

# BIOLOGICAL STREAM SURVEY

**ROCKLAND COUNTY, NEW YORK  
LOTIC SCENE INVESTIGATION (LSI)  
2012 STREAM BIOMONITORING WATER QUALITY PROJECT**



PREPARED BY  
WATERSHED ASSESSMENT ASSOCIATES, LLC  
SCHENECTADY, NEW YORK

FOR  
ROCKLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT  
POMONA, NEW YORK

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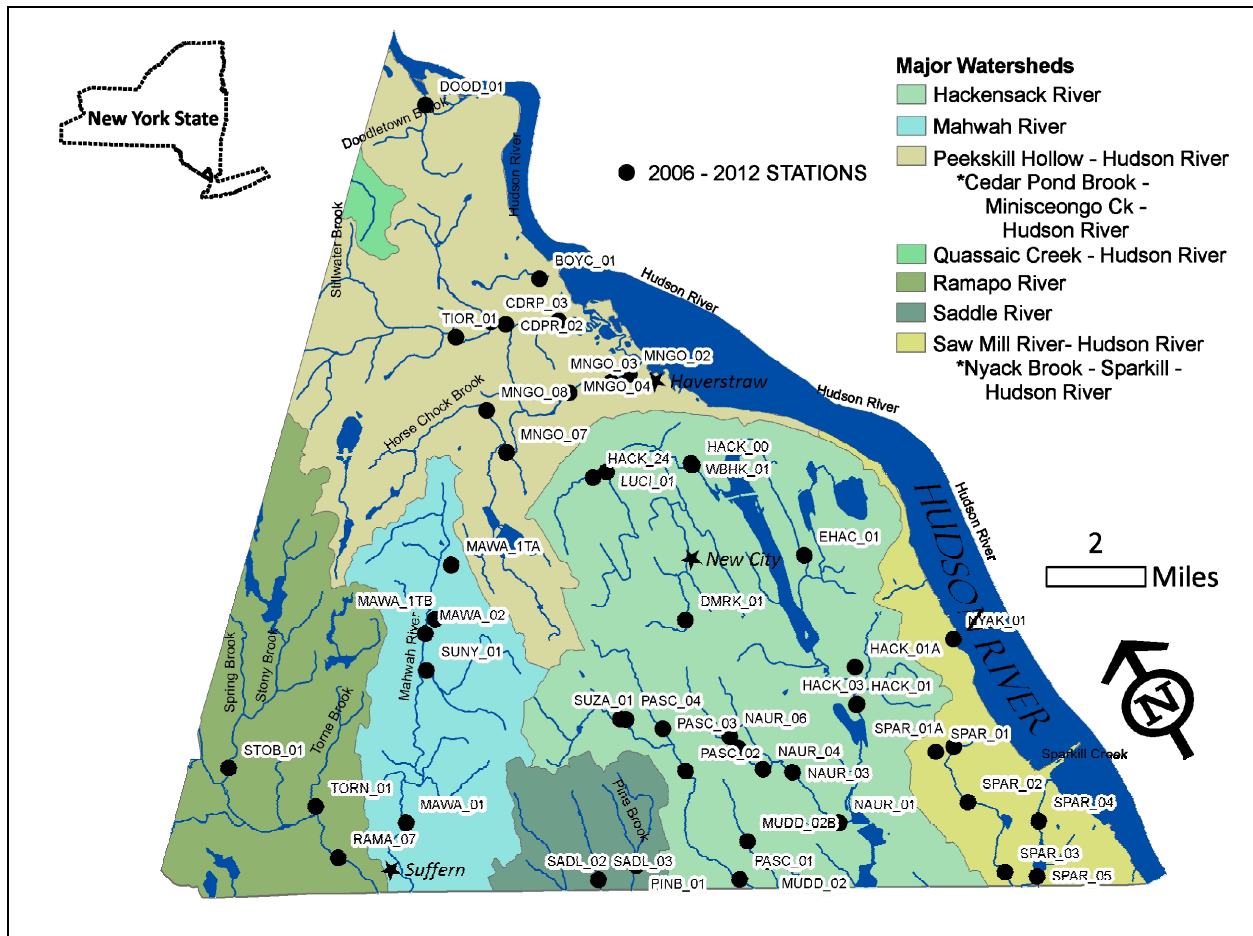
## Introduction

This report summarizes the results from the benthic samples collected for Rockland County in 2012. This project is supported by the Rockland County Soil and Water Conservation District. This data is part of an ongoing assessment of Rockland County stream communities since 2006 (Figure 1); for complete project overview, history, rationale, background, project goals, methods, key terminology and interpretation of 2006-2012 data, see Rockland County reports website:

