Fair	—	163	19	191	CPMI	4	6	Poor	Fair	+	106	18
149A	PMI	68.10	59.02	Excellent	Good	—	144	19	654	CPMI	6	4	Fair	Poor	—	115	18
149B	PMI	55.08	36.97	Fair	Fair	/	153	19	656	CPMI	6	6	Fair	Fair	/	139	18
150	PMI	52.65	33.82	Fair	Poor	—	140	19	657	CPMI	4	6	Poor	Fair	+	149	18
151	PMI	39.87	55.64	Fair	Fair	/	118	19	658	CPMI	16	14	Good	Good	/	138	18
151A	PMI	47.53	59.82	Fair	Good	+	131	19	661	CPMI	4	12	Poor	Good	+	124	18
152	PMI	61.65	56.36	Good	Good	/	165	19	662	CPMI	6	6	Fair	Fair	/	142	18
153	PMI	64.35	61.14	Excellent	Good	—	170	19	666	CPMI	6	6	Fair	Fair	/	109	18

NOTES:

Comparison of NJ impairment score results between earliest and latest sampling dates:

- nd no data
- + indicates positive change in rating
- indicates negative change in rating
- / indicates no change in rating

<u>CPMI</u>	<u>Value</u>	<u>PMI</u>	<u>Value</u>	<u>HGMI</u>	<u>Value</u>	<u>Habitat Score</u>	<u>Value</u>
Excellent	22.0-30.0	Excellent	63.0-100.0	Excellent	63.0-100.0	Optimal	160 - 200
Good	11.0-21.0	Good	56.0-62.99	Good	42.0-62.99	Sub-optimal	110 - 159
Fair	6.0-10.0	Fair	34.0-55.99	Fair	21.0-41.99	Marginal	60 - 109
Poor	0-5.99	Poor	0-33.99	Poor	0-20.99	Poor	<60

New Jersey AMNET Study — Round 3 Lower Delaware Region

Table 2

Comparative Scores / Ratings (see notes)

Watershed Management Areas 17, 18, 19, & 20

Station	Index name	Rnd 2 Score	Rnd 3 Score	Rnd 2 Rating	Rnd 3 Rating	Change in Rating	Rnd 3 Habitat Score	WMA	Station	Index name	Rnd 2 Score	Rnd 3 Score	Rnd 2 Rating	Rnd 3 Rating	Change in Rating	Rnd 3 Habitat Score	WMA
668	CPMI	18	10	Good	Fair	—	167	18	723	PMI	41.61	55.04	Fair	Fair	/	173	17
669	CPMI	8	8	Fair	Fair	/	130	18	724	PMI	45.06	52.25	Fair	Fair	/	155	17
670	CPMI	12	8	Good	Fair	—	154	18	725	PMI	44.70	42.33	Fair	Fair	/	161	17
673	CPMI	8	10	Fair	Fair	/	112	18	726A	CPMI	2	nd	Poor	no sample	nd	nd	17
674	CPMI	12	8	Good	Fair	—	111	18	727	CPMI	10	12	Fair	Good	+	143	17
675	CPMI	4	8	Poor	Fair	+	130	18	728	CPMI	8	20	Fair	Good	+	154	17
676	CPMI	6	8	Fair	Fair	/	136	18	729	CPMI	20	8	Good	Fair	—	143	17
677	CPMI	8	6	Fair	Fair	/	141	18	730	CPMI	12	6	Good	Fair	—	157	17
678	CPMI	8	8	Fair	Fair	/	147	18	731	CPMI	10	10	Fair	Fair	/	163	17
679	CPMI	6	10	Fair	Fair	/	160	18	732	CPMI	14	8	Good	Fair	—	136	17
680	CPMI	18	10	Good	Fair	—	112	18	733	CPMI	16	10	Good	Fair	—	151	17
681	CPMI	18	22	Good	Excellent	+	117	18	734	PMI	52.42	54.72	Fair	Fair	/	153	17
682	CPMI	4	12	Poor	Good	+	116	18	735	CPMI	16	20	Good	Good	/	139	17
683	CPMI	8	14	Fair	Good	+	136	18	736	CPMI	22	12	Excellent	Good	—	154	17
686	CPMI	6	28	Fair	Excellent	+	155	18	737	CPMI	20	24	Good	Excellent	+	162	17
687	CPMI	8	14	Fair	Good	+	144	18	738	PMI	32.50	36.41	Poor	Fair	+	145	17
688	CPMI	10	4	Fair	Poor	—	167	18	739	CPMI	18	20	Good	Good	/	160	17
690	CPMI	8	4	Fair	Poor	—	136	17	740	CPMI	22	18	Excellent	Good	—	145	17
691	CPMI	8	0	Fair	Poor	—	116	17	741	CPMI	14	12	Good	Good	/	110	17
692	CPMI	8	12	Fair	Good	+	119	17	742	CPMI	10	4	Fair	Poor	—	139	17
693	CPMI	6	8	Fair	Fair	/	143	17	743	CPMI	16	8	Good	Fair	—	116	17
694	CPMI	0	4	Poor	Poor	/	111	17	744	CPMI	18	6	Good	Fair	—	156	17
695	CPMI	14	8	Good	Fair	—	112	17	745	CPMI	10	10	Fair	Fair	/	143	17
696	CPMI	12	2	Good	Poor	—	135	17	746	CPMI	4	4	Poor	Poor	/	116	17
697	CPMI	4	8	Poor	Fair	+	143	17	747	CPMI	6	6	Fair	Fair	/	125	17
698	CPMI	8	6	Fair	Fair	/	138	17	748	CPMI	6	10	Fair	Fair	/	153	17
699	CPMI	10	6	Fair	Fair	/	99	17	749	CPMI	18	22	Good	Excellent	+	165	17
700	CPMI	20	18	Good	Good	/	132	17	750	CPMI	4	2	Poor	Poor	/	137	17
701	CPMI	12	16	Good	Good	/	121	17	751	CPMI	6	4	Fair	Poor	—	132	17
705	CPMI	14	16	Good	Good	/	155	17	752	CPMI	22	24	Excellent	Excellent	/	158	17
708	CPMI	2	4	Poor	Poor	/	130	17	753	CPMI	24	14	Excellent	Good	—	142	17
709	CPMI	12	24	Good	Excellent	+	131	17	754	CPMI	10	4	Fair	Poor	—	137	17
710	CPMI	6	6	Fair	Fair	/	147	17	756	CPMI	14	14	Good	Good	/	150	17
711	CPMI	2	8	Poor	Fair	+	155	17	757	PMI	37.68	36.60	Fair	Fair	/	159	17
712	CPMI	14	8	Good	Fair	—	136	17	758	PMI	54.05	53.39	Fair	Fair	/	157	17
713	CPMI	4	4	Poor	Poor	/	119	17	759	PMI	44.53	47.96	Fair	Fair	/	169	17
714	CPMI	4	8	Poor	Fair	+	139	17	760	PMI	70.42	64.78	Excellent	Excellent	/	166	17
716	CPMI	nd	6	no sample	Fair	nd	107	17	761	PMI	59.91	67.60	Good	Excellent	+	133	17
717	CPMI	6	6	Fair	Fair	/	118	17	762	PMI	70.56	69.55	Excellent	Excellent	/	176	17
721	PMI	49.47	56.13	Fair	Good	+	148	17	763	PMI	64.43	57.73	Excellent	Good	—	172	17
722	PMI	34.10	24.76	Fair	Poor	—	141	17									

NOTES:

Comparison of NJ impairment score results between earliest and latest sampling dates:

- nd no data
- + indicates positive change in rating
- indicates negative change in rating
- / indicates no change in rating

<u>CPMI</u>	<u>Value</u>	<u>PMI</u>	<u>Value</u>	<u>HGMI</u>	<u>Value</u>	<u>Habitat Score</u>	<u>Value</u>
Excellent	22.0-30.0	Excellent	63.0-100.0	Excellent	63.0-100.0	Optimal	160 - 200
Good	11.0-21.0	Good	56.0-62.99	Good	42.0-62.99	Sub-optimal	110 - 159
Fair	6.0-10.0	Fair	34.0-55.99	Fair	21.0-41.99	Marginal	60 - 109
Poor	0-5.99	Poor	0-33.99	Poor	0-20.99	Poor	<60

Table 3

Macroinvertebrate Abnormalities (see notes)

Watershed Management Areas 17, 18, 19, and 20

Station	Round 2	Round 3	WMA		Station	Round 2	Round 3	WMA				
119A	1/3	1/18	20		662	1/22		18				
123	1/61	1/100	20		674		+1	18				
126B		2/110	20		675	1/15		18				
127		1/40	20		676	1/65		18				
131A	+1, 1/17	1/12	20		677		1/74	18				
132	1/88		20		678	1/27		18				
133	1/59		20		680	3/14		18				
135		1/39	20		683		+1	18				
136		1/20	20		687	1/78		18				
137		2/67	20		688	1/9		18				
140		1/8	20		693	1/47		17				
141O	1/40	+1	20		695	1/59	1/59	17				
144		3/105	19		696		1/84	17				
145		1/23	19		697	1/43		17				
146	1/48		19		698	+1		17				
147	2/62		19		699	1/105	1/77	17				
151A		+1	19		700	1/23		17				
152	2/55		19		709	+1		17				
154	1/56		19		712	+1, 1/33		17				
156	1/22		19		724	1/18		17				
157	+1		19		725	+1		17				
157A		1/78	19		729	3/38	1/54	17				
158		1/19	19		730		1/64	17				
162	1/16		19		734		1/64	17				
163		1/4	19		746		1/19	17				
165	1/27		19		747	1/42	+2	17				
170		2/9	19		748	1/36	1/24	17				
173	+1		19		750	1/29		17				
176R	1/12		19		756	1/30		17				
182	2/24	3/64	18									
183		1/73	18									
189		1/32	18									
191		1/19	18									
654		1/33	18									
656	1/47		18									

NOTES:

chironomids with deformities / # chironomids examined

+ — indicates the number of non-chironomids having abnormalities

abnormalities are considered chronic if they appear in both the Round 2 and the Round 3 columns

Table 4 — HABITAT ASSESSMENT FOR HIGH GRADIENT STREAMS

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yrs.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORES	VALUE
OPTIMAL	160 X 200
SUB-OPTIMAL	110 X 159
MARGINAL	60 X 109
POOR	< 60

Table 4 (cont.) — HABITAT ASSESSMENT FOR *LOW GRADIENT STREAMS*

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient).	30-50% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% <20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yrs.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Note: determine left or right side by facing downstream.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORES	VALUE
OPTIMAL	160 X 200
SUB-OPTIMAL	110 X 159
MARGINAL	60 X 109
POOR	< 60

Table 5 - List of AMNET sites with Parameters that did not attain standards:

Amnet#	Stream Name	Station Location	Non-Attaining Parameter(s)
AN0119	Crosswicks Ck (Jumping Bk)	Bunting Bridge Rd, North Hanover Twp	pH, Tot Phos
AN0119A	South Run	Browns Mills-Cookstown Rd, New Hanover Twp	pH, Tot Phos
AN0120	North Run	Main St, North Hanover Twp	Tot Phos, TSS
AN0121	Crosswicks Ck	Rt 537, Plumsted Twp	Tot Phos
AN0124*	Lahaway Ck	New Egypt-Allentown Rd, Upper Freehold Twp	Tot Phos
AN0125*	Crosswicks Ck	Extonville Rd USGS Gauge, Chesterfield Twp	pH, Tot Phos, TSS
AN0125B	Miry Run	Holmes Mill Rd, Upper Freehold Twp	pH, Tot Phos, TSS, Turbidity
AN0126B	Pleasant Run	Extonville Rd, Hamilton Twp	pH, Tot Phos, TSS
AN0128	Negro Run	Red Valley Rd, Allentown Boro	pH, Tot Phos
AN0129	Doctors Ck	Breza Rd, Allentown Boro	Tot Phos
AN0131A	Back Ck	Yardville-Hamilton Square Rd, Hamilton Twp	Tot Phos
AN0132	Blacks Ck	Chesterfield-Georgetown Rd, Chesterfield Twp	pH, Tot Phos
AN0133	Bacon Run	White Pine Rd, Chesterfield Twp	pH, Tot Phos
AN0135	Crafts Ck	Gaunts Bridge Rd, Mansfield Twp	pH, Tot Phos
AN0136	Crafts Ck	Island Rd, Mansfield Twp	pH, Tot Phos
AN0137	Crafts Ck	Old York Rd, Florence Twp	pH
AN0138	Assiscunk Ck	Columbus-Georgetown Rd, Mansfield Twp	pH, Tot Phos
AN0139*	Annaricken Bk	Island Rd, Springfield Twp	pH, Tot Phos
AN0140	Barkers Bk N Br	Georgetown-Juliustown Rd, Springfield Twp	pH, Tot Phos
AN0141	Assiscunk Ck	Jacksonville Rd, Springfield Twp	pH
AN0141O	Barkers Bk	Jacksonville-Smithville Rd, Springfield Twp	pH, Tot Phos
AN0143*	North Br Rancocas Ck	Military Rd., Pemberton Twp	pH, Tot Phos
AN0149	Rancocas Ck N Br	Main St, Pemberton	pH, Tot Phos
AN0149A*	Ong Run	West Lakeshore Dr., Pemberton Twp	pH
AN0149B	Jacks Run	Range Rd, New Hanover Twp	pH
AN0151*	Rancocas Ck N Br	Iron Works Park, Mount Holly Twp	pH, Tot Phos
AN0151A*	Indian Run	Birmingham Rd, Pemberton Twp	pH, Tot Phos, TSS
AN0153*	Burrs Mill Bk	Sooy Place/Hedgerhouse Rd, Woodland Twp	DO
AN0154*	Burrs Mill Bk	Sooy Place Rd Off Rt 70, Pemberton Twp	pH, Tot Phos
AN0155*	Friendship Ck	Retreat Rd, Southampton Twp	pH, Tot Phos
AN0156*	Rancocas Ck S Br	Ridge Rd, Southampton Twp	pH, Tot Phos
AN0157	Jade Run	A Farm Rd off Rt 206, Southampton Twp	DO, pH, Tot Phos
AN0157A*	Jade Run	Stockton Bridge Rd, Pemberton Twp	DO, pH, Tot Phos
AN0158	Little Ck	Rt 70, Medford Twp	pH
AN0162	Rancocas Ck SW Br	Elmwood Rd, Evesham Twp	Tot Phos
AN0163	UNT to Barton Run	Braddock Mill Rd & Rt 73, Voorhees Twp	pH
AN0164*	Black Run	Kettle Run Rd, Evesham Twp	pH
AN0165*	Black Run trib	Braddock Mill Rd, Evesham Twp	pH
AN0166	Barton Run	Tuckerton Rd & Christopher Mill Rd, Medford Twp	pH
AN0169	Rancocas Ck SW Br	Rt 70, Medford Twp	Tot Phos
AN0170	Sharps Run	Rt 541, Medford Twp	Tot Phos
AN0172	UNT to Masons Ck	Ark Rd nr. Fenimore Rd, Lumberton Twp	Tot Phos
AN0173	Masons Ck	Rt 38, Hainesport Twp	Tot Phos
AN0175	Mill Ck	Levitt Pkwy, Willingboro Twp	Tot Phos
AN0179	Pennsauken Ck N Br	Fellowship Rd nr I-295, Mt Laurel Twp	Tot Phos

* Excellent or Good AMNET site

Table 5 (cont.) - List of AMNET sites with Parameters that did not attain standards:

Amnet#	Stream Name	Station Location	Non-Attaining Parameter(s)
AN0182	Pennsauken Ck S Br	Greentree Rd, Cherry Hill Twp	Tot Phos, TSS
AN0183	Pennsauken Ck S Br	Rt 41, Maple Shade Twp	Tot Phos, TSS
AN0186	Cooper R N Br	Kresson Rd, Voorhees Twp	pH
AN0187	Cooper R N Br	Springdale Rd, Cherry Hill Twp	pH
AN0188	Cooper R N Br	River Dr, Cherry Hill Twp	pH
AN0189*	Cooper R S Br	Gibbsboro Rd, Gibbsboro Boro	Tot Phos, Turbidity, PCE-TCE
AN0190	Cooper R S Br	Evesham Rd, Magnolia Boro	Tot Phos, Turbidity, PCE-TCE
AN0191	Cooper R S Br	Rt 41, Cherry Hill Twp	Tot Phos, Turbidity, PCE-TCE
AN0654	Newton Ck S Br	Rt 168, Mt Ephraim Boro	pH, Temp, Tot Phos
AN0661*	Bg Timber Ck N Br	W Park Ave, Lindenwold Boro	Tot Phos
AN0662	Mason Run	Chews Landing Rd, Lindenwold Boro	Tot Phos
AN0673	Edwards Run	Pitman-Jefferson Rd, Harrison Twp	Tot Phos
AN0674	Edwards Run	Jessups Mill Rd, Mantua Twp	Tot Phos
AN0683*	Raccoon Ck	Tomlin Station Rd, Harrison Twp	Tot Phos, Turbidity
AN0686*	Oldmans Ck	Swedesboro Rd, South Harrison Twp	pH
AN0687*	Oldmans Ck	Harrisonville Lake Rd, South Harrison Twp	pH
AN0688	Oldmans Ck	Kings Hwy, Woolwich Twp	Tot Phos, TSS
AN0690	Salem R	Rt 581 (Commissioners Rd), Upper Pittsgrove Twp	pH, Tot Phos
AN0691	Salem R	Mill St, Pilesgrove Twp	pH, Tot Phos
AN0693	Salem R	Kings Hwy, Pilesgrove Twp	Temp, Tot Phos, TSS
AN0694	Major Run	Pointers-Sharpstown Rd, Mannington Twp	Temp, Tot Phos, TSS
AN0695	Two Penny Run	E Quillytown Rd, Upper Penns Neck Twp	Tot Phos
AN0696	Game Ck	Rt 48, Upper Penns Neck Twp	Tot Phos
AN0699	Alloway Ck	Yorktown-Friesburg Rd (Rt 672), Alloway Twp	Tot Phos
AN0708	Raccoon Ditch	Davis Mill Rd, Stow Creek Twp	DO
AN0709*	Cohansey R	Beal Rd, Alloway Twp	pH, Tot Phos
AN0710	Cohansey R	Rt 540, Hopewell Twp	pH, Tot Phos
AN0712	Cohansey R	Silver Lake Rd, Upper Deerfield Twp	pH, Tot Phos
AN0724	Indian Br	Rt 47, Franklin Twp	pH
AN0727*	Ltl Ease Run	Grant Ave, Franklin Twp	pH
AN0728*	Ltl Ease Run	Leonard Cake Rd, Franklin Twp	pH
AN0730	Still Run	Little Mill Rd, Franklin Twp	pH
AN0732	Still Run	Rt 40, Franklin Twp	pH
AN0733	Maurice R (Scotland Run)	Willow Grove Rd (Rt 690), Pittsgrove Twp	pH
AN0738	Blackwater Br	Main Rd, Franklin Twp	pH
AN0739*	Blackwater Br	Maurice River Pkwy., Vineland	pH
AN0740*	Maurice R	Almond Ave, Vineland	pH
AN0743	Palatine Br	Shirley Rd, Upper Pittsgrove Twp	pH, Tot Phos
AN0744	Palatine Br	Lower Mill Rd, Pittsgrove Twp	pH, Tot Phos
AN0751	Maurice R	Sherman Ave, Vineland	pH
AN0753*	Mill Ck	off Rt 552, Millville	pH
AN0754	White Marsh Run	Hogbin Rd, Millville	pH
AN0760*	Manantico Ck	Rt 49, Millville	pH, Tot Phos
AN0763*	Manumuskin R	on The Nature Conservancy property off Cumberland-Port Elizabeth Rd (Fries Mill), Maurice River Twp	pH

* Excellent or Good AMNET site

Appendix A — Station Numbers and Locations for the Round 3 Lower Delaware Region AMNET Study

Site	Stream	Latitude Longitude	Watershed Management Area
AN0119	Jumping Bk	40 02'46.163"N 74 32'22.678"W	20
AN0119A	South Run	40 01'38.586"N 74 33'35.890"W	20
AN0120	North Run	40 02'58.566"N 74 33'45.724"W	20
AN0121	Crosswicks Ck	40 05'03.177"N 74 32'27.148"W	20
AN0122	Lahaway Ck	40 08'02.478"N 74 27'41.945"W	20
AN0123	Ivanhoe Bk	40 08'17.621"N 74 27'37.970"W	20
AN0124	Lahaway Ck	40 06'25.582"N 74 32'11.319"W	20
AN0125	Crosswicks Ck	40 08'12.885"N 74 36'00.967"W	20
AN0125B	Miry Run	40 08'01.721"N 74 32'32.374"W	20
AN0126A	UNT to Crosswicks Ck	40 08'09.974"N 74 37'05.598"W	20
AN0126B	Pleasant Run	40 08'54.262"N 74 35'57.293"W	20
AN0127	Doctors Ck	40 09'42.180"N 74 28'05.896"W	20
AN0128	Negro Run	40 10'31.491"N 74 34'03.730"W	20
AN0129	Doctors Ck	40 10'37.270"N 74 35'55.389"W	20
AN0131A	Back Ck	40 11'31.773"N 74 39'55.258"W	20
AN0132	Blacks Ck	40 06'34.757"N 74 38'29.999"W	20
AN0133	Bacons Run	40 06'26.828"N 74 41'06.139"W	20
AN0135	Crafts Ck	40 04'30.104"N 74 39'55.313"W	20
AN0136	Crafts Ck	40 04'25.986"N 74 42'04.764"W	20
AN0137	Crafts Ck	40 06'01.643"N 74 45'21.566"W	20
AN0138	Assiscunk Ck	40 03'54.842"N 74 39'59.464"W	20
AN0139	Annaricken Bk	40 03'19.036"N 74 42'08.442"W	20
AN0140	North Br Barkers Bk	40 01'58.261"N 74 40'12.383"W	20
AN0141	Assiscunk Ck	40 03'52.971"N 74 45'24.601"W	20

Site	Stream	Latitude Longitude	Watershed Management Area
AN0141O	Barkers Bk	40 01'17.105"N 74 45'06.771"W	20
AN0142C	UNT to Assiscunk Ck	40 03'07.899"N 74 49'14.030"W	20
AN0143	North Br Rancocas Ck	39 58'46.829"N 74 31'30.920"W	19
AN0144	Pole Bridge Br	39 56'48.978"N 74 33'20.155"W	19
AN0145	Mt Misery Bk	39 55'44.693"N 74 31'51.593"W	19
AN0146	McDonalds Br	39 53'06.213"N 74 30'19.579"W	19
AN0147	Bisphams Mill Ck	39 55'26.003"N 74 35'30.127"W	19
AN0148	Greenwood Br	39 57'22.829"N 74 37'39.577"W	19
AN0149	North Br Rancocas Ck	39 58'12.345"N 74 41'03.227"W	19
AN0149A	Ong Run	39 58'35.529"N 74 34'35.949"W	19
AN0149B	Jacks Run	39 59'31.506"N 74 34'11.172"W	19
AN0150	Budds Run	39 58'34.906"N 74 40'51.343"W	19
AN0151	North Br Rancocas Ck	39 59'31.706"N 74 46'46.513"W	19
AN0151A	Indian Run	39 58'50.239"N 74 42'40.168"W	19
AN0152	Friendship Ck	39 52'15.726"N 74 41'34.923"W	19
AN0153	Burrs Mill Bk	39 51'33.878"N 74 35'53.218"W	19
AN0154	Burrs Mill Bk	39 52'54.599"N 74 40'30.108"W	19
AN0155	Friendship Ck	39 54'59.540"N 74 42'51.537"W	19
AN0156	South Br Rancocas Ck	39 55'23.615"N 74 43'03.539"W	19
AN0157	Jade Run	39 56'26.473"N 74 43'57.203"W	19
AN0157A	Jade Run	39 55'44.289"N 74 40'07.533"W	19
AN0158	Little Ck	39 53'54.326"N 74 47'17.302"W	19
AN0159	Bear Swamp River	39 53'43.556"N 74 46'44.796"W	19
AN0160	Little Ck	39 56'16.831"N 74 47'36.279"W	19

Appendix A — Station Numbers and Locations for the Round 3 Lower Delaware Region AMNET Study

Site	Stream	Latitude Longitude	Watershed Management Area
AN0162	Southwest Br Rancocas Ck	39 53'24.916"N 74 53'01.013"W	19
AN0163	UNT to Barton Run	39 51'20.592"N 74 55'17.336"W	19
AN0164	Black Run	39 49'58.943"N 74 53'34.378"W	19
AN0165	UNT to Black Run	39 51'00.889"N 74 54'22.261"W	19
AN0166	Barton Run	39 52'43.625"N 74 51'36.092"W	19
AN0167	Kettle Run	39 48'11.286"N 74 53'34.354"W	19
AN0168	Haynes Ck	39 53'06.698"N 74 49'53.909"W	19
AN0169	Southwest Br Rancocas Ck (Haynes Ck)	39 54'16.533"N 74 48'45.243"W	19
AN0170	Sharps Run	39 54'19.053"N 74 49'28.169"W	19
AN0171A	Bobbys Run	39 57'39.138"N 74 45'11.489"W	19
AN0172	UNT to Masons Ck	39 56'37.792"N 74 51'22.814"W	19
AN0173	Masons Ck	39 58'19.308"N 74 51'25.370"W	19
AN0175	Mill Ck	40 02'09.498"N 74 53'36.917"W	19
AN0176	Swedes Run	40 00'54.105"N 74 57'22.428"W	18
AN0177	Pompeston Ck	40 00'12.372"N 74 58'58.234"W	18
AN0178	North Br Pennsauken Ck	39 55'13.326"N 74 53'53.281"W	18
AN0179	North Br Pennsauken Ck	39 56'27.821"N 74 57'14.034"W	18
AN0182	South Br Pennsauken Ck	39 54'21.421"N 74 57'08.828"W	18
AN0183	South Br Pennsauken Ck	39 56'25.012"N 74 58'58.010"W	18
AN0186	North Br Cooper River	39 51'34.652"N 74 55'45.714"W	18
AN0187	North Br Cooper River	39 53'19.886"N 74 58'07.036"W	18
AN0188	North Br Cooper River	39 54'31.444"N 75 01'30.744"W	18
AN0189	South Br Cooper River	39 49'32.996"N 74 58'28.895"W	18
AN0190	South Br Cooper River	39 51'33.946"N 75 00'57.424"W	18

Site	Stream	Latitude Longitude	Watershed Management Area
AN0191	South Br Cooper River	39 54'11.706"N 75 01'18.832"W	18
AN0654	S Br Newton Ck	39 53'19.774"N 75 05'21.663"W	18
AN0656	UNT to S Br Big Timber Ck (Turners Run)	39 44'45.157"N 75 03'39.409"W	18
AN0657	UNT to S Br Big Timber Ck (Turners Run)	39 46'46.131"N 75 03'14.878"W	18
AN0658	S Br Big Timber Ck	39 46'19.012"N 75 02'57.830"W	18
AN0661	N Br Big Timber Ck	39 48'55.002"N 75 00'02.249"W	18
AN0662	Mason Run	39 48'48.482"N 75 01'18.528"W	18
AN0666	Little Timber Ck	39 52'11.051"N 75 04'22.119"W	18
AN0668	Mantua Ck	39 43'31.722"N 75 06'03.677"W	18
AN0669	Mantua Ck	39 45'17.341"N 75 07'02.938"W	18
AN0670	Chestnut Br	39 44'10.257"N 75 08'43.097"W	18
AN0673	Edwards Run	39 44'48.431"N 75 11'41.839"W	18
AN0674	Edwards Run	39 47'08.832"N 75 11'52.514"W	18
AN0675	Still Run	39 47'18.673"N 75 15'25.173"W	18
AN0676	Rattling Run	39 46'17.508"N 75 15'50.625"W	18
AN0677	Pargy Ck	39 47'34.051"N 75 17'10.520"W	18
AN0678	Little Timber Ck	39 47'24.249"N 75 18'20.655"W	18
AN0679	Raccoon Ck	39 41'09.056"N 75 11'04.705"W	18
AN0680	Raccoon Ck	39 44'10.891"N 75 13'27.255"W	18
AN0681	S Br Raccoon Ck	39 42'03.036"N 75 13'47.211"W	18
AN0682	S Br Raccoon Ck	39 44'10.281"N 75 15'20.758"W	18
AN0683	Raccoon Ck	39 44'25.473"N 75 15'31.891"W	18
AN0686	Oldmans Ck	39 39'44.321"N 75 13'50.954"W	18
AN0687	Oldmans Ck	39 40'55.942"N 75 16'00.001"W	18

Appendix A — Station Numbers and Locations for the Round 3 Lower Delaware Region AMNET Study

Site	Stream	Latitude Longitude	Watershed Management Area
AN0688	Oldmans Ck	39 41'57.556"N 75 19'59.611"W	18
AN0690	Salem River	39 37'17.691"N 75 16'05.539"W	17
AN0691	Salem River	39 38'36.970"N 75 19'49.436"W	17
AN0692	Nichomus Run	39 38'22.288"N 75 20'57.239"W	17
AN0693	Salem River	39 39'09.934"N 75 22'04.999"W	17
AN0694	Major Run	39 38'55.254"N 75 22'27.384"W	17
AN0695	Two Penny Run	39 41'22.582"N 75 24'31.243"W	17
AN0696	Game Ck	39 41'28.523"N 75 25'42.367"W	17
AN0697	UNT to Culliers Run	39 37'02.307"N 75 24'00.320"W	17
AN0698	Swedes Run	39 35'46.459"N 75 22'33.313"W	17
AN0699	Alloway Ck	39 35'28.222"N 75 17'45.750"W	17
AN0700	Cool Run	39 34'43.454"N 75 18'34.004"W	17
AN0701	UNT to Alloway Ck (Cedar Bk)	39 33'35.287"N 75 20'22.774"W	17
AN0705	Sarah Run	39 29'18.497"N 75 19'36.555"W	17
AN0708	Raccoon Ditch	39 25'25.583"N 75 22'00.152"W	17
AN0709	Cohansey River	39 32'41.071"N 75 16'29.504"W	17
AN0710	Cohansey River	39 31'00.326"N 75 16'00.616"W	17
AN0711	Parsonage Run	39 29'14.359"N 75 15'12.788"W	17
AN0712	Cohansey River	39 28'21.373"N 75 15'19.422"W	17
AN0713	Barrett Run	39 27'02.298"N 75 17'31.458"W	17
AN0714	Barrett Run	39 26'45.589"N 75 14'46.492"W	17
AN0716	Island Br	39 24'49.313"N 75 14'39.534"W	17
AN0717	Pine Mount Ck	39 24'48.922"N 75 20'51.606"W	17
AN0721	Scotland Run	39 41'34.769"N 75 02'27.728"W	17

Site	Stream	Latitude Longitude	Watershed Management Area
AN0722	Scotland Run	39 39'21.281"N 75 03'03.325"W	17
AN0723	Scotland Run	39 37'05.352"N 75 03'34.622"W	17
AN0724	Indian Br	39 35'26.762"N 75 03'34.962"W	17
AN0725	Scotland Run	39 34'22.861"N 75 03'29.703"W	17
AN0727	Little Ease Run	39 38'05.696"N 75 04'19.601"W	17
AN0728	Little Ease Run	39 35'49.106"N 75 04'33.406"W	17
AN0729	Still Run	39 40'22.961"N 75 07'47.935"W	17
AN0730	Still Run	39 38'08.942"N 75 05'57.383"W	17
AN0731	Reed Br	39 36'31.882"N 75 05'22.540"W	17
AN0732	Still Run	39 35'07.531"N 75 04'53.919"W	17
AN0733	Maurice River (Scotland Run)	39 33'01.387"N 75 04'15.807"W	17
AN0734	Burnt Mill Br	39 33'17.326"N 75 01'48.317"W	17
AN0735	Burnt Mill Br	39 31'40.134"N 75 03'59.079"W	17
AN0736	Green Br	39 32'52.954"N 75 06'02.984"W	17
AN0737	Green Br	39 31'37.882"N 75 04'50.377"W	17
AN0738	Blackwater Br	39 31'07.971"N 74 59'22.620"W	17
AN0739	Blackwater Br	39 30'20.396"N 75 04'19.945"W	17
AN0740	Maurice River	39 29'43.983"N 75 04'34.936"W	17
AN0741	Muddy Run	39 37'03.444"N 75 12'06.338"W	17
AN0742	Muddy Run	39 35'19.990"N 75 09'52.727"W	17
AN0743	Palatine Br	39 34'43.367"N 75 12'10.741"W	17
AN0744	Palatine Br	39 33'25.272"N 75 10'27.573"W	17
AN0745	Muddy Run	39 32'29.765"N 75 10'06.017"W	17
AN0746	Indian Run	39 33'46.323"N 75 12'26.238"W	17

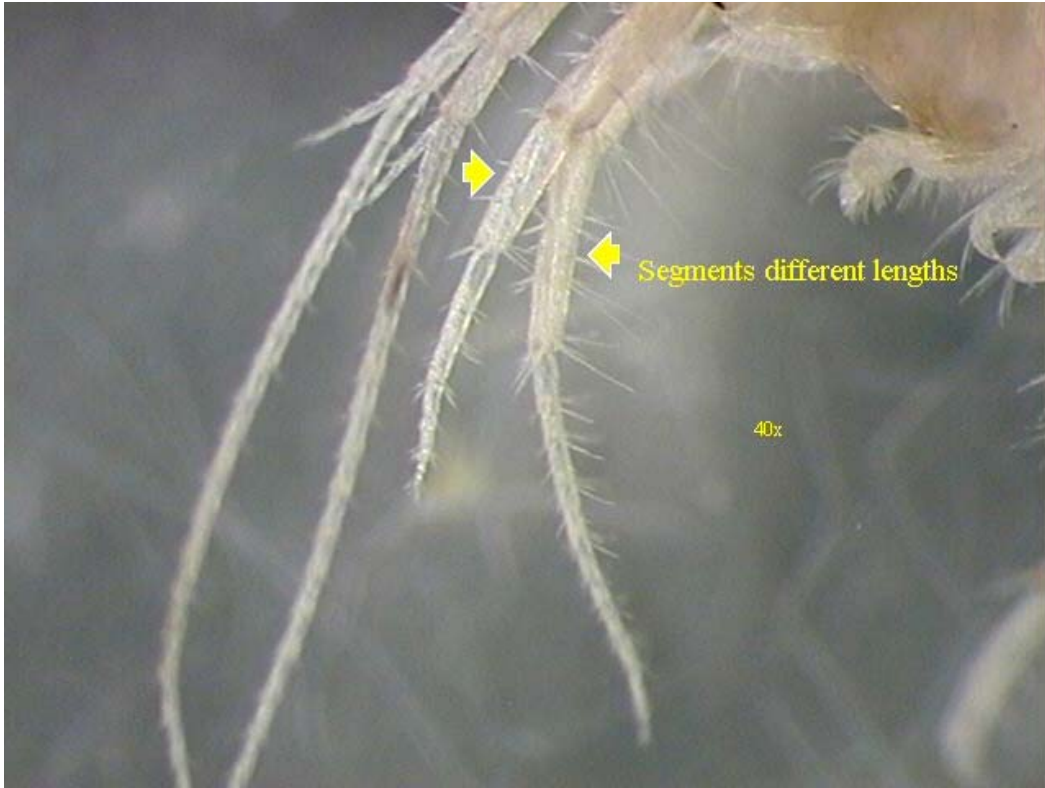
Appendix A — Station Numbers and Locations for the Round 3 Lower Delaware Region AMNET Study

Site	Stream	Latitude Longitude	Watershed Management Area
AN0747	Indian Run	39 32'08.304"N 75 11'02.136"W	17
AN0748	Muddy Run	39 30'24.436"N 75 07'44.565"W	17
AN0749	Muddy Run	39 28'13.951"N 75 05'34.555"W	17
AN0750	Parvin Br	39 27'18.762"N 75 04'05.959"W	17
AN0751	Maurice River	39 26'53.107"N 75 04'19.603"W	17
AN0752	Lebanon Br (Mill Ck)	39 26'17.098"N 75 06'27.116"W	17
AN0753	Mill Ck	39 25'33.606"N 75 05'08.305"W	17
AN0754	White Marsh Run	39 23'33.261"N 75 06'05.438"W	17
AN0756	Buckshutem Ck	39 20'51.706"N 75 03'45.334"W	17
AN0757	Cedar Br	39 27'40.268"N 74 57'29.124"W	17
AN0758	Panther Br (Manantico Ck)	39 27'40.241"N 74 57'25.993"W	17
AN0759	Manantico Ck	39 27'01.827"N 74 57'21.940"W	17
AN0760	Manantico Ck	39 23'10.936"N 74 59'21.539"W	17
AN0761	Berryman Br	39 23'15.681"N 74 59'36.541"W	17
AN0762	Manumuskin River	39 25'26.773"N 74 54'47.805"W	17
AN0763	Manumuskin River	39 20'57.887"N 74 57'29.302"W	17