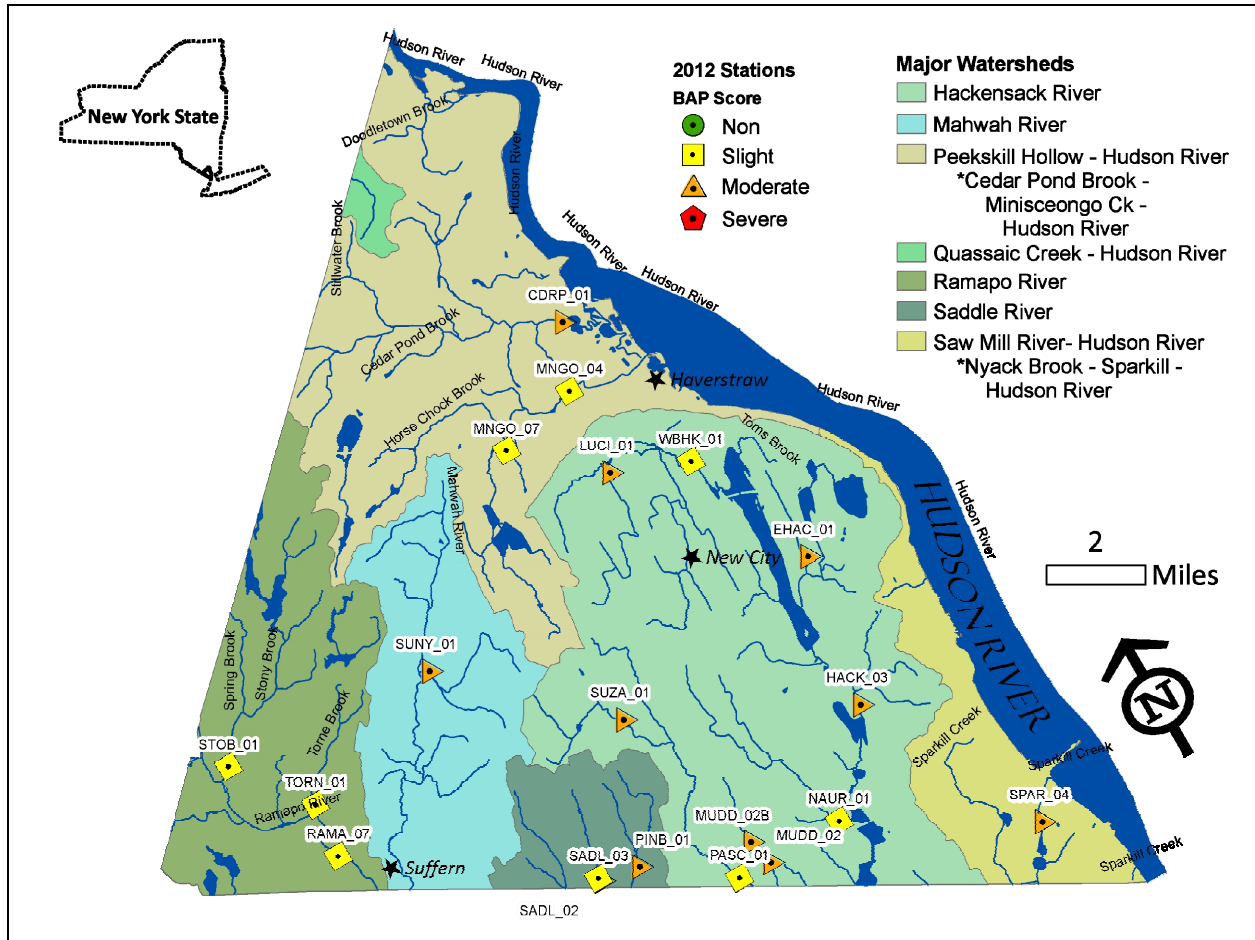
<http://www.co.rockland.ny.us/enviro/BiomonitorProject.htm>

Benthic kick samples were collected at 20 stations over a 2 day period (July 31 and August 1, 2012). Eighteen of the stations had been previously sampled in at least one year during 2006 – 2011; stations are re-sampled periodically for trend monitoring. The two new stations that were assessed were selected to establish baseline water quality and augment water quality assessments on the same stream (Figure 2). Data was analyzed using New York State Department of Environmental Conservation (NYS DEC) methodology to determine a biological assessment profile (BAP), indicating overall water quality at each test site (see Table 3).

**Figure 1. Map of 2006-2012 station locations in Rockland County, NY. Watershed delineation and watershed names are based on hydrological drainage units originated by the U.S. Geological Survey New York Water Science Center and U.S Department of Agriculture, New York State Natural Resources Conservation Service (published in 2008). \*Indicates the name of the watershed that it is locally known as.**



**Figure 2. Map of 2012 station locations and BAP scores in Rockland County, NY. Watershed delineation and watershed names are based on hydrological drainage units originated by the U.S. Geological Survey New York Water Science Center and U.S Department of Agriculture, New York State Natural Resources Conservation Service (published in 2008). \*Indicates the name of the watershed that it is locally known as.**