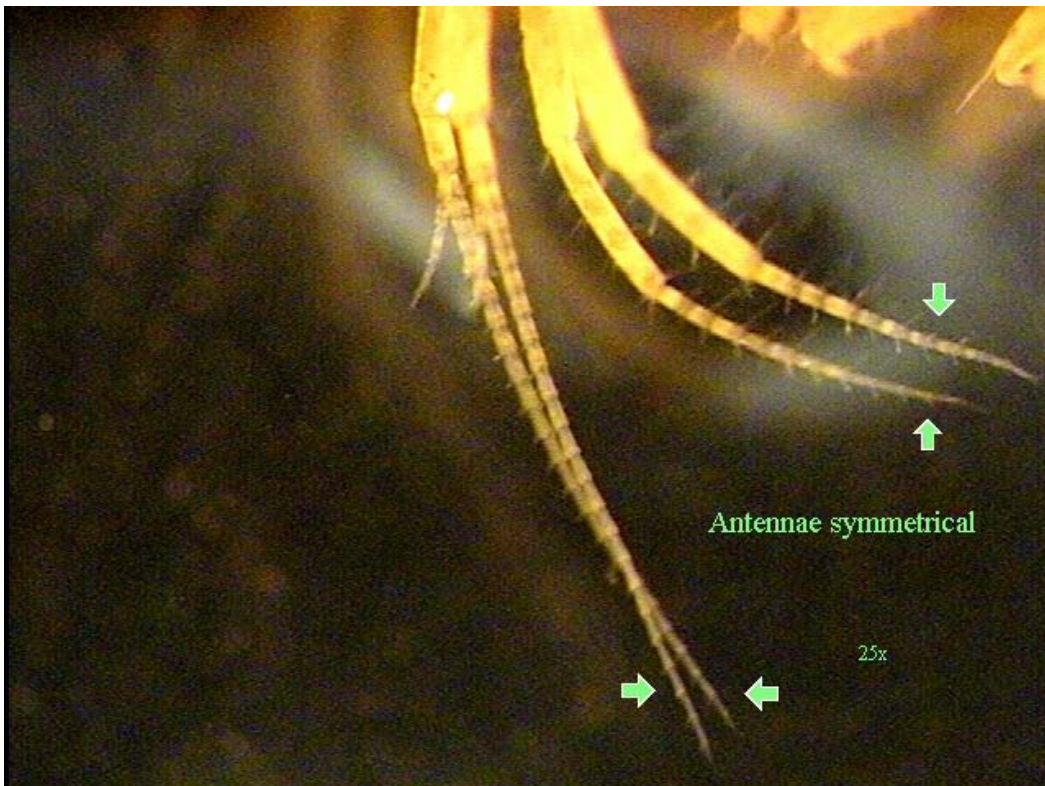
APPENDIX B

Pictures of Morphological Abnormalities in Larval Chironomidae
and Amphipoda Recovered in Recent AMNET Surveys

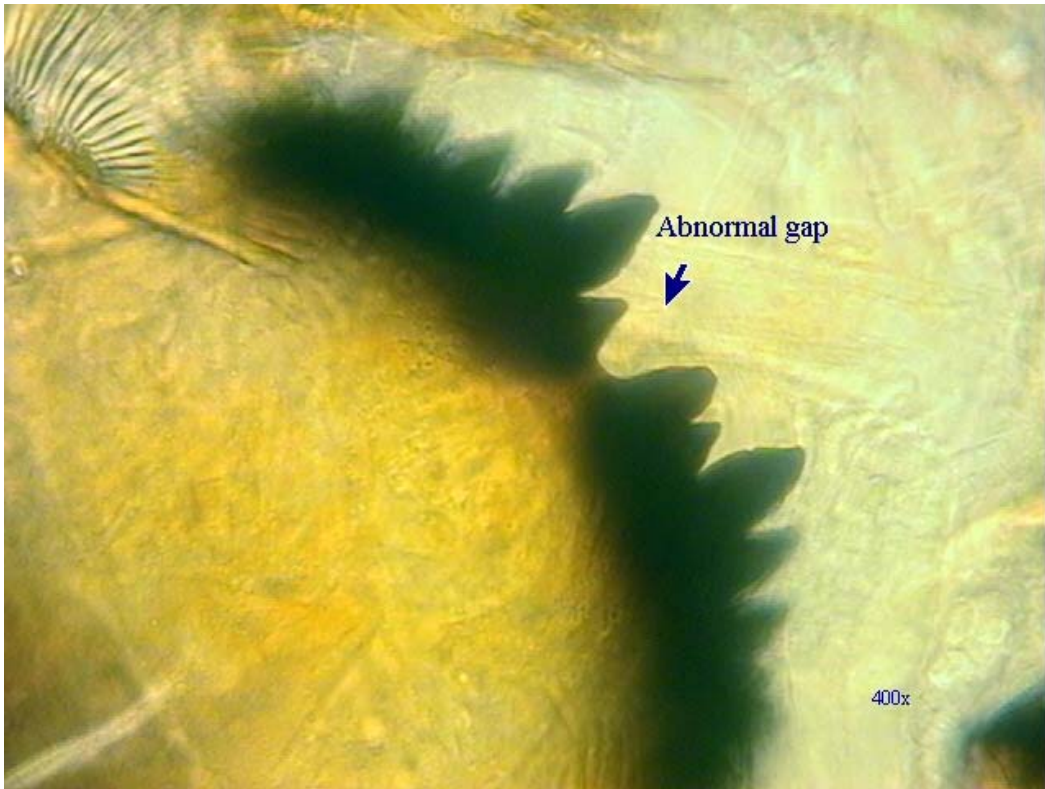
Gammarus fasciatus with second antennae showing different lengths



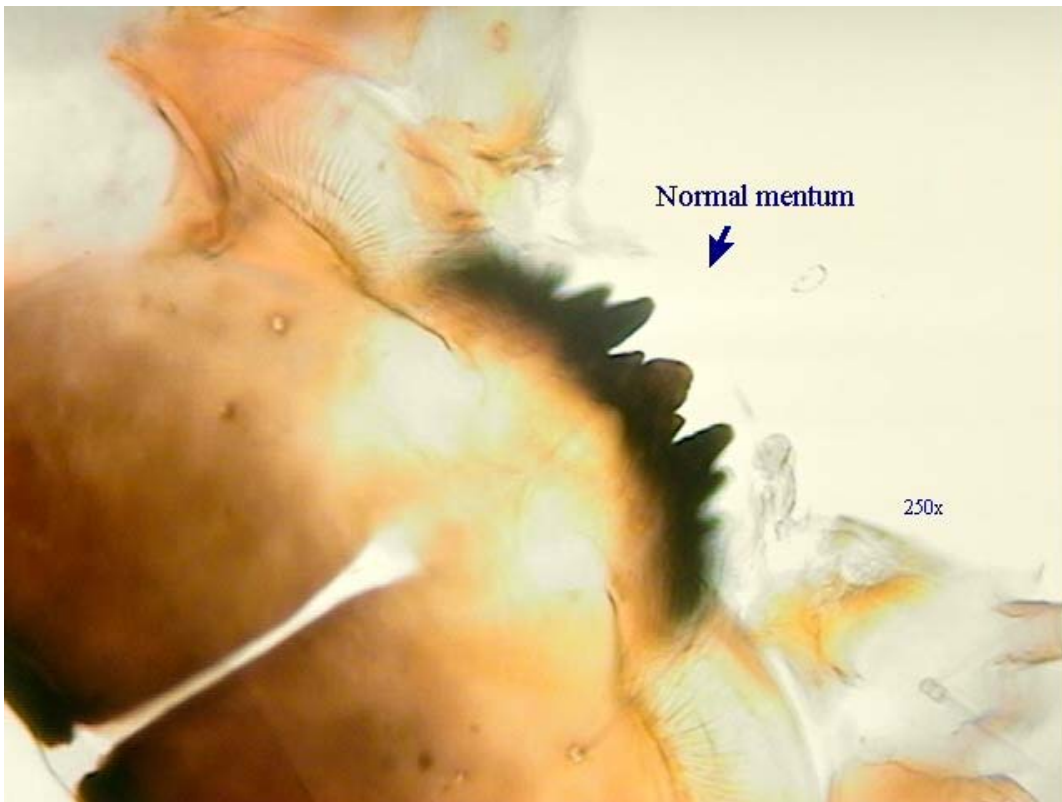
Gammarus fasciatus with normal antennae (showing antennal pairs of same length)



Chironomus species with mentum abnormality



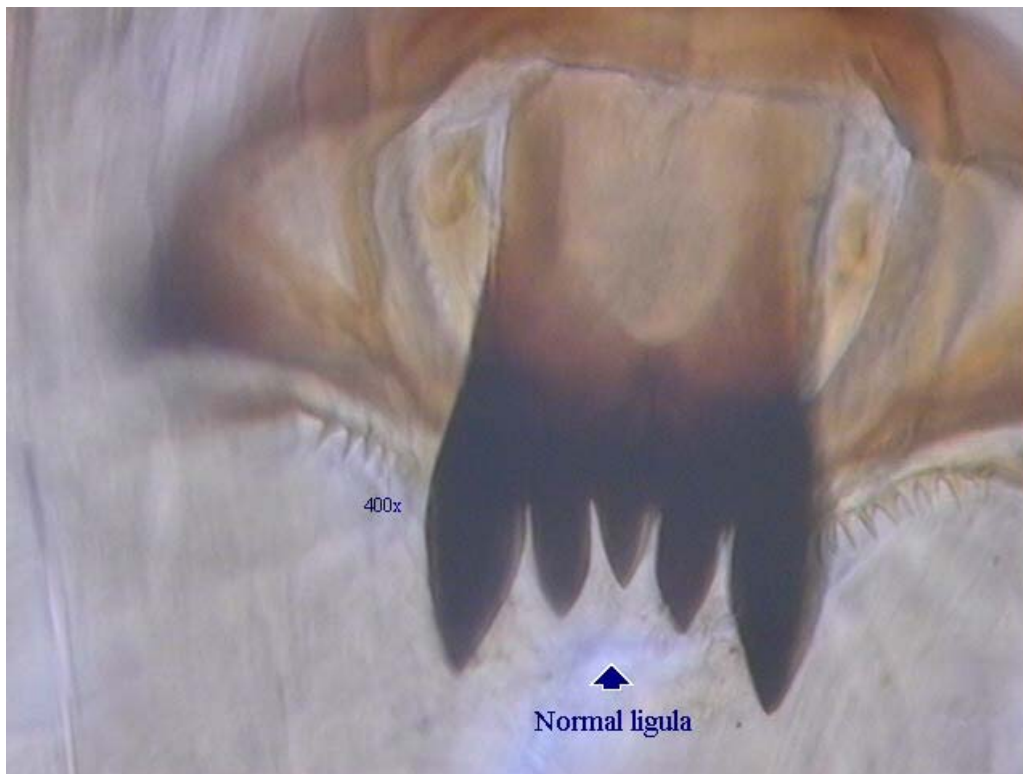
Chironomus species with normal mentum



Procladius species with abnormal ligula



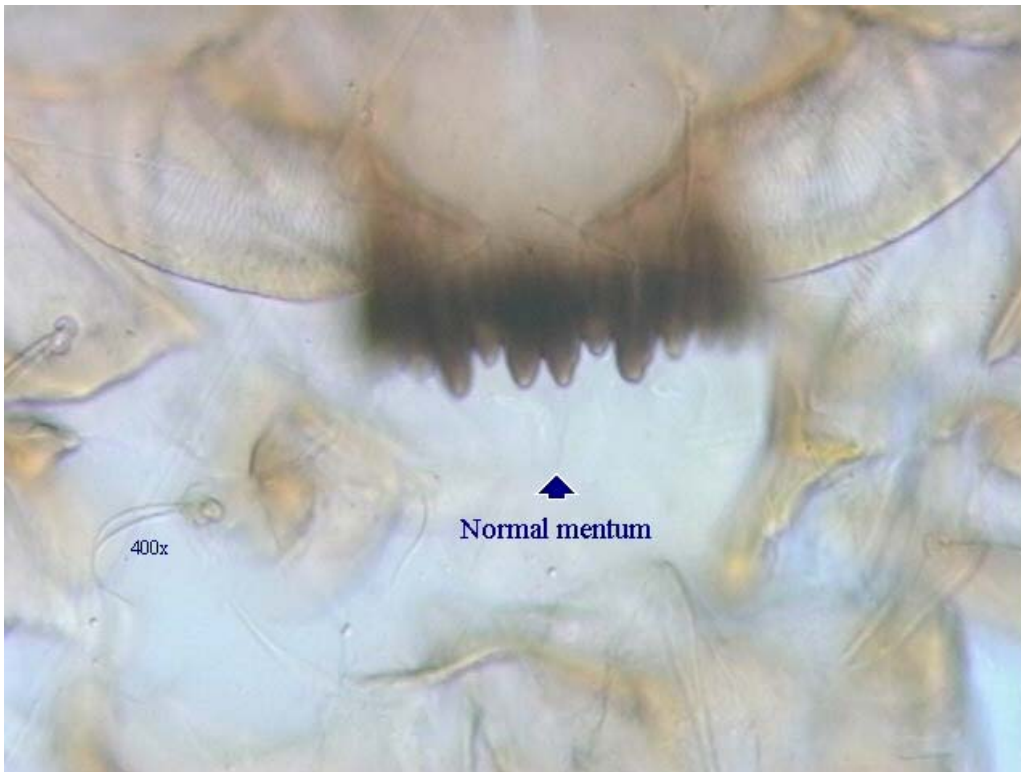
Procladius species with normal ligula



Polypedilum species with abnormal mentum



Polypedilum species with normal mentum

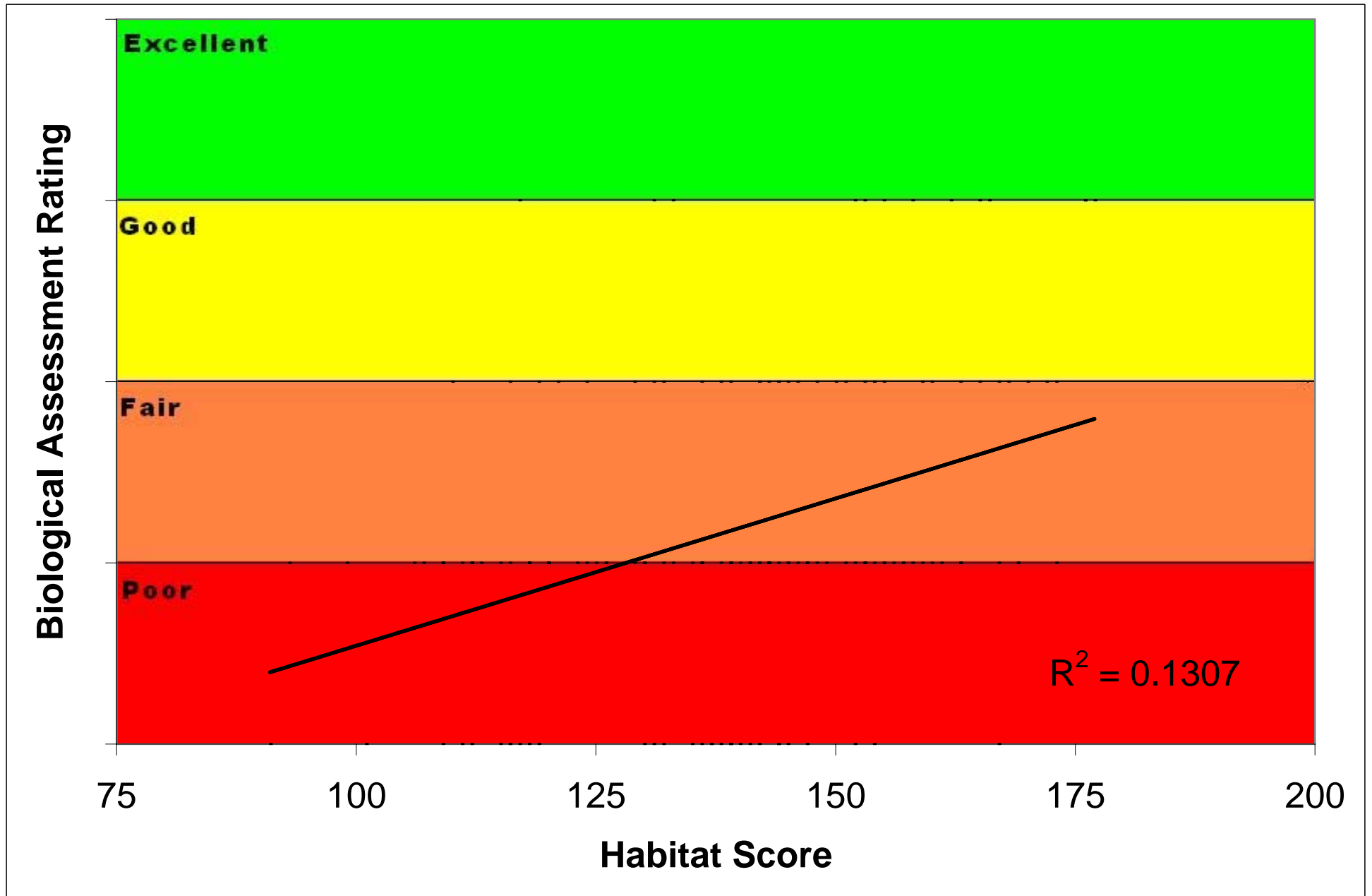


APPENDIX C

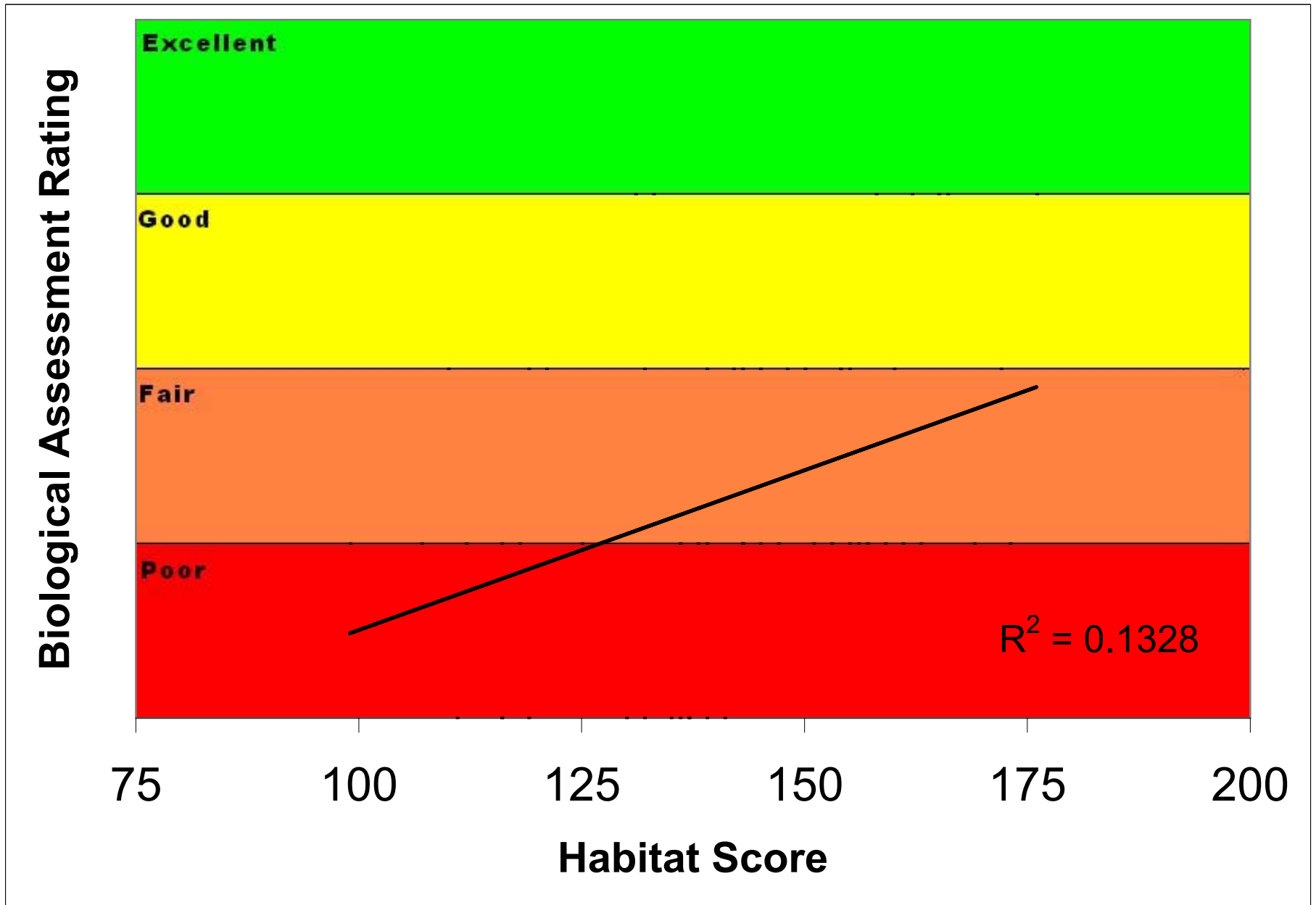
Graphical Comparison of Habitat Assessment Scores versus Biological Assessment Ratings from the Round 3 Lower Delaware Region AMNET Study

Comparative Scores of
Biological Assessment Rating vs. Habitat Score

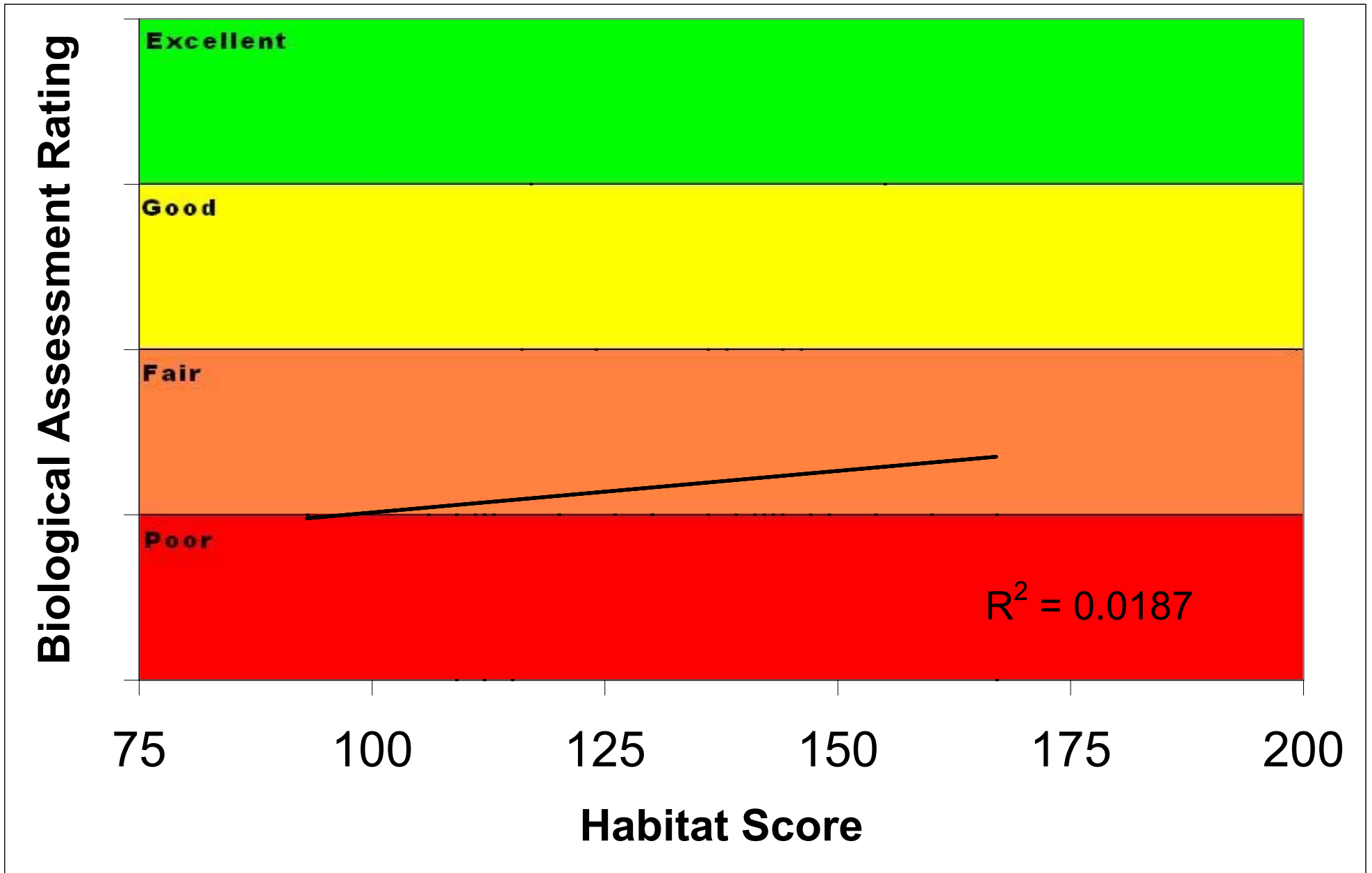
Combined
Round 3



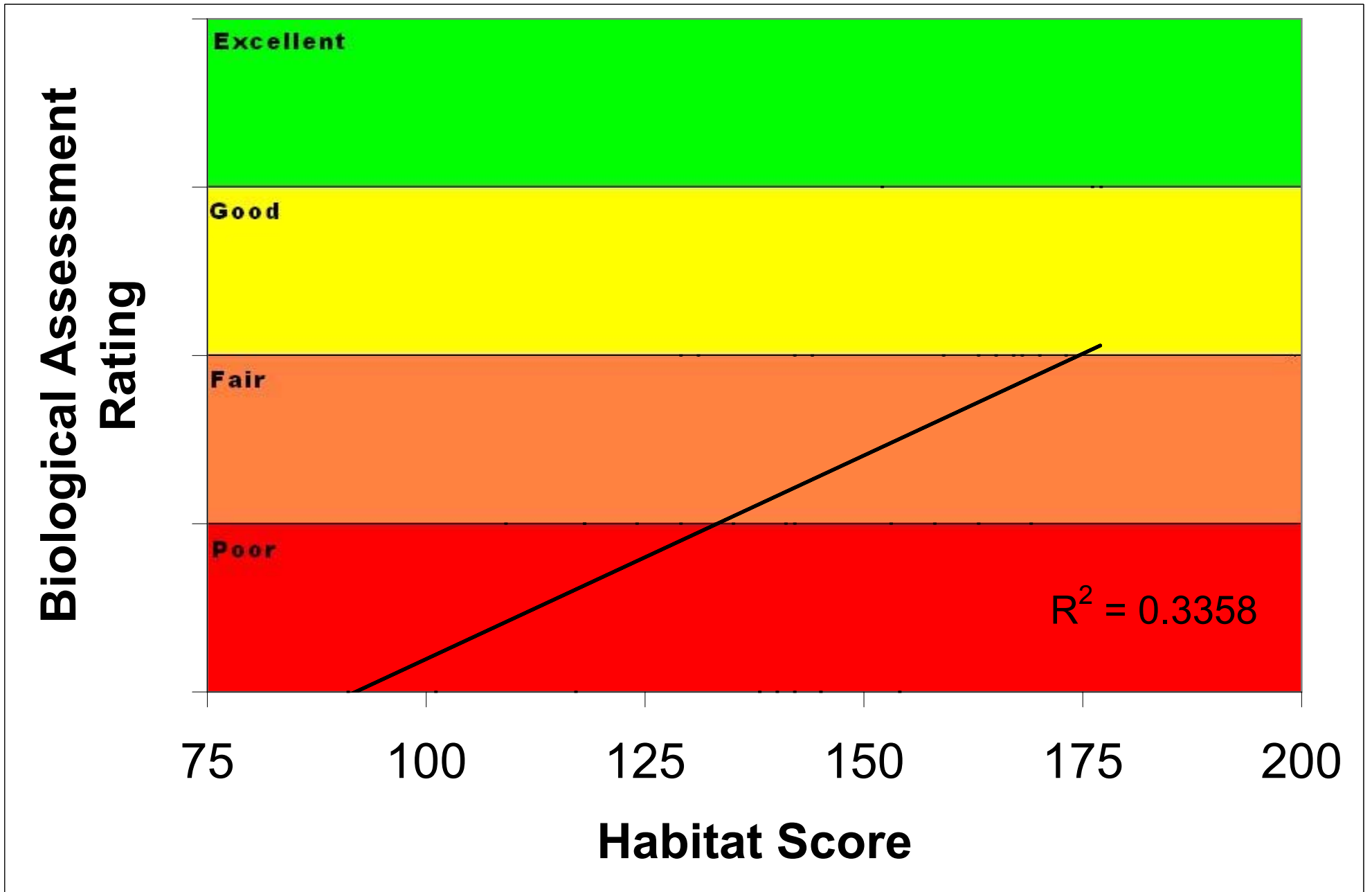
Comparative Scores of
Biological Assessment Rating vs. Habitat Score
WMA 17
Round 3



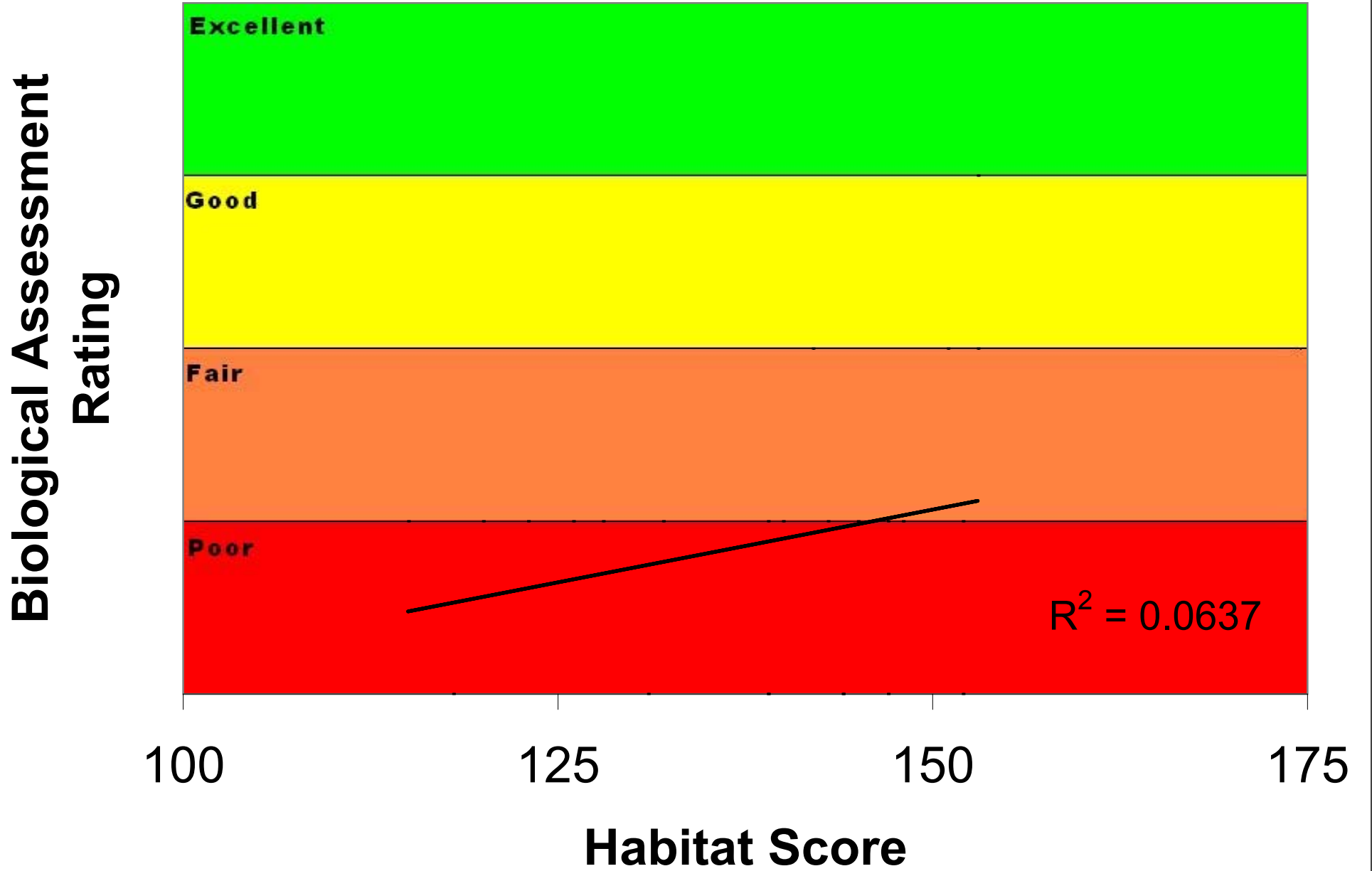
Comparative Scores of
Biological Assessment Rating vs. Habitat Score
WMA 18
Round 3



Comparative Scores of
Biological Assessment Rating vs. Habitat Score
WMA 19
Round 3



Comparative Scores of
Biological Assessment Rating vs. Habitat Score
WMA 20
Round 3



APPENDIX D

Taxonomic and Statistical Data, Biological Assessments, Habitat Assessment Scores and Observations from the Round 3 Lower Delaware Region AMNET Study

(Site numbers, locations, sample dates, and USGS topographic quadrangle, top of page.)

Notes/Definitions:

Statistical data includes those biometric results that are applied to the following ratings.

CPMI	PMI	HGMI
<ol style="list-style-type: none"> 1. Total # of Taxa 2. # of EPT taxa 3. % Ephemeroptera 4. Hilsenhoff Biotic Index (HBI) 5. % clingers 	<ol style="list-style-type: none"> 1. Insect taxa 2. Non-insect taxa 3. % Plecoptera + Trichoptera 4. % Diptera excluding Tanytarsini 5. % Mollusca + Amphipoda 6. Beck's Biotic Index (BBI) 7. % filterers 	<ol style="list-style-type: none"> 1. # of genera 2. % non-insect genera 3. % sensitive EPT 4. # of scraper genera 5. Hilsenhoff Biotic Index (HBI) 6. # of Attribute 2 genera 7. # of Attribute 3 genera

See METHODS, Table 1, Volume 1.

Other notes:

1. Ck – Creek, Bk – Brook, Br – Branch, R – River, UNT – un-named tributary
2. Habitat observations supplement the habitat assessment scores in Table 2 and Appendix C; Open Canopy = overhead vegetation; water quality measurements taken in field include temperature (°C), pH, dissolved oxygen, conductivity.