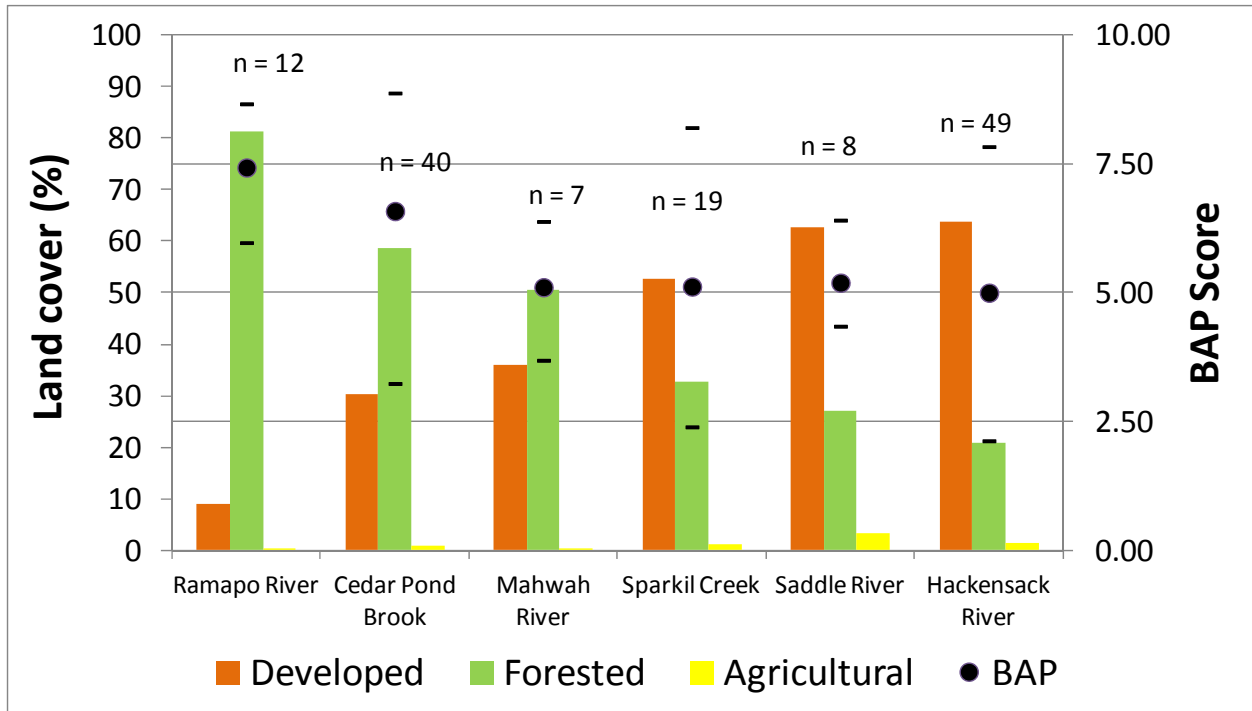
### Summary of Results

The 2012 biological community metrics indicated Rockland County water quality ranged from slightly impacted to moderately impacted: 9 sites were slightly impacted and 11 were moderately impacted (Figure 2 and Table 1).

Comparison of the biological assessment profile (BAP) for each station to prior data shows water quality declined (BAP dropped at least 0.5 points) at 8 stations, improved at 2 stations, and remained the same at 8 stations (Table 2). There was no comparison data available for 2 stations. Of the 8 stations with declining water quality, the BAP dropped enough at four stations to reclassify them into a worse impact category. One of the 2 stations with improved water quality both were reclassified into a higher category.

The variability in water quality, in part, reflects land use in each of the major stream basins. Areas with greater percentage of forested land have been associated with higher water quality scores since 2006 than areas of greater development or agriculture (figure 3). Forested areas usually contain fewer sources of pollutants and superior ability to buffer impacts. Greater impervious surface associated with development results in more runoff of pollutants; chemicals applied to lawns and crops and livestock waste also impact streams through runoff.

**Figure 3. Percentage of land use and mean BAP scores for years 2006 – 2012 within each major watershed. N = number of samples, dashed line indicates minimum and maximum scores.**



**Table 1. Benthic macroinvertebrate metric scores and impact source determination percentages for the 20 stream sites sampled in 2012 throughout Rockland County, NY. Bolded numbers indicate most likely source of impact to stream community. TR= taxa richness; BI= biotic index; EPT = Ephemeroptera-Plecoptera-Trichoptera taxa; PMA= percent model affinity; BAP = biotic assessment profile; Nat=natural; NPN = non-point nutrient; Org = organic inputs; Imp= impoundment; Complex= municipal/industrial/nutrients. NBI-N = Nutrient Biotic Index for nitrogen; NBI-P = Nutrient Biotic Index for phosphorus. \*Stations added in 2012; all other stations have been previously sampled at least once during 2006-2011.**

| Stream Name               | Station   | Biotoc Metrics |     |     |     |     | Impact Source Determination (ISD) |           |           |           |           |           |           | NBI metrics |       |
|---------------------------|-----------|----------------|-----|-----|-----|-----|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-------|
|                           |           | TR             | EPT | BI  | PMA | BAP | Nat                               | NPN       | Org       | Complex   | Toxic     | Silt      | Imp       | NBI-N       | NBI-P |
| Cedar Pond Brook          | CDRP_01   | 15             | 10  | 5.4 | 25  | 4.6 | 30                                | <b>51</b> | 46        | <b>50</b> | 37        | 33        | <b>58</b> | 4.56        | 5.97  |
| W Branch Hackensack River | WBHK_01*  | 14             | 6   | 4.9 | 62  | 5.8 | 60                                | 61        | <b>67</b> | 54        | 58        | <b>66</b> | <b>66</b> | 6.99        | 6.65  |
| E Branch Hackensack River | EHAC_01   | 16             | 0   | 7.6 | 35  | 2.6 | 15                                | 30        | <b>61</b> | <b>56</b> | 35        | 40        | 50        | 5.50        | 7.40  |
| Hackensack River          | HACK_03   | 13             | 2   | 6.7 | 48  | 4   | 29                                | 35        | 53        | <b>63</b> | 42        | 47        | 56        | 7.88        | 7.12  |
| Minisceongo Creek         | MNGO_07   | 18             | 8   | 5.4 | 38  | 5.2 | 36                                | 57        | <b>59</b> | 54        | <b>63</b> | 56        | <b>58</b> | 6.27        | 6.15  |
| Miniseongo Creek          | MNGO_04   | 13             | 8   | 5.3 | 44  | 5.1 | 42                                | <b>59</b> | <b>58</b> | <b>60</b> | <b>59</b> | 51        | <b>55</b> | 6.00        | 6.48  |
| Muddy Creek               | MUDD_02   | 13             | 1   | 5.9 | 41  | 3.5 | 24                                | 36        | 34        | 52        | <b>64</b> | 34        | 54        | 7.78        | 7.16  |
| Muddy Creek               | MUDD_02B* | 10             | 4   | 5.4 | 44  | 4.2 | 37                                | <b>57</b> | <b>56</b> | 54        | <b>60</b> | <b>55</b> | 53        | 7.85        | 7.12  |
| Nauraushaun Brook         | NAUR_01   | 22             | 8   | 5.4 | 54  | 6.2 | 34                                | <b>59</b> | <b>60</b> | <b>60</b> | 51        | 48        | <b>60</b> | 6.83        | 6.88  |
| Pascack Brook             | PASC_01   | 16             | 6   | 5.3 | 42  | 5   | 24                                | <b>52</b> | <b>50</b> | <b>55</b> | 38        | 38        | <b>58</b> | 7.08        | 7.03  |
| Pine Brook                | PINB_01   | 10             | 4   | 5.1 | 30  | 3.7 | 32                                | 64        | 56        | 49        | <b>72</b> | 55        | 60        | 7.01        | 6.78  |
| Ramapo River              | RAMA_07   | 18             | 11  | 4.8 | 68  | 7   | 48                                | <b>62</b> | 49        | <b>57</b> | 56        | 42        | 51        | 5.62        | 6.32  |
| Saddle River              | SADL_02   | 14             | 6   | 5.1 | 29  | 4.4 | 31                                | 53        | <b>63</b> | <b>63</b> | <b>65</b> | 52        | <b>62</b> | 6.77        | 6.57  |
| Saddle River              | SADL_03   | 20             | 5   | 5.3 | 47  | 5.4 | 42                                | <b>69</b> | 47        | 54        | 44        | 44        | 59        | 7.08        | 6.59  |
| Sparkill Creek            | SPAR_04   | 14             | 5   | 5.9 | 35  | 4.2 | 27                                | 48        | <b>55</b> | <b>54</b> | <b>58</b> | 41        | <b>53</b> | 7.89        | 7.10  |
| Stoney Brook              | STOB_01   | 17             | 13  | 2.6 | 59  | 7.4 | <b>51</b>                         | 37        | 31        | 26        | 25        | 45        | 31        | 5.14        | 5.00  |
| Sunny Brook               | SUNY_01   | 9              | 3   | 5.8 | 40  | 3.7 | 32                                | 49        | <b>56</b> | 51        | 50        | <b>52</b> | 47        | 7.71        | 6.88  |
| Torne Brook               | TORN_01   | 18             | 7   | 3   | 43  | 5.9 | 42                                | 47        | 41        | 41        | 40        | 36        | 46        | 5.08        | 4.79  |
| Unnamed tributary         | LUCI_01   | 16             | 8   | 4.7 | 26  | 4.7 | 30                                | <b>63</b> | 40        | <b>62</b> | 37        | 32        | 53        | 3.56        | 4.43  |
| Unnamed tributary         | SUZA_01   | 13             | 3   | 5.6 | 49  | 4.5 | 29                                | <b>59</b> | <b>55</b> | <b>60</b> | 45        | 37        | <b>57</b> | 6.34        | 6.36  |

**Table 2 Biological Assessment Profile (BAP) scores from 2006-2012, the relative difference between 2012 and the most previous BAP values, and the overall change in water quality status (a difference of  $\geq \pm 0.5$  points).**