AMNET Site # AN0119 Stream Name: Crosswicks Ck (Jumping Bk)

Location: Bunting Bridge Rd; North Hanover Twp; Burlington County

Collection Date: 5/25/2006 USGS Topo Map: New Egypt

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Pisidium	6.8	19
Gammarus	6	18
Polypedilum	6	13
Ancyronyx	2	11
Tribelos	5	6
Caecidotea	8	5
Amnicola	4.8	3
Cricotopus	7	3
* Oecetis	8	3
Ablabesmyia	8	2
Aulodrilus	8	2
Tanytarsus	6	2
Brillia	5	1
Dubiraphia	6	1
Dugesia	4	1
* Eurylophella	4	1
Hydrophilidae	5	1
Hydroporus	5	1
Lumbriculus	8	1
Phaenopsectra	7	1
* Phylocentropus	5	1
Potthastia	2	1
Procladius	9	1
Thienemannimyia	6	1
Unionidae	8	1

* (EPT organism) Taxa Richness: 25 Population: 100

Becks Biotic Index (BBI): 4.00 %Plecoptera +Trichoptera: 4.00%

Insect Taxa: 17 %Mollusca + Amphipoda: 41.00%

Non-Insect Taxa: 8 %Diptera - Tanytarsini: 29.00%

%Filterers: 23.00%

PMI Rating: 41.36 Fair

Habitat Analysis: 139 Suboptimal USEPA Protocol

Observations: Water temp: 16.64 C; Cond: 99 umhos; DO: 7.17 mg/L; pH: 6.40 SU
 Clarity: turbid; Flow Rate: slow; Width/Depth: 30' / 3'; Substrate: gravel, mud
 Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, weeds
 Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland (Sod), rural

AMNET Site # AN0119A Stream Name: South Run

Location: Browns Mills-Cookstown Rd; New Hanover Twp; Burlington County

Collection Date: 6/8/2006 USGS Topo Map: New Egypt

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Orconectes	6	15
Ischnura	9	10
Polypedilum	6	10
Caecidotea	8	6
Rhagovelia	9	5
Dubiraphia	6	3
Phaenopsectra	7	3
* Caenis	7	2
Calopteryx	6	2
Dicrotendipes	8	2
Enchytraeidae	10	2
Laccophilus	5	2
Limnodrilus	10	2
Peltodytes	5	2
Simulium	6	2
Thienemannimyia	6	2
Dineutus	4	1
Gyrinus	4	1
Hyalella	8	1
Micropsectra	7	1
Microvelia	6	1
Pisidium	6.8	1
Slavina	7	1

* (EPT organism) *Taxa Richness:* 23 *Population:* 77

Becks Biotic Index (BBI): 2.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 16 *%Mollusca + Amphipoda:* 2.60%

Non-Insect Taxa: 7 *%Diptera - Tanytarsini:* 24.68%

%Filterers: 3.90%

PMI Rating: 48.44 Fair

Habitat Analysis: 147 Suboptimal USEPA Protocol

Observations: Water temp: 16.69 C; Cond: 260 umhos; DO: 7.28 mg/L; pH: 6.75 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 20', <1'; Substrate: gravel, sand

Canopy: open; Bank Stability: fair; Bank Vegetation: grass, trees

Stream Gradient: Low Gradient Stream; Land Uses: forested, Fort Dix Military Base

Other: tadpoles, macrophytes, eels, fish

AMNET Site # AN0120

Stream Name: North Run

Location: Main St; North Hanover Twp; Burlington County

Collection Date: 5/25/2006

USGS Topo Map: New Egypt

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Amnicola	4.8	21
Limnodrilus	10	13
Tubificidae	10	10
Gammarus	6	9
Physa	8	8
Procladius	9	8
Tribelos	5	8
Polypedilum	6	4
Tanytarsus	6	4
Hydroporus	5	3
Orthocladius	6	3
Chironomus	10	2
Cricotopus	7	2
Peltodytes	5	2
Brillia	5	1
Calopteryx	6	1
Stenelmis	5	1

* (EPT organism) *Taxa Richness:* 17 *Population:* 100

Becks Biotic Index (BBI): 0.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 12 *%Mollusca + Amphipoda:* 38.00%

Non-Insect Taxa: 5 *%Diptera - Tanytarsini:* 28.00%

%Filterers: 4.00%

PMI Rating: **42.18 Fair**

Habitat Analysis: 120 Suboptimal USEPA Protocol

Observations: Water temp: 14.26 C; Cond: 246 umhos; DO: 8.64 mg/L; pH: 7.10 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 15', 2-3'; Substrate: gravel, sand

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: trash; slight sewage odor; sump from house pumping water into stream

AMNET Site # AN0121 **Stream Name: Crosswicks Ck**
Location: Rt 537; Plumsted Twp; Ocean County
Collection Date: 5/25/2006 **USGS Topo Map: New Egypt**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	12
Amnicola	4.8	10
Argia	6	8
Aulodrilus	8	8
* Cheumatopsyche	5	8
Slavina	7	8
Sphaeriidae	8	7
Polypedilum	6	6
Stylaria	8	6
Pisidium	6.8	5
* Caenis	7	4
Tanytarsus	6	3
Caecidotea	8	2
Planorbidae	6	2
Tribelos	5	2
Brillia	5	1
Cricotopus	7	1
Dubiraphia	6	1
Macronychus	2	1
Micropsectra	7	1
Nais	8	1
Orthoclaadiinae	5	1
Prostoma	7	1
Rheotanytarsus	6	1

* (EPT organism) *Taxa Richness:* 24 *Population:* 100

Becks Biotic Index (BBI): 1.00 *%Plecoptera +Trichoptera:* 8.00%
Insect Taxa: 13 *%Mollusca + Amphipoda:* 36.00%
Non-Insect Taxa: 11 *%Diptera - Tanytarsini:* 11.00%
 %Filterers: 24.00%

PMI Rating: **33.72** **Poor**

Habitat Analysis: 131 Suboptimal USEPA Protocol

Observations: Water temp: 17.20 C; Cond: 154 umhos; DO: 7.29 mg/L; pH: 6.85 SU
Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 39' / 2'; Substrate: sand, silt, clay
Canopy: mostly open; Bank Stability: poor; Bank Vegetation: trees, weeds
Stream Gradient: Low Gradient Stream; Land Uses: rural
Pipes / Ditches: storm sewers
Other: rip rap walls by bridge; new erosion control netting

AMNET Site # AN0122

Stream Name: Lahaway Ck

Location: Rt 537 outlt of Prospertown Lk; Upper Freehold Twp; Monmouth County

Collection Date: 5/11/2006

USGS Topo Map: Roosevelt

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Musculium	5	28
Gillia	8	14
Hydroporus	5	8
Cricotopus	7	6
Pristina	8	5
Pisidium	6.8	4
Microtendipes	7	3
Parachironomus	10	3
Physa	8	3
Stylodrilus	10	3
Thienemannimyia	6	3
Campeloma	7	2
* Ceraclea	3	2
Nais	8	2
Nanocladius	3	2
Tanytarsus	6	2
Aulodrilus	8	1
Enallagma	9	1
* Isoperla	2	1
Limnodrilus	10	1
Menetus	6	1
Paratanytarsus	6	1
Polypedilum	6	1
Prostoma	7	1
Rheocricotopus	6	1
Simulium	6	1

* (EPT organism) Taxa Richness: 26 Population: 100

Becks Biotic Index (BBI): 3.00 %Plecoptera +Trichoptera: 3.00%

Insect Taxa: 14 %Mollusca + Amphipoda: 52.00%

Non-Insect Taxa: 12 %Diptera - Tanytarsini: 20.00%

%Filterers: 38.00%

PMI Rating: 29.94 Poor

Habitat Analysis: 144 Suboptimal USEPA Protocol

Observations: Water temp: 18.8 C; Cond: 116 umhos; DO: 8.4 mg/L; pH: 6.9 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 20', 1.5'; Substrate: gravel, sand

Canopy: open; Bank Stability: good; Bank Vegetation: shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: 12" concrete pipe downstream, 12" corrugated metal pipe upstream

Downstream of Impoundment: Prospertown Lake

Other: freshwater mussels, 2 baby turtles; concrete retention basin upstream left side, macrophytes, filamentous algae

AMNET Site # AN0123

Stream Name: Ivanhoe Bk

Location: Millers Mill Rd; Upper Freehold Twp; Monmouth County

Collection Date: 5/11/2006 USGS Topo Map: Roosevelt

Genus	Tolerance Value	Amount
Cricotopus	7	19
Chironomus	10	15
Paratendipes	8	10
Tanytarsus	6	9
Orthocladius	6	7
Parakiefferiella	4	7
Ablabesmyia	8	4
Simulium	6	4
Heterotrissocladius	0	3
Polypedilum	6	3
Rheocricotopus	6	3
Ancyronyx	2	2
Dromogomphus	4	2
Limnodrilus	10	2
Psectrocladius	8	2
Rheotanytarsus	6	2
Argia	6	1
Calopteryx	6	1
Enchytraeidae	10	1
Musculium	5	1
* Oecetis	8	1
Thienemanniella	6	1

* (EPT organism) Taxa Richness: 22 Population: 100

%Dominance / Dominant Taxon(s): 19.0% Cricotopus

Hilsenhoff Biotic Index (HBI): 6.80 %Clingers: 29.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 140 Suboptimal USEPA Protocol

Observations: Water temp: 15.3 C; Cond: 115 umhos; DO: 9.8 mg/L; pH: 6.6 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 16', 1.5'; Substrate: mud

Canopy: partly open; Bank Stability: poor; Bank Vegetation: shrubs, grasses, trees

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: bank erosion undercut banks, macrophytes, minnows, green frogs, soft clay bottom, extensive siltation

AMNET Site # AN0124

Stream Name: Lahaway Ck

Location: New Egypt-Allentown Rd (Holms Mill Rd CR27); Upper Freehold Twp; Monmouth County

Collection Date: 5/25/2006 USGS Topo Map: New Egypt

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	18
Corbicula	4	10
* Maccaffertium	3	8
* Baetidae	4	6
* Dannella	2	5
Rheotanytarsus	6	5
Tanytarsus	6	5
Macronychus	2	4
Pisidium	6.8	4
Stenelmis	5	4
Aulodrilus	8	3
* Brachycentrus	1	3
Polypedilum	6	3
Brillia	5	2
* Cheumatopsyche	5	2
Limnodrilus	10	2
Macromia	2	2
Phaenopsectra	7	2
Amnicola	4.8	1
Ancyronyx	2	1
Caecidotea	8	1
Chrysops	6	1
Eukiefferiella	8	1
Musculium	5	1
Nais	8	1
* Oecetis	8	1
* Perlesta	4	1
* Phylocentropus	5	1
Potthastia	2	1
Rheocricotopus	6	1

* (EPT organism) Taxa Richness: 30 Population: 100

%Dominance / Dominant Taxon(s): 18.0% Gammarus

Hilsenhoff Biotic Index (HBI): 4.91 %Clingers: 41.00%

* E+P+T: 9 (3) Ephemeroptera, (1) Plecoptera, (4) Trichoptera %Ephemeroptera: 24.00%

CPMI Rating: 22 Excellent

Habitat Analysis: 153 Suboptimal USEPA Protocol

Observations: Water temp: 14.95 C; Cond: 137 umhos; DO: 9.09 mg/L; pH: 6.93 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 23' / 2'; Substrate: gravel, sand, silt

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural

Other: bridge deteriorating

AMNET Site # AN0125

Stream Name: Crosswicks Ck

Location: Extonville Rd USGS Gauge; Chesterfield Twp; Burlington & Mercer County

Collection Date: 6/1/2006 USGS Topo Map: Allentown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	50
* Cheumatopsyche	5	10
Rheotanytarsus	6	8
Gammarus	6	4
Saetheria	4	4
Tanytarsus	6	4
Brillia	5	3
Tvetenia	5	3
Cricotopus	7	2
* Maccaffertium	3	2
Prostoma	7	2
Simulium	6	2
* Baetidae	4	1
* Brachycentrus	1	1
Macronychus	2	1
Musculium	5	1
Nematoda	6	1
* Perlesta	4	1
* (EPT organism) Taxa Richness: 18		Population: 100

%Dominance / Dominant Taxon(s): 50.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 5.60 %Clingers: 27.00%

* E+P+T: 5 (2) Ephemeroptera, (1) Plecoptera, (2) Trichoptera %Ephemeroptera: 3.00%

CPMI Rating: 12 Good

Habitat Analysis: 142 Suboptimal USEPA Protocol

Observations: Water temp: 21.8 C; Cond: 173 umhos; DO: 7.1 mg/L; pH: 6.9 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 59', 1-3'; Substrate: sand, mud, silt

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: waterfowl, frogs, minnows

AMNET Site # AN0125B Stream Name: Miry Run

Location: Holmes Mill Rd; Upper Freehold Twp; Monmouth County

Collection Date: 5/25/2006 USGS Topo Map: Allentown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Rheotanytarsus	6	23
Nais	8	15
Tanytarsus	6	14
Tribelos	5	11
Polypedilum	6	9
Calopteryx	6	7
Chironomus	10	4
Brillia	5	3
Heterotrissocladius	0	3
Thienemannimyia	6	3
Ancyronyx	2	1
Caecidotea	8	1
Dicranota	3	1
Hexatoma	2	1
Hydroporus	5	1
Nematoda	6	1
Prostoma	7	1
Tubificidae	10	1

* (EPT organism) *Taxa Richness:* 18 *Population:* 100

%Dominance / Dominant Taxon(s): 23.0% Rheotanytarsus

Hilsenhoff Biotic Index (HBI): 6.09 *%Clingers:* 24.00%

* *E+P+T:* 0 () Ephemeroptera, () Plecoptera, () Trichoptera *%Ephemeroptera:* 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 128 Suboptimal USEPA Protocol

Observations: Water temp: 12.68 C; Cond: 214 umhos; DO: 9.87 mg/L; pH: 6.92 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 21' / <1'; Substrate: gravel, sand, silt, root mats

Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, rural

AMNET Site # AN0126A **Stream Name: UNT to Crosswicks Ck**

Location: Iron Bridge Rd; Chesterfield Twp; Burlington County

Collection Date: 5/25/2006 **USGS Topo Map: Allentown**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	28
Thienemannimyia	6	24
Brillia	5	12
Nais	8	8
Heterotrissocladius	0	4
Tanytarsus	6	4
Dicranota	3	3
Tribelos	5	3
Rheotanytarsus	6	2
Simulium	6	2
Ancyronyx	2	1
Bezzia	6	1
Boyeria	2	1
Calopteryx	6	1
Corydalus	4	1
Nanocladius	3	1
Orthocladius	6	1
Pristinella	10	1
Tubificidae	10	1
Tvetenia	5	1

* (EPT organism) *Taxa Richness:* 20 *Population:* 100

%Dominance / Dominant Taxon(s): 28.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 5.62 *%Clingers:* 6.00%

* *E+P+T:* 0 () Ephemeroptera, () Plecoptera, () Trichoptera *%Ephemeroptera:* 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 126 Suboptimal USEPA Protocol

Observations: Water temp: 14.07 C; Cond: 172 umhos; DO: 8.98 mg/L; pH: 6.55 SU

Clarity: turbid; Flow Rate: fast; Width/Depth: 5' / <1'; Substrate: gravel, sand

Canopy: closed; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: rust colored sediment

AMNET Site # AN0126B Stream Name: Pleasant Run

Location: Extonville Rd; Hamilton Twp; Mercer County

Collection Date: 6/1/2006 USGS Topo Map: Allentown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	72
Phaenopsectra	7	12
Chironomus	10	4
Simulium	6	2
Tipula	4	2
Tribelos	5	2
Ancyronyx	2	1
Brillia	5	1
Enchytraeidae	10	1
Eukiefferiella	8	1
Limnodrilus	10	1
Thienemannimyia	6	1

* (EPT organism) *Taxa Richness:* 12 *Population:* 100

%Dominance / Dominant Taxon(s): 72.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.27 *%Clingers:* 15.00%

* *E+P+T:* 0 () Ephemeroptera, () Plecoptera, () Trichoptera *%Ephemeroptera:* 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 118 Suboptimal USEPA Protocol

Observations: Water temp: 18.5 C; Cond: 236 umhos; DO: 8.1 mg/L; pH: 6.6 SU

Clarity: turbid- rust brown; Flow Rate: moderate; Width/Depth: 13' / 1-2'; Substrate: gravel, sand, mud

Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock, forested

Other: new concrete-bridge construction; excessive suspended solids; frogs

AMNET Site # AN0127

Stream Name: Doctors Ck

Location: Rt 526 Red Valley Rd outlet of Red Valley Lk; Upper Freehold Twp; Monmouth County

Collection Date: 5/11/2006 USGS Topo Map: Roosevelt

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	25
Physella	9.1	12
Ischnura	9	9
Pisidium	6.8	9
Tanypodinae	7	7
Bezzia	6	6
Amnicola	4.8	4
Planorbidae	6	4
Endochironomus	10	3
Limnodrilus	10	3
Ceratopogonidae	6	2
Dugesia	4	2
Libellula	9	2
Nais	8	2
Orthoclaadiinae	5	2
Ablabesmyia	8	1
* Caenis	7	1
Pachydiplax	10	1
Stylaria	8	1
Tanytarsini	6	1
Tanytarsus	6	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 22 Population: 99

%Dominance / Dominant Taxon(s): 25.3% Polypedilum

Hilsenhoff Biotic Index (HBI): 7.16

%Clingers: 3.03%

* E+P+T: 1 (1) Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 1.01%

CPMI Rating: 6 Fair

Habitat Analysis: 143 Suboptimal USEPA Protocol

Observations: Water temp: 19.0 C; Cond: 125 umhos; DO: 8.5 mg/L; pH: 6.4 SU

Clarity: turbid; Flow Rate: slow; Width/Depth: 14.5', >3'; Substrate: mud, silt

Canopy: mostly open; Bank Stability: good; Bank Vegetation: shrubs, trees, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural, agriculture-livestock (horses)

Downstream of Impoundment: Red Valley Lake

Other: fish, bullfrog; adjacent to hunting club

AMNET Site # AN0128

Stream Name: Negro Run

Location: Red Valley Rd; Allentown Boro; Monmouth County

Collection Date: 5/25/2006 USGS Topo Map: Allentown

Genus	Tolerance Value	Amount
Stylaria	8	32
Physella	9.1	22
Planorbidae	6	7
Parachironomus	10	6
Amnicola	4.8	3
Aulodrilus	8	3
* Caenis	7	3
Musculium	5	3
Cricotopus	7	2
Dicrotendipes	8	2
Dugesia	4	2
Endochironomus	10	2
Gammarus	6	2
Hyalella	8	2
Limnodrilus	10	2
Thienemannimyia	6	2
Lymnaeidae	6	1
Paratanytarsus	6	1
Pisidium	6.8	1
Polypedilum	6	1
Procladius	9	1

* (EPT organism) Taxa Richness: 21 Population: 100

%Dominance / Dominant Taxon(s): 32.0% Stylaria

Hilsenhoff Biotic Index (HBI): 7.84

%Clingers: 4.00%

* E+P+T: 1 (1) Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 3.00%

CPMI Rating: 4 Poor

Habitat Analysis: 147 Suboptimal USEPA Protocol

Observations: Water temp: 16.66 C; Cond: 268 umhos; DO: 8.75 mg/L; pH: 7.20 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 27' , 2'; Substrate: gravel, mud, snags

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, weeds, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland

Pipes / Ditches: 24" concrete stormwater pipe

Downstream of Impoundment: Pond

Other: new bridge-2003, macrophytes

AMNET Site # AN0129

Stream Name: Doctors Ck

Location: Breza Rd; Allentown Boro; Monmouth County

Collection Date: 6/13/2006 USGS Topo Map: Allentown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	19
Chironomus	10	17
Rheotanytarsus	6	10
Limnodrilus	10	9
Gammarus	6	7
Polypedilum	6	5
Slavina	7	4
Tanytarsini	6	4
Tanytarsus	6	4
Glyptotendipes	10	2
Paratendipes	8	2
Pisidium	6.8	2
Thienemannimyia	6	2
Ablabesmyia	8	1
Alboglossiphonia	8	1
Ancyronyx	2	1
Argia	6	1
* Ceraclea	3	1
* Cheumatopsyche	5	1
Corbicula	4	1
Dicrotendipes	8	1
Dubiraphia	6	1
Dugesia	4	1
* Hydroptila	6	1
Microtendipes	7	1
Phaenopsectra	7	1

* (EPT organism) Taxa Richness: 26 Population: 100

%Dominance / Dominant Taxon(s): 19.0% Tribelos

Hilsenhoff Biotic Index (HBI): 6.99 %Clingers: 17.00%

* E+P+T: 3 () Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 10 Fair

Habitat Analysis: 146 Suboptimal USEPA Protocol

Observations: Water temp: 19.15 C; Cond: 166 umhos; DO: 6.32 mg/L; pH: 6.82 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 37' / 2'; Substrate: gravel, sand, silt, snags

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: storm sewers (left bank upstream of bridge)

Other: Allentown STP upstream

AMNET Site # AN0131A **Stream Name: Back Ck**

Location: Yardville-Hamilton Square Rd; Hamilton Twp; Mercer County

Collection Date: 6/13/2006 **USGS Topo Map: Trenton East**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	63
Physella	9.1	10
Caecidotea	8	6
Ischnura	9	5
Planorbidae	6	4
Stictochironomus	9	4
Paratanytarsus	6	3
Polypedilum	6	2
Dubiraphia	6	1
Helobdella	8	1
Limnodrilus	10	1

* (*EPT organism*) *Taxa Richness:* 11 *Population:* 100

%Dominance / Dominant Taxon(s): 63.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.76 *%Clingers:* 1.00%

* *E+P+T:* 0 () Ephemeroptera, () Plecoptera, () Trichoptera *%Ephemeroptera:* 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 152 Suboptimal USEPA Protocol

Observations: Water temp: 16.43 C; Cond: 424 umhos; DO: 6.70 mg/L; pH: 6.87 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 16', 1'; Substrate: gravel, sand, silt

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: macrophytes

AMNET Site # AN0132

Stream Name: Blacks Ck

Location: Chesterfield-Georgetown Rd; Chesterfield Twp; Burlington County

Collection Date: 6/27/2006 USGS Topo Map: Columbus

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Cheumatopsyche	5	20
Gammarus	6	20
Polypedilum	6	18
Tribelos	5	10
Prostoma	7	4
Heterotrissocladius	0	3
Rheotanytarsus	6	3
Simulium	6	3
Tanytarsus	6	3
Tubificidae	10	3
Hemerodromia	6	2
Macromia	2	2
Tipula	4	2
Aeshna	5	1
Argia	6	1
Dicrotendipes	8	1
Dineutus	4	1
Microvelia	6	1
Rhagovelia	9	1
Rheopelopia	4	1

* (EPT organism) Taxa Richness: 20 Population: 100

%Dominance / Dominant Taxon(s): 20.0% Cheumatopsyche & Gammarus

Hilsenhoff Biotic Index (HBI): 5.56 %Clingers: 27.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 10 Fair

Habitat Analysis: 145 Suboptimal USEPA Protocol

Observations: Water temp: 22.58 C; Cond: 137 umhos; DO: 6.78 mg/L; pH: 6.71 SU

Clarity: turbid; Flow Rate: moderate; Width/Depth: 23' / < 1.0'; Substrate: cobble, gravel, sand, mud, root mats

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: fish, undercut banks

AMNET Site # AN0133

Stream Name: Bacons Run

Location: White Pine Rd; Chesterfield Twp; Burlington County

Collection Date: 6/6/2006 USGS Topo Map: Columbus

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	36
Nais	8	16
Brillia	5	9
Tribelos	5	6
Heterotrissocladius	0	5
Chironomus	10	3
* Hydropsyche	4	3
Limnodrilus	10	3
Dicranota	3	2
Gammarus	6	2
Molophilus	3	2
Rheotanytarsus	6	2
Simulium	6	2
Tanytarsus	6	2
Chrysops	6	1
Clinocera	6	1
Dineutus	4	1
Enallagma	9	1
Microvelia	6	1
Pyralidae	5	1
Rheopelopia	4	1

* (EPT organism) Taxa Richness: 21 Population: 100

%Dominance / Dominant Taxon(s): 36.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 5.91

%Clingers: 8.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 152 Suboptimal USEPA Protocol

Observations: Water temp: 17.6 C; Cond: 219 umhos; DO: 8.5 mg/L; pH: 6.6 SU

Clarity: turbid; Flow Rate: moderate; Width/Depth: 15', 1-2'; Substrate: gravel, sand, mud

Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: minnows; eroded banks

AMNET Site # AN0135

Stream Name: Crafts Ck

Location: Gaunts Bridge Rd; Mansfield Twp; Burlington County

Collection Date: 6/6/2006 USGS Topo Map: Columbus

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Cheumatopsyche	5	16
Polypedilum	6	12
Physella	9.1	11
Musculium	5	10
Limnodrilus	10	7
Heterotrissocladius	0	6
Tanytarsus	6	5
Gammarus	6	4
Hydroporus	5	3
Tribelos	5	3
Tubifex	10	3
Amnicola	4.8	2
Physa	8	2
Placobdella	8	2
Pseudosuccinea	6	2
Rheopelopia	4	2
Caecidotea	8	1
Chironomus	10	1
Cricotopus	7	1
Cryptochironomus	8	1
Dicrotendipes	8	1
Fossaria	6	1
Lumbriculus	8	1
Nais	8	1
Rheotanytarsus	6	1
Stenelmis	5	1

* (EPT organism) Taxa Richness: 26 Population: 100

%Dominance / Dominant Taxon(s): 16.0% Cheumatopsyche

Hilsenhoff Biotic Index (HBI): 6.22 %Clingers: 19.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 10 Fair

Habitat Analysis: 123 Suboptimal USEPA Protocol

Observations: Water temp: 18.60 C; Cond: 304 umhos; DO: 6.69 mg/L; pH: 6.63 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 4', <1'; Substrate: cobble, gravel, sand

Canopy: partly open; Bank Stability: poor; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock(horses), suburban-new houses, rural

Other: macrophytes, frog, trash, snails; house being built on left bank; sampled downstream of bridge

AMNET Site # AN0136

Stream Name: Crafts Ck

Location: Island Rd; Mansfield Twp; Burlington County

Collection Date: 6/6/2006 USGS Topo Map: Columbus

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	20
Caecidotea	8	18
Paratendipes	8	14
Chironomus	10	13
Sphaerium	8	7
Gammarus	6	6
Pisidium	6.8	6
Polypedilum	6	3
Limnodrilus	10	2
Physella	9.1	2
Procladius	9	2
Tubifex	10	2
Brillia	5	1
Dolichopodidae	4	1
Dubiraphia	6	1
Musculium	5	1
Tipulidae	3	1

* (EPT organism) Taxa Richness: 17 Population: 100

%Dominance / Dominant Taxon(s): 20.0% Tribelos

Hilsenhoff Biotic Index (HBI): 7.36

%Clingers: 1.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 139 Suboptimal USEPA Protocol

Observations: Water temp: 17.03 C; Cond: 189 umhos; DO: 7.53 mg/L; pH: 6.57 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 13' / 1-2'; Substrate: cobble, sand, mud

Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban

AMNET Site # AN0137

Stream Name: Crafts Ck

Location: Old York Rd; Florence Twp; Burlington County

Collection Date: 6/15/2006 USGS Topo Map: Bristol

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	13
Gammarus	6	12
Polypedilum	6	11
Rheotanytarsus	6	10
Aulodrilus	8	7
Paratanytarsus	6	7
Limnodrilus	10	5
Phaenopsectra	7	4
Tanytarsus	6	4
Thienemannimyia	6	4
Dubiraphia	6	3
Caecidotea	8	2
* Caenis	7	2
Nais	8	2
Tipula	4	2
Corbicula	4	1
Hydrobiidae	8	1
Hydroporus	5	1
Ischnura	9	1
Limnophyes	8	1
Macronychus	2	1
Micropsectra	7	1
Paratendipes	8	1
* Pseudocloeon	4	1
Sphaeriidae	8	1
Stenelmis	5	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 27 Population: 100

%Dominance / Dominant Taxon(s): 13.0% Tribelos

Hilsenhoff Biotic Index (HBI): 6.37

%Clingers: 19.00%

* E+P+T: 2 (2) Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 3.00%

CPMI Rating: 10 Fair

Habitat Analysis: 132 Suboptimal USEPA Protocol

Observations: Water temp: 18.74 C; Cond: 292 umhos; DO: 6.70 mg/L; pH: 6.73 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 21'<1'; Substrate: sand, mud, root mats

Canopy: closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, rural

Other: minnows, snapper turtle, muskrat, macrophytes, grass shrimp

AMNET Site # AN0138

Stream Name: Assiscunk Ck

Location: Columbus-Georgetown Rd; Mansfield Twp; Burlington County

Collection Date: 6/6/2006

USGS Topo Map: Columbus

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	63
Caecidotea	8	13
Polypedilum	6	9
Limnodrilus	10	2
Rheopelopia	4	2
Tubifex	10	2
Agabus	5	1
Chironomus	10	1
Heterotrissocladius	0	1
Hydrophilidae	5	1
Hydroporus	5	1
Nais	8	1
Placobdella	8	1
Simulium	6	1
Stenelmis	5	1

**(EPT organism)* *Taxa Richness:* 15 *Population:* 100

Becks Biotic Index (BBI): 3.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 9 *%Mollusca + Amphipoda:* 63.00%

Non-Insect Taxa: 6 *%Diptera - Tanytarsini:* 14.00%

%Filterers: 1.00%

PMI Rating: **35.31 Fair**

Habitat Analysis: 115 Suboptimal USEPA Protocol

Observations: Water temp: 16.52 C; Cond: 222 umhos; DO: 8.76 mg/L; pH: 6.66 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 8', <1.0'; Substrate: cobble, gravel, sand, mud

Canopy: mostly open; Bank Stability: poor; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural

Other: stream goes through pipe under road. sampled downstream.

AMNET Site # AN0139

Stream Name: Annaricken Bk

Location: Island Rd; Springfield Twp; Burlington County

Collection Date: 6/15/2006 USGS Topo Map: Columbus

Genus	Tolerance Value	Amount
Stenelmis	5	28
Polypedilum	6	24
Rheopelopia	4	6
Simulium	6	6
Gammarus	6	5
Prosimulium	2	4
Rheotanytarsus	6	4
Tanytarsus	6	4
Rhagovelia	9	3
Brillia	5	2
Macronychus	2	2
* Acerpenna	4	1
Agabetes	5	1
Cricotopus	7	1
Dromogomphus	4	1
Enchytraeidae	10	1
Heterotrissocladius	0	1
Lumbriculidae	8	1
Nais	8	1
Pisidium	6.8	1
Stenochironomus	5	1
Tropisternus	10	1
Tubificidae	10	1

* (EPT organism) Taxa Richness: 23 Population: 100

%Dominance / Dominant Taxon(s): 28.0% Stenelmis

Hilsenhoff Biotic Index (HBI): 5.49 %Clingers: 45.00%

* E+P+T: 1 (1) Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 12 Good

Habitat Analysis: 153 Suboptimal USEPA Protocol

Observations: Water temp: 17.73 C; Cond: 181 umhos; DO: 8.16 mg/L; pH: 6.49 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 8' / < 1.0'; Substrate: gravel, sand, root mats, clay

Canopy: closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, forested

Other: fish, macrophytes, frogs

AMNET Site # AN0140

Stream Name: North Br Barkers Bk

Location: Georgetown-Juliustown Rd; Springfield Twp; Burlington County

Collection Date: 6/15/2006

USGS Topo Map: Columbus

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	61
Tubificidae	10	12
Limnodrilus	10	9
Physa	8	9
Paratendipes	8	3
Dubiraphia	6	2
Brillia	5	1
Polypedilum	6	1
Rheotanytarsus	6	1
Tanypodinae	7	1

* (EPT organism) *Taxa Richness:* 10 *Population:* 100

Becks Biotic Index (BBI): 0.00 *%Plecoptera + Trichoptera:* 0.00%

Insect Taxa: 6 *%Mollusca + Amphipoda:* 70.00%

Non-Insect Taxa: 4 *%Diptera - Tanytarsini:* 6.00%

%Filterers: 1.00%

PMI Rating: 31.58 Poor

Habitat Analysis: 144 Suboptimal USEPA Protocol

Observations: Water temp: 18.04 C; Cond: 185 umhos; DO: 7.29 mg/L; pH: 6.53 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 10' / <1.0-2'; Substrate: gravel, sand, mud

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, forested

Other: macrophytes, frogs

AMNET Site # AN0141

Stream Name: Assiscunk Ck

Location: Jacksonville Rd; Springfield Twp; Burlington County

Collection Date: 6/6/2006 USGS Topo Map: Bristol

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Ophidonais	7	18
Physella	9.1	16
Chironomidae	6	5
Dubiraphia	6	4
Fossaria	6	4
Polypedilum	6	4
Stylaria	8	4
Gammarus	6	3
Nais	8	3
Orthocladius	6	3
Sphaerium	8	3
Stenelmis	5	3
Stylodrilus	10	3
Trichocorixa	9	3
Amnicola	4.8	2
Ancyronyx	2	2
Gerridae	8	2
Gillia	8	2
Musculium	5	2
Tipula	4	2
Tribelos	5	2
Ablabesmyia	8	1
Argia	6	1
Calopteryx	6	1
Chrysops	6	1
Gyrinus	4	1
Helisoma	7	1
Limnodrilus	10	1
Procladius	9	1
Rheotanytarsus	6	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 31 Population: 100

%Dominance / Dominant Taxon(s): 18.0% Ophidonais

Hilsenhoff Biotic Index (HBI): 7.07

%Clingers: 11.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 148 Suboptimal USEPA Protocol

Observations: Water temp: 18.49 C; Cond: 180 umhos; DO: 6.75 mg/L; pH: 6.41 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 47' / 2-3'; Substrate: cobble, gravel, mud

Canopy: partly open; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: crayfish, duck

AMNET Site # AN01410 Stream Name: Barkers Bk

Location: Jacksonville-Smithville Rd; Springfield Twp; Burlington County

Collection Date: 6/6/2006 USGS Topo Map: Bristol

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	76
Caecidotea	8	13
Physella	9.1	4
Dubiraphia	6	2
Pisidium	6.8	2
Stylaria	8	1
Tanytarsus	6	1
Thienemannimyia	6	1

* (EPT organism) Taxa Richness: 8 Population: 100

%Dominance / Dominant Taxon(s): 76.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.42 %Clingers: 2.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 2 Poor

Habitat Analysis: 139 Suboptimal USEPA Protocol

Observations: Water temp: 17.64 C; Cond: 192 umhos; DO: 6.71 mg/L; pH: 6.42 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 23', 2'; Substrate: cobble, sand, mud

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: grass, trees

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock

Other: Sampled downstream of bridge. filamentous algae, macrophytes, minnows, bullfrogs

AMNET Site # AN0142C Stream Name: UNT to Assiscunk Ck

Location: Oxmead Rd; Burlington Twp; Burlington County

Collection Date: 7/20/2006 USGS Topo Map: Bristol

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	29
Polypedilum	6	10
Stenelmis	5	10
Rheotanytarsus	6	8
Ancyronyx	2	6
Argia	6	5
Menetus	6	5
Dubiraphia	6	4
Lumbriculidae	8	3
Physella	9.1	3
Dicrotendipes	8	2
Microtendipes	7	2
Ablabesmyia	8	1
Boyeria	2	1
Calopteryx	6	1
Chironomini	6	1
Helichus	5	1
Limnodrilus	10	1
Macronychus	2	1
Microvelia	6	1
Paratanytarsus	6	1
Paratendipes	8	1
Phaenopsectra	7	1
Stictochironomus	9	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 29.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.89 %Clingers: 38.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 12 Good

Habitat Analysis: 151 Suboptimal USEPA Protocol

Observations: Water temp: 21.79 C; Cond: 200 umhos; DO: 6.79 mg/L; pH: 6.46 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 5' / < 1.0'; Substrate: cobble, mud

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs, ivy

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: lawn adjacent to stream on right bank

AMNET Site # AN0143

Stream Name: North Br Rancocas Ck

Location: Military Rd. (outlet of Hanover Lk); Pemberton Twp; Burlington County

Collection Date: 6/1/2006

USGS Topo Map: Browns Mills

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Stylaria	8	26
Psectrocladius	8	24
Polypedilum	6	12
Tvetenia	5	9
Tanytarsus	6	7
Nais	8	6
Tribelos	5	4
* Hydropsyche	4	3
Cryptochironomus	8	2
Dero	10	2
Phaenopsectra	7	2
Bezzia	6	1
* Oecetis	8	1
Thienemannimyia	6	1

**(EPT organism)* *Taxa Richness:* 14 *Population:* 100

Becks Biotic Index (BBI): 1.00 *%Plecoptera +Trichoptera:* 4.00%

Insect Taxa: 11 *%Mollusca + Amphipoda:* 0.00%

Non-Insect Taxa: 3 *%Diptera - Tanytarsini:* 55.00%

%Filterers: 10.00%

PMI Rating: 55.78 Fair

Habitat Analysis: 135 Suboptimal USEPA Protocol

Observations: Water temp: 26.7 C; Cond: 32 umhos; DO: 6.2 mg/L; pH: 3.9 SU

Clarity: slightly turbid- cedar; Flow Rate: moderate; Width/Depth: 31', <1-2'; Substrate: gravel, sand

Canopy: open; Bank Stability: fair; Bank Vegetation: freshly planted shrubs

Stream Gradient: Low Gradient Stream; Land Uses: Fort Dix military base

Downstream of Impoundment: Hanover Lake

Other: Riparian zone reconstruction; turtle, minnows, waterfowl

AMNET Site # AN0144 **Stream Name: Pole Bridge Br**
Location: Split Rock Rd; Otl Country Lk; Pemberton Twp; Burlington County
Collection Date: 6/8/2006 **USGS Topo Map: Browns Mills**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	67
Dicrotendipes	8	12
Stenelmis	5	4
Tipula	4	4
Stylodrilus	10	3
Limnodrilus	10	2
Phaenopsectra	7	2
Chironomidae	6	1
Heterotrissocladius	0	1
Lumbricidae	10	1
Nais	8	1
Trepobates	8	1
Tribelos	5	1