| Stream Name                | Station | BAP<br>2006 | BAP<br>2007 | BAP<br>2008 | BAP<br>2009 | BAP<br>2010 | BAP<br>2011 | BAP<br>2012 | Diff  | Change    |
|----------------------------|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-----------|
| Cedar Pond Brook           | CDRP_01 | 7.2         | 8.61        |             | 7.56        |             |             | 4.62        | -2.94 | Decline   |
| E. Branch Hackensack River | EHAC_01 |             |             | 4.05        | 2.69        |             |             | 2.64        | -0.05 | No change |
| Hackensack River           | HACK_03 |             |             |             | 3.62        |             |             | 3.98        | 0.36  | No change |
| Minisceongo Creek          | MNGO_04 | 6.31        | 5.51        |             |             | 4.28        |             | 5.1         | 0.82  | Improve   |
| Minisceongo Creek          | MNGO_07 |             |             | 3.24        | 6.25        |             |             | 5.18        | -1.07 | Decline   |
| Muddy Creek                | MUDD_02 | 4.97        | 4.92        |             | 5.09        | 4.35        | 4.4         | 3.49        | -0.91 | Decline   |
| Nauraushaun Brook          | NAUR_01 |             |             | 5.83        |             |             |             | 6.19        | 0.36  | No change |
| Pascack Brook              | PASC_01 |             |             | 5.76        |             |             | 4.3         | 5.02        | 0.72  | Improve   |
| Pine Brook                 | PINB_01 |             |             | 4.37        | 4.99        | 4.19        |             | 3.73        | -0.46 | No change |
| Ramapo River               | RAMA_07 | 7.29        | 6.01        | 5.97        | 7.58        | 6.54        | 6.5         | 6.98        | 0.48  | No change |
| Saddle River               | SADL_02 |             |             | 4.36        | 6.41        |             |             | 4.35        | -2.06 | Decline   |
| Saddle River               | SADL_03 |             |             | 4.84        | 5.34        | 6           | 5.2         | 5.36        | 0.16  | No change |
| Sparkill                   | SPAR_04 | 4.73        | 5.46        | 4.64        | 4.6         | 4.29        | 4.6         | 4.2         | -0.40 | No change |
| Stoney Brook               | STOB_01 | 8.41        | 8.66        | 8.11        | 8.20        |             |             | 7.4         | -0.80 | Decline   |
| Sunny Brook                | SUNY_01 |             |             | 4.31        | 5.74        |             |             | 3.69        | -2.05 | Decline   |
| Torne Brook                | TORN_01 |             |             | 6.15        |             | 7.37        |             | 5.92        | -1.45 | Decline   |
| Unnamed tributary          | SUZA_01 |             |             | 4.84        | 4.69        |             |             | 4.51        | -0.18 | No change |
| Unnamed tributary          | LUCI_01 |             |             | 5.82        |             |             |             | 4.73        | -1.09 | Decline   |

**Table 3. Descriptions of the NYS metrics and BAP scores calculated (adapted from Smith et al. 2009).**

| Metric  | Description  | Sample Type | Predicted response to impact |
|---|--|-------------|------------------------------|
| Taxa Richness (TR)                                  | Species richness is the total number of unique species or taxa found in the subsample. Higher species richness indicates higher water quality.   | Kick        | Decrease                     |
| Ephemeroptera-Trichoptera-Plecoptera (EPT) Richness | EPT Richness is the total number of taxa of mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) found in a subsample. These are considered to be mostly clean-water organisms, and their presence may indicate good water quality.  | Kick        | Decrease                     |
| Hilsenhoff's Biotic Index (BI)                      | Biotic index is calculated by multiplying the number of individuals of each species or taxa by its assigned tolerance value, summing these products, and dividing by the total number of individuals. Tolerance values range from intolerant (0) to tolerant (10). High biotic index values are suggestive of organically enriched condition, while low values indicate naturally occurring, ambient communities.  | Kick        | Increase                     |
| Percent Model Affinity (PMA)                        | This is a measure of similarity to a model non-impacted community based on percent abundance in 7 major groups to measure similarity to a kick sample community of 40% Ephemeroptera, 5% Plecoptera, 10% Trichoptera, 10% Coleoptera, 20% Chironomidae, 5% Oligochaeta, and 10% Other. The lower the similarity value the greater the impact.  | Kick        | Decrease                     |
| Biological Assessment Profile (BAP)                 | BAP is the assessed impact for each station. The BAP score is the mean value of the above metrics after converting each metric score to a common scale of 0-10. The higher the BAP score, the better the assessed impact category. There are four impact categories in NYS: non-, slight, moderate, or severe impact.<br><br>The NYS impact categories and representative BAP scores are; Non-Impact 7.51 – 10, Slight Impact 5.01-7.5, Moderate Impact 2.51- 5, Severe Impact 0- 2.5. | Kick        | Decrease                     |

**Table 4. Nutrient Biotic Index (NBI) Ranges and trophic state.**

| Trophic state for NBI | NBI     |
|-----------------------|---------|
| Eutrophic             | 6.01-10 |
| Mesotrophic           | 5.01-6  |
| Oligotrophic          | 0-5     |



## **Appendix**

A Field and Lab Data Summary page was created for each of the stations sampled, including: site location, number, sampling date, physical and chemical data, and site photos as well as the taxa identified for each sub-sample.

# Stream Field Data Summary

Waterbody: **Cedar Pond Brook**

River Basin: **Hudson**

County: **Rockland**

State: **NY**

Station: **CDRP 01**

Coll Date: **7/31/2012**

Site description: **Just above Lowland Road bridge**

Latitude: **41.2268**

Longitude: **-73.9846**

Field Crew: **jkn**

| Physical Characteristics        |                  |
|---------------------------------|------------------|
| Depth (meters):                 | 0.2              |
| Width (meters):                 | 5                |
| Current (cm/sec):               | 56               |
| Canopy (%):                     | 43               |
| Substrate                       |                  |
| Rock (%):                       | 10               |
| Rubble (%):                     | 25               |
| Gravel (%):                     | 25               |
| Sand (%):                       | 25               |
| Silt (%):                       | 15               |
| Embeddedness (%):               | 25               |
| Chemical Measurements           |                  |
| DO (mg/L):                      | 10.88            |
| DO sat. (%):                    | 120.3            |
| Temperature (C):                | 20.29            |
| Spec. Conduct. (umhos):         | 300              |
| Baro pressure:                  | 763.4            |
| pH:                             | 7.53             |
| Salinity (PSS):                 | 0.14             |
| Biological Attributes           |                  |
| Aquatic vegetation              |                  |
| Macrophytes:                    | Y                |
| Diatoms:                        | Y                |
| Algae-suspended:                |                  |
| Algae-filamentous:              | Y                |
| Occurance of macroinvertebrates |                  |
| Ephemeroptera:                  | Y                |
| Plecoptera:                     | Y                |
| Trichoptera:                    | Y                |
| Coleoptera:                     | Y                |
| Megaloptera:                    | Y                |
| Odonata:                        |                  |
| Chironomidae:                   | Y                |
| Simuliidae:                     |                  |
| Decapoda:                       |                  |
| Gammaridae:                     |                  |
| Mollusca:                       |                  |
| Oligochaeta:                    |                  |
| Other macro's:                  |                  |
| Field Faunal Condition:         | <b>Very good</b> |

Flow  
↓



↑  
Flow



## Lab Data Summary

Waterbody: **Cedar Pond Brook**

Station: **CDRP\_01**

Latitude: **41.2268**

County: **Rockland** State: **NY**

WAA Sample ID: **W08611**

Longitude: **-73.9846**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order         | Family          | Final Determination      | Total # |
|---------------|-----------------|--------------------------|---------|
| COLEOPTERA    | Psephenidae     | Psephenus herricki       | 1       |
| DIPTERA       | Chironomidae    | Cricotopus sp.           | 1       |
|               |                 | Thienemannimyia gr. spp. | 2       |
|               |                 | Tvetenia vitracies       | 1       |
| EPHEMEROPTERA | Baetidae        | Baetis intercalaris      | 7       |
|               | Heptageniidae   | Stenonema sp.            | 1       |
| MEGALOPTERA   | Corydalidae     | Nigronia serricornis     | 1       |
| PLECOPTERA    | Perlidae        | Acroneuria abnormis      | 1       |
| TRICHOPTERA   | Glossosomatidae | Glossosoma sp.           | 1       |
|               | Hydropsychidae  | Cheumatopsyche sp.       | 22      |
|               |                 | Hydropsyche betteni      | 1       |
|               |                 | Hydropsyche bronta       | 16      |
|               |                 | Hydropsyche morosa       | 27      |
|               |                 | Hydropsyche sparna       | 11      |
|               | Philopotamidae  | Chimarra aterrima?       | 7       |