* (EPT organism) *Taxa Richness:* 13 *Population:* 100

Becks Biotic Index (BBI): 3.00 *%Plecoptera + Trichoptera:* 0.00%

Insect Taxa: 9 *%Mollusca + Amphipoda:* 0.00%

Non-Insect Taxa: 4 *%Diptera - Tanytarsini:* 88.00%

%Filterers: 0.00%

PMI Rating: 59.59 Good

Habitat Analysis: 129 Suboptimal USEPA Protocol

Observations: Water temp: 20.12 C; Cond: 53 umhos; DO: 7.02 mg/L; pH: 4.41 SU

Clarity: turbid-cedar; Flow Rate: moderate; Width/Depth: 41', 1-3'; Substrate: gravel, sand

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, grass

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Downstream of Impoundment: Country Lake

Other: macrophytes; outfall pipe flowing; foam; erosion control on left bank

AMNET Site # AN0145 Stream Name: Mt Misery Bk

Location: Rt 70; Pemberton Twp; Burlington County

Collection Date: 6/8/2006 USGS Topo Map: Browns Mills

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Brachycentrus	1	37
Pisidium	6.8	8
Thienemannimyia	6	6
* Chimarra	4	5
* Hydropsyche	4	5
Tribelos	5	5
Hexatoma	2	4
* Lepidostoma	1	3
* Oecetis	8	3
Lumbriculus	8	2
Orthocladius	6	2
Pentaneura	6	2
Sialis	4	2
Stenelmis	5	2
Apsectrotanypus	5	1
Chrysops	6	1
Corydalis	4	1
Cricotopus	7	1
Dicranota	3	1
Dineutus	4	1
* Hydroptila	6	1
* Leuctra	0	1
* Limnephilus	3	1
Nais	8	1
* Perlesta	4	1
* Polycentropus	6	1
Polypedilum	6	1

* (EPT organism) Taxa Richness: 27 Population: 99

Becks Biotic Index (BBI): 15.00 %Plecoptera +Trichoptera: 58.59%

Insect Taxa: 24 %Mollusca + Amphipoda: 8.08%

Non-Insect Taxa: 3 %Diptera - Tanytarsini: 24.24%

%Filterers: 56.57%

PMI Rating: 67.32 Excellent

Habitat Analysis: 177 Optimal USEPA Protocol

Observations: Water temp: 15.79 C; Cond: 38 umhos; DO: 8.47 mg/L; pH: 4.20 SU

Clarity: clear- cedar; Flow Rate: fast; Width/Depth: 27' / 1-2'; Substrate: gravel, sand, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: macrophytes

AMNET Site # AN0146

Stream Name: McDonalds Br

Location: Lebanon St For (Butterworth Rd) USGS Gauge; Woodland Twp; Burlington County

Collection Date: 7/26/2006

USGS Topo Map: Browns Mills

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Psectrocladius	8	44
Cricotopus	7	10
Simulium	6	10
Tribelos	5	10
* Leuctra	0	7
Apsectrotanypus	5	4
Naididae	7	4
Thienemannimyia	6	3
Caecidotea	8	2
Bezzia	6	1
Enchytraeidae	10	1
Micropsectra	7	1
Pristinella	10	1
Procladius	9	1
Pseudolimnophila	2	1

* (EPT organism) Taxa Richness: 15 Population: 100

Becks Biotic Index (BBI): 3.00 %Plecoptera +Trichoptera: 7.00%

Insect Taxa: 11 %Mollusca + Amphipoda: 0.00%

Non-Insect Taxa: 4 %Diptera - Tanytarsini: 84.00%

%Filterers: 10.00%

PMI Rating: 60.52 Good

Habitat Analysis: 168 Optimal USEPA Protocol

Observations: Water temp: 17.20 C; Cond: 29 umhos; DO: 5.90 mg/L; pH: 4.03 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 10' / < 1.0 - 2'; Substrate: sand, mud, silt

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: macrophytes, frogs, filamentous algae; Atlantic White Cedar forest; USGS Gage - 0.5'

AMNET Site # AN0148 **Stream Name: Greenwood Br**
Location: New Lisbon Rd; Pemberton Twp; Burlington County
Collection Date: 6/27/2006 **USGS Topo Map: Pemberton**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Caecidotea	8	49
* Molanna	6	6
Tanytarsus	6	6
Tribelos	5	6
Lumbriculus	8	5
Trichocorixa	9	5
Polypedilum	6	4
Procladius	9	4
Nais	8	2
* Polycentropodidae	6	2
Ablabesmyia	8	1
* Cheumatopsyche	5	1
Dicrotendipes	8	1
Enallagma	9	1
Erythemis	10	1
Helobdella	8	1
Hydrophilidae	5	1
* Lepidostoma	1	1
Limnodrilus	10	1
Rheopelopia	4	1
Rheotanytarsus	6	1

* (EPT organism) *Taxa Richness:* 21 *Population:* 100

Becks Biotic Index (BBI): 3.00 *%Plecoptera +Trichoptera:* 10.00%

Insect Taxa: 16 *%Mollusca + Amphipoda:* 0.00%

Non-Insect Taxa: 5 *%Diptera - Tanytarsini:* 17.00%

%Filterers: 10.00%

PMI Rating: **51.23 Fair**

Habitat Analysis: 158 Suboptimal USEPA Protocol

Observations: Water temp: 21.85 C; Cond: 55 umhos; DO: 6.77 mg/L; pH: 4.07 SU

Clarity: clear, cedar; Flow Rate: fast; Width/Depth: 47' / 1 - 3'; Substrate: cobble, sand, mud

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, grasses, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: pumping station upstream

Other: lawn on left bank, downstream of bridge; water level very high due to recent storm

AMNET Site # AN0149 **Stream Name: North Br Rancocas Ck**
Location: Main St; Pemberton; Burlington County
Collection Date: 6/13/2006 **USGS Topo Map: Pemberton**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Stenelmis	5	29
Caecidotea	8	6
Sphaerium	8	6
Tribelos	5	6
Tvetenia	5	6
Thienemannimyia	6	5
* Brachycentrus	1	4
Helobdella	8	4
Limnodrilus	10	4
* Perlesta	4	4
Ablabesmyia	8	3
Cryptochironomus	8	3
Tubificidae	10	3
Ancyronyx	2	2
* Maccaffertium	3	2
Phaenopsectra	7	2
Polypedilum	6	2
Xylotopus	2	2
Cricotopus	7	1
Dubiraphia	6	1
* Hydroptila	6	1
Pisidium	6.8	1
Prostoma	7	1
Tanytarsus	6	1
Tipula	4	1

* (EPT organism) *Taxa Richness:* 25 *Population:* 100

Becks Biotic Index (BBI): 7.00 *%Plecoptera +Trichoptera:* 9.00%
Insect Taxa: 18 *%Mollusca + Amphipoda:* 7.00%
Non-Insect Taxa: 7 *%Diptera - Tanytarsini:* 31.00%
 %Filterers: 12.00%

PMI Rating: 53.35 Fair

Habitat Analysis: 163 Optimal USEPA Protocol

Observations: Water temp: 19.21 C; Cond: 52 umhos; DO: 7.76 mg/L; pH: 5.22 SU

Clarity: clear- cedar; Flow Rate: moderate; Width/Depth: 60' . 3'; Substrate: gravel, sand, mud, snags

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grass

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Downstream of Impoundment: Dam

Other: geese

AMNET Site # AN0149A Stream Name: Ong Run
Location: West Lakeshore Dr.; Pemberton Twp; Burlington County
Collection Date: 6/1/2006 USGS Topo Map: Browns Mills

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	54
Paratendipes	8	12
Pisidium	6.8	7
Simulium	6	7
Polypedilum	6	4
Tvetenia	5	3
* Brachycentrus	1	2
Cambaridae	5	2
Phaenopsectra	7	2
Prodiamesa	3	2
Ancyronyx	2	1
Caecidotea	8	1
Chironomus	10	1
Stempellinella	6	1
Thienemannimyia	6	1

* (EPT organism) *Taxa Richness:* 15 *Population:* 100

Becks Biotic Index (BBI): 4.00 *%Plecoptera +Trichoptera:* 2.00%

Insect Taxa: 12 *%Mollusca + Amphipoda:* 7.00%

Non-Insect Taxa: 3 *%Diptera - Tanytarsini:* 86.00%

%Filterers: 16.00%

PMI Rating: 59.02 Good

Habitat Analysis: 144 Suboptimal USEPA Protocol

Observations: Water temp: 23.2 C; Cond: 127 umhos; DO: 6.7 mg/L; pH: 6.2 SU

Clarity: clear- cedar; Flow Rate: moderate; Width/Depth: 11', <1'; Substrate: cobble, gravel, sand

Canopy: partly open; Bank Stability: fair; Bank Vegetation: grasses, shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: adjacent to pumping station; trash

AMNET Site # AN0149B Stream Name: Jacks Run
Location: Range Rd; New Hanover Twp; Burlington County
Collection Date: 6/1/2006 USGS Topo Map: Browns Mills

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Slavina	7	19
Sphaeriidae	8	19
Vejdovskyella	4	11
Aulodrilus	8	9
Dero	10	7
Tanypodinae	7	6
Peltodytes	5	5
Ceratopogonidae	6	4
Amnicola	4.8	3
Einfeldia	9	3
Polypedilum	6	3
Limnodrilus	10	2
Procladius	9	2
Tanytarsus	6	2
Bezzia	6	1
Caecidotea	8	1
Libellula	9	1
Nais	8	1
Zavreliella	6	1

* (EPT organism) *Taxa Richness:* 19 *Population:* 100

Becks Biotic Index (BBI): 1.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 10 *%Mollusca + Amphipoda:* 22.00%

Non-Insect Taxa: 9 *%Diptera - Tanytarsini:* 20.00%

%Filterers: 21.00%

PMI Rating: 36.97 Fair

Habitat Analysis: 153 Suboptimal USEPA Protocol

Observations: Water temp: 22.1 C; Cond: 74 umhos; DO: 5.4 mg/L; pH: 5.7 SU

Clarity: slightly turbid- brown; Flow Rate: slow; Width/Depth: 25' 2-3'; Substrate: sand, mud

Canopy: open; Bank Stability: fair; Bank Vegetation: shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested, Fort Dix Military Base

Downstream of Impoundment: Pond

Other: fish, frogs, macrophytes, turtles

AMNET Site # AN0150

Stream Name: Budds Run

Location: Hanover St (Main St); Pemberton; Burlington County

Collection Date: 6/13/2006

USGS Topo Map: Pemberton

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	31
Physa	8	17
Caecidotea	8	16
Amnicola	4.8	5
Polypedilum	6	4
Ancyronyx	2	3
* Cheumatopsyche	5	3
Limnodrilus	10	3
Dubiraphia	6	2
Macronychus	2	2
Musculium	5	2
Stenelmis	5	2
Tubifex	10	2
Argia	6	1
Corydalus	4	1
* Eurylophella	4	1
Pisidium	6.8	1
Procladius	9	1
Rheotanytarsus	6	1
Stylaria	8	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 21 Population: 100

Becks Biotic Index (BBI): 4.00 %Plecoptera +Trichoptera: 3.00%

Insect Taxa: 12 %Mollusca + Amphipoda: 56.00%

Non-Insect Taxa: 9 %Diptera - Tanytarsini: 6.00%

%Filterers: 7.00%

PMI Rating: 33.82 Poor

Habitat Analysis: 140 Suboptimal USEPA Protocol

Observations: Water temp: 17.5 C; Cond: 179 umhos; DO: 7.09 mg/L; pH: 6.99 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 15' / 1'; Substrate: cobble

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: storm sewers

Other: new road, retaining wall near left bank; minor bridge repair in progress

AMNET Site # AN0151

Stream Name: North Br Rancocas Ck

Location: Iron Works Park (upstream of dam); Mount Holly Twp; Burlington County

Collection Date: 6/15/2006

USGS Topo Map: Mt. Holly

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	48
Polypedilum	6	16
Limnodrilus	10	10
Trichocorixa	9	5
Chironomidae	6	4
Nais	8	4
Caecidotea	8	2
Gammarus	6	2
Stylodrilus	10	2
Ancyronyx	2	1
Chironomus	10	1
Dubiraphia	6	1
Paratendipes	8	1
Rheumatobates	8	1
Stylaria	8	1
Tanytarsus	6	1

** (EPT organism)* *Taxa Richness:* 16 *Population:* 100

Becks Biotic Index (BBI): 1.00 *%Plecoptera + Trichoptera:* 0.00%

Insect Taxa: 10 *%Mollusca + Amphipoda:* 2.00%

Non-Insect Taxa: 6 *%Diptera - Tanytarsini:* 70.00%

%Filterers: 1.00%

PMI Rating: 55.64 Fair

Habitat Analysis: 118 Suboptimal USEPA Protocol

Observations: Water temp: 19.97 C; Cond: 142 umhos; DO: 6.83 mg/L; pH: 6.22 SU

Clarity: turbid, cedar; Flow Rate: moderate; Width/Depth: 50'/2'; Substrate: gravel, sand, mud, undercut bank

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: man made banks (concrete, metal, and stone)

AMNET Site # AN0151A Stream Name: Indian Run
Location: Birmingham Rd; Pemberton Twp; Burlington County
Collection Date: 6/13/2006 USGS Topo Map: Pemberton

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	40
Gammarus	6	9
Polypedilum	6	8
Gomphus	5	5
Paratendipes	8	4
Caecidotea	8	3
* Cheumatopsyche	5	3
Nigronia	2	3
Tubifex	10	3
Ablabesmyia	8	2
Ancyronyx	2	2
Aulodrilus	8	2
* Brachycentrus	1	2
Hexatoma	2	2
Paralauterborniella	8	2
Sialis	4	2
Calopteryx	6	1
Cryptochironomus	8	1
Dubiraphia	6	1
Microtendipes	7	1
Pisidium	6.8	1
Tanytarsus	6	1
Thienemannimyia	6	1
Tropisternus	10	1

* (EPT organism) *Taxa Richness:* 24 *Population:* 100

Becks Biotic Index (BBI): 6.00 *%Plecoptera +Trichoptera:* 5.00%
Insect Taxa: 19 *%Mollusca + Amphipoda:* 10.00%
Non-Insect Taxa: 5 *%Diptera - Tanytarsini:* 61.00%
 %Filterers: 8.00%

PMI Rating: 59.82 Good

Habitat Analysis: 131 Suboptimal USEPA Protocol

Observations: Water temp: 15.82 C; Cond: 169 umhos; DO: 8.55 mg/L; pH: 6.78 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 20' , 1'; Substrate: gravel, sand, mud, silt, root mats

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

AMNET Site # AN0152 **Stream Name: Friendship Ck**
Location: Friendship Rd (Powell Place Rd); Tabernacle Twp; Burlington County
Collection Date: 6/27/2006 **USGS Topo Map: Indian Mills**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Brachycentrus	1	67
Aulodrilus	8	9
* Leuctra	0	4
Limnodrilus	10	3
Thienemannimyia	6	3
Corixidae	9	2
* Hydropsyche	4	2
Tanytarsus	6	2
* Cheumatopsyche	5	1
Cricotopus	7	1
Dineutus	4	1
Sialis	4	1
Simulium	6	1
Thienemanniella	6	1
Tipula	4	1
Tribelos	5	1

* (EPT organism) *Taxa Richness:* 16 *Population:* 100

Becks Biotic Index (BBI): 8.00 *%Plecoptera + Trichoptera:* 74.00%
Insect Taxa: 14 *%Mollusca + Amphipoda:* 0.00%
Non-Insect Taxa: 2 *%Diptera - Tanytarsini:* 8.00%
 %Filterers: 73.00%

PMI Rating: 56.36 Good

Habitat Analysis: 165 Optimal USEPA Protocol

Observations: Water temp: 21.92 C; Cond: 78 umhos; DO: 8.07 mg/L; pH: 5.21 SU
Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 30' / 1 - 2'; Substrate: cobble, gravel, sand, silt
Canopy: partly open; Bank Stability: good; Bank Vegetation: grasses, shrubs, trees
Stream Gradient: Low Gradient Stream; Land Uses: forested
Other: macrophytes, fish, under cut banks; water level high due to recent storm; new bridge construction/repairs

AMNET Site # AN0153

Stream Name: Burrs Mill Bk

Location: Sooy Place/Hedgerhouse Rd; Woodland Twp; Burlington County

Collection Date: 7/12/2006

USGS Topo Map: Chatsworth

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Thienemannimyia	6	26
Caecidotea	8	19
Chironomus	10	18
Tribelos	5	11
Chaetocladius	6	9
Enchytraeidae	10	5
Procladius	9	5
Ceratopogonidae	6	1
Cryptochironomus	8	1
Dineutus	4	1
Endochironomus	10	1
Kiefferulus	10	1
* Oecetis	8	1
Tanytarsus	6	1

* (EPT organism) Taxa Richness: 14 Population: 100

Becks Biotic Index (BBI): 1.00 %Plecoptera +Trichoptera: 1.00%

Insect Taxa: 12 %Mollusca + Amphipoda: 0.00%

Non-Insect Taxa: 2 %Diptera - Tanytarsini: 73.00%

%Filterers: 1.00%

PMI Rating: 61.14 Good

Habitat Analysis: 170 Optimal USEPA Protocol

Observations: Water temp: 25.33 C; Cond: 73 umhos; DO: 3.18 mg/L; pH: 3.62 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 22'/1'; Substrate: mud, snags

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, grasses, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

AMNET Site # AN0154 **Stream Name: Burrs Mill Bk**
Location: Sooy Place Rd Off Rt 70; Pemberton Twp; Burlington County
Collection Date: 6/27/2006 **USGS Topo Map: Pemberton**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Hydropsyche	4	9
Tribelos	5	8
Enchytraeidae	10	6
Stenelmis	5	6
* Chimarra	4	5
Dineutus	4	4
Thienemannimyia	6	3
Caecidotea	8	2
* Phyllocentropus	5	2
Polypedilum	6	2
Argia	6	1
* Brachycentrus	1	1
* Leptoceridae	4	1
Libellula	9	1
Limnodrilus	10	1
Limnophyes	8	1
* Maccaffertium	3	1
Macromia	2	1
* Molanna	6	1
* Oecetis	8	1
Psectrocladius	8	1
Stelechomyia	7	1
Tabanidae	6	1
Tanytarsus	6	1
* Triaenodes	6	1

* (EPT organism) *Taxa Richness:* 25 *Population:* 62

Becks Biotic Index (BBI): 8.00 *%Plecoptera +Trichoptera:* 33.87%
Insect Taxa: 22 *%Mollusca + Amphipoda:* 0.00%
Non-Insect Taxa: 3 *%Diptera - Tanytarsini:* 27.42%
 %Filterers: 29.03%

PMI Rating: 62.93 Good

Habitat Analysis: 173 Optimal USEPA Protocol

Observations: Water temp: 22.56 C; Cond: 58 umhos; DO: 6.14 mg/L; pH: 4.02 SU
 Clarity: clear, cedar; Flow Rate: fast; Width/Depth: 30' / 1 - 3'; Substrate: gravel, sand
 Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, grasses, shrubs
 Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland (cranberry bogs), forested
 Other: turtle, frogs; ponded area upstream of bridge; water level very high due to recent storm

AMNET Site # AN0155 **Stream Name: Friendship Ck**
Location: Retreat Rd; Southampton Twp; Burlington County
Collection Date: 6/27/2006 **USGS Topo Map: Pemberton**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Stenelmis	5	13
* Maccaffertium	3	9
* Hydropsyche	4	7
Polypedilum	6	6
* Cheumatopsyche	5	5
Tvetenia	5	5
Ancyronyx	2	4
Macromia	2	4
Tribelos	5	4
Caecidotea	8	2
* Chimarra	4	2
* Phyllocentropus	5	2
Ancylidae	6	1
Boyeria	2	1
Cricotopus	7	1
Gomphidae	1	1
Hydrophilidae	5	1
Tanytarsus	6	1

* (EPT organism) *Taxa Richness:* 18 *Population:* 69

Becks Biotic Index (BBI): 8.00 *%Plecoptera +Trichoptera:* 23.19%
Insect Taxa: 16 *%Mollusca + Amphipoda:* 1.45%
Non-Insect Taxa: 2 *%Diptera - Tanytarsini:* 23.19%
 %Filterers: 24.64%

PMI Rating: 58.54 Good

Habitat Analysis: 167 Optimal USEPA Protocol

Observations: Water temp: 23.52 C; Cond: 71 umhos; DO: 6.48 mg/L; pH: 4.82 SU
Clarity: clear, cedar; Flow Rate: fast; Width/Depth: 11' / 2 - 3'; Substrate: cobble, gravel, sand, mud
Canopy: mostly open; Bank Stability: good; Bank Vegetation: grasses, shrubs, trees
Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested
Other: macrophytes, frogs; creosote smell; new bridge construction; water level very high due to recent storm

AMNET Site # AN0156

Stream Name: South Br Rancocas Ck

Location: Ridge Rd(Buddtown-Beaverville Rd); Southampton Twp; Burlington County

Collection Date: 6/27/2006

USGS Topo Map: Pemberton

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	38
Enchytraeidae	10	13
Limnodrilus	10	8
Caecidotea	8	7
* Oecetis	8	4
* Phylocentropus	5	4
Ischnura	9	3
Nais	8	3
Dicrotendipes	8	2
Lumbriculidae	8	2
Stenelmis	5	2
Thienemannimyia	6	2
Berosus	5	1
* Chimarra	4	1
Cricotopus	7	1
Dolichopodidae	4	1
Limnophyes	8	1
Lumbriculus	8	1
* Pycnopsyche	4	1
Pyralidae	5	1
Simulium	6	1
Tipula	4	1
* Triaenodes	6	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 24 Population: 100

Becks Biotic Index (BBI): 4.00 %Plecoptera +Trichoptera: 11.00%

Insect Taxa: 18 %Mollusca + Amphipoda: 0.00%

Non-Insect Taxa: 6 %Diptera - Tanytarsini: 48.00%

%Filterers: 6.00%

PMI Rating: 58.43 Good

Habitat Analysis: 163 Optimal USEPA Protocol

Observations: Water temp: 23.31 C; Cond: 71 umhos; DO: 5.54 mg/L; pH: 4.52 SU

Clarity: clear, cedar; Flow Rate: moderate; Width/Depth: 41' / 2 - 4'; Substrate: gravel, sand

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: water level very high due to recent storm

AMNET Site # AN0157 Stream Name: Jade Run

Location: A Farm Rd off Rt 206 past Jade Run Sod Frm; Southampton Twp; Burlington County

Collection Date: 7/12/2006 USGS Topo Map: Pemberton

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	36
Amnicola	4.8	11
Helisoma	7	7
Tribelos	5	7
Musculium	5	6
Physella	9.1	5
Cryptochironomus	8	4
Caecidotea	8	3
Dicrotendipes	8	3
Dugesia	4	3
Enallagma	9	3
Limnodrilus	10	2
Peltodytes	5	2
Corixidae	9	1
Dubiraphia	6	1
Helobdella	8	1
Pisidium	6.8	1
Procladius	9	1
Stylodrilus	10	1
Sympetrum	4	1
Unionidae	8	1

**(EPT organism)* Taxa Richness: 21 Population: 100

Becks Biotic Index (BBI): 2.00 %Plecoptera +Trichoptera: 0.00%

Insect Taxa: 9 %Mollusca + Amphipoda: 67.00%

Non-Insect Taxa: 12 %Diptera - Tanytarsini: 15.00%

%Filterers: 8.00%

PMI Rating: 27.84 Poor

Habitat Analysis: 142 Suboptimal USEPA Protocol

Observations: Water temp: 23.74 C; Cond: 114 umhos; DO: 4 mg/L; pH: 6.13 SU

Clarity: turbid; Flow Rate: slow; Width/Depth: 16.5' / 2'; Substrate: gravel, sand, mud

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland (sod, corn), rural

AMNET Site # AN0157A Stream Name: Jade Run

Location: Stockton Bridge Rd; Pemberton Twp; Burlington County

Collection Date: 6/27/2006 USGS Topo Map: Pemberton

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	52
Chironomus	10	18
Caecidotea	8	15
Limnodrilus	10	6
Libellula	9	3
Phaenopsectra	7	2
Polypedilum	6	2
Parachironomus	10	1
Procladius	9	1

* (EPT organism) Taxa Richness: 9 Population: 100

Becks Biotic Index (BBI): 0.00 %Plecoptera +Trichoptera: 0.00%

Insect Taxa: 7 %Mollusca + Amphipoda: 0.00%

Non-Insect Taxa: 2 %Diptera - Tanytarsini: 76.00%

%Filterers: 0.00%

PMI Rating: 58.95 Good

Habitat Analysis: 159 Suboptimal USEPA Protocol

Observations: Water temp: 21.54 C; Cond: 54 umhos; DO: 1.92 mg/L; pH: 4.21 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 17' / 2 - 3'; Substrate: sand, mud

Canopy: partly open; Bank Stability: good; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: oily sheen on surface, trash; water level very high due to recent storm

AMNET Site # AN0159 **Stream Name: Bear Swamp River**

Location: Rt 70; Medford Twp; Burlington County

Collection Date: 7/12/2006 **USGS Topo Map: Mt. Holly**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tanytarsus	6	35
Tribelos	5	35
Caecidotea	8	10
Enchytraeidae	10	5
Polypedilum	6	5
Corydalis	4	2
Somatochlora	1	2
Stylodrilus	10	2
Ablabesmyia	8	1
Cryptochironomus	8	1
Gomphus	5	1
Stenochironomus	5	1

**(EPT organism)* *Taxa Richness:* 12 *Population:* 100

Becks Biotic Index (BBI): 3.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 9 *%Mollusca + Amphipoda:* 0.00%

Non-Insect Taxa: 3 *%Diptera - Tanytarsini:* 43.00%

%Filterers: 35.00%

PMI Rating: **49.01 Fair**

Habitat Analysis: 169 Optimal USEPA Protocol

Observations: Water temp: 22.21 C; Cond: 89 umhos; DO: 4.98 mg/L; pH: 4.02 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 20' / 2'; Substrate: sand, mud, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

AMNET Site # AN0160 **Stream Name: Little Ck**
Location: Eayrestown Rd; Lumberton Twp; Burlington County
Collection Date: 7/18/2006 **USGS Topo Map: Mt. Holly**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Amnicola	4.8	25
Polypedilum	6	22
Caecidotea	8	20
* Cheumatopsyche	5	6
Musculium	5	6
Ancyronyx	2	4
Tribelos	5	3
Macronychus	2	2
* Oecetis	8	2
Stenelmis	5	2
* Ceraclea	3	1
Dugesia	4	1
Gammarus	6	1
Heterotrissocladius	0	1
Pisidium	6.8	1
Rheopelopia	4	1
Rheotanytarsus	6	1
Stenochironomus	5	1

* (EPT organism) *Taxa Richness:* 18 *Population:* 100

Becks Biotic Index (BBI): 7.00 *%Plecoptera +Trichoptera:* 9.00%
Insect Taxa: 12 *%Mollusca + Amphipoda:* 33.00%
Non-Insect Taxa: 6 *%Diptera - Tanytarsini:* 28.00%
 %Filterers: 14.00%

PMI Rating: **46.62 Fair**

Habitat Analysis: 133 Suboptimal USEPA Protocol

Observations: Water temp: 24.65 C; Cond: 236 umhos; DO: 5.34 mg/L; pH: 6.75 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 23.5' / < 1.0 - 2'; Substrate: gravel, sand, root mats

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested, golf course

Other: frogs, eels, fish, undercut banks

AMNET Site # AN0162

Stream Name: Southwest Br Rancocas Ck

Location: Elmwood Rd Next to S T P; Evesham Twp; Burlington County

Collection Date: 7/13/2006

USGS Topo Map: Moorestown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	35
Physella	9.1	27
Musculium	5	9
Polypedilum	6	9
Caecidotea	8	4
Phaenopsectra	7	2
Pisidium	6.8	2
Aeshna	5	1
Calopteryx	6	1
* Cheumatopsyche	5	1
Chironomus	10	1
Cryptochironomus	8	1
Enchytraeidae	10	1
Helobdella	8	1
Limnodrilus	10	1
Lumbricidae	10	1
Mooreobdella	7.8	1
Perithemis	4	1
Thienemannimyia	6	1

* (EPT organism) *Taxa Richness:* 19 *Population:* 100

Becks Biotic Index (BBI): 1.00 *%Plecoptera +Trichoptera:* 1.00%

Insect Taxa: 9 *%Mollusca + Amphipoda:* 73.00%

Non-Insect Taxa: 10 *%Diptera - Tanytarsini:* 14.00%

%Filterers: 12.00%

PMI Rating: 27.50 Poor

Habitat Analysis: 117 Suboptimal USEPA Protocol

Observations: Water temp: 22.65 C; Cond: 231 umhos; DO: 5.78 mg/L; pH: 7.10 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 10' / 1'; Substrate: silt, root mats

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, weeds, grasses

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: site near Sewage Treatment plant

AMNET Site # AN0163

Stream Name: UNT to Barton Run

**Location: Braddock Mill Rd & Rt 73 Oult of Kresson Lk; Voorhees Twp;
Camden County**

Collection Date: 7/13/2006

USGS Topo Map: Clementon

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Amnicola	4.8	36
Corbicula	4	14
Campeloma	7	7
Gammarus	6	7
Musculium	5	7
Gyraulus	6	5
* Cheumatopsyche	5	3
Dugesia	4	2
Enallagma	9	2
Helobdella	8	2
* Oecetis	8	2
Stylaria	8	2
Thienemannimyia	6	2
Batracobdella	8	1
* Ceraclea	3	1
* Chimarra	4	1
* Mystacides	4	1
Physella	9.1	1
Polypedilum	6	1
Rheotanytarsus	6	1
Stenelmis	5	1
Stylodrilus	10	1

* (EPT organism) *Taxa Richness:* 22 *Population:* 100

Becks Biotic Index (BBI): 5.00 *%Plecoptera + Trichoptera:* 8.00%

Insect Taxa: 10 *%Mollusca + Amphipoda:* 77.00%

Non-Insect Taxa: 12 *%Diptera - Tanytarsini:* 3.00%

%Filterers: 26.00%

PMI Rating: 25.06 Poor

Habitat Analysis: 145 Suboptimal USEPA Protocol

Observations: Water temp: 26.96 C; Cond: 101 umhos; DO: 5.88 mg/L; pH: 6.64 SU

Clarity: clear, cedar; Flow Rate: moderate; Width/Depth: 16' / < 1.0'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, vines, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Downstream of Impoundment: Kresson Lake

AMNET Site # AN0164

Stream Name: Black Run

Location: Kettle Run Rd { Pipe }; Evesham Twp; Burlington County

Collection Date: 8/10/2006

USGS Topo Map: Clementon

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Apsectrotanypus	5	20
Procladius	9	13
* Leuctra	0	10
Clinotanypus	8	8
Calopteryx	6	7
* Oecetis	8	6
Thienemannimyia	6	6
* Leptophlebiidae	2	3
Psectrocladius	8	3
Bezzia	6	2
* Molanna	6	2
* Phylocentropus	5	2
Tanytarsus	6	2
Chrysops	6	1
Cryptochironomus	8	1
Demicryptochironomus	8	1
* Diplectrona	0	1
* Heteroplectron	3	1
Labrundinia	7	1
Microtendipes	7	1
Nigronia	2	1
* Oxyethira	3	1
Pentaneura	6	1
Pseudolimnophila	2	1
Rheocricotopus	6	1
Stempellinella	6	1
Stenochironomus	5	1
* Triaenodes	6	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 29 Population: 100

Becks Biotic Index (BBI): 9.00 %Plecoptera +Trichoptera: 24.00%

Insect Taxa: 29 %Mollusca + Amphipoda: 0.00%

Non-Insect Taxa: 0 %Diptera - Tanytarsini: 62.00%

%Filterers: 6.00%

PMI Rating: 75.70 Excellent

Habitat Analysis: 152 Suboptimal USEPA Protocol

Observations: Water temp: 19.43 C; Cond: 55 umhos; DO: 6.45 mg/L; pH: 4.64 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 5' / < 1.0'; Substrate: sand, mud

Canopy: closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: macrophytes; braided stream; wetlands upstream

AMNET Site # AN0165 **Stream Name: UNT to Black Run**
Location: Braddock Mill Rd; Evesham Twp; Burlington County
Collection Date: 7/18/2006 **USGS Topo Map: Clementon**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	54
Caecidotea	8	18
Lumbriculus	8	14
Conchapelopia	6	7
Bezzia	6	3
Cryptochironomus	8	1
Polypedilum	6	1
Pyralidae	5	1
Sialis	4	1

* (EPT organism) *Taxa Richness:* 9 *Population:* 100

Becks Biotic Index (BBI): 1.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 7 *%Mollusca + Amphipoda:* 0.00%

Non-Insect Taxa: 2 *%Diptera - Tanytarsini:* 66.00%

%Filterers: 0.00%

PMI Rating: **57.79 Good**

Habitat Analysis: 142 Suboptimal USEPA Protocol

Observations: Water temp: 25.76 C; Cond: 71 umhos; DO: 1.62 mg/L; pH: 4.95 SU

Clarity: slightly turbid, cedar; Flow Rate: slow; Width/Depth: 3' / < 1.0'; Substrate: gravel, sand, mud

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, forested

Other: frogs

AMNET Site # AN0166

Stream Name: Barton Run

Location: Tuckerton Rd & Christopher Mill Rd; Medford Twp; Burlington County

Collection Date: 7/13/2006

USGS Topo Map: Mt. Holly

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Amnicola	4.8	13
Stenelmis	5	13
Musculium	5	11
Caecidotea	8	10
Macronychus	2	10
Dubiraphia	6	8
Tribelos	5	8
Corbicula	4	6
Ancyronyx	2	5
Gammarus	6	2
Prostoma	7	2
Stenochironomus	5	2
Batracobdella	8	1
Crangonyx	8	1
Dugesia	4	1
Helisoma	7	1
Limnodrilus	10	1
Nais	8	1
Nilotanypus	6	1
Pisidium	6.8	1
Polypedilum	6	1
Stylodrilus	10	1

* (EPT organism) *Taxa Richness:* 22 *Population:* 100

Becks Biotic Index (BBI): 4.00 *%Plecoptera + Trichoptera:* 0.00%

Insect Taxa: 8 *%Mollusca + Amphipoda:* 35.00%

Non-Insect Taxa: 14 *%Diptera - Tanytarsini:* 12.00%

%Filterers: 18.00%

PMI Rating: 30.10 Poor

Habitat Analysis: 154 Suboptimal USEPA Protocol

Observations: Water temp: 25.73 C; Cond: 133 umhos; DO: 4.43 mg/L; pH: 6.28 SU

Clarity: slightly turbid, cedar; Flow Rate: moderate; Width/Depth: 27' / 2'; Substrate: gravel, sand, snags

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, weeds

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: 24" concrete storm sewer flowing upstream

AMNET Site # AN0167

Stream Name: Kettle Run

Location: Hopewell Rd Oult of Marlton Lk; Evesham Twp; Burlington County

Collection Date: 7/13/2006

USGS Topo Map: Clementon

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Stylaria	8	35
* Cheumatopsyche	5	8
Musculium	5	8
Polypedilum	6	8
Amnicola	4.8	7
Dugesia	4	7
Physella	9.1	6
* Hydropsyche	4	4
Nais	8	4
* Oecetis	8	4
Limnodrilus	10	3
Pisidium	6.8	2
Lumbriculus	8	1
* Maccaffertium	3	1
Mesovelgia	9	1
Parachironomus	10	1

* (EPT organism) *Taxa Richness:* 16 *Population:* 100

Becks Biotic Index (BBI): 3.00 *%Plecoptera + Trichoptera:* 16.00%

Insect Taxa: 7 *%Mollusca + Amphipoda:* 23.00%

Non-Insect Taxa: 9 *%Diptera - Tanytarsini:* 9.00%

%Filterers: 22.00%

PMI Rating: 38.36 Fair

Habitat Analysis: 124 Suboptimal USEPA Protocol

Observations: Water temp: 27.94 C; Cond: 98 umhos; DO: 7.40 mg/L; pH: 6.79 SU

Clarity: slightly turbid, cedar; Flow Rate: moderate; Width/Depth: 3' / 3'; Substrate: gravel

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: phragmites, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Downstream of Impoundment: Marlton Lake

Other: macrophytes; stream channelized through pipe under road; concrete banks

AMNET Site # AN0168 **Stream Name: Haynes Ck**
Location: Himmelein Rd; Medford Twp; Burlington County
Collection Date: 7/13/2006 **USGS Topo Map: Mt. Holly**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Musculium	5	35
* Cheumatopsyche	5	32
* Oecetis	8	6
Stenelmis	5	6
Amnicola	4.8	3
Phaenopsectra	7	3
* Ceraclea	3	2
Corbicula	4	2
Boyeria	2	1
Cryptochironomus	8	1
Enallagma	9	1
Gammarus	6	1
Gyraulus	6	1
* Maccaffertium	3	1
Macronychus	2	1
Pisidium	6.8	1
Polypedilum	6	1
Tvetenia	5	1
Unionidae	8	1

* (*EPT organism*) *Taxa Richness:* 19 *Population:* 100

Becks Biotic Index (BBI): 5.00 *%Plecoptera +Trichoptera:* 40.00%

Insect Taxa: 12 *%Mollusca + Amphipoda:* 44.00%

Non-Insect Taxa: 7 *%Diptera - Tanytarsini:* 6.00%

%Filterers: 71.00%

PMI Rating: **37.32 Fair**

Habitat Analysis: 129 Suboptimal USEPA Protocol

Observations: Water temp: 27.05 C; Cond: 94 umhos; DO: 6.08 mg/L; pH: 6.16 SU

Clarity: slightly turbid, cedar; Flow Rate: moderate; Width/Depth: 33/3'; Substrate: gravel, sand

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, bamboo

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Downstream of Impoundment: lake

AMNET Site # AN0169 **Stream Name: Southwest Br Rancocas Ck (Haynes Ck)**

Location: Rt 70; Medford Twp; Burlington County

Collection Date: 7/12/2006 **USGS Topo Map: Mt. Holly**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	69
Gammarus	6	6
Dugesia	4	5
Musculium	5	4
Dubiraphia	6	3
Stylodrilus	10	3
Caecidotea	8	2
Hydrobiidae	8	2
Argia	6	1
Limnodrilus	10	1
Macronychus	2	1
Procladius	9	1
* Stenacron	4	1
Stenelmis	5	1

* (*EPT organism*) *Taxa Richness:* 14 *Population:* 100

Becks Biotic Index (BBI): 3.00 *%Plecoptera + Trichoptera:* 0.00%

Insect Taxa: 7 *%Mollusca + Amphipoda:* 12.00%

Non-Insect Taxa: 7 *%Diptera - Tanytarsini:* 70.00%

%Filterers: 4.00%

***PMI Rating:* 52.53 Fair**

Habitat Analysis: 118 Suboptimal USEPA Protocol

Observations: Water temp: 26.41 C; Cond: 138 umhos; DO: 4.86 mg/L; pH: 6.41 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 57' / 2-3'; Substrate: mud, silt

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

AMNET Site # AN0170 **Stream Name: Sharps Run**
Location: Rt 541; Medford Twp; Burlington County
Collection Date: 7/12/2006 **USGS Topo Map: Mt. Holly**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	22
Physella	9.1	14
* Cheumatopsyche	5	10
Caecidotea	8	8
Dubiraphia	6	6
Helisoma	7	5
Stenelmis	5	5
Amnicola	4.8	4
Macronychus	2	4
Stictochironomus	9	3
Argia	6	2
Enallagma	9	2
Limnodrilus	10	2
Polypedilum	6	2
Stylodrilus	10	2
Dugesia	4	1
* Maccaffertium	3	1
Microtendipes	7	1
Musculium	5	1
Pristinella	10	1
Rheotanytarsus	6	1
Sialis	4	1
Spirosperma	10	1
Tubifex	10	1

* (EPT organism) *Taxa Richness:* 24 *Population:* 100

Becks Biotic Index (BBI): 4.00 *%Plecoptera +Trichoptera:* 10.00%
Insect Taxa: 12 *%Mollusca + Amphipoda:* 46.00%
Non-Insect Taxa: 12 *%Diptera - Tanytarsini:* 6.00%
 %Filterers: 13.00%

PMI Rating: **33.61** **Poor**

Habitat Analysis: 138 Suboptimal USEPA Protocol

Observations: Water temp: 24.75 C; Cond: 268 umhos; DO: 3.37 mg/L; pH: 6.92 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 25' / < 1.0'; Substrate: cobble, gravel, sand, snags

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: macrophytes

AMNET Site # AN0171A Stream Name: Bobbys Run
Location: Smithville Rd; Mt Holly; Burlington County
Collection Date: 7/25/2006 USGS Topo Map: Mt. Holly

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Sphaerium	8	30
Pisidium	6.8	18
Physella	9.1	15
Tubifex	10	12
Caecidotea	8	9
Hyalella	8	4
Limnodrilus	10	4
Somatochlora	1	4
Bezzia	6	1
* Callibaetis	9	1
Polypedilum	6	1
Psectrotanypus	10	1

* (*EPT organism*) *Taxa Richness:* 12 *Population:* 100

Becks Biotic Index (BBI): 2.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 5 *%Mollusca + Amphipoda:* 67.00%

Non-Insect Taxa: 7 *%Diptera - Tanytarsini:* 3.00%

%Filterers: 48.00%

***PMI Rating:* 22.33 Poor**

Habitat Analysis: 101 Marginal USEPA Protocol

Observations: Water temp: 20.94 C; Cond: 341 umhos; DO: 2.94 mg/L; pH: 6.98 SU
 Clarity: turbid; Flow Rate: slow; Width/Depth: 2' / < 1.0'; Substrate: cobble, mud, silt
 Canopy: open; Bank Stability: good; Bank Vegetation: grasses, shrubs
 Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland
 Other: macrophytes, filamentous algae; stream barely flowing

AMNET Site # AN0172

Stream Name: UNT to Masons Ck

Location: Ark Rd nr. Fenimore Rd; Lumberton Twp; Burlington County

Collection Date: 7/25/2006

USGS Topo Map: Mt. Holly

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Pisidium	6.8	28
Caecidotea	8	27
Musculium	5	16
Apsectrotanypus	5	15
Aulodrilus	8	7
Sialis	4	2
Anopheles	6	1
Clinotanypus	8	1
Phaenopsectra	7	1
Tanypodinae	7	1
Tribelos	5	1

**(EPT organism)* *Taxa Richness:* 11 *Population:* 100

Becks Biotic Index (BBI): 1.00 *%Plecoptera + Trichoptera:* 0.00%

Insect Taxa: 7 *%Mollusca + Amphipoda:* 44.00%

Non-Insect Taxa: 4 *%Diptera - Tanytarsini:* 20.00%

%Filterers: 45.00%

PMI Rating: 32.84 Poor

Habitat Analysis: 91 Marginal USEPA Protocol

Observations: Water temp: 23.37 C; Cond: 265 umhos; DO: 0.12 mg/L; pH: 6.54 SU

Clarity: turbid; Flow Rate: slow; Width/Depth: 4' / < 1.0'; Substrate: sand, mud

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: forested

Pipes / Ditches: storm sewers

Other: frogs; not flowing; a newly constructed storm drain/retention basin upstream

AMNET Site # AN0173

Stream Name: Masons Ck

Location: Rt 38; Hainesport Twp; Burlington County

Collection Date: 4/10/2001 USGS Topo Map: Mt. Holly

Genus	Tolerance Value	Amount
Gammarus	6	25
Amnicola	4.8	13
Pisidium	6.8	10
Sphaerium	8	9
Physella	9.1	8
Hydrolix	4	6
Tubificidae	10	6
Dubiraphia	6	5
Procladius	9	5
Ablabesmyia	8	3
Caecidotea	8	2
Menetus	6	2
* Phyllocentropus	5	2
Slavina	7	2
Thienemannimyia	6	2
Helisoma	7	1
Ischnura	9	1
Palaemonetes	4	1
Phaenopsectra	7	1
Polypedilum	6	1
Rheotanytarsus	6	1

* (EPT organism) Taxa Richness: 21 Population: 109

%Dominance / Dominant Taxon(s): 22.9% Gammarus

Hilsenhoff Biotic Index (HBI): 6.69 %Clingers: 6.42%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 121 Suboptimal USEPA Protocol

Observations: Water temp: 14.9 C; Cond: 161 umhos; DO: 9.9 mg/L; pH: 7.1 SU

Clarity: turbid; Flow Rate: moderate; Width/Depth: 24' / 1-2'; Substrate: gravel, sand, mud

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, weeds

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: storm sewers

Other: fish, high flow present.

AMNET Site # AN0175

Stream Name: Mill Ck

Location: Levitt Pkwy; Willingboro Twp; Burlington County

Collection Date: 7/20/2006 USGS Topo Map: Beverly

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	64
Polypedilum	6	11
Tribelos	5	8
Rheotanytarsus	6	5
Dubiraphia	6	3
Ancyronyx	2	2
Dugesia	4	2
Physella	9.1	2
Caecidotea	8	1
Gyraulus	6	1
Musculium	5	1

* (EPT organism) Taxa Richness: 11 Population: 100

%Dominance / Dominant Taxon(s): 64.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.87

%Clingers: 10.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 141 Suboptimal USEPA Protocol

Observations: Water temp: 23.68 C; Cond: 302 umhos; DO: 5.43 mg/L; pH: 6.71 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 17' / 1'; Substrate: gravel, sand, snags

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

AMNET Site # AN0176 Stream Name: Swedes Run

Location: Rt 130; Delran Twp; Burlington County

Collection Date: 7/20/2006 USGS Topo Map: Beverly

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	65
Polypedilum	6	8
Tribelos	5	7
Limnodrilus	10	4
Musculium	5	4
Stenelmis	5	3
Ancyronyx	2	1
Dicrotendipes	8	1
Dubiraphia	6	1
Macronychus	2	1
Microtendipes	7	1
Mooreobdella	7.8	1
Pisidium	6.8	1
Procladius	9	1
Rheopelopia	4	1

* (EPT organism) Taxa Richness: 15 Population: 100

%Dominance / Dominant Taxon(s): 65.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.01 %Clingers: 7.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 93 Marginal USEPA Protocol

Observations: Water temp: 24.49 C; Cond: 273 umhos; DO: 5.52 mg/L; pH: 6.97 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 20' / < 1.0'; Substrate: gravel, sand, silt, snags

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: urban

AMNET Site # AN0177

Stream Name: Pompeston Ck

Location: Rt 130; Cinnaminson Twp; Burlington County

Collection Date: 7/20/2006 USGS Topo Map: Beverly

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Musculium	5	24
Polypedilum	6	16
Paratendipes	8	12
Dugesia	4	8
Rheotanytarsus	6	7
* Cheumatopsyche	5	5
Limnodrilus	10	5
Placobdella	8	4
Corbicula	4	3
Stylodrilus	10	3
Helisoma	7	2
Physella	9.1	2
Tribelos	5	2
Enallagma	9	1
Gammarus	6	1
Menetus	6	1
Stenelmis	5	1
Tanytarsus	6	1
Tipula	4	1
Tubificidae	10	1

* (EPT organism) Taxa Richness: 20 Population: 100

%Dominance / Dominant Taxon(s): 24.0% Musculium

Hilsenhoff Biotic Index (HBI): 6.23

%Clingers: 13.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 144 Suboptimal USEPA Protocol

Observations: Water temp: 26.72 C; Cond: 189 umhos; DO: 4.41 mg/L; pH: 6.97 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 10' / < 1.0'; Substrate: cobble, gravel, sand

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: urban

Downstream of Impoundment: Lake

AMNET Site # AN0178 **Stream Name: North Br Pennsauken Ck**
Location: Church Rd; Mt Laurel Twp; Burlington County
Collection Date: 8/1/2006 **USGS Topo Map: Moorestown**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	17
Limnodrilus	10	13
Caecidotea	8	11
Tribelos	5	8
Aulodrilus	8	7
Chironomus	10	5
Paratendipes	8	4
Phaenopsectra	7	4
Ancyronyx	2	2
Dubiraphia	6	2
Dugesia	4	2
Ischnura	9	2
Pisidium	6.8	2
Dicrotendipes	8	1
Micropsectra	7	1
Molophilus	3	1
Naididae	7	1
Orthoclaadiinae	5	1
Planorbidae	6	1
Polypedilum	6	1
Psectrocladius	8	1
Tubifex	10	1

* (EPT organism) *Taxa Richness:* 22 *Population:* 88

Becks Biotic Index (BBI): 3.00 *%Plecoptera +Trichoptera:* 0.00%

Insect Taxa: 13 *%Mollusca + Amphipoda:* 22.73%

Non-Insect Taxa: 9 *%Diptera - Tanytarsini:* 29.55%

%Filterers: 2.27%

PMI Rating: **43.80 Fair**

Habitat Analysis: 113 Suboptimal USEPA Protocol

Observations: Water temp: 21.84 C; Cond: 258 umhos; DO: 4.48 mg/L; pH: 6.84 SU
 Clarity: turbid; Flow Rate: slow; Width/Depth: 11.5' / 2'; Substrate: sand, silt, clay
 Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: trees, shrubs
 Stream Gradient: Low Gradient Stream; Land Uses: suburban

AMNET Site # AN0179

Stream Name: North Br Pennsauken Ck

Location: Fellowship Rd nr I-295; Mt Laurel Twp; Burlington County

Collection Date: 8/1/2006 USGS Topo Map: Moorestown

Genus	Tolerance Value	Amount
Polypedilum	6	38
Limnodrilus	10	10
Chironomus	10	8
Tanytarsus	6	8
Stenelmis	5	6
* Cheumatopsyche	5	4
Phaenopsectra	7	4
Rheotanytarsus	6	4
Gammarus	6	3
Paratanytarsus	6	3
Thienemannimyia	6	3
Cryptochironomus	8	2
Ancyronyx	2	1
Caecidotea	8	1
Hydrolimax	4	1
Mesovelia	9	1
Micropsectra	7	1
Pristina	8	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 19 Population: 100

%Dominance / Dominant Taxon(s): 38.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.76 %Clingers: 19.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 109 Marginal USEPA Protocol

Observations: Water temp: 25.87 C; Cond: 328 umhos; DO: 3.49 mg/L; pH: 6.66 SU

Clarity: turbid; Flow Rate: slow; Width/Depth: 30' / 2'; Substrate: gravel, sand, mud

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: urban

Pipes / Ditches: storm sewers

Other: frogs

AMNET Site # AN0182

Stream Name: South Br Pennsauken Ck

Location: Greentree Rd; Cherry Hill Twp; Camden & Burlington County

Collection Date: 8/1/2006 USGS Topo Map: Moorestown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Caecidotea	8	24
Polypedilum	6	19
Chironomus	10	12
Limnodrilus	10	12
Rheopelopia	4	6
Musculium	5	4
Endochironomus	10	3
Tribelos	5	3
Tubifex	10	3
Helobdella	8	2
Phaenopsectra	7	2
Physa	8	2
Pristinella	10	2
Enallagma	9	1
Enchytraeidae	10	1
Pisidium	6.8	1
Placobdella	8	1
Procladius	9	1
Stylodrilus	10	1

* (EPT organism) Taxa Richness: 19 Population: 100

%Dominance / Dominant Taxon(s): 24.0% Caecidotea

Hilsenhoff Biotic Index (HBI): 7.84

%Clingers: 5.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 109 Marginal USEPA Protocol

Observations: Water temp: 23.09 C; Cond: 302 umhos; DO: 5.21 mg/L; pH: 6.80 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 19' / 1'; Substrate: sand, silt

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: shrubs, grasses, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: storm sewers

Other: macrophytes

AMNET Site # AN0183

Stream Name: South Br Pennsauken Ck

Location: Rt 41; Maple Shade Twp; Burlington & Camden County

Collection Date: 8/8/2006 USGS Topo Map: Moorestown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	58
Limnodrilus	10	19
Argia	6	2
Caecidotea	8	2
Nais	8	2
Phaenopsectra	7	2
Tanytarsus	6	2
Thienemannimyia	6	2
Ablabesmyia	8	1
Ancyronyx	2	1
Brillia	5	1
Chironomus	10	1
Corbicula	4	1
Cricotopus	7	1
Hemerodromia	6	1
Rheocricotopus	6	1
Stenochironomus	5	1
Stylaria	8	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 19 Population: 100

%Dominance / Dominant Taxon(s): 58.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.86 %Clingers: 6.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 126 Suboptimal USEPA Protocol

Observations: Water temp: 23.71 C; Cond: 384 umhos; DO: 6.32 mg/L; pH: 7.33 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 30' / 1 - 2'; Substrate: gravel, sand, silt, undercut banks

Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban (adjacent to apartment complex)

Pipes / Ditches: 2 storm sewers (36" corrugated steel)

Other: snapping turtle, crayfish, minnows, trash

AMNET Site # AN0186 **Stream Name: North Br Cooper River**

Location: Kresson Rd; Voorhees Twp; Camden County

Collection Date: 8/10/2006 **USGS Topo Map: Clementon**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Dugesia	4	18
Pisidium	6.8	17
Dicrotendipes	8	11
Tribelos	5	10
Chironomus	10	9
Dero	10	5
Limnodrilus	10	5
Physella	9.1	5
Tubifex	10	4
Viviparidae	6	4
Helobdella	8	3
Aulodrilus	8	2
Microtendipes	7	2
Ancyronyx	2	1
Paratendipes	8	1
Phaenopsectra	7	1
Placobdella	8	1
Polypedilum	6	1

* (EPT organism) *Taxa Richness:* 18 *Population:* 100

Becks Biotic Index (BBI): 2.00 *%Plecoptera + Trichoptera:* 0.00%

Insect Taxa: 8 *%Mollusca + Amphipoda:* 26.00%

Non-Insect Taxa: 10 *%Diptera - Tanytarsini:* 35.00%

%Filterers: 19.00%

PMI Rating: **38.34 Fair**

Habitat Analysis: 120 Suboptimal USEPA Protocol

Observations: Water temp: 21.18 C; Cond: 363 umhos; DO: 0.31 mg/L; pH: 6.87 SU

Clarity: slightly turbid; Flow Rate: slow (still); Width/Depth: 12.5' / < 1.0'; Substrate: gravel, sand, silt, root mats

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: 2 storm sewers

Other: fish, frogs; yard clippings dumped on right bank

AMNET Site # AN0187

Stream Name: North Br Cooper River

Location: Springdale Rd; Cherry Hill Twp; Camden County

Collection Date: 7/25/2006 USGS Topo Map: Moorestown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	38
Brillia	5	7
Rheotanytarsus	6	6
Paratanytarsus	6	5
Physella	9.1	5
* Hydropsyche	4	4
Rhagovelia	9	4
Aulodrilus	8	3
Caecidotea	8	3
Calopteryx	6	3
* Cheumatopsyche	5	3
Nais	8	3
Chironomus	10	2
Limnodrilus	10	2
Tanytarsus	6	2
Ancyronyx	2	1
Boyeria	2	1
Ischnura	9	1
Lumbriculidae	8	1
Lymnaeidae	6	1
Menetus	6	1
Micropsectra	7	1
Phaenopsectra	7	1
Stylaria	8	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 38.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.43 %Clingers: 15.00%

* E+P+T: 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 143 Suboptimal USEPA Protocol

Observations: Water temp: 20.72 C; Cond: 222 umhos; DO: 7.05 mg/L; pH: 6.88 SU

Clarity: slightly turbid; Flow Rate: fast; Width/Depth: 16' / 1'; Substrate: cobble, gravel, sand, root mats

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, urban, forested

Pipes / Ditches: storm sewer (3' concrete)

Other: oily sheen, iron floc, fresh creosote, lots of sedimentation

AMNET Site # AN0188

Stream Name: North Br Cooper River

Location: River Dr Penny Packer Pk; Cherry Hill Twp; Camden County

Collection Date: 8/1/2006 USGS Topo Map: Camden

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	30
Polypedilum	6	16
Paratanytarsus	6	13
Musculium	5	10
Tanytarsus	6	7
Ancyronyx	2	5
Menetus	6	4
Endochironomus	10	3
* Cheumatopsyche	5	2
Rheotanytarsus	6	2
Tribelos	5	2
Enchytraeidae	10	1
Eukiefferiella	8	1
Notonecta	5	1
Rhagovelia	9	1
Sphaerium	8	1
Stenochironomus	5	1

* (EPT organism) Taxa Richness: 17 Population: 100

%Dominance / Dominant Taxon(s): 30.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.87 %Clingers: 12.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 120 Suboptimal USEPA Protocol

Observations: Water temp: 23.86 C; Cond: 307 umhos; DO: 6.46 mg/L; pH: 7.13 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 39' / < 1.0'; Substrate: gravel, sand, mud, silt, snags

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: storm sewers

AMNET Site # AN0189

Stream Name: South Br Cooper River

Location: Gibbsboro Rd; Gibbsboro Boro; Camden County

Collection Date: 8/10/2006 USGS Topo Map: Clementon

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Limnodrilus	10	23
Tribelos	5	10
Polypedilum	6	9
Sphaeriidae	8	9
Stenelmis	5	9
* Hydropsyche	4	4
Nais	8	4
* Cheumatopsyche	5	3
Phaenopsectra	7	3
Stylodrilus	10	3
Hymenella	4	2
Natarsia	8	2
Sphaerium	8	2
Tubificidae	10	2
Chironomus	10	1
Corydalis	4	1
Cryptochironomus	8	1
Dicranota	3	1
Dicrotendipes	8	1
Dubiraphia	6	1
Enallagma	9	1
* Eurylophella	4	1
Gammarus	6	1
Helisoma	7	1
* Leuctra	0	1
Menetus	6	1
Procladius	9	1
Tanytarsus	6	1
Trepobates	8	1

* (EPT organism) Taxa Richness: 29 Population: 100

%Dominance / Dominant Taxon(s): 23.0% Limnodrilus

Hilsenhoff Biotic Index (HBI): 7.19 %Clingers: 23.00%

* E+P+T: 4 (1) Ephemeroptera, (1) Plecoptera, (2) Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 12 Good

Habitat Analysis: 146 Suboptimal USEPA Protocol

Observations: Water temp: 23.24 C; Cond: 62 umhos; DO: 4.86 mg/L; pH: 5.73 SU
Clarity: clear; Flow Rate: slow; Width/Depth: 7' / < 1.0'; Substrate: gravel, sand, silt
Canopy: mostly open; Bank Stability: good; Bank Vegetation: ferns, shrubs, trees
Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

AMNET Site # AN0190

Stream Name: South Br Cooper River

Location: Evesham Rd; Magnolia Boro; Camden County

Collection Date: 8/17/2006 USGS Topo Map: Runnemedede

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Sphaeriidae	8	87
Hydroporus	5	3
Limnodrilus	10	3
Physa	8	2
Bittacomorpha	8	1
Limnophila	3	1
Notonecta	5	1
Tipula	4	1
Tubifex	10	1

* (EPT organism) *Taxa Richness:* 9 *Population:* 100

%Dominance / Dominant Taxon(s): 87.0% Sphaeriidae

Hilsenhoff Biotic Index (HBI): 7.87

%Clingers: 0.00%

* *E+P+T:* 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 2 Poor

Habitat Analysis: 112 Suboptimal USEPA Protocol

Observations: Water temp: 20.4 C; Cond: 268 umhos; DO: 6.47 mg/L; pH: 6.58 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 11' / < 1.0'; Substrate: sand, mud, silt

Canopy: closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Other: iron precipitate

AMNET Site # AN0191

Stream Name: South Br Cooper River

Location: Rt 41 USGS Gauge at Foot Br nr Dam; Cherry Hill Twp; Camden County

Collection Date: 8/1/2006 USGS Topo Map: Camden

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Corbicula	4	22
Limnodrilus	10	21
Gammarus	6	15
Polypedilum	6	6
Prostoma	7	6
Ancyronyx	2	5
Cura	4	4
Nais	8	3
Batracobdella	8	2
Dicrotendipes	8	2
Glossiphoniidae	8	2
Helobdella	8	2
Stenochironomus	5	2
Caecidotea	8	1
Chironomus	10	1
Cryptochironomus	8	1
Enallagma	9	1
Endochironomus	10	1
Phaenopsectra	7	1
Procladius	9	1
Tanytarsus	6	1

* (EPT organism) *Taxa Richness:* 21 *Population:* 100

%Dominance / Dominant Taxon(s): 22.0% Corbicula

Hilsenhoff Biotic Index (HBI): 6.57

%Clingers: 7.00%

* *E+P+T:* 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 106 Marginal USEPA Protocol

Observations: Water temp: 27.77 C; Cond: 249 umhos; DO: 5.55 mg/L; pH: 6.92 SU

Clarity: turbid; Flow Rate: moderate; Width/Depth: 35' / 1'; Substrate: sand, silt, snags

Canopy: partly open; Bank Stability: poor; Bank Vegetation: trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Downstream of Impoundment: lake

AMNET Site # AN0654

Stream Name: S Br Newton Ck

Location: Rt 168; Mt Ephraim Boro; Camden County

Collection Date: 8/8/2006 USGS Topo Map: Camden

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Limnodrilus	10	41
Stylaria	8	14
Chironomus	10	6
Polypedilum	6	5
Tanypus	10	4
Gammarus	6	3
Glossiphoniidae	8	3
Glyptotendipes	10	3
Parachironomus	10	2
Tribelos	5	2
Tubifex	10	2
Bezzia	6	1
Cladopelma	8	1
Clinotanypus	8	1
Cryptochironomus	8	1
Cryptotendipes	6	1
Cura	4	1
Dicrotendipes	8	1
Enallagma	9	1
Helobdella	8	1
Physella	9.1	1
Pisidium	6.8	1
Placobdella	8	1
Sphaerium	8	1
Tanytarsus	6	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 41.0% Limnodrilus

Hilsenhoff Biotic Index (HBI): 8.86 %Clingers: 0.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 115 Suboptimal USEPA Protocol

Observations: Water temp: 27.57 C; Cond: 167 umhos; DO: 1.79 mg/L; pH: 7.13 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 36' / 1 - 2'; Substrate: sand, mud

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: commercial

Other: fish, frogs, tadpoles, ducks, macrophytes, filamentous algae, purple loosestrife, trash

AMNET Site # AN0656

Stream Name: UNT to S Br Big Timber Ck (Turners R

Location: Ganttown Rd; Washington Twp; Gloucester County

Collection Date: 8/17/2006 USGS Topo Map: Pitman East

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Paratanytarsus	6	32
Polypedilum	6	21
Gammarus	6	18
Rheotanytarsus	6	9
Physa	8	5
Calopteryx	6	2
* Lype	2	2
Menetus	6	2
Thienemannimyia	6	2
Argia	6	1
Microvelia	6	1
Phaenopsectra	7	1
* Polycentropus	6	1
Rhagovelia	9	1
Tanytarsus	6	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 16 Population: 100

%Dominance / Dominant Taxon(s): 32.0% Paratanytarsus

Hilsenhoff Biotic Index (HBI): 6.05 %Clingers: 14.00%

* E+P+T: 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 139 Suboptimal USEPA Protocol

Observations: Water temp: 20.74 C; Cond: 201 umhos; DO: 7.73 mg/L; pH: 7.25 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 17' / < 1.0'; Substrate: gravel, sand

Canopy: closed; Bank Stability: good; Bank Vegetation: trees, vines, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

AMNET Site # AN0657

Stream Name: UNT to S Br Big Timber Ck (Turners R

Location: Grenloch Terrace (last bridge); Washington Twp; Gloucester County

Collection Date: 8/22/2006 USGS Topo Map: Runnemed

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	23
Dicrotendipes	8	20
Stylaria	8	19
Tanytarsus	6	7
Nais	8	4
Rheotanytarsus	6	4
Cura	4	3
Enallagma	9	3
Amnicola	4.8	2
Helisoma	7	2
Limnodrilus	10	2
* Baetis	6	1
Caecidotea	8	1
Corbicula	4	1
Cricotopus	7	1
Cryptotendipes	6	1
Dero	10	1
Menetus	6	1
Peltodytes	5	1
Sphaerium	8	1
Stenelmis	5	1
Tubificidae	10	1

* (EPT organism) Taxa Richness: 22 Population: 100

%Dominance / Dominant Taxon(s): 23.0% Gammarus

Hilsenhoff Biotic Index (HBI): 7.06

%Clingers: 6.00%

* E+P+T: 1 (1) Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 1.00%

CPMI Rating: 6 Fair

Habitat Analysis: 149 Suboptimal USEPA Protocol

Observations: Water temp: 21.7 C; Cond: 134 umhos; DO: 7.39 mg/L; pH: 7.02 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 21' / 1 - 2'; Substrate: gravel, sand, root mats

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, commercial

Downstream of Impoundment: Grenloch Lake

Other: fish, waterfowl, macrophytes, purple loosestrife

AMNET Site # AN0658

Stream Name: S Br Big Timber Ck

Location: Turnersville-Sicklerville Rd; Washington Twp; Gloucester County

Collection Date: 8/17/2006 USGS Topo Map: Runnemedede

Genus	Tolerance Value	Amount
Gammarus	6	35
Rheotanytarsus	6	11
Macronychus	2	9
Stenelmis	5	9
* Maccaffertium	3	6
Ancyronyx	2	4
Corbicula	4	4
Polypedilum	6	4
* Baetis	6	2
Hetaerina	6	2
Nais	8	2
Promoresia	2	2
Rheopelopia	4	2
Amnicola	4.8	1
Corydalus	4	1
Enallagma	9	1
* Hydropsyche	4	1
* Mystacides	4	1
Physa	8	1
Rheumatobates	8	1
Viviparidae	6	1

* (EPT organism) Taxa Richness: 21 Population: 100

%Dominance / Dominant Taxon(s): 35.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.05 %Clingers: 43.00%

* E+P+T: 4 (2) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 8.00%

CPMI Rating: 14 Good

Habitat Analysis: 138 Suboptimal USEPA Protocol

Observations: Water temp: 22.65 C; Cond: 158 umhos; DO: 7.91 mg/L; pH: 7.06 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 22' / 2'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: suburban, commercial

Pipes / Ditches: storm sewers

Other: Hardware store facility and parking lot on left bank

AMNET Site # AN0661

Stream Name: N Br Big Timber Ck

Location: W Park Ave; Lindenwold Boro; Camden County

Collection Date: 8/17/2006 USGS Topo Map: Runnemed

Genus	Tolerance Value	Amount
Polypedilum	6	31
Amnicola	4.8	13
* Hydropsyche	4	9
Stenelmis	5	8
* Maccaffertium	3	6
* Cheumatopsyche	5	5
Cura	4	5
Ancyronyx	2	3
Corbicula	4	3
Limnodrilus	10	3
Musculium	5	2
Sphaerium	8	2
Tribelos	5	2
* Baetis	6	1
Cryptotendipes	6	1
Gammarus	6	1
* Hydroptila	6	1
Macronychus	2	1
Mooreobdella	7.8	1
Tanypodinae	7	1
Tanytarsus	6	1

* (EPT organism) Taxa Richness: 21 Population: 100

%Dominance / Dominant Taxon(s): 31.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 5.18

%Clingers: 33.00%

* E+P+T: 5 (2) Ephemeroptera, () Plecoptera, (3) Trichoptera

%Ephemeroptera: 7.00%

CPMI Rating: 12 Good

Habitat Analysis: 124 Suboptimal USEPA Protocol

Observations: Water temp: 24.03 C; Cond: 160 umhos; DO: 6.04 mg/L; pH: 6.94 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 29.5' / 1'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: storm sewers

Other: Lindenwold Boro MUA facility downstream of bridge

AMNET Site # AN0662

Stream Name: Mason Run

Location: Chews Landing Rd; Lindenwold Boro; Camden County

Collection Date: 8/17/2006 USGS Topo Map: Runnemedede

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	19
Amnicola	4.8	15
Limnodrilus	10	14
Musculium	5	9
Ancyronyx	2	5
Stylaria	8	5
Corbicula	4	4
Pisidium	6.8	4
Polypedilum	6	4
Campeloma	7	3
Phaenopsectra	7	3
Hydrolix	4	2
Tanytarsus	6	2
Ablabesmyia	8	1
Apsectrotanypus	5	1
Aulodrilus	8	1
Calopteryx	6	1
Dugesia	4	1
Helobdella	8	1
Paratanytarsus	6	1
Physa	8	1
Placobdella	8	1
Rheotanytarsus	6	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 19.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.27 %Clingers: 9.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 142 Suboptimal USEPA Protocol

Observations: Water temp: 19.71 C; Cond: 158 umhos; DO: 6.38 mg/L; pH: 7.13 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 34' / < 1.0'; Substrate: gravel, sand, silt, snags

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: storm sewers

AMNET Site # AN0666 Stream Name: Little Timber Ck

Location: Devon Rd; Bellmawr Boro; Camden County

Collection Date: 8/22/2006 USGS Topo Map: Runnemedede

Genus	Tolerance Value	Amount
Polypedilum	6	44
Physa	8	8
Chironomus	10	7
Tribelos	5	6
Cricotopus	7	4
Gammarus	6	3
Limnodrilus	10	3
Menetus	6	3
Nais	8	3
Tanytarsus	6	3
Tubificidae	10	3
Ancylidae	6	2
Cryptochironomus	8	2
Microvelia	6	2
Rheotanytarsus	6	2
Tipula	4	2
Brillia	5	1
Hydroporus	5	1
Rheopelopia	4	1

* (EPT organism) Taxa Richness: 19 Population: 100

%Dominance / Dominant Taxon(s): 44.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.68 %Clingers: 6.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 109 Marginal USEPA Protocol

Observations: Water temp: 19.52 C; Cond: 299 umhos; DO: 7.18 mg/L; pH: 6.79 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 18' / < 1.0'; Substrate: cobble, gravel, sand

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: storm sewers

Other: frogs, minnows; iron floc; trash; undercut banks; concrete shoring

AMNET Site # AN0668

Stream Name: Mantua Ck

Location: Greentree Rd; Washington Twp; Gloucester County

Collection Date: 8/22/2006 USGS Topo Map: Pitman East

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	23
Tribelos	5	16
Polypedilum	6	13
Amnicola	4.8	8
Aulodrilus	8	6
Calopteryx	6	6
* Hydropsyche	4	6
Rheotanytarsus	6	6
Musculium	5	3
* Cheumatopsyche	5	2
* Maccaffertium	3	2
Menetus	6	2
Tvetenia	5	2
Cricotopus	7	1
Helisoma	7	1
Lumbriculus	8	1
Macronychus	2	1
Simulium	6	1

* (EPT organism) Taxa Richness: 18 Population: 100

%Dominance / Dominant Taxon(s): 23.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.61 %Clingers: 19.00%

* E+P+T: 3 (1) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 2.00%

CPMI Rating: 10 Fair

Habitat Analysis: 167 Optimal USEPA Protocol

Observations: Water temp: 19.43 C; Cond: 144 umhos; DO: 7.87 mg/L; pH: 7.21 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 25' / < 1.0'; Substrate: cobble, gravel, sand, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: fish, frogs, macrophytes

AMNET Site # AN0669

Stream Name: Mantua Ck

Location: Lambs Rd; Mantua Twp; Gloucester County

Collection Date: 8/22/2006 USGS Topo Map: Runnemedede

Genus	Tolerance Value	Amount
Prostoma	7	17
Nais	8	12
Cricotopus	7	11
* Hydroptila	6	11
Polypedilum	6	8
Physa	8	6
Limnodrilus	10	5
Musculium	5	5
Cura	4	4
Gammarus	6	3
Libellulidae	9	3
* Cheumatopsyche	5	2
Helisoma	7	2
Tubificidae	10	2
Ablabesmyia	8	1
Dicrotendipes	8	1
* Hydropsyche	4	1
Laevapex	6	1
Orthocladius	6	1
Rheotanytarsus	6	1
Stenelmis	5	1
Stylaria	8	1
Tanytarsus	6	1

* (EPT organism) Taxa Richness: 23 Population: 100

%Dominance / Dominant Taxon(s): 17.0% Prostoma

Hilsenhoff Biotic Index (HBI): 6.91 %Clingers: 27.00%

* E+P+T: 3 () Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 130 Suboptimal USEPA Protocol

Observations: Water temp: 24.51 C; Cond: 171 umhos; DO: 7.64 mg/L; pH: 7.39 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 19' / < 1.0 - 2'; Substrate: cobble

Canopy: open; Bank Stability: good; Bank Vegetation: weeds, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Downstream of Impoundment: Bethel Lake

Other: turtle, large fish, sunfish, leopard frog; chain link fence across stream for erosion control; USGS gage: 1.30'

AMNET Site # AN0670

Stream Name: Chestnut Br

Location: Lambs Rd; Pitman Boro; Gloucester County

Collection Date: 8/22/2006 USGS Topo Map: Pitman West

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	26
* Cheumatopsyche	5	12
Rheotanytarsus	6	10
Calopteryx	6	8
Dugesia	4	5
Ischnura	9	4
Limnodrilus	10	4
Amnicola	4.8	3
Argia	6	3
Pisidium	6.8	3
Prostoma	7	3
Corbicula	4	2
Corynoneura	4	2
Musculium	5	2
Planorbidae	6	2
Stylaria	8	2
Tanytarsus	6	2
Cryptochironomus	8	1
Hemerodromia	6	1
Labrundinia	7	1
Phaenopsectra	7	1
Quistradrilus	10	1
Thienemannimyia	6	1
Viviparidae	6	1