### Metric Results

Taxa Richness: **15**

EPT Richness: **10**

Biotic Index: **5.39**

PMA: **25**

BAP Score: **4.62**

# Stream Field Data Summary

Waterbody: **Pascack Brook**

River Basin: **Hackensack**

County: **Rockland**

State: **NY**

Station: **PASC 01**

Coll Date: **7/31/2012**

Site description: **Just above W. Washington Ave bridge**

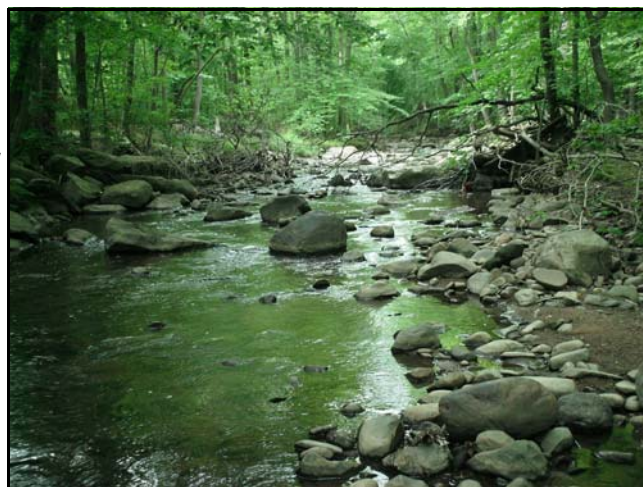
Latitude: **41.0598**

Longitude: **-74.0365**

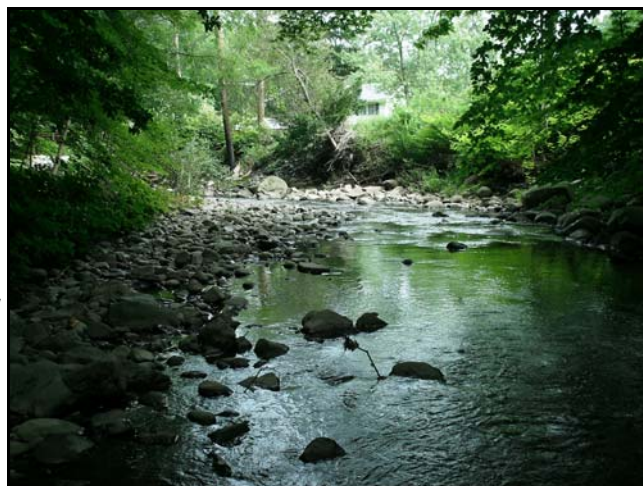
Field Crew: **jkn**

| <b>Physical Characteristics</b> |              |
|---------------------------------|--------------|
| Depth (meters):                 | <b>0.2</b>   |
| Width (meters):                 | <b>7</b>     |
| Current (cm/sec):               | <b>65</b>    |
| Canopy (%):                     | <b>79</b>    |
| Substrate                       |              |
| Rock (%):                       | <b>20</b>    |
| Rubble (%):                     | <b>25</b>    |
| Gravel (%):                     | <b>25</b>    |
| Sand (%):                       | <b>20</b>    |
| Silt (%):                       | <b>10</b>    |
| Embeddedness (%):               | <b>45</b>    |
| <b>Chemical Measurements</b>    |              |
| DO (mg/L):                      | <b>9.15</b>  |
| DO sat. (%):                    | <b>100</b>   |
| Temperature (C):                | <b>20.05</b> |
| Spec. Conduct. (umhos):         | <b>495</b>   |
| Baro pressure:                  | <b>756</b>   |
| pH:                             | <b>8.09</b>  |
| Salinity (PSS):                 | <b>0.24</b>  |
| <b>Biological Attributes</b>    |              |
| Aquatic vegetation              |              |
| Macrophytes:                    | <b>Y</b>     |
| Diatoms:                        | <b>Y</b>     |
| Algae-suspended:                |              |
| Algae-filamentous:              |              |
| Occurance of macroinvertebrates |              |
| Ephemeroptera:                  | <b>Y</b>     |
| Plecoptera:                     |              |
| Trichoptera:                    | <b>Y</b>     |
| Coleoptera:                     |              |
| Megaloptera:                    |              |
| Odonata:                        |              |
| Chironomidae:                   | <b>Y</b>     |
| Simuliidae:                     |              |
| Decapoda:                       |              |
| Gammaridae:                     |              |
| Mollusca:                       |              |
| Oligochaeta:                    | <b>Y</b>     |
| Other macro's:                  |              |
| Field Faunal Condition:         | <b>Good</b>  |

Flow  
↓



↑  
Flow



## Lab Data Summary

Waterbody: **Pascack Brook**

Station: **PASC\_01**

Latitude: **41.0598**

County: **Rockland** State: **NY**

WAA Sample ID: **W08619**

Longitude: **-74.0365**

Collection Date: **7/31/2012**

Subsample size: **84**

| Order              | Family          | Final Determination   | Total #             |                     |
|--------------------|-----------------|-----------------------|---------------------|---------------------|
| AMPHIPODA          | Crangonyctidae  | Crangonyx sp.         | 1                   |                     |
| COLEOPTERA         | Elmidae         | Stenelmis sp.         | 3                   |                     |
| DECAPODA           | Cambaridae      | Orconectes sp.        | 2                   |                     |
| DIPTERA            | Chironomidae    | Diamesa sp.           | 13                  |                     |
|                    |                 | Polypedilum flavum    | 1                   |                     |
|                    |                 | Rheocricotopus sp.    | 2                   |                     |
|                    |                 | Tanytarsus sp.        | 1                   |                     |
|                    |                 | Tvetenia bavarica gr. | 2                   |                     |
|                    |                 | Simuliidae            | Simulium sp.        | 1                   |
|                    |                 | Tipulidae             | Antocha sp.         | 3                   |
|                    |                 | EPHEMEROPTERA         | Baetidae            | Baetis intercalaris |
| TRICHOPTERA        | Glossosomatidae | Glossosoma sp.        | 2                   |                     |
|                    |                 | Hydropsychidae        | Cheumatopsyche sp.  | 25                  |
|                    |                 |                       | Hydropsyche betteni | 7                   |
|                    |                 |                       | Hydropsyche bronta  | 4                   |
| Hydropsyche sparna | 14              |                       |                     |                     |

### Metric Results

Taxa Richness: **16**

EPT Richness: **6**

Biotic Index: **5.25**

PMA: **42**

BAP Score: **5.02**

# Stream Field Data Summary

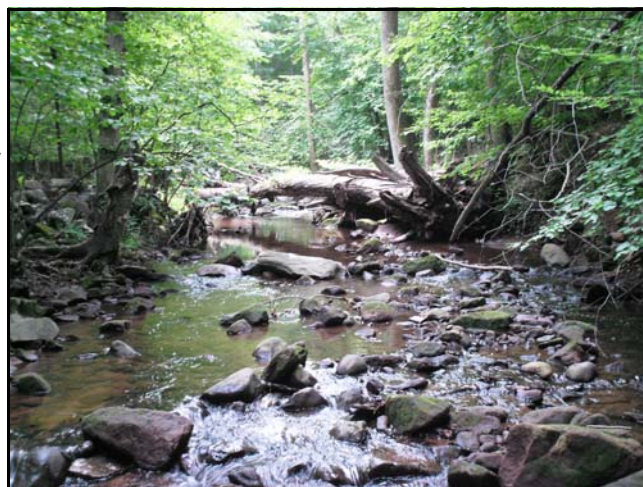
Waterbody: **Unnamed tributary**  
 River Basin: **Hackensack River**  
 County: **Rockland**  
 State: **NY**