* (EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 26.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.10

%Clingers: 26.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 154 Suboptimal USEPA Protocol

Observations: Water temp: 25 C; Cond: 206 umhos; DO: 6.45 mg/L; pH: 7.33 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 14' / < 1.0'; Substrate: gravel, sand, root mats

Canopy: partly open; Bank Stability: good; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: fish, filamentous algae, trash

AMNET Site # AN0673

Stream Name: Edwards Run

Location: Pitman-Jefferson Rd; Harrison Twp; Gloucester County

Collection Date: 8/29/2006 USGS Topo Map: Pitman West

Genus	Tolerance Value	Amount
Polypedilum	6	13
Rheotanytarsus	6	10
Calopteryx	6	8
Tanytarsus	6	8
Paratanytarsus	6	7
Phaenopsectra	7	7
Aulodrilus	8	6
Limnodrilus	10	6
Chironomus	10	3
Dineutus	4	3
Ablabesmyia	8	2
Ancyronyx	2	2
Anopheles	6	2
Cryptochironomus	8	2
Nais	8	2
Physa	8	2
Prostoma	7	2
Thienemannimyia	6	2
Boyeria	2	1
* Cheumatopsyche	5	1
Chironomini	6	1
Corixidae	9	1
Cricotopus	7	1
Dicrotendipes	8	1
* Hydropsyche	4	1
Libellulidae	9	1
Microvelia	6	1
Musculium	5	1
Peltodytes	5	1
Simulium	6	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 31 Population: 100

%Dominance / Dominant Taxon(s): 13.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.58 %Clingers: 23.00%

* E+P+T: 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 10 Fair

Habitat Analysis: 112 Suboptimal USEPA Protocol

Observations: Water temp: 22.45 C; Cond: 178 umhos; DO: 6.55 mg/L; pH: 7.13 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 12' / < 1.0'; Substrate: gravel, sand, mud, root mats

Canopy: partly open; Bank Stability: poor; Bank Vegetation: shrubs, trees

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, agriculture-livestock, forested

Pipes / Ditches: storm sewers

Other: frogs, minnows, eels; undercut banks

AMNET Site # AN0674

Stream Name: Edwards Run

Location: Jessups Mill Rd; Mantua Twp; Gloucester County

Collection Date: 8/29/2006 USGS Topo Map: Woodbury

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	21
Polypedilum	6	12
Aulodrilus	8	7
Calopteryx	6	4
Gomphus	5	4
Limnodrilus	10	4
Tanytarsus	6	4
Corixidae	9	3
Cryptotendipes	6	3
Musculium	5	3
Ancyronyx	2	2
Chironomus	10	2
Dubiraphia	6	2
Helichus	5	2
Lumbriculidae	8	2
Naididae	7	2
Physa	8	2
Prostoma	7	2
Sialis	4	2
Ablabesmyia	8	1
Anopheles	6	1
Chrysops	6	1
Cricotopus	7	1
Cryptochironomus	8	1
Hydrolimax	4	1
Mooreobdella	7.8	1
Nigronia	2	1
Paralauterborniella	8	1
Paratendipes	8	1
Phaenopsectra	7	1
* Phryganeidae	4	1
Rheotanytarsus	6	1
Simulium	6	1
Stenelmis	5	1
Stenochironomus	5	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 36 Population: 100

%Dominance / Dominant Taxon(s): 21.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.39

%Clingers: 14.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 111 Suboptimal USEPA Protocol

Observations: Water temp: 20.73 C; Cond: 211 umhos; DO: 6.85 mg/L; pH: 6.76 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 12' / < 1.0'; Substrate: gravel, sand, mud, root mats

Canopy: partly open; Bank Stability: fair; Bank Vegetation: shrubs, trees, vines

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Other: frogs; new construction / development; concrete bridge deteriorating; GSCA pumping station

AMNET Site # AN0675

Stream Name: Still Run

Location: Quaker Rd; East Greenwich Twp; Gloucester County

Collection Date: 9/21/2006 USGS Topo Map: Bridgeport

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	14
Tanytarsus	6	12
Enallagma	9	10
Trichocorixa	9	9
Heterotrissocladius	0	7
Dicrotendipes	8	6
Pisidium	6.8	4
Procladius	9	4
Microtendipes	7	3
Prostoma	7	3
Argia	6	2
Chironomus	10	2
Endochironomus	10	2
Helisoma	7	2
Polypedilum	6	2
Rheotanytarsus	6	2
Stylaria	8	2
* Caenis	7	1
Calopteryx	6	1
* Cloeon	4	1
Fossaria	6	1
Menetus	6	1
Nais	8	1
Parachironomus	10	1
Parakiefferiella	4	1
Physa	8	1
Sialis	4	1
Sphaerium	8	1
Sympetrum	4	1
Tribelos	5	1
Tubificidae	10	1

* (EPT organism) Taxa Richness: 31 Population: 100

%Dominance / Dominant Taxon(s): 14.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.76 %Clingers: 9.00%

* E+P+T: 2 (2) Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 2.00%

CPMI Rating: 8 Fair

Habitat Analysis: 130 Suboptimal USEPA Protocol

Observations: Water temp: 15.78 C; Cond: 234 umhos; DO: 7.90 mg/L; pH: 6.81 SU

Clarity: turbid; Flow Rate: slow; Width/Depth: 28' / > 4'; Substrate: mud, snags

Canopy: open; Bank Stability: good; Bank Vegetation: shrubs, grasses, trees

Stream Gradient: Low Gradient Stream; Land Uses: rural

Other: macrophytes; only able to sample along banks, stream too deep

AMNET Site # AN0676

Stream Name: Rattling Run

Location: Tomlin Rd; East Greenwich Twp; Gloucester County

Collection Date: 9/21/2006 USGS Topo Map: Bridgeport

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Sphaeriidae	8	34
* Cheumatopsyche	5	19
Physa	8	9
Calopteryx	6	7
* Hydropsyche	4	7
Prostoma	7	6
Planorbidae	6	4
Gammarus	6	3
Campeloma	7	2
Limnodrilus	10	2
Amnicola	4.8	1
Ancyronyx	2	1
Argia	6	1
Aulodrilus	8	1
Lumbriculidae	8	1
Rhagovelia	9	1
Rheotanytarsus	6	1

* (EPT organism) Taxa Richness: 17 Population: 100

%Dominance / Dominant Taxon(s): 34.0% Sphaeriidae

Hilsenhoff Biotic Index (HBI): 6.71

%Clingers: 29.00%

* E+P+T: 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 136 Suboptimal USEPA Protocol

Observations: Water temp: 15.15 C; Cond: 230 umhos; DO: 10.31 mg/L; pH: 6.95 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 16' / < 1.0'; Substrate: gravel, sand, mud, silt, snags

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: drainage ditch, 4" PVC septic drain pipe in stream

Other: lawn very close to left bank, downstream of bridge

AMNET Site # AN0677

Stream Name: Pargy Ck

Location: Swedesboro Ave; East Greenwich Twp; Gloucester County

Collection Date: 9/21/2006 USGS Topo Map: Bridgeport

Genus	Tolerance Value	Amount
Polypedilum	6	31
Glyptotendipes	10	16
Sphaeriidae	8	12
Rheotanytarsus	6	8
Dugesia	4	7
Tanytarsus	6	6
Aulodrilus	8	3
Hydrolimax	4	2
* Hydroptila	6	2
Limnodrilus	10	2
Stylaria	8	2
Tribelos	5	2
Argia	6	1
Dicrotendipes	8	1
Endochironomus	10	1
Hyalella	8	1
Kiefferulus	10	1
Slavina	7	1
Tipula	4	1

* (EPT organism) Taxa Richness: 19 Population: 100

%Dominance / Dominant Taxon(s): 31.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.97 %Clingers: 12.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 141 Suboptimal USEPA Protocol

Observations: Water temp: 18.53 C; Cond: 210 umhos; DO: 5.38 mg/L; pH: 6.58 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 31' / 2'; Substrate: mud, silt, snags

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, agriculture-livestock, rural

Other: macrophytes

AMNET Site # AN0678

Stream Name: Little Timber Ck

Location: Paulsboro Rd; Logan Twp; Gloucester County

Collection Date: 9/21/2006 USGS Topo Map: Bridgeport

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Amnicola	4.8	12
Menetus	6	11
Gammarus	6	10
Sphaerium	8	9
Physa	8	8
Caecidotea	8	7
Tubificidae	10	7
Enallagma	9	6
Cura	4	4
Libellulidae	9	3
Calopteryx	6	2
Dromogomphus	4	2
Dubiraphia	6	2
Limnodrilus	10	2
Prostoma	7	2
Tribelos	5	2
Ancyronyx	2	1
Clinotanytus	8	1
Erythemis	10	1
Hydroporus	5	1
Laevapex	6	1
Nais	8	1
Pisidium	6.8	1
Polypedilum	6	1
Sialis	4	1
Stylodrilus	10	1
Tanytarsus	6	1

* (EPT organism) Taxa Richness: 27 Population: 100

%Dominance / Dominant Taxon(s): 12.0% Amnicola

Hilsenhoff Biotic Index (HBI): 6.90 %Clingers: 3.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 147 Suboptimal USEPA Protocol

Observations: Water temp: 14.84 C; Cond: 266 umhos; DO: 8.60 mg/L; pH: 6.87 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 42' / 2'; Substrate: mud, snags

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, agriculture-cropland

Other: turtle, macrophytes; oily sheen; braided channel

AMNET Site # AN0679

Stream Name: Raccoon Ck

Location: Ellis Mill Rd (below Gilman Lake); Elk Twp; Gloucester County

Collection Date: 9/28/2006 USGS Topo Map: Pitman West

Genus	Tolerance Value	Amount
Musculium	5	51
* Oecetis	8	10
Physa	8	8
Argia	6	6
* Cheumatopsyche	5	5
Amnicola	4.8	3
Ischnura	9	3
* Mystacides	4	3
Pisidium	6.8	3
Limnodrilus	10	2
Tipula	4	2
Dugesia	4	1
* Eurylophella	4	1
Libellula	9	1
Psectrocladius	8	1
* (EPT organism) Taxa Richness: 15		Population: 100

%Dominance / Dominant Taxon(s): 51.0% Musculium

Hilsenhoff Biotic Index (HBI): 5.87 %Clingers: 22.00%

* E+P+T: 4 (1) Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 10 Fair

Habitat Analysis: 160 Optimal USEPA Protocol

Observations: Water temp: 18.36 C; Cond: 147 umhos; DO: 8.74 mg/L; pH: 6.77 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 24' / 2'; Substrate: gravel, sand, snags

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural

Downstream of Impoundment: Gilman Lake

AMNET Site # AN0680

Stream Name: Raccoon Ck

Location: Rt 45 (N Main St); Harrison Twp; Gloucester County

Collection Date: 8/22/2006 USGS Topo Map: Pitman West

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	20
Amnicola	4.8	9
Caecidotea	8	9
Enallagma	9	7
Tanytarsus	6	6
* Caenis	7	5
* Hydroptila	6	4
Stenelmis	5	4
Stylaria	8	4
Perithemis	4	3
Polypedilum	6	3
Ancyronyx	2	2
* Cheumatopsyche	5	2
Helisoma	7	2
Optioservus	4	2
Peltodytes	5	2
Pentaneura	6	2
Physa	8	2
Ablabesmyia	8	1
Batracobdella	8	1
Corynoneura	4	1
Cryptochironomus	8	1
Limnodrilus	10	1
* Maccaffertium	3	1
Musculium	5	1
* Mystacides	4	1
Nais	8	1
Orthocladus	6	1
Procladius	9	1
Tubificidae	10	1

* (EPT organism) Taxa Richness: 30 Population: 100

%Dominance / Dominant Taxon(s): 20.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.32 %Clingers: 15.00%

* E+P+T: 5 (2) Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 6.00%

CPMI Rating: 10 Fair

Habitat Analysis: 112 Suboptimal USEPA Protocol

Observations: Water temp: 23.27 C; Cond: 160 umhos; DO: 6.66 mg/L; pH: 7.07 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 40' / 1 - 2'; Substrate: gravel, sand, cobble, root mats

Canopy: partly open; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban

Pipes / Ditches: 18" corrugated metal pipe

Other: large fish, frogs, filamentous algae, macrophytes; iron floc

AMNET Site # AN0681

Stream Name: S Br Raccoon Ck

Location: Swedesboro-Franklinville Rd (Rt 538); South Harrison Twp;
Gloucester County

Collection Date: 8/29/2006 USGS Topo Map: Pitman West

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Hydropsyche	4	20
Polypedilum	6	13
* Baetis	6	9
Calopteryx	6	7
Macronychus	2	7
Rheotanytarsus	6	5
Nais	8	4
Simulium	6	4
Phaenopsectra	7	3
Stenelmis	5	3
Gammarus	6	2
Sphaeriidae	8	2
* Triaenodes	6	2
Ancyronyx	2	1
* Cheumatopsyche	5	1
Dineutus	4	1
Dugesia	4	1
Helichus	5	1
Hemerodromia	6	1
* Isonychia	2	1
* Maccaffertium	3	1
Macromia	2	1
Nigronia	2	1
* Oecetis	8	1
Optioservus	4	1
Parametriocnemus	5	1
Planorbidae	6	1
Pristina	8	1
Prostoma	7	1
Psephenus	4	1
* Serratella	2	1
Tvetenia	5	1

* (EPT organism) Taxa Richness: 32 Population: 100

%Dominance / Dominant Taxon(s): 20.0% Hydropsyche

Hilsenhoff Biotic Index (HBI): 5.14 %Clingers: 52.00%

* E+P+T: 8 (4) Ephemeroptera, () Plecoptera, (4) Trichoptera %Ephemeroptera: 12.00%

CPMI Rating: 22 Excellent

Habitat Analysis: 117 Suboptimal USEPA Protocol

Observations: Water temp: 21.5 C; Cond: 178 umhos; DO: 5.17 mg/L; pH: 7.21 SU

Clarity: slightly turbid, cedar; Flow Rate: slow; Width/Depth: 17.5' / < 1.0'; Substrate: cobble, gravel, sand, root mats

Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: storm sewers (concrete spillway)

Other: minnows, undercut banks

AMNET Site # AN0682

Stream Name: S Br Raccoon Ck

Location: High St; Harrison Twp; Gloucester County

Collection Date: 9/26/2006 USGS Topo Map: Woodstown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedium	6	39
Rheocricotopus	6	7
Calopteryx	6	6
Gammarus	6	6
* Maccaffertium	3	5
Tanytarsus	6	5
Rheotanytarsus	6	4
* Baetidae	4	3
Optioservus	4	3
Prostoma	7	3
Corbicula	4	2
Limnodrilus	10	2
Microtendipes	7	2
Phaenopsectra	7	2
* Cheumatopsyche	5	1
Cricotopus	7	1
Helisoma	7	1
* Hydropsyche	4	1
Macronychus	2	1
* Oecetis	8	1
* Polycentropus	6	1
Simulium	6	1
Sphaerium	8	1
Trichocorixa	9	1
Tubificidae	10	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 39.0% Polypedium

Hilsenhoff Biotic Index (HBI): 5.90 %Clingers: 23.00%

* E+P+T: 6 (2) Ephemeroptera, () Plecoptera, (4) Trichoptera %Ephemeroptera: 8.00%

CPMI Rating: 12 Good

Habitat Analysis: 116 Suboptimal USEPA Protocol

Observations: Water temp: 15.63 C; Cond: 231 umhos; DO: 8.36 mg/L; pH: 7.39 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 19' / < 1.0'; Substrate: sand, mud

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: forested, rural, agriculture-livestock (goats)

Other: newly paved road; manure pile near right bank; USGS gage: 1.0'

AMNET Site # AN0683

Stream Name: Raccoon Ck

Location: Tomlin Station Rd (USGS gage); Harrison Twp; Gloucester County

Collection Date: 9/26/2006 USGS Topo Map: Woodstown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	25
* Maccaffertium	3	14
Polypedilum	6	13
Corbicula	4	12
Rhagovelia	9	4
Rheotanytarsus	6	4
Corduliidae	5	3
Limnodrilus	10	3
* Baetis	6	2
Calopteryx	6	2
* Cheumatopsyche	5	2
Peltodytes	5	2
* Pseudocloeon	4	2
Ancyronyx	2	1
Argia	6	1
Boyeria	2	1
Brillia	5	1
Gerridae	8	1
Helisoma	7	1
Lumbriculidae	8	1
Macromia	2	1
Palaemonetes	4	1
Quistradrilus	10	1
Sphaeriidae	8	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 25.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.42 %Clingers: 22.00%

* E+P+T: 4 (3) Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 18.00%

CPMI Rating: 14 Good

Habitat Analysis: 136 Suboptimal USEPA Protocol

Observations: Water temp: 16.45 C; Cond: 204 umhos; DO: 8.46 mg/L; pH: 7.22 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 34' / 1'; Substrate: sand, snags

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: storm sewers (left bank, upstream of bridge)

Other: macrophytes; USGS gage - 7.9'; small stream feeding into creek on right bank, upstream of bridge

AMNET Site # AN0686

Stream Name: Oldmans Ck

Location: Swedesboro Rd; South Harrison Twp; Gloucester & Salem County

Collection Date: 5/2/2007 USGS Topo Map: Pitman West

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Maccaffertium	3	30
Tanytarsus	6	16
* Cheumatopsyche	5	6
* Hydropsyche	4	6
Tribelos	5	5
Corydalus	4	4
* Eurylophella	4	4
* Macrostemum	3	4
Pisidium	6.8	3
Rheopelopia	4	3
Tvetenia	5	3
* Baetidae	4	2
Cricotopus	7	2
* Ephemerella	1	2
* Acentrella	4	1
Calopteryx	6	1
Corynoneura	4	1
Dubiraphia	6	1
Gomphus	5	1
* Leuctra	0	1
Macromia	2	1
* Mystacides	4	1

* (EPT organism) Taxa Richness: 22 Population: 98

%Dominance / Dominant Taxon(s): 30.6% Maccaffertium

Hilsenhoff Biotic Index (HBI): 4.20 %Clingers: 61.22%

* E+P+T: 10 (5) Ephemeroptera, (1) Plecoptera, (4) Trichoptera %Ephemeroptera: 39.80%

CPMI Rating: 28 Excellent

Habitat Analysis: 155 Suboptimal USEPA Protocol

Observations: Water temp: 13.97 C; Cond: 200 umhos; DO: 10.73 mg/L; pH: 6.29 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 16' / 1'; Substrate: gravel, sand, silt, undercut banks, clay

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland (nursery), rural, forested

Other: macrophytes, filamentous algae

AMNET Site # AN0687

Stream Name: Oldmans Ck

Location: Harrisonville Lake Rd (outlet of Harrisonville Lake); South Harrison Twp; Gloucester & Salem County

Collection Date: 9/28/2006 USGS Topo Map: Woodstown

Genus	Tolerance Value	Amount
* Cheumatopsyche	5	35
* Caenis	7	11
Stylaria	8	9
Limnodrilus	10	8
Hyalella	8	5
Ablabesmyia	8	4
Gammarus	6	3
Tanytarsus	6	3
Thienemannimyia	6	3
* Chimarra	4	2
Dugesia	4	2
Physa	8	2
Argia	6	1
Corbicula	4	1
Helobdella	8	1
Hydrolix	4	1
* Oecetis	8	1
Orthocladinae	5	1
Placobdella	8	1
Planorbidae	6	1
Polypedilum	6	1
Potthastia	2	1
Rheotanytarsus	6	1
Stenelmis	5	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 35.0% Cheumatopsyche

Hilsenhoff Biotic Index (HBI): 6.40 %Clingers: 41.00%

* E+P+T: 4 (1) Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 11.00%

CPMI Rating: 14 Good

Habitat Analysis: 144 Suboptimal USEPA Protocol

Observations: Water temp: 18.94 C; Cond: 216 umhos; DO: 8.62 mg/L; pH: 7.41 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 41' / 1'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Downstream of Impoundment: Harrisonville Lake

Other: filamentous algae

AMNET Site # AN0688

Stream Name: Oldmans Ck

Location: Kings Hwy; Woolwich Twp; Gloucester & Salem County

Collection Date: 9/26/2006 USGS Topo Map: Woodstown

Genus	Tolerance Value	Amount
Glyptotendipes	10	16
Ischnura	9	16
Polypedilum	6	12
Endochironomus	10	10
Tanytarsus	6	8
Planorbidae	6	6
Sphaeriidae	8	6
Dero	10	4
Hydrolimax	4	3
Argia	6	2
Erythemis	10	2
Nais	8	2
Slavina	7	2
Ablabesmyia	8	1
Ancyliidae	6	1
Chironomus	10	1
Culex	8	1
Gomphidae	1	1
* Hydroptila	6	1
Libellula	9	1
* Oecetis	8	1
Paratanytarsus	6	1
Physa	8	1
Stylaria	8	1

* (EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 16.0% Glyptotendipes & Ischnura

Hilsenhoff Biotic Index (HBI): 8.00 %Clingers: 14.00%

* E+P+T: 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 167 Optimal USEPA Protocol

Observations: Water temp: 18.92 C; Cond: 220 umhos; DO: 8.45 mg/L; pH: 7.29 SU

Clarity: turbid; Flow Rate: moderate; Width/Depth: 40' / > 2'; Substrate: cobble, mud

Canopy: open; Bank Stability: good; Bank Vegetation: trees, shrubs, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, agriculture-livestock, rural

Other: frogs, turtle; trash, oily sheen on water; gage: 4.0'

AMNET Site # AN0690

Stream Name: Salem R

Location: Rt 581 (Commissioners Rd); Upper Pittsgrove Twp; Salem County

Collection Date: 10/19/2006 USGS Topo Map: Alloway

Genus	Tolerance Value	Amount
Glyptotendipes	10	30
Nais	8	11
Prostoma	7	10
Menetus	6	7
Dicrotendipes	8	6
Limnodrilus	10	5
Caecidotea	8	4
Physella	9.1	3
Pristinella	10	3
Amnicola	4.8	2
Dubiraphia	6	2
Microtendipes	7	2
Pristina	8	2
Thienemanniella	6	2
Tribelos	5	2
Cryptochironomus	8	1
Enallagma	9	1
Ferrissia	7	1
Helobdella	8	1
Lumbriculus	8	1
Peltodytes	5	1
Perithemis	4	1
Plathemis	3	1
Polypedilum	6	1

*(EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 30.0% Glyptotendipes

Hilsenhoff Biotic Index (HBI): 8.19 %Clingers: 4.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 136 Suboptimal USEPA Protocol

Observations: Water temp: 16.1 C; Cond: 227 umhos; DO: 7.93 mg/L; pH: 7.01 SU

Clarity: slightly turbid, brownish; Flow Rate: slow; Width/Depth: 29' / 1'; Substrate: gravel, sand, silt, snags, under cut banks

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural, forested

Pipes / Ditches: storm sewers (2, concrete)

Other: fish, frogs

AMNET Site # AN0691

Stream Name: Salem R

**Location: Mill St (outlet of Memorial Lake) (USGS gauge); Piles Grove Twp;
Salem County**

Collection Date: 10/19/2006 USGS Topo Map: Woodstown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Glyptotendipes	10	75
* Cheumatopsyche	5	10
Dugesia	4	6
* Hydropsyche	4	3
Musculium	5	2
Polypedilum	6	2
Lumbriculidae	8	1
Paratanytarsus	6	1
* (EPT organism)	<i>Taxa Richness:</i> 8	<i>Population:</i> 100

%Dominance / Dominant Taxon(s): 75.0% Glyptotendipes

Hilsenhoff Biotic Index (HBI): 8.72

%Clingers: 13.00%

* *E+P+T:* 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 0 Poor

Habitat Analysis: 116 Suboptimal USEPA Protocol

Observations: Water temp: 16.6 C; Cond: 213 umhos; DO: 8.61 mg/L; pH: 7.18 SU

Clarity: turbid, brownish; Flow Rate: fast; Width/Depth: 42' / < 1.0 - 1'; Substrate: gravel, sand, cobble

Canopy: open; Bank Stability: good; Bank Vegetation: trees, weeds

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Downstream of Impoundment: Memorial Lake

Other: turtle, waterfowl, egrets, macrophytes, filamentous algae; oil sheen near bridge; USGS gage: 1.20'

AMNET Site # AN0692

Stream Name: Nichomus Run

Location: Rt 45; Piles Grove Twp; Salem County

Collection Date: 9/28/2006 USGS Topo Map: Woodstown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Microtendipes	7	26
Limnodrilus	10	10
Stenelmis	5	9
Tanytarsus	6	9
Gammarus	6	7
Cura	4	5
Phaenopsectra	7	5
Polypedilum	6	5
Prostoma	7	3
Musculium	5	2
Rheotanytarsus	6	2
Sphaerium	8	2
Thienemanniella	6	2
Calopteryx	6	1
* Cheumatopsyche	5	1
Chironomus	10	1
Cladotanytarsus	7	1
* Maccaffertium	3	1
Orthocladius	6	1
Rheocricotopus	6	1
Scirtidae	7	1
Stictochironomus	9	1
Stylodrilus	10	1
Tanypodinae	7	1
Tribelos	5	1
Trichocorixa	9	1

* (EPT organism) Taxa Richness: 26 Population: 100

%Dominance / Dominant Taxon(s): 26.0% Microtendipes

Hilsenhoff Biotic Index (HBI): 6.69

%Clingers: 44.00%

* E+P+T: 2 (1) Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 1.00%

CPMI Rating: 12 Good

Habitat Analysis: 119 Suboptimal USEPA Protocol

Observations: Water temp: 16.44 C; Cond: 364 umhos; DO: 5.78 mg/L; pH: 7.40 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 16' / < 1.0'; Substrate: gravel, sand, mud, silt

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock, rural

Other: lawn adjacent to left bank, downstream of bridge

AMNET Site # AN0693

Stream Name: Salem R

Location: Kings Hwy; Pilesgrove Twp; Salem County

Collection Date: 9/28/2006 USGS Topo Map: Woodstown

Genus	Tolerance Value	Amount
Gammarus	6	15
Argia	6	11
Planorbidae	6	9
Rheotanytarsus	6	8
Macronychus	2	7
Caecidotea	8	6
Limnodrilus	10	5
Polypedilum	6	5
Ancyronyx	2	4
Physa	8	4
Tanytarsus	6	4
Ischnura	9	3
Libellula	9	3
Ancyliidae	6	2
Hydrophilidae	4	2
* Oecetis	8	2
Pisidium	6.8	2
Tribelos	5	2
Calopteryx	6	1
* Cheumatopsyche	5	1
Cryptochironomus	8	1
Helobdella	8	1
Palaemonetes	4	1
Thienemannimyia	6	1

* (EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 15.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.15 %Clingers: 33.00%

* E+P+T: 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 143 Suboptimal USEPA Protocol

Observations: Water temp: 17.62 C; Cond: 317 umhos; DO: 6.35 mg/L; pH: 7.17 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 57' / 3'; Substrate: gravel, sand, mud, silt, snags

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: turtle, trash

AMNET Site # AN0694

Stream Name: Major Run

Location: Pointers-Sharptown Rd; Mannington Twp; Salem County

Collection Date: 9/28/2006 USGS Topo Map: Woodstown

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Limnodrilus	10	42
Stylo-drilus	10	15
Glyptotendipes	10	10
Dicrotendipes	8	7
Cambaridae	5	5
Polypedilum	6	5
Rheotanytarsus	6	3
Musculium	5	2
Rheopelopia	4	2
Trichocorixa	9	2
Clinotanypus	8	1
Cura	4	1
Enallagma	9	1
Tanypus	10	1
Tanytarsus	6	1
Thienemannimyia	6	1
Tipula	4	1

* (EPT organism) Taxa Richness: 17 Population: 100

%Dominance / Dominant Taxon(s): 42.0% Limnodrilus

Hilsenhoff Biotic Index (HBI): 8.82 %Clingers: 3.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 111 Suboptimal USEPA Protocol

Observations: Water temp: 19.12 C; Cond: 394 umhos; DO: 7.09 mg/L; pH: 7.40 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 19' / < 1.0'; Substrate: gravel, sand, mud, silt

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural

Pipes / Ditches: drainage ditch

Other: nursery on left bank with several flexible corrugated drain pipes emptying into stream

AMNET Site # AN0695

Stream Name: Two Penny Run

Location: E Quillytown Rd; Upper Penns Neck Twp; Salem County

Collection Date: 10/3/2006 USGS Topo Map: Penns Grove

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	21
Campeloma	7	14
Polypedilum	6	11
Tanytarsus	6	11
Hydrolimax	4	6
Dubiraphia	6	4
Pisidium	6.8	4
Ablabesmyia	8	3
Limnodrilus	10	3
Argia	6	2
Cryptochironomus	8	2
Dugesia	4	2
Libellulidae	9	2
Planorbidae	6	2
Ancyronyx	2	1
Anopheles	6	1
Dero	10	1
Endochironomus	10	1
Ischnura	9	1
* Oecetis	8	1
Parachironomus	10	1
Parakiefferiella	4	1
Perithemis	4	1
Phaenopsectra	7	1
Prostoma	7	1
Quistradrilus	10	1
Tubifex	10	1

* (EPT organism) *Taxa Richness:* 27 *Population:* 100

%Dominance / Dominant Taxon(s): 21.0% Tribelos

Hilsenhoff Biotic Index (HBI): 6.27

%Clingers: 10.00%

* *E+P+T:* 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 112 Suboptimal USEPA Protocol

Observations: Water temp: 16.78 C; Cond: 262 umhos; DO: 7.18 mg/L; pH: 7.17 SU

Clarity: turbid; Flow Rate: slow; Width/Depth: 15' / 1'; Substrate: gravel, mud, snags, undercut banks

Canopy: mostly open; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural

Pipes / Ditches: storm sewers

Other: crayfish

AMNET Site # AN0696

Stream Name: Game Ck

Location: Rt 48 (outlet of Layton's Lake); Upper Penns Neck Twp; Salem County

Collection Date: 10/3/2006 USGS Topo Map: Penns Grove

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Glyptotendipes	10	57
Hyalella	8	17
Dicrotendipes	8	5
Gammarus	6	5
Endochironomus	10	4
Hydrolymna	4	4
Stylaria	8	4
Amnicola	4.8	1
Dugesia	4	1
Musculium	5	1
Nanocladius	3	1

* (EPT organism) Taxa Richness: 11 Population: 100

%Dominance / Dominant Taxon(s): 57.0% Glyptotendipes

Hilsenhoff Biotic Index (HBI): 8.81

%Clingers: 4.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 2 Poor

Habitat Analysis: 135 Suboptimal USEPA Protocol

Observations: Water temp: 18.52 C; Cond: 243 umhos; DO: 9.12 mg/L; pH: 7.49 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 32' / <1.0'; Substrate: cobble, gravel, sand, snags

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural, suburban

Downstream of Impoundment: Layton's Lake

Other: fish, frogs, crayfish, grass shrimp, turtle, clams, Unionid mussels, waterfowl, filamentous algae, many large bryozoan colonies; lawn up to lake bank; concrete wall on right bank

AMNET Site # AN0697

Stream Name: UNT to Culliers Run

Location: Basset Rd; Mannington Twp; Salem County

Collection Date: 10/3/2006 USGS Topo Map: Salem

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	23
Caecidotea	8	12
Tanytarsus	6	12
Pisidium	6.8	10
Amnicola	4.8	9
Enallagma	9	5
Chironomus	10	3
Gammarus	6	3
Musculium	5	3
Bezzia	6	2
Menetus	6	2
Batracobdella	8	1
Dicrotendipes	8	1
Dubiraphia	6	1
Helisoma	7	1
Limnodrilus	10	1
Nais	8	1
Orthoclaadiinae	5	1
Phaenopsectra	7	1
Physella	9.1	1
* Polycentropus	6	1
Prostoma	7	1
Psectrotanypus	10	1
Pyralidae	5	1
Rheotanytarsus	6	1
Rheumatobates	8	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 27 Population: 100

%Dominance / Dominant Taxon(s): 23.0% Tribelos

Hilsenhoff Biotic Index (HBI): 6.46 %Clingers: 4.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 143 Suboptimal USEPA Protocol

Observations: Water temp: 14.68 C; Cond: 434 umhos; DO: 5.85 mg/L; pH: 7.52 SU

Clarity: turbid, cloudy-greenish; Flow Rate: slow; Width/Depth: 12' / 1 - 2'; Substrate: cobble, mud, snags, root mats

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural

Other: frogs, turtle, macrophytes, oil sheen

AMNET Site # AN0698

Stream Name: Swedes Run

Location: Swedes Bridge Rd; Mannington Twp; Salem County

Collection Date: 10/3/2006 USGS Topo Map: Salem

Genus	Tolerance Value	Amount
Gammarus	6	32
Sphaerium	8	9
Tribelos	5	9
Pisidium	6.8	8
Caecidotea	8	7
Trichocorixa	9	7
Menetus	6	4
Dubiraphia	6	3
Physella	9.1	3
* Paraleptophlebia	1	2
Prostoma	7	2
Sialis	4	2
Tabanus	5	2
Tubificidae	10	2
Amnicola	4.8	1
Calopteryx	6	1
* Cheumatopsyche	5	1
Dicrotendipes	8	1
Glyptotendipes	10	1
* Molanna	6	1
Polypedilum	6	1
Procladius	9	1

* (EPT organism) Taxa Richness: 22 Population: 100

%Dominance / Dominant Taxon(s): 32.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.61 %Clingers: 4.00%

* E+P+T: 3 (1) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 2.00%

CPMI Rating: 6 Fair

Habitat Analysis: 138 Suboptimal USEPA Protocol

Observations: Water temp: 13.92 C; Cond: 404 umhos; DO: 5.20 mg/L; pH: 7.38 SU

Clarity: turbid, milky; Flow Rate: slow; Width/Depth: 20' / < 1.0'; Substrate: gravel, cobble, mud, snags

Canopy: mostly closed; Bank Stability: poor; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural

Other: fish, periphytes

AMNET Site # AN0699

Stream Name: Alloway Ck

Location: Yorktown-Friesburg Rd (Rt 672); Alloway Twp; Salem County

Collection Date: 10/19/2006 USGS Topo Map: Alloway

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	30
Aulodrilus	8	9
Chironomus	10	9
Polypedilum	6	9
Paratanytarsus	6	6
Cricotopus	7	5
Physa	8	5
Pisidium	6.8	5
Boyeria	2	3
Tanytarsus	6	3
Calopteryx	6	2
Dubiraphia	6	2
Limnodrilus	10	2
Naididae	7	2
* Cheumatopsyche	5	1
* Eurylophella	4	1
Macronychus	2	1
Micropsectra	7	1
Microtendipes	7	1
Ophidonais	7	1
Rhagovelia	9	1
Sialis	4	1

* (EPT organism) Taxa Richness: 22 Population: 100

%Dominance / Dominant Taxon(s): 30.0% Tribelos

Hilsenhoff Biotic Index (HBI): 6.38 %Clingers: 11.00%

* E+P+T: 2 (1) Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 6 Fair

Habitat Analysis: 99 Marginal USEPA Protocol

Observations: Water temp: 15.60 C; Cond: 280 umhos; DO: 9.15 mg/L; pH: 7.28 SU

Clarity: slightly turbid; Flow Rate: moderate; Width/Depth: 11' / 1'; Substrate: gravel, sand, silt, snags

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock (cow pasture), forested (right bank)

Other: snapping turtle, macrophytes

AMNET Site # AN0700

Stream Name: Cool Run

Location: Stockington-Pleasant Hill Rd; Alloway Twp; Salem County

Collection Date: 10/24/2006 USGS Topo Map: Alloway

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Cheumatopsyche	5	21
Rheotanytarsus	6	10
* Maccaffertium	3	7
Simulium	6	7
Enallagma	9	5
Calopteryx	6	4
Menetus	6	4
Pisidium	6.8	4
Stenelmis	5	4
Endochironomus	10	3
Limnodrilus	10	3
Macromia	2	3
Musculium	5	3
Dicrotendipes	8	2
Didymops	4	2
Macronychus	2	2
* Polycentropus	6	2
Polypedilum	6	2
Antocha	3	1
* Caenis	7	1
Dromogomphus	4	1
Hagenius	3	1
Helisoma	7	1
* Hydropsyche	4	1
Nanocladius	3	1
Prosimulium	2	1
Stenochironomus	5	1
Tetragoneuria	8.5	1
Thienemanniella	6	1
* (EPT organism)	<i>Taxa Richness:</i> 29	<i>Population:</i> 99

%Dominance / Dominant Taxon(s): 21.2% Cheumatopsyche

Hilsenhoff Biotic Index (HBI): 5.59 %Clingers: 59.60%

* E+P+T: 5 (2) Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 8.08%

CPMI Rating: 18 Good

Habitat Analysis: 132 Suboptimal USEPA Protocol

Observations: Water temp: 10.85 C; Cond: 195 umhos; DO: 9.06 mg/L; pH: 7.08 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 14' / 2'; Substrate: gravel, sand, silt, clay

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural

Pipes / Ditches: storm sewers

Other: macrophytes

AMNET Site # AN0701

Stream Name: UNT to Alloway Ck (Cedar Bk)

Location: Alloway-Aldine Rd (Rt 611); Alloway Twp; Salem County

Collection Date: 10/19/2006 USGS Topo Map: Alloway

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Ischnura	9	23
Dubiraphia	6	10
Tribelos	5	8
Crangonyx	8	7
* Eurylophella	4	7
Argia	6	5
Stylaria	8	5
Musculium	5	4
Stenelmis	5	4
* Maccaffertium	3	3
Microtendipes	7	3
* Oecetis	8	3
Planorbidae	6	3
* Caenis	7	2
Gomphus	5	2
Ancyronyx	2	1
Cricotopus	7	1
Glossiphoniidae	8	1
Glyptotendipes	10	1
Isotomidae	10	1
Macromia	2	1
Nanocladius	3	1
Pisidium	6.8	1
Rheocricotopus	6	1
Slavina	7	1
* Triaenodes	6	1

* (EPT organism) Taxa Richness: 26 Population: 100

%Dominance / Dominant Taxon(s): 23.0% Ischnura

Hilsenhoff Biotic Index (HBI): 6.65 %Clingers: 37.00%

* E+P+T: 5 (3) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 12.00%

CPMI Rating: 16 Good

Habitat Analysis: 121 Suboptimal USEPA Protocol

Observations: Water temp: 16.7 C; Cond: 95 umhos; DO: 7.62 mg/L; pH: 6.02 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 23' /< 1.0 - 1'; Substrate: gravel, sand, silt, root mats, undercut banks

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, lawn (right bank)

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock, suburban, forested

Other: crayfish, macrophytes

AMNET Site # AN0705

Stream Name: Sarah Run

Location: Telegraph Rd (Rt 647); Quinton Twp; Salem & Cumberland County

Collection Date: 10/24/2006 USGS Topo Map: Shiloh

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Pisidium	6.8	34
Caecidotea	8	7
Calopteryx	6	7
Cricotopus	7	7
Thienemannimyia	6	5
Limnodrilus	10	4
Physa	8	4
* Triaenodes	6	4
* Brachycentrus	1	3
* Cheumatopsyche	5	3
* Oecetis	8	3
Gammarus	6	2
* Platycentropus	4	2
Simulium	6	2
Aulodrilus	8	1
Cordulegaster	3	1
* Diplectrona	0	1
* Eurylophella	4	1
Gyraulus	6	1
* Lepidostoma	1	1
Microtendipes	7	1
* Phryganeidae	4	1
Planorbidae	6	1
Prostoma	7	1
* Pseudocloeon	4	1
Rheotanytarsus	6	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 27 Population: 100

%Dominance / Dominant Taxon(s): 34.0% Pisidium

Hilsenhoff Biotic Index (HBI): 6.39 %Clingers: 22.00%

* E+P+T: 10 (2) Ephemeroptera, () Plecoptera, (8) Trichoptera %Ephemeroptera: 2.00%

CPMI Rating: 16 Good

Habitat Analysis: 155 Suboptimal USEPA Protocol

Observations: Water temp: 9.30 C; Cond: 139 umhos; DO: 8.03 mg/L; pH: 6.48 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 11' / 1'; Substrate: sand, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: storm sewers (plastic pipe)

Other: filamentous algae, macrophytes

AMNET Site # AN0708

Stream Name: Raccoon Ditch

Location: Davis Mill Rd; Stow Creek Twp; Cumberland County

Collection Date: 10/26/2006 USGS Topo Map: Shiloh

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Glyptotendipes	10	51
Dicrotendipes	8	12
Menetus	6	7
* Caenis	7	5
Enallagma	9	3
* Hydropsyche	4	3
Limnodrilus	10	3
Nais	8	3
* Oecetis	8	3
Endochironomus	10	2
Argia	6	1
Caecidotea	8	1
Gammarus	6	1
Lumbriculus	8	1
Musculium	5	1
Physella	9.1	1
Pristina	8	1
Tribelos	5	1

* (EPT organism) *Taxa Richness:* 18 *Population:* 100

%Dominance / Dominant Taxon(s): 51.0% Glyptotendipes

Hilsenhoff Biotic Index (HBI): 8.75

%Clingers: 9.00%

* *E+P+T:* 3 (1) Ephemeroptera, () Plecoptera, (2) Trichoptera

%Ephemeroptera: 5.00%

CPMI Rating: 4 Poor

Habitat Analysis: 130 Suboptimal USEPA Protocol

Observations: Water temp: 11.33 C; Cond: 134 umhos; DO: 9.19 mg/L; pH: 6.76 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 40' / 1 - 2'; Substrate: cobble, silt

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Downstream of Impoundment: lake

Other: turtles; iron precipitate

AMNET Site # AN0709

Stream Name: Cohansey River

Location: Beal Rd; Alloway Twp; Salem County

Collection Date: 10/24/2006 USGS Topo Map: Alloway

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Maccaffertium	3	32
Tribelos	5	15
Pisidium	6.8	13
Simulium	6	10
Calopteryx	6	7
* Cheumatopsyche	5	4
Rheotanytarsus	6	4
Diplocladius	8	2
Hemerodromia	6	2
Nigronia	2	2
Thienemannimyia	6	2
Aulodrilus	8	1
* Baetidae	4	1
Gomphidae	1	1
* Hydropsyche	4	1
* Leptophlebiidae	2	1
Tanytarsus	6	1
Tipulidae	3	1

* (EPT organism) Taxa Richness: 18 Population: 100

%Dominance / Dominant Taxon(s): 32.0% Maccaffertium

Hilsenhoff Biotic Index (HBI): 4.77

%Clingers: 55.00%

* E+P+T: 5 (3) Ephemeroptera, () Plecoptera, (2) Trichoptera

%Ephemeroptera: 34.00%

CPMI Rating: 24 Excellent

Habitat Analysis: 131 Suboptimal USEPA Protocol

Observations: Water temp: 9.63 C; Cond: 141 umhos; DO: 8.33 mg/L; pH: 6.56 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 6' / < 1.0'; Substrate: sand

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, livestock (cows)

Other: fish, frogs, crayfish, macrophytes; stream is piped under road

AMNET Site # AN0710

Stream Name: Cohansey River

Location: Rt 540; Hopewell Twp; Cumberland County

Collection Date: 10/24/2006 USGS Topo Map: Alloway

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Musculium	5	22
Physella	9.1	20
Limnodrilus	10	12
Pisidium	6.8	12
Prostoma	7	8
Menetus	6	4
Nais	8	3
Tribelos	5	3
Thienemanniella	6	2
Tipula	4	2
Tvetenia	5	2
Ancyronyx	2	1
Batracobdella	8	1
Boyeria	2	1
Gammarus	6	1
Helisoma	7	1
Heterotrissocladius	0	1
Nematoda	6	1
Procladius	9	1
Rheopelopia	4	1
Stylodrilus	10	1

* (EPT organism) Taxa Richness: 21 Population: 100

%Dominance / Dominant Taxon(s): 22.0% Musculium

Hilsenhoff Biotic Index (HBI): 6.97

%Clingers: 1.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 147 Suboptimal USEPA Protocol

Observations: Water temp: 9.73 C; Cond: 187 umhos; DO: 7.71 mg/L; pH: 6.87 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 28' / < 1.0'; Substrate: mud

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, agriculture-livestock

Other: fish, filamentous algae, macrophytes; trash; boom in water; minor bridge construction

AMNET Site # AN0711

Stream Name: Parsonage Run

Location: Finley Rd; Upper Deerfield Twp; Cumberland County

Collection Date: 10/24/2006 USGS Topo Map: Shiloh

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	48
Pisidium	6.8	18
Macronychus	2	6
Simulium	6	6
Stenelmis	5	5
Tribelos	5	4
Calopteryx	6	3
Aulodrilus	8	2
Limnodrilus	10	2
Brillia	5	1
* Cheumatopsyche	5	1
Corbicula	4	1
Helobdella	8	1
Rheotanytarsus	6	1
Spirosperma	10	1

* (EPT organism) Taxa Richness: 15 Population: 100

%Dominance / Dominant Taxon(s): 48.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.95 %Clingers: 19.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 155 Suboptimal USEPA Protocol

Observations: Water temp: 10.28 C; Cond: 352 umhos; DO: 7.60 mg/L; pH: 6.80 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 22' / 2'; Substrate: mud, silt, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, weeds, vines

Stream Gradient: Low Gradient Stream; Land Uses: rural

Other: macrophytes

AMNET Site # AN0712

Stream Name: Cohansey River

Location: Silver Lake Rd; Upper Deerfield Twp; Cumberland County

Collection Date: 11/28/2006 USGS Topo Map: Shiloh

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	38
Calopteryx	6	7
Ischnura	9	6
Hydrolymna	4	5
Planorbidae	6	5
Sphaeriidae	8	4
Macronychus	2	3
Slavina	7	3
Amnicola	4.8	2
Argia	6	2
Brillia	5	2
Corbicula	4	2
Limnodrilus	10	2
Phaenopsectra	7	2
Procladius	9	2
Stylaria	8	2
* Taeniopteryx	2	2
Ancyliidae	6	1
Corynoneura	4	1
Diplocladius	8	1
Dubiraphia	6	1
Enchytraeidae	10	1
* Eurylophella	4	1
Paraponyx	5	1
Planariidae	4	1
Prostoma	7	1
Rheotanytarsus	6	1
Stenelmis	5	1

* (EPT organism) Taxa Richness: 28 Population: 100

%Dominance / Dominant Taxon(s): 38.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.10 %Clingers: 12.00%

* E+P+T: 2 (1) Ephemeroptera, (1) Plecoptera, () Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 8 Fair

Habitat Analysis: 136 Suboptimal USEPA Protocol

Observations: Water temp: 8.84 C; Cond: 212 umhos; DO: 10.01 mg/L; pH: 8.72 SU

Clarity: turbid, brown; Flow Rate: slow; Width/Depth: 22' / > 4'; Substrate: gravel, sand, mud, silt

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural

Other: fish, macrophytes; USGS gage

AMNET Site # AN0713

Stream Name: Barrett Run

Location: Randolph Rd (Maple Ave); Hopewell Twp; Cumberland County

Collection Date: 10/31/2006 USGS Topo Map: Shiloh

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Limnodrilus	10	54
Pisidium	6.8	10
Musculium	5	6
Ischnura	9	4
Prostoma	7	4
* Caenis	7	3
Slavina	7	3
Aulodrilus	8	2
Libellula	9	2
Tubifex	10	2
* Cheumatopsyche	5	1
Corynoneura	4	1
Dero	10	1
Helobdella	8	1
Perithemis	4	1
Placobdella	8	1
Planorbidae	6	1
Procladius	9	1
Stylaria	8	1
Tetragoneuria	8.5	1

* (EPT organism) Taxa Richness: 20 Population: 100

%Dominance / Dominant Taxon(s): 54.0% Limnodrilus

Hilsenhoff Biotic Index (HBI): 8.69 %Clingers: 1.00%

* E+P+T: 2 (1) Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 3.00%

CPMI Rating: 4 Poor

Habitat Analysis: 119 Suboptimal USEPA Protocol

Observations: Water temp: 10.95 C; Cond: 205 umhos; DO: 5.42 mg/L; pH: 6.07 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 33' / 2 - 2.5'; Substrate: sand, silt

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, grasses, vines

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland

Other: macrophytes; stream barely flowing

AMNET Site # AN0714

Stream Name: Barrett Run

Location: Beebe Run Rd; Bridgeton; Cumberland County

Collection Date: 10/31/2006 USGS Topo Map: Bridgeton

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Dugesia	4	23
* Cheumatopsyche	5	15
Glyptotendipes	10	12
Corbicula	4	5
Dicrotendipes	8	5
* Hydropsyche	4	5
Polypedilum	6	5
Musculium	5	4
* Caenis	7	3
Ischnura	9	3
Limnodrilus	10	3
Amnicola	4.8	2
Endochironomus	10	2
Hyalella	8	2
Prostoma	7	2
Cryptochironomus	8	1
Dero	10	1
Helobdella	8	1
Hemerodromia	6	1
Libellula	9	1
Perithemis	4	1
Physella	9.1	1
Stenochironomus	5	1
Stylaria	8	1

* (EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 23.0% Dugesia

Hilsenhoff Biotic Index (HBI): 6.22 %Clingers: 22.00%

* E+P+T: 3 (1) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 3.00%

CPMI Rating: 8 Fair

Habitat Analysis: 139 Suboptimal USEPA Protocol

Observations: Water temp: 12.48 C; Cond: 159 umhos; DO: 9.41 mg/L; pH: 6.64 SU

Clarity: turbid; Flow Rate: moderate; Width/Depth: 22' / 2'; Substrate: gravel, sand, cobble, silt

Canopy: open; Bank Stability: good; Bank Vegetation: trees, shrubs, lawn

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: storm sewers (3' concrete)

Downstream of Impoundment: Mary Elmer Lake

Other: macrophytes; adjacent to the City of Bridgeton's Sewage Pumping Station

AMNET Site # AN0716

Stream Name: Island Br

Location: Fayette St (Dutch Neck Rd); Bridgeton; Cumberland County

Collection Date: 10/31/2006 USGS Topo Map: Bridgeton

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Cheumatopsyche	5	30
Physella	9.1	22
Limnodrilus	10	19
Polypedilum	6	12
Dugesia	4	11
Prostoma	7	3
Dero	10	1
Helobdella	8	1
Lumbricidae	10	1

* (EPT organism) Taxa Richness: 9 Population: 100

%Dominance / Dominant Taxon(s): 30.0% Cheumatopsyche

Hilsenhoff Biotic Index (HBI): 7.05 %Clingers: 30.00%

* E+P+T: 1 () Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 107 Marginal USEPA Protocol

Observations: Water temp: 9.48 C; Cond: 178 umhos; DO: 8.40 mg/L; pH: 6.49 SU

Clarity: slightly turbid; Flow Rate: slow; Width/Depth: 5' /< 1.0'; Substrate: gravel, silt

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, weeds, ivy

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: storm sewers (PVC pipe)

Downstream of Impoundment: lake

Other: concrete trash; site adjacent to Cumberland Co. Sewage Pumping Station #7

AMNET Site # AN0717

Stream Name: Pine Mount Ck

Location: Rt 623; Greenwich Twp; Cumberland County

Collection Date: 10/31/2006 USGS Topo Map: Shiloh

Genus	Tolerance Value	Amount
Gammarus	6	32
Tribelos	5	24
Hetaerina	6	7
Caecidotea	8	6
Tubificidae	10	5
* Heteroplectron	3	4
Musculium	5	3
Eclipidrilus	8	2
Limnodrilus	10	2
Prostoma	7	2
Calopteryx	6	1
* Cheumatopsyche	5	1
Enchytraeidae	10	1
Fossaria	6	1
Hexatoma	2	1
Nais	8	1
Natarsia	8	1
* Phylloctenopus	5	1
Physella	9.1	1
Rheopelopia	4	1
Stylodrilus	10	1
Tetragoneuria	8.5	1
Trichocorixa	9	1

* (EPT organism) Taxa Richness: 23 Population: 100

%Dominance / Dominant Taxon(s): 32.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.20

%Clingers: 1.00%

* E+P+T: 3 () Ephemeroptera, () Plecoptera, (3) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 6 Fair

Habitat Analysis: 118 Suboptimal USEPA Protocol

Observations: Water temp: 11.89 C; Cond: 157 umhos; DO: 7.54 mg/L; pH: 5.82 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 7' / < 1.0 - 2'; Substrate: gravel, sand, root mats, undercut banks

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, weeds, lawn

Stream Gradient: Low Gradient Stream; Land Uses: suburban, forested

Pipes / Ditches: storm sewers (2 corrugated metal pipes)

Other: macrophytes; lawn comes right up to stream bank

AMNET Site # AN0722

Stream Name: Scotland Run

Location: Rt 610 (Clayton-Williamstown Rd) (otlt Wilson Lk); Clayton Boro;
Gloucester County

Collection Date: 4/10/2007

USGS Topo Map: Pitman East

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Corbicula	4	44
Musculium	5	17
Polypedilum	6	9
Lumbriculus	8	6
Potthastia	2	4
Amnicola	4.8	3
Paratanytarsus	6	3
Dero	10	2
Slavina	7	2
Ablabesmyia	8	1
* Cheumatopsyche	5	1
Cricotopus	7	1
* Eurylophella	4	1
Hydrobiidae	8	1
* Hydropsyche	4	1
Limnodrilus	10	1
Nais	8	1
Parachironomus	10	1
Unniella	6	1

* (EPT organism) Taxa Richness: 19 Population: 100

Becks Biotic Index (BBI): 4.00 %Plecoptera +Trichoptera: 2.00%

Insect Taxa: 10 %Mollusca + Amphipoda: 65.00%

Non-Insect Taxa: 9 %Diptera - Tanytarsini: 17.00%

%Filterers: 63.00%

PMI Rating: 24.76 Poor

Habitat Analysis: 141 Suboptimal USEPA Protocol

Observations: Water temp: 7.79 C; Cond: 96 umhos; DO: 11.68 mg/L; pH: 6.43 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 35' / 1'; Substrate: gravel, sand

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested, community park

Pipes / Ditches: storm sewers-right bank

Downstream of Impoundment: Wilson Lake

Other: clams, filamentous algae, waterfowl, foam, county park with bathing beach

AMNET Site # AN0723 **Stream Name: Scotland Run**
Location: Rt 538; Franklin Twp; Gloucester County
Collection Date: 5/1/2007 **USGS Topo Map: Newfield**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Sphaeriidae	8	19
Polypedilum	6	11
Tribelos	5	7
* Eurylophella	4	6
* Agarodes	3	5
Campeloma	7	5
Thienemannimyia	6	5
Macronychus	2	4
Simulium	6	4
Stenelmis	5	4
Crangonyx	8	3
Cricotopus	7	3
Ablabesmyia	8	2
* Cheumatopsyche	5	2
* Isoperla	2	2
Macromia	2	2
* Phyllocentropus	5	2
* Triaenodes	6	2
Calopteryx	6	1
* Ceraclea	3	1
Enchytraeidae	10	1
Eukiefferiella	8	1
* Hydropsyche	4	1
Limnodrilus	10	1
* Maccaffertium	3	1
Nematoda	6	1
* Oecetis	8	1
Probezzia	6	1
* Psilotreta	0	1
Tvetenia	5	1

* (EPT organism) *Taxa Richness:* 30 *Population:* 100

Becks Biotic Index (BBI): 10.00 *%Plecoptera +Trichoptera:* 17.00%

Insect Taxa: 24 *%Mollusca + Amphipoda:* 27.00%

Non-Insect Taxa: 6 *%Diptera - Tanytarsini:* 35.00%

%Filterers: 28.00%

PMI Rating: **55.04 Fair**

Habitat Analysis: 173 Optimal USEPA Protocol

Observations: Water temp: 15.51 C; Cond: 75 umhos; DO: 5.82 mg/L; pH: 4.73 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 26' / 1-1.5'; Substrate: gravel, sand

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: filamentous algae

AMNET Site # AN0724

Stream Name: Indian Br

Location: Rt 47; Franklin Twp; Gloucester County

Collection Date: 5/1/2007

USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Eurylophella	4	39
Crangonyx	8	16
Cricotopus	7	10
Tribelos	5	9
Microtendipes	7	8
Tanytarsus	6	4
* Hydropsyche	4	3
Thienemannimyia	6	2
Apsectrotanypus	5	1
Calopteryx	6	1
Clinotanypus	8	1
Cryptochironomus	8	1
Ischnura	9	1
* Phyllocentropus	5	1
Procladius	9	1
Psectrocladius	8	1
Rheotanytarsus	6	1

* (EPT organism) Taxa Richness: 17 Population: 100

Becks Biotic Index (BBI): 2.00 %Plecoptera +Trichoptera: 4.00%

Insect Taxa: 16 %Mollusca + Amphipoda: 16.00%

Non-Insect Taxa: 1 %Diptera - Tanytarsini: 34.00%

%Filterers: 17.00%

PMI Rating: 52.25 Fair

Habitat Analysis: 155 Suboptimal USEPA Protocol

Observations: Water temp: 13.05 C; Cond: 60 umhos; DO: 5.40 mg/L; pH: 3.98 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 16' / 3'; Substrate: gravel, sand, mud, snags, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, turf

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: storm sewers- 6" corrugated metal

Other: filamentous algae, macrophytes, USGS gauge 2.80', trash, tire

AMNET Site # AN0725

Stream Name: Scotland Run

Location: Rt 40 (outlet of Malaga Lake); Franklin Twp; Gloucester County

Collection Date: 5/1/2007

USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Cheumatopsyche	5	26
* Macrostemum	3	26
Corbicula	4	18
* Hydropsyche	4	9
Musculium	5	9
Lumbriculus	8	5
* Maccaffertium	3	4
Chironomini	6	2
Cricotopus	7	1

* (EPT organism) Taxa Richness: 9 Population: 100

Becks Biotic Index (BBI): 4.00 %Plecoptera +Trichoptera: 61.00%

Insect Taxa: 6 %Mollusca + Amphipoda: 27.00%

Non-Insect Taxa: 3 %Diptera - Tanytarsini: 3.00%

%Filterers: 88.00%

PMI Rating: 42.33 Fair

Habitat Analysis: 161 Optimal USEPA Protocol

Observations: Water temp: 17.82 C; Cond: 72 umhos; DO: 7.94 mg/L; pH: 5.19 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 32' / 2'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: storm sewers- grate on bridge

Downstream of Impoundment: Malaga Lake

Other: clams / Unionid mussels, waterfowl

AMNET Site # AN0726A **Stream Name: Little Ease Run**
Location: Carpenter Rd; Glassboro Boro; Gloucester County
Visit Date: 4/10/2007 **USGS Topo Map: Pitman East**

Site not sampled see Note below:

no sample. Road closed, no vehicle access.

AMNET Site # AN0727

Stream Name: Little Ease Run

Location: Grant Ave; Franklin Twp; Gloucester County

Collection Date: 4/10/2007 USGS Topo Map: Pitman East

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	41
Microtendipes	7	26
Tanytarsus	6	6
Ablabesmyia	8	3
Apsectrotanypus	5	3
Musculium	5	3
Limnodrilus	10	2
* Polycentropus	6	2
Procladius	9	2
Sialis	4	2
Gomphus	5	1
* Lepidostoma	1	1
Macropelopia	10	1
* Molanna	6	1
* Mystacides	4	1
Nematoda	6	1
Peltodytes	5	1
* Pycnopsyche	4	1
Rheotanytarsus	6	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 20 Population: 100

%Dominance / Dominant Taxon(s): 41.0% Tribelos

Hilsenhoff Biotic Index (HBI): 5.92 %Clingers: 29.00%

* E+P+T: 5 () Ephemeroptera, () Plecoptera, (5) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 12 Good

Habitat Analysis: 143 Suboptimal USEPA Protocol

Observations: Water temp: 6.32 C; Cond: 86 umhos; DO: 9.69 mg/L; pH: 5.01 SU

Clarity: slightly turbid-cedar; Flow Rate: slow; Width/Depth: 27' / 2+'; Substrate: sand, mud

Canopy: mostly open; Bank Stability: fair; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: Drainage ditch on left bank down stream side

Other: filamentous algae

AMNET Site # AN0728

Stream Name: Little Ease Run

Location: Leonard Cake Rd; Franklin Twp; Gloucester County

Collection Date: 5/2/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Simulium	6	38
Cricotopus	7	8
* Maccaffertium	3	6
Polypedilum	6	6
* Triaenodes	6	4
* Cheumatopsyche	5	3
Crangonyx	8	3
* Eurylophella	4	3
Thienemannimyia	6	3
* Agarodes	3	2
Hydrobiidae	8	2
* Hydropsyche	4	2
Ischnura	9	2
* Oecetis	8	2
Tanytarsus	6	2
Ablabesmyia	8	1
Aulodrilus	8	1
Calopteryx	6	1
* Ceraclea	3	1
Enchytraeidae	10	1
Gomphus	5	1
* Hydroptila	6	1
Limnodrilus	10	1
Nais	8	1
Placobdella	8	1
Rheocricotopus	6	1
Sphaeriidae	8	1
Stenochironomus	5	1
Thienemanniella	6	1

* (EPT organism) Taxa Richness: 29 Population: 100

%Dominance / Dominant Taxon(s): 38.0% Simulium

Hilsenhoff Biotic Index (HBI): 6.04 %Clingers: 63.00%

* E+P+T: 9 (2) Ephemeroptera, () Plecoptera, (7) Trichoptera %Ephemeroptera: 9.00%

CPMI Rating: 20 Good

Habitat Analysis: 154 Suboptimal USEPA Protocol

Observations: Water temp: 16.64 C; Cond: 90 umhos; DO: 7.32 mg/L; pH: 5.38 SU

Clarity: clear- cedar brown; Flow Rate: moderate; Width/Depth: 20' / 3'; Substrate: gravel, sand, snags

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: macrophytes, oil sheen-creosote from bridge

AMNET Site # AN0729

Stream Name: Still Run

Location: Aura Rd; Elk Twp; Gloucester County

Collection Date: 5/2/2007 USGS Topo Map: Pitman West

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Cricotopus	7	34
Sphaeriidae	8	19
Orthocladus	6	15
Lumbriculidae	8	9
* Eurylophella	4	5
Planorbidae	6	5
* Maccaffertium	3	3
* Cheumatopsyche	5	2
Potthastia	2	2
Hydrobaenus	8	1
Nigronia	2	1
Paratendipes	8	1
Polypedilum	6	1

* (EPT organism) *Taxa Richness:* 13 *Population:* 98

%Dominance / Dominant Taxon(s): 34.7% Cricotopus

Hilsenhoff Biotic Index (HBI): 6.62 *%Clingers:* 46.94%

* *E+P+T:* 3 (2) Ephemeroptera, () Plecoptera, (1) Trichoptera *%Ephemeroptera:* 8.16%

CPMI Rating: 8 Fair

Habitat Analysis: 143 Suboptimal USEPA Protocol

Observations: Water temp: 13.11 C; Cond: 320 umhos; DO: 8.98 mg/L; pH: 6.13 SU

Clarity: clear-cedar brown; Flow Rate: moderate; Width/Depth: 12' / 1'; Substrate: gravel, sand, mud

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural

Other: fish, frogs, macrophytes

AMNET Site # AN0730

Stream Name: Still Run

Location: Little Mill Rd; Franklin Twp; Gloucester County

Collection Date: 4/10/2007 USGS Topo Map: Pitman East

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Paratendipes	8	40
Musculium	5	7
Tanytarsus	6	6
Tubifex	10	6
Pisidium	6.8	5
Amnicola	4.8	4
Nematoda	6	4
Ablabesmyia	8	3
Cricotopus	7	3
* Eurylophella	4	2
Hyalella	8	2
Nais	8	2
Planariidae	4	2
Procladius	9	2
Rheotanytarsus	6	2
Caecidotea	8	1
Enallagma	9	1
Gillia	8	1
Gomphus	5	1
Limnodrilus	10	1
Orthocladius	6	1
Peltodytes	5	1
Physella	9.1	1
* Polycentropus	6	1
* Ptilostomis	5	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 40.0% Paratendipes

Hilsenhoff Biotic Index (HBI): 7.22 %Clingers: 8.00%

* E+P+T: 3 (1) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 2.00%

CPMI Rating: 6 Fair

Habitat Analysis: 157 Suboptimal USEPA Protocol

Observations: Water temp: 7.58 C; Cond: 145 umhos; DO: 11.03 mg/L; pH: 6.33 SU

Clarity: clear, cedar; Flow Rate: slow; Width/Depth: 28' / > 3'; Substrate: gravel, sand, cobble (by bridge)

Canopy: open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: macrophytes, waterfowl

AMNET Site # AN0731

Stream Name: Reed Br

Location: Royal Ave; Franklin Twp; Gloucester County

Collection Date: 5/31/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Sphaeriidae	8	48
Stenelmis	5	14
* Cheumatopsyche	5	9
Lumbriculidae	8	8
* Maccaffertium	3	3
Polypedilum	6	3
Rheotanytarsus	6	3
Amnicola	4.8	2
Physella	9.1	2
* Attenella	2	1
Ischnura	9	1
* Macrostemum	3	1
Palaemonetes	4	1
Simulium	6	1
Tanytarsus	6	1
Thienemannimyia	6	1
Tvetenia	5	1

* (EPT organism) Taxa Richness: 17 Population: 100

%Dominance / Dominant Taxon(s): 48.0% Sphaeriidae

Hilsenhoff Biotic Index (HBI): 6.77

%Clingers: 32.00%

* E+P+T: 4 (2) Ephemeroptera, () Plecoptera, (2) Trichoptera

%Ephemeroptera: 4.00%

CPMI Rating: 10 Fair

Habitat Analysis: 163 Optimal USEPA Protocol

Observations: Water temp: 23.68 C; Cond: 104 umhos; DO: 7.57 mg/L; pH: 5.95 SU

Clarity: clear-cedar brown; Flow Rate: moderate; Width/Depth: 24' / 1'; Substrate: cobble, gravel, sand, snags, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Downstream of Impoundment: Lake upstream

Other: fish, frogs, macrophytes, oil sheen, creosote on surface

AMNET Site # AN0732

Stream Name: Still Run

Location: Rt 40; Franklin Twp; Gloucester County

Collection Date: 5/2/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Enchytraeidae	10	11
Musculium	5	9
Pisidium	6.8	9
Polypedilum	6	9
Bezzia	6	7
Tanytarsus	6	6
Tribelos	5	6
Gammarus	6	5
Nematoda	6	4
Eclipidrilus	8	3
Gillia	8	3
Limnodrilus	10	3
Nais	8	3
Rheotanytarsus	6	3
Amnicola	4.8	2
Muscidae	6	2
Parachaetocladus	2	2
Stenelmis	5	2
Tubificidae	10	2
Corbicula	4	1
Cricotopus	7	1
Heterotrissocladus	0	1
* Maccaffertium	3	1
Menetus	6	1
Paratendipes	8	1
* Polycentropus	6	1
Procladius	9	1
Stenochironomus	5	1

* (EPT organism) Taxa Richness: 28 Population: 100

%Dominance / Dominant Taxon(s): 11.0% Enchytraeidae

Hilsenhoff Biotic Index (HBI): 6.56 %Clingers: 8.00%

* E+P+T: 2 (1) Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 8 Fair

Habitat Analysis: 136 Suboptimal USEPA Protocol

Observations: Water temp: 17.99 C; Cond: 100 umhos; DO: 8.98 mg/L; pH: 5.94 SU

Clarity: clear-cedar brown; Flow Rate: moderate; Width/Depth: 36' / 3'; Substrate: gravel, sand, snags

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock, rural, forested

Other: clams / Unionid mussels, macrophytes, filamentous algae

AMNET Site # AN0733

Stream Name: Maurice River (Scotland Run)

Location: Willow Grove Rd (Rt 690) (out. Willow Grove Lk); Pittsgrove Twp;
Salem County

Collection Date: 5/1/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Corbicula	4	19
Manayunkia	6	10
Musculium	5	9
* Macrostemum	3	8
Stylodrilus	10	8
Amnicola	4.8	7
Eclipidrilus	8	5
Gammarus	6	4
Pisidium	6.8	4
Stenelmis	5	4
Gomphus	5	3
* Caenis	7	2
* Cheumatopsyche	5	2
Enchytraeidae	10	2
Gillia	8	2
Limnodrilus	10	2
Argia	6	1
Cura	4	1
Helobdella	8	1
Macronychus	2	1
Menetus	6	1
Parakiefferiella	4	1
Rheotanytarsus	6	1
Tanytarsus	6	1
Tetragoneuria	8.5	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 19.0% Corbicula

Hilsenhoff Biotic Index (HBI): 5.75 %Clingers: 17.00%

* E+P+T: 3 (1) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 2.00%

CPMI Rating: 10 Fair

Habitat Analysis: 151 Suboptimal USEPA Protocol

Observations: Water temp: 12.12 C; Cond: 99 umhos; DO: 5.86 mg/L; pH: 5.65 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 16' / 2'; Substrate: gravel, sand, snags

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Downstream of Impoundment: Willow Grove Lake

Other: clams, Unionid mussels, waterfowl

AMNET Site # AN0734 Stream Name: Burnt Mill Br

Location: West Blvd; Newfield; Gloucester County

Collection Date: 5/8/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Cricotopus	7	35
Paratendipes	8	10
Thienemannimyia	6	7
Pisidium	6.8	5
* Pseudocloeon	4	5
Caecidotea	8	4
* Cheumatopsyche	5	4
Lumbriculidae	8	4
Micropsectra	7	4
Planorbidae	6	4
* Eurylophella	4	3
Lymnaeidae	6	2
* Maccaffertium	3	2
Orthocladius	6	2
Parametriochnemus	5	2
Phaenopsectra	7	2
Cryptochironomus	8	1
Limnodrilus	10	1
Simulium	6	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 20 Population: 99

Becks Biotic Index (BBI): 3.00 %Plecoptera +Trichoptera: 4.04%

Insect Taxa: 14 %Mollusca + Amphipoda: 11.11%

Non-Insect Taxa: 6 %Diptera - Tanytarsini: 61.62%

%Filterers: 10.10%

PMI Rating: 54.72 Fair

Habitat Analysis: 153 Suboptimal USEPA Protocol

Observations: Water temp: 12.03 C; Cond: 149 umhos; DO: 9.83 mg/L; pH: 5.93 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 50' / 2-4'; Substrate: gravel, sand, mud, snags

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, vines

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Pipes / Ditches: storm sewers-grate on road

Other: macrophytes, waterfowl, ducks, algae mats, duck weed, foam, water flows through 2 pipes under road

AMNET Site # AN0735

Stream Name: Burnt Mill Br

Location: Rt 55; Vineland; Cumberland County

Collection Date: 5/8/2007 USGS Topo Map: Newfield

Genus	Tolerance Value	Amount
Gammarus	6	44
* Cheumatopsyche	5	13
Parametrioctenus	5	6
Simulium	6	5
* Acentrella	4	4
* Eurylophella	4	3
* Maccaffertium	3	3
* Macrostemum	3	3
Brillia	5	2
Corydalis	4	2
* Isoperla	2	2
Sphaerium	8	2
* Baetidae	4	1
Boyeria	2	1
* Goera	0	1
* Hydropsyche	4	1
* Lepidostoma	1	1
Orthocladus	6	1
Physella	9.1	1
Progomphus	5	1
Rheotanytarsus	6	1
Thienemannimyia	6	1
Tvetenia	5	1

* (EPT organism) Taxa Richness: 23 Population: 100

%Dominance / Dominant Taxon(s): 44.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.21 %Clingers: 34.00%

* E+P+T: 10 (4) Ephemeroptera, (1) Plecoptera, (5) Trichoptera %Ephemeroptera: 11.00%

CPMI Rating: 20 Good

Habitat Analysis: 139 Suboptimal USEPA Protocol

Observations: Water temp: 14.81 C; Cond: 190 umhos; DO: 8.08 mg/L; pH: 6.03 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 26' / 2'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: macrophytes, periphytes, tadpoles

AMNET Site # AN0736

Stream Name: Green Br

Location: Crow Pond Rd; Pittsgrove Twp; Salem County

Collection Date: 5/31/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Crangonyx	8	30
Cricotopus	7	13
Thienemannimyia	6	9
Tribelos	5	7
Simulium	6	5
* Lepidostoma	1	4
* Leuctra	0	4
Limnodrilus	10	4
Sphaeriidae	8	3
Tanytarsus	6	3
* Diplectrona	0	2
* Pseudocloeon	4	2
Calopteryx	6	1
Dicranota	3	1
Eukiefferiella	8	1
Heterotrissocladius	0	1
Hydroporus	5	1
* Limnephilus	3	1
Macropelopia	10	1
Micropsectra	7	1
Microtendipes	7	1
Oulimnius	4	1
Rheotanytarsus	6	1
Stenelmis	5	1
Tubifex	10	1
Unniella	6	1

* (EPT organism) Taxa Richness: 26 Population: 100

%Dominance / Dominant Taxon(s): 30.0% Crangonyx

Hilsenhoff Biotic Index (HBI): 6.24 %Clingers: 28.00%

* E+P+T: 5 (1) Ephemeroptera, (1) Plecoptera, (3) Trichoptera %Ephemeroptera: 2.00%

CPMI Rating: 12 Good

Habitat Analysis: 154 Suboptimal USEPA Protocol

Observations: Water temp: 15.54 C; Cond: 61 umhos; DO: 6.62 mg/L; pH: 4.81 SU

Clarity: clear-cedar brown; Flow Rate: moderate; Width/Depth: 15' / 1'; Substrate: gravel, sand, mud, root mats

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: macrophytes

AMNET Site # AN0737

Stream Name: Green Br

Location: Jesse Bridge Rd; Pittsgrove Twp; Salem County

Collection Date: 5/1/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Eurylophella	4	22
Crangonyx	8	11
* Maccaffertium	3	10
Stenelmis	5	9
Polypedilum	6	6
* Cheumatopsyche	5	5
Cricotopus	7	5
Ischnura	9	5
* Mystacides	4	5
Thienemannimyia	6	4
Sphaeriidae	8	3
Enchytraeidae	10	2
* Caenis	7	1
Calopteryx	6	1
Hagenius	3	1
Hemerodromia	6	1
* Hydropsyche	4	1
Microtendipes	7	1
Nigronia	2	1
* Oecetis	8	1
Pseudolimnophila	2	1
* Triaenodes	6	1
Tribelos	5	1
Tvetenia	5	1
Unniella	6	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 22.0% Eurylophella

Hilsenhoff Biotic Index (HBI): 5.47 %Clingers: 56.00%

* E+P+T: 8 (3) Ephemeroptera, () Plecoptera, (5) Trichoptera %Ephemeroptera: 33.00%

CPMI Rating: 24 Excellent

Habitat Analysis: 162 Optimal USEPA Protocol

Observations: Water temp: 15.31 C; Cond: 58 umhos; DO: 7.60 mg/L; pH: 4.31 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 19/ 1'; Substrate: gravel, sand, root mats

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: forested

Downstream of Impoundment: Small recreational pond (YMCA)

Other: filamentous algae, tadpoles; stream flows under road through 2 pipes; Nature Conservation sanctuary area

AMNET Site # AN0738 **Stream Name: Blackwater Br**
Location: Main Rd; Franklin Twp; Gloucester County
Collection Date: 5/8/2007 **USGS Topo Map: Buena**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Sphaeriidae	8	28
Planorbidae	6	14
Physella	9.1	13
Orthocladius	6	12
Culicoides	10	7
Potthastia	2	6
Caecidotea	8	4
Hydroporus	5	4
Chironomus	10	2
Cricotopus	7	2
Bezzia	6	1
Boyeria	2	1
Ilybius	5	1
Naididae	7	1
Pentaneura	6	1
Polypedilum	6	1
Tanytarsus	6	1
Tubifex	10	1

* (EPT organism) *Taxa Richness:* 18 *Population:* 100

Becks Biotic Index (BBI): 2.00 *%Plecoptera +Trichoptera:* 0.00%
Insect Taxa: 12 *%Mollusca + Amphipoda:* 55.00%
Non-Insect Taxa: 6 *%Diptera - Tanytarsini:* 32.00%
 %Filterers: 29.00%

PMI Rating: **36.41 Fair**

Habitat Analysis: 145 Suboptimal USEPA Protocol

Observations: Water temp: 12.87 C; Cond: 174 umhos; DO: 4.92 mg/L; pH: 6.27 SU
Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 17' / 1'; Substrate: sand, silt
Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses
Stream Gradient: Low Gradient Stream; Land Uses: rural, forested
Other: macrophytes, filamentous algae, waterfowl, ducks, duckweed; adjacent to automotive shop

AMNET Site # AN0739

Stream Name: Blackwater Br

Location: Maurice River Pkwy. (USGS gauge); Vineland; Cumberland County

Collection Date: 5/8/2007 USGS Topo Map: Newfield

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	37
* Brachycentrus	1	18
* Acentrella	4	12
Cricotopus	7	8
* Maccaffertium	3	3
Stenelmis	5	3
* Cheumatopsyche	5	2
* Heterocloeon	2	2
* Lepidostoma	1	2
Rheopelopia	4	2
Corydalis	4	1
Cryptochironomus	8	1
* Eurylophella	4	1
Limnodrilus	10	1
Orthocladius	6	1
Polypedilum	6	1
Simulium	6	1
Sphaerium	8	1

* (EPT organism) Taxa Richness: 18 Population: 97

%Dominance / Dominant Taxon(s): 38.1% Gammarus

Hilsenhoff Biotic Index (HBI): 4.58 %Clingers: 40.21%

* E+P+T: 7 (4) Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 18.56%

CPMI Rating: 20 Good

Habitat Analysis: 160 Optimal USEPA Protocol

Observations: Water temp: 13.62 C; Cond: 142 umhos; DO: 9.64 mg/L; pH: 6.00 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 24' /3'; Substrate: gravel, sand, mud

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses, Phragmites

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: macrophytes, USGS gage

AMNET Site # AN0740

Stream Name: Maurice River

Location: Almond Ave (USGS gauge); Vineland; Cumberland County

Collection Date: 5/8/2007 USGS Topo Map: Millville

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	36
* Eurylophella	4	9
Corbicula	4	6
Amnicola	4.8	5
Microtendipes	7	5
Cricotopus	7	4
Enchytraeidae	10	4
* Oecetis	8	4
Crangonyx	8	3
Cryptochironomus	8	2
Hydrobaenus	8	2
* Maccaffertium	3	2
* Nyctiophylax	5	2
Pisidium	6.8	2
Rheotanytarsus	6	2
Caecidotea	8	1
Didymops	4	1
Menetus	6	1
* Molanna	6	1
Nais	8	1
Nanocladius	3	1
Oulimnius	4	1
Peltodytes	5	1
* Pycnopsyche	4	1
Stempellinella	6	1
Tanytarsus	6	1
* Triaenodes	6	1

* (EPT organism) Taxa Richness: 27 Population: 100

%Dominance / Dominant Taxon(s): 36.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.99 %Clingers: 29.00%

* E+P+T: 7 (2) Ephemeroptera, () Plecoptera, (5) Trichoptera %Ephemeroptera: 11.00%

CPMI Rating: 18 Good

Habitat Analysis: 145 Suboptimal USEPA Protocol

Observations: Water temp: 14.52 C; Cond: 95 umhos; DO: 9.09 mg/L; pH: 5.98 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 75' / 1-3'; Substrate: gravel, sand

Canopy: open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested, recreational beach/park

Other: macrophytes, periphytes, filamentous algae, geese, waterfowl, USGS gage

AMNET Site # AN0741

Stream Name: Muddy Run

Location: Burlington Rd; Upper Pittsgrove Twp; Salem County

Collection Date: 6/6/2007 USGS Topo Map: Elmer

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Simulium	6	23
Tribelos	5	16
Tanytarsus	6	12
Orthocladius	6	8
Rheopelopia	4	7
Polypedilum	6	5
Cricotopus	7	4
Cryptochironomus	8	4
Phaenopsectra	7	3
Ablabesmyia	8	2
Argia	6	2
Dicrotendipes	8	2
Hydroporus	5	2
Limnodrilus	10	2
Procladius	9	2
* Acerpenna	4	1
* Cheumatopsyche	5	1
Chironomus	10	1
Heterotrissocladius	0	1
Menetus	6	1
Stenelmis	5	1

* (EPT organism) Taxa Richness: 21 Population: 100

%Dominance / Dominant Taxon(s): 23.0% Simulium

Hilsenhoff Biotic Index (HBI): 5.99 %Clingers: 34.00%

* E+P+T: 2 (1) Ephemeroptera, () Plecoptera, (1) Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 12 Good

Habitat Analysis: 110 Suboptimal USEPA Protocol

Observations: Water temp: 15.91 C; Cond: 216 umhos; DO: 5.97 mg/L; pH: 5.92 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 10' / <1'; Substrate: cobble, mud, snags, root mats

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland(corn), agriculture-livestock(horses)

Other: fish, crayfish, macrophytes, periphytes, salamanders; gabion on both banks, chain link fencing from gabion lines stream bed for approx 20 yards

AMNET Site # AN0742

Stream Name: Muddy Run

Location: Salem Rd (Rt 611) (out. Elmer Lake); Elmer Boro; Salem County

Collection Date: 6/6/2007 USGS Topo Map: Elmer

Genus	Tolerance Value	Amount
Hyaella	8	42
Stenelmis	5	7
Hydrobiidae	8	6
Mooreobdella	7.8	5
Musculium	5	5
Caecidotea	8	4
Helobdella	8	4
Limnodrilus	10	4
Cricotopus	7	3
Ablabesmyia	8	2
Corbicula	4	2
Lumbriculidae	8	2
Planorbidae	6	2
Pseudochironomus	5	2
* Caenis	7	1
Cladopelma	8	1
Cryptochironomus	8	1
Dicrotendipes	8	1
Ischnura	9	1
Lumbricidae	10	1
Pentaneura	6	1
Polypedilum	6	1
Psectrocladius	8	1
Stylaria	8	1

* (EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 42.0% Hyaella

Hilsenhoff Biotic Index (HBI): 7.48 %Clingers: 10.00%

* E+P+T: 1 (1) Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 1.00%

CPMI Rating: 4 Poor

Habitat Analysis: 139 Suboptimal USEPA Protocol

Observations: Water temp: 22.65 C; Cond: 163 umhos; DO: 6.63 mg/L; pH: 6.61 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 31' / 1'; Substrate: gravel, sand, snags, root mats

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock, rural, forested

Downstream of Impoundment: Elmer Lake

Other: fish, frogs, turtle, periphytes, clams/Unionid mussels

AMNET Site # AN0743

Stream Name: Palatine Br

Location: Shirley Rd; Upper Pittsgrove Twp; Salem County

Collection Date: 6/6/2007 USGS Topo Map: Elmer

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Polypedilum	6	47
Phaenopsectra	7	26
Physella	9.1	5
Micropsectra	7	3
Tribelos	5	3
Ancyronyx	2	2
Limnodrilus	10	2
Pisidium	6.8	2
Planorbidae	6	2
Ablabesmyia	8	1
Bezzia	6	1
Brillia	5	1
Chironomus	10	1
Cricotopus	7	1
Cryptochironomus	8	1
Procladius	9	1
Stenelmis	5	1

* (EPT organism) Taxa Richness: 17 Population: 100

%Dominance / Dominant Taxon(s): 47.0% Polypedilum

Hilsenhoff Biotic Index (HBI): 6.53 %Clingers: 30.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 8 Fair

Habitat Analysis: 116 Suboptimal USEPA Protocol

Observations: Water temp: 15.67 C; Cond: 240 umhos; DO: 7.32 mg/L; pH: 5.85 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 17' / 2'; Substrate: gravel, sand, silt

Canopy: partly open; Bank Stability: fair; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural

Other: macrophytes, snake

AMNET Site # AN0744

Stream Name: Palatine Br

Location: Lower Mill Rd; Pittsgrove Twp; Salem County

Collection Date: 6/6/2007 USGS Topo Map: Elmer

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Physella	9.1	28
Planorbidae	6	17
Ablabesmyia	8	9
Micropsectra	7	7
* Attenella	2	4
Corixidae	9	4
Dicrotendipes	8	4
Cricotopus	7	3
Peltodytes	5	3
Phaenopsectra	7	3
Tanytarsus	6	3
Enchytraeidae	10	2
Lymnaeidae	6	2
Polypedilum	6	2
Acricotopus	10	1
Ancylidae	6	1
Ancyronyx	2	1
Hydroporus	5	1
Macronychus	2	1
Ophidonais	7	1
Paratanytarsus	6	1
* Pseudocloeon	4	1
Stylaria	8	1

* (EPT organism) Taxa Richness: 23 Population: 100

%Dominance / Dominant Taxon(s): 28.0% Physella

Hilsenhoff Biotic Index (HBI): 7.23

%Clingers: 12.00%

* E+P+T: 2 (2) Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 5.00%

CPMI Rating: 6 Fair

Habitat Analysis: 156 Suboptimal USEPA Protocol

Observations: Water temp: 17.36 C; Cond: 194 umhos; DO: 6.30 mg/L; pH: 6.22 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 31' / 2'; Substrate: gravel, sand

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs, weeds

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: fish, macrophytes, periphytes, filamentous algae

AMNET Site # AN0745

Stream Name: Muddy Run

Location: Rt 690 (out. of Palatine Lake); Pittsgrove Twp; Salem County

Collection Date: 5/31/2007 USGS Topo Map: Elmer

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	37
* Cheumatopsyche	5	24
Simulium	6	18
Corbicula	4	4
Stenelmis	5	4
Cricotopus	7	2
Dicrotendipes	8	2
Sphaeriidae	8	2
* Brachycentrus	1	1
Cryptochironomus	8	1
Hyalella	8	1
Macronychus	2	1
Phaenopsectra	7	1
Polypedilum	6	1
Pseudochironomus	5	1

* (EPT organism) *Taxa Richness:* 15 *Population:* 100

%Dominance / Dominant Taxon(s): 37.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.69 *%Clingers:* 51.00%

* *E+P+T:* 2 () Ephemeroptera, () Plecoptera, (2) Trichoptera *%Ephemeroptera:* 0.00%

CPMI Rating: 10 Fair

Habitat Analysis: 143 Suboptimal USEPA Protocol

Observations: Water temp: 24.12 C; Cond: 137 umhos; DO: 7.75 mg/L; pH: 6.45 SU

Clarity: clear - cedar brown; Flow Rate: moderate; Width/Depth: >100' /2'; Substrate: gravel, sand, snags, root mats

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Downstream of Impoundment: Palatine Lake, immediately up stream

Other: fish, turtle, clams/unionid mussels

AMNET Site # AN0746

Stream Name: Indian Run

Location: Cedar Lane Rd; Upper Pittsgrove Twp; Salem County

Collection Date: 6/19/2007 USGS Topo Map: Elmer

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Musculium	5	38
Physella	9.1	30
Pisidium	6.8	17
Paratendipes	8	7
Phaenopsectra	7	4
Clinotanytus	8	1
Corixidae	9	1
Lumbriculus	8	1
Thienemannimyia	6	1

* (*EPT organism*) *Taxa Richness:* 9 *Population:* 100

%Dominance / Dominant Taxon(s): 38.0% Musculium

Hilsenhoff Biotic Index (HBI): 6.94

%Clingers: 4.00%

* *E+P+T:* 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 116 Suboptimal USEPA Protocol

Observations: Water temp: 20.71 C; Cond: 179 umhos; DO: 5.65 mg/L; pH: 7.48 SU

Clarity: clear; Flow Rate: slow; Width/Depth: 12' / 2'; Substrate: mud

Canopy: mostly closed; Bank Stability: fair; Bank Vegetation: trees, weeds

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-livestock, forested

Pipes / Ditches: storm sewers

Other: frogs, macrophytes

AMNET Site # AN0747

Stream Name: Indian Run

Location: Husted Station Rd (upstream of Centerton Pd); Pittsgrove Twp; Salem County

Collection Date: 5/31/2007 USGS Topo Map: Elmer

Genus	Tolerance Value	Amount
Gammarus	6	39
Caecidotea	8	13
Polypedilum	6	11
Physella	9.1	9
Amnicola	4.8	3
Dero	10	3
Dicrotendipes	8	3
Ormosia	3	2
Pisidium	6.8	2
Ancyronyx	2	1
Enchytraeidae	10	1
* Eurylophella	4	1
Hyalella	8	1
Ischnura	9	1
Limnodrilus	10	1
Lumbricillus	10	1
Microtendipes	7	1
Phaenopsectra	7	1
Placobdella	8	1
Planorbidae	6	1
Procladius	9	1
Simulium	6	1
Tetragoneuria	8.5	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 24 Population: 100

%Dominance / Dominant Taxon(s): 39.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.88

%Clingers: 5.00%

* E+P+T: 1 (1) Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 1.00%

CPMI Rating: 6 Fair

Habitat Analysis: 125 Suboptimal USEPA Protocol

Observations: Water temp: 18.18 C; Cond: 180 umhos; DO: 6.22 mg/L; pH: 5.97 SU

Clarity: turbid; Flow Rate: slow; Width/Depth: 33' / >3'; Substrate: mud, silt, snags

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, forested

Other: fish, frogs, macrophytes, filamentous algae

AMNET Site # AN0748

Stream Name: Muddy Run

Location: Parvins Mill Rd (out. of Parvin Lake); Pittsgrove Twp; Salem County

Collection Date: 6/19/2007 USGS Topo Map: Elmer

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	43
Musculium	5	14
Rheotanytarsus	6	12
Physella	9.1	6
Polypedilum	6	5
Corbicula	4	4
* Oecetis	8	3
* Cheumatopsyche	5	2
Limnodrilus	10	2
Nanocladius	3	2
Chironomini	6	1
Dugesia	4	1
* Leptoceridae	4	1
Manayunkia	6	1
Mooreobdella	7.8	1
Naididae	7	1
Prostoma	7	1

* (EPT organism) Taxa Richness: 17 Population: 100

%Dominance / Dominant Taxon(s): 43.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.02 %Clingers: 17.00%

* E+P+T: 3 () Ephemeroptera, () Plecoptera, (3) Trichoptera %Ephemeroptera: 0.00%

CPMI Rating: 10 Fair

Habitat Analysis: 153 Suboptimal USEPA Protocol

Observations: Water temp: 25.98 C; Cond: 104 umhos; DO: 8.17 mg/L; pH: 8.18 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 80' / 2'; Substrate: gravel, sand, root mats, undercut banks

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Downstream of Impoundment: Parvin Lake

Other: fish, turtles, clams / Unionid mussels

AMNET Site # AN0749

Stream Name: Muddy Run

Location: Lebanon Rd; Pittsgrove Twp; Salem County

Collection Date: 6/7/2007 USGS Topo Map: Millville

Genus	Tolerance Value	Amount
* Brachycentrus	1	59
Rheopelopia	4	6
* Leuctra	0	4
Chrysops	6	3
* Eurylophella	4	3
* Lepidostoma	1	3
Calopteryx	6	2
Eclipidrilus	8	2
* Maccaffertium	3	2
Musculium	5	2
* Oecetis	8	2
Boyeria	2	1
* Cheumatopsyche	5	1
Dicranota	3	1
Gammarus	6	1
* Heteroplectron	3	1
Hydrovatus	5	1
* Molanna	6	1
Paracladopelma	7	1
* Psilotreta	0	1
Rheocricotopus	6	1
Sphaeriidae	8	1
Tanytarsus	6	1

* (EPT organism) Taxa Richness: 23 Population: 100

%Dominance / Dominant Taxon(s): 59.0% Brachycentrus

Hilsenhoff Biotic Index (HBI): 2.33 %Clingers: 71.00%

* E+P+T: 10 (2) Ephemeroptera, (1) Plecoptera, (7) Trichoptera %Ephemeroptera: 5.00%

CPMI Rating: 22 Excellent

Habitat Analysis: 165 Optimal USEPA Protocol

Observations: Water temp: 13.89 C; Cond: 65 umhos; DO: 8.93 mg/L; pH: 4.44 SU

Clarity: clear-cedar; Flow Rate: moderate; Width/Depth: 14' / 1'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: forested-Union Lake WMA

Other: frogs, macrophytes

AMNET Site # AN0750

Stream Name: Parvin Br

Location: Rt 55; Vineland; Cumberland County

Collection Date: 11/14/2006 USGS Topo Map: Millville

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Limnodrilus	10	11
Sphaeriidae	8	8
Caecidotea	8	6
Tribelos	5	5
Lumbriculidae	8	4
Ancyronyx	2	3
* Ptilostomis	5	3
Nais	8	2
Tetragoneuria	8.5	2
Cricotopus	7	1
Dubiraphia	6	1
Enchytraeidae	10	1
* Maccaffertium	3	1
Orthocladius	6	1
Thienemannimyia	6	1
Tubifex	10	1

* (EPT organism) Taxa Richness: 16 Population: 51

%Dominance / Dominant Taxon(s): 21.6% Limnodrilus

Hilsenhoff Biotic Index (HBI): 7.47

%Clingers: 11.76%

* E+P+T: 2 (1) Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 1.96%

CPMI Rating: 2 Poor

Habitat Analysis: 137 Suboptimal USEPA Protocol

Observations: Water temp: 14.80 C; Cond: 264 umhos; DO: 5.98 mg/L; pH: 6.82 SU

Clarity: clear, cedar; Flow Rate: fast; Width/Depth: 20' / 1'; Substrate: gravel, sand, snags, root mats, undercut banks

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses, weeds

Stream Gradient: Low Gradient Stream; Land Uses: forested

AMNET Site # AN0751

Stream Name: Maurice River

Location: Sherman Ave; Vineland; Cumberland County

Collection Date: 5/30/2007 USGS Topo Map: Millville

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Gammarus	6	57
Polypedilum	6	7
* Phyllocentropus	5	5
Physella	9.1	5
Amnicola	4.8	4
Limnodrilus	10	4
Stagnicola	7	4
Tribelos	5	3
Chironomus	10	2
Sphaerium	8	2
Tubifex	10	2
Ablabesmyia	8	1
Enallagma	9	1
* Eurylophella	4	1
Pisidium	6.8	1
Procladius	9	1

* (EPT organism) Taxa Richness: 16 Population: 100

%Dominance / Dominant Taxon(s): 57.0% Gammarus

Hilsenhoff Biotic Index (HBI): 6.50

%Clingers: 1.00%

* E+P+T: 2 (1) Ephemeroptera, () Plecoptera, (1) Trichoptera

%Ephemeroptera: 1.00%

CPMI Rating: 4 Poor

Habitat Analysis: 132 Suboptimal USEPA Protocol

Observations: Water temp: 21.37 C; Cond: 111 umhos; DO: 7.14 mg/L; pH: 5.92 SU

Clarity: clear - cedar brown; Flow Rate: moderate; Width/Depth: 90' /4'; Substrate: sand, mud, snags

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: frogs, macrophytes

AMNET Site # AN0752

Stream Name: Lebanon Br (Mill Ck)

Location: Sherman Rd; Deerfield Twp; Cumberland County

Collection Date: 11/14/2006 USGS Topo Map: Millville

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Leuctra	0	19
* Maccaffertium	3	16
* Cheumatopsyche	5	15
* Pycnopsyche	4	7
Caecidotea	8	5
Crangonyx	8	4
Simulium	6	4
Sphaerium	8	4
Hetaerina	6	3
Tvetenia	5	3
* Brachycentrus	1	2
* Hydropsyche	4	2
Nigronia	2	2
Orthocladius	6	2
Spirosperma	10	2
Bezzia	6	1
Hemerodromia	6	1
* Heteroplectron	3	1
* Isoperla	2	1
Limnodrilus	10	1
Lumbriculus	8	1
* Lype	2	1
Pisidium	6.8	1
Polypedilum	6	1
* Taeniopteryx	2	1

* (EPT organism) Taxa Richness: 25 Population: 100

%Dominance / Dominant Taxon(s): 19.0% Leuctra

Hilsenhoff Biotic Index (HBI): 4.10 %Clingers: 64.00%

* E+P+T: 10 (1) Ephemeroptera, (3) Plecoptera, (6) Trichoptera %Ephemeroptera: 16.00%

CPMI Rating: 24 Excellent

Habitat Analysis: 158 Suboptimal USEPA Protocol

Observations: Water temp: 13.44 C; Cond: 85 umhos; DO: 4.37 mg/L; pH: 3.92 SU

Clarity: clear, cedar; Flow Rate: fast; Width/Depth: 10' / 1 - 2'; Substrate: gravel, sand

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: agriculture-cropland, rural, forested

Pipes / Ditches: storm sewers

Other: macrophytes; floatables; foam on surface

AMNET Site # AN0753

Stream Name: Mill Ck

Location: off Rt 552 (Union Lake WMA); Millville; Cumberland County

Collection Date: 6/7/2007 USGS Topo Map: Millville

Genus	Tolerance Value	Amount
Gammarus	6	29
Polypedilum	6	13
Musculium	5	7
Tribelos	5	7
* Brachycentrus	1	6
Limnodrilus	10	5
* Eurylophella	4	3
* Maccaffertium	3	3
Physella	9.1	3
Tanytarsus	6	3
Tubificidae	10	3
Amnicola	4.8	2
Sphaerium	8	2
Ablabesmyia	8	1
Ancyronyx	2	1
Clinotanypus	8	1
Eclipidrilus	8	1
Enchytraeidae	10	1
* Glossosomatidae	0	1
Hydrobaenus	8	1
Macromia	2	1
Macronychus	2	1
Menetus	6	1
Phaenopsectra	7	1
Rheopelopia	4	1
Stenelmis	5	1
Stylodrilus	10	1

* (EPT organism) Taxa Richness: 27 Population: 100

%Dominance / Dominant Taxon(s): 29.0% Gammarus

Hilsenhoff Biotic Index (HBI): 5.80 %Clingers: 17.00%

* E+P+T: 4 (2) Ephemeroptera, () Plecoptera, (2) Trichoptera %Ephemeroptera: 6.00%

CPMI Rating: 14 Good

Habitat Analysis: 142 Suboptimal USEPA Protocol

Observations: Water temp: 18.83 C; Cond: 129 umhos; DO: 7.83 mg/L; pH: 6.18 SU

Clarity: turbid-brown; Flow Rate: slow; Width/Depth: 70' / 3'; Substrate: gravel, sand, silt, root mats, undercut banks

Canopy: open; Bank Stability: good; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: fish, turtle, two large dead fish, trash downstream, deteriorating concrete bridge

AMNET Site # AN0754

Stream Name: White Marsh Run

Location: Hogbin Rd; Millville; Cumberland County

Collection Date: 5/30/2007 USGS Topo Map: Millville

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Crangonyx	8	39
Micropsectra	7	14
Tanytarsus	6	13
Tribelos	5	12
Psectrocladius	8	5
Lumbriculidae	8	4
Cricotopus	7	3
Microtendipes	7	3
Unniella	6	2
Enchytraeidae	10	1
Hydrobaenus	8	1
Polypedilum	6	1
Simulium	6	1
Tvetenia	5	1

* (EPT organism) Taxa Richness: 14 Population: 100

%Dominance / Dominant Taxon(s): 39.0% Crangonyx

Hilsenhoff Biotic Index (HBI): 7.09

%Clingers: 7.00%

* E+P+T: 0 () Ephemeroptera, () Plecoptera, () Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 4 Poor

Habitat Analysis: 137 Suboptimal USEPA Protocol

Observations: Water temp: 15.75 C; Cond: 43 umhos; DO: 6.63 mg/L; pH: 3.80 SU

Clarity: clear-cedar brown; Flow Rate: moderate; Width/Depth: 10' / 1'; Substrate: sand, mud

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: frogs, macrophytes, filamentous algae, pest control sampling at site for DCPA

AMNET Site # AN0756

Stream Name: Buckshutem Ck

Location: Rt 555; Millville; Cumberland County

Collection Date: 5/30/2007 USGS Topo Map: Dividing Creek

Genus	Tolerance Value	Amount
Rheopelopia	4	20
Cricotopus	7	18
Simulium	6	13
Corydalis	4	11
Orthocladius	6	11
Apsectrotanypus	5	4
Argia	6	4
Bezzia	6	3
Polypedilum	6	3
* Cheumatopsyche	5	1
Eclipidrilus	8	1
Hydroporus	5	1
* Hydropsyche	4	1
Labrundinia	7	1
* Leuctra	0	1
* Mystacides	4	1
Psectrocladius	8	1
Rheotanytarsus	6	1
Sialis	4	1
Stylodrilus	10	1
Tabanus	5	1
Tribelos	5	1

* (EPT organism) Taxa Richness: 22 Population: 100

%Dominance / Dominant Taxon(s): 20.0% Rheopelopia

Hilsenhoff Biotic Index (HBI): 5.45

%Clingers: 50.00%

* E+P+T: 4 () Ephemeroptera, (1) Plecoptera, (3) Trichoptera

%Ephemeroptera: 0.00%

CPMI Rating: 14 Good

Habitat Analysis: 150 Suboptimal USEPA Protocol

Observations: Water temp: 15.80 C; Cond: 48 umhos; DO: 6.32 mg/L; pH: 3.38 SU

Clarity: clear-cedar brown; Flow Rate: moderate; Width/Depth: 4' / 2'; Substrate: gravel, sand, root mats

Canopy: partly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: forested

Other: frogs, macrophytes, filamentous algae, stream was braided

AMNET Site # AN0757 **Stream Name: Cedar Br**
Location: Italia Ave; Vineland; Cumberland County
Collection Date: 6/7/2007 **USGS Topo Map: Five Points**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Brachycentrus	1	25
Corbicula	4	10
Crangonyx	8	10
Sphaeriidae	8	10
Lumbriculidae	8	7
Tribelos	5	7
Physella	9.1	5
Planorbidae	6	5
* Cheumatopsyche	5	4
Polypedilum	6	4
Aulodrilus	8	2
Enchytraeidae	10	2
Ischnura	9	2
Brillia	5	1
Dubiraphia	6	1
Erpobdella	7.8	1
Limnodrilus	10	1
* Maccaffertium	3	1
Paratendipes	8	1
* Pseudocloeon	4	1

* (*EPT organism*) *Taxa Richness:* 20 *Population:* 100

Becks Biotic Index (BBI): 5.00 *%Plecoptera +Trichoptera:* 29.00%

Insect Taxa: 10 *%Mollusca + Amphipoda:* 40.00%

Non-Insect Taxa: 10 *%Diptera - Tanytarsini:* 13.00%

%Filterers: 49.00%

PMI Rating: **36.60 Fair**

Habitat Analysis: 159 Suboptimal USEPA Protocol

Observations: Water temp: 19.10 C; Cond: 182 umhos; DO: 6.19 mg/L; pH: 5.92 SU
 Clarity: clear; Flow Rate: moderate; Width/Depth: 15' / 2'; Substrate: gravel, sand
 Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, vines
 Stream Gradient: Low Gradient Stream; Land Uses: rural, forested
 Other: macrophytes, stream goes through two pipes under road

AMNET Site # AN0758 Stream Name: Panther Br (Manantico Ck)

Location: Italia Ave; Vineland; Cumberland County

Collection Date: 6/7/2007 USGS Topo Map: Five Points

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Brachycentrus	1	32
Tribelos	5	31
Gammarus	6	7
Rheotanytarsus	6	4
Polypedilum	6	3
Ancyronyx	2	2
Eclipidrilus	8	2
Limnodrilus	10	2
Menetus	6	2
Sphaerium	8	2
Tubificidae	10	2
Brillia	5	1
Dubiraphia	6	1
Gomphus	5	1
Macronychus	2	1
Musculium	5	1
Parakiefferiella	4	1
Procladius	9	1
Rheocricotopus	6	1
Stenelmis	5	1
Tanytarsus	6	1
Zavrelia	4	1

* (EPT organism) Taxa Richness: 22 Population: 100

Becks Biotic Index (BBI): 6.00 %Plecoptera +Trichoptera: 32.00%

Insect Taxa: 15 %Mollusca + Amphipoda: 12.00%

Non-Insect Taxa: 7 %Diptera - Tanytarsini: 38.00%

%Filterers: 40.00%

PMI Rating: 53.39 Fair

Habitat Analysis: 157 Suboptimal USEPA Protocol

Observations: Water temp: 17.13 C; Cond: 210 umhos; DO: 7.14 mg/L; pH: 5.80 SU

Clarity: clear; Flow Rate: moderate; Width/Depth: 15' / 3'; Substrate: gravel, sand

Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: frogs, macrophytes, lawn up to left bank

AMNET Site # AN0759

Stream Name: Manantico Ck

Location: Hance Bridge Rd (Rt 673); Vineland; Cumberland County

Collection Date: 6/7/2007

USGS Topo Map: Five Points

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Brachycentrus	1	79
Tribelos	5	6
* Pseudocloeon	4	3
Crangonyx	8	2
Polypedilum	6	2
Aulodrilus	8	1
Calopteryx	6	1
Limnodrilus	10	1
Lumbriculus	8	1
* Maccaffertium	3	1
Phaenopsectra	7	1
Planorbidae	6	1
Simulium	6	1

* (EPT organism) *Taxa Richness:* 13 *Population:* 100

Becks Biotic Index (BBI): 4.00 *%Plecoptera + Trichoptera:* 79.00%

Insect Taxa: 8 *%Mollusca + Amphipoda:* 3.00%

Non-Insect Taxa: 5 *%Diptera - Tanytarsini:* 10.00%

%Filterers: 80.00%

PMI Rating: 47.96 Fair

Habitat Analysis: 169 Optimal USEPA Protocol

Observations: Water temp: 17.90 C; Cond: 212 umhos; DO: 7.93 mg/L; pH: 5.87 SU

Clarity: clear-cedar; Flow Rate: fast; Width/Depth: 17' / 2'; Substrate: gravel, sand

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, vines

Stream Gradient: Low Gradient Stream; Land Uses: rural

Other: macrophytes

AMNET Site # AN0760 **Stream Name: Manantico Ck**
Location: Rt 49; Millville; Cumberland County
Collection Date: 6/21/2007 **USGS Topo Map: Five Points**

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
* Brachycentrus	1	38
Rheotanytarsus	6	10
Stenelmis	5	9
* Perlesta	4	5
Tanytarsus	6	5
* Maccaffertium	3	4
* Cheumatopsyche	5	3
* Leuctra	0	3
Polypedilum	6	3
Tvetenia	5	3
* Attenella	2	2
Macronychus	2	2
Oulimnius	4	2
Promoresia	2	2
Thienemanniella	6	2
Cordulegaster	3	1
Cryptochironomus	8	1
* Glossosoma	0	1
* Neophylax	3	1
Phaenopsectra	7	1
Pisidium	6.8	1
* Pycnopsyche	4	1

* (EPT organism) *Taxa Richness:* 22 *Population:* 100

Becks Biotic Index (BBI): 15.00 *%Plecoptera +Trichoptera:* 52.00%

Insect Taxa: 21 *%Mollusca + Amphipoda:* 1.00%

Non-Insect Taxa: 1 *%Diptera - Tanytarsini:* 10.00%

%Filterers: 57.00%

PMI Rating: **64.78** **Excellent**

Habitat Analysis: 166 Optimal USEPA Protocol

Observations: Water temp: 16.53 C; Cond: 119 umhos; DO: 9.27 mg/L; pH: 6.73 SU
 Clarity: clear; Flow Rate: moderate; Width/Depth: 40' / 1'; Substrate: gravel, sand, snags
 Canopy: mostly closed; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses
 Stream Gradient: Low Gradient Stream; Land Uses: rural
 Other: fish, macrophytes, periphytes

AMNET Site # AN0763

Stream Name: Manumuskin River

Location: on The Nature Conservancy property off Cumberland-Port Elizabeth Rd (Fries Mill); Maurice River Twp; Cumberland County

Collection Date: 6/26/2007 USGS Topo Map: Port Elizabeth

<i>Genus</i>	<i>Tolerance Value</i>	<i>Amount</i>
Tribelos	5	72
Microtendipes	7	7
Nais	8	5
Psectrocladius	8	5
Dicrotendipes	8	2
Tanytarsus	6	2
Caecidotea	8	1
Cricotopus	7	1
Gammarus	6	1
* Leptoceridae	4	1
Rheopelopia	4	1
Thienemanniella	6	1
Tubificidae	10	1

**(EPT organism)* Taxa Richness: 13 Population: 100

Becks Biotic Index (BBI): 2.00 %Plecoptera +Trichoptera: 1.00%

Insect Taxa: 9 %Mollusca + Amphipoda: 1.00%

Non-Insect Taxa: 4 %Diptera - Tanytarsini: 89.00%

%Filterers: 9.00%

PMI Rating: 57.73 Good

Habitat Analysis: 172 Optimal USEPA Protocol

Observations: Water temp: 19.26 C; Cond: 33 umhos; DO: 7.43 mg/L; pH: 4.59 SU

Clarity: clear-cedar; Flow Rate: slow; Width/Depth: 26' / 3'; Substrate: gravel, sand, silt

Canopy: mostly open; Bank Stability: good; Bank Vegetation: trees, shrubs, grasses

Stream Gradient: Low Gradient Stream; Land Uses: rural, forested

Other: frogs, turtle, Fence Swift lizard; Manumuskin River Preserve