Station: **LUCI 01**  
 Coll Date: **7/31/2012**  
 Site description: **Just off Woodhaven Dr.**

Latitude: **41.1818**  
 Longitude: **-73.9991**  
 Field Crew: **jkn**

| Physical Characteristics        |       |
|---------------------------------|-------|
| Depth (meters):                 | 0.25  |
| Width (meters):                 | 3     |
| Current (cm/sec):               | 82    |
| Canopy (%):                     | 84    |
| Substrate                       |       |
| Rock (%):                       | 25    |
| Rubble (%):                     | 25    |
| Gravel (%):                     | 20    |
| Sand (%):                       | 30    |
| Silt (%):                       | 5     |
| Embeddedness (%):               | 45    |
| Chemical Measurements           |       |
| DO (mg/L):                      | 87.3  |
| DO sat. (%):                    | 95    |
| Temperature (C):                | 19.46 |
| Spec. Conduct. (umhos):         | 319   |
| Baro pressure:                  | 760.1 |
| pH:                             | 7.74  |
| Salinity (PSS):                 | 0.15  |
| Biological Attributes           |       |
| Aquatic vegetation              |       |
| Macrophytes:                    | Y     |
| Diatoms:                        | Y     |
| Algae-suspended:                |       |
| Algae-filamentous:              |       |
| Occurance of macroinvertebrates |       |
| Ephemeroptera:                  |       |
| Plecoptera:                     |       |
| Trichoptera:                    | Y     |
| Coleoptera:                     |       |
| Megaloptera:                    | Y     |
| Odonata:                        | Y     |
| Chironomidae:                   | Y     |
| Simuliidae:                     | Y     |
| Decapoda:                       | Y     |
| Gammaridae:                     |       |
| Mollusca:                       |       |
| Oligochaeta:                    |       |
| Other macro's:                  |       |
| Field Faunal Condition:         | Poor  |

Flow  
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Flow



## Lab Data Summary

Waterbody: **Unnamed tributary**

Station: **LUCI\_01**

Latitude: **41.1818**

County: **Rockland** State: **NY**

WAA Sample ID: **W08615**

Longitude: **-73.9991**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order         | Family          | Final Determination      | Total # |
|---------------|-----------------|--------------------------|---------|
| AMPHIPODA     | Crangonyctidae  | Crangonyx sp.            | 2       |
| COLEOPTERA    | Elmidae         | Stenelmis sp.            | 1       |
| DECAPODA      | Cambaridae      | Cambarus sp.             | 1       |
| DIPTERA       | Chironomidae    | Chaetocladius sp.        | 4       |
|               |                 | Diamesa sp.              | 3       |
|               |                 | Thienemannimyia gr. spp. | 1       |
|               | Tipulidae       | Limonia sp.              | 1       |
| EPHEMEROPTERA | Baetidae        | Baetis sp.               | 1       |
|               | Heptageniidae   | Stenonema sp.            | 1       |
| ISOPODA       | Asellidae       | Caecidotea sp.           | 1       |
| TRICHOPTERA   | Glossosomatidae | Glossosoma sp.           | 6       |
|               | Hydropsychidae  | Cheumatopsyche sp.       | 7       |
|               |                 | Hydropsyche betteni      | 5       |
|               |                 | Hydropsyche sparna       | 25      |
|               | Philopotamidae  | Chimarra sp.             | 40      |
|               | Rhyacophilidae  | Rhyacophila fuscula      | 1       |

### Metric Results

Taxa Richness: **16**

EPT Richness: **8**

Biotic Index: **4.71**

PMA: **26**

BAP Score: **4.73**

# Stream Field Data Summary

Waterbody: **Unnamed tributary**

River Basin: **Passaic**

County: **Rockland**

State: **NY**

Station: **SUZA 01**

Coll Date: **8/1/2012**

Site description: **Just below North Main St bridge**

Latitude: **41.1179**

Longitude: **-74.0436**

Field Crew: **jkn**

| Physical Characteristics        |                   |
|---------------------------------|-------------------|
| Depth (meters):                 | <b>0.25</b>       |
| Width (meters):                 | <b>3</b>          |
| Current (cm/sec):               | <b>47</b>         |
| Canopy (%):                     | <b>59</b>         |
| Substrate                       |                   |
| Rock (%):                       | <b>10</b>         |
| Rubble (%):                     | <b>30</b>         |
| Gravel (%):                     | <b>32</b>         |
| Sand (%):                       | <b>20</b>         |
| Silt (%):                       | <b>10</b>         |
| Embeddedness (%):               | <b>55</b>         |
| Chemical Measurements           |                   |
| DO (mg/L):                      | <b>6.25</b>       |
| DO sat. (%):                    | <b>70.3</b>       |
| Temperature (C):                | <b>21.2</b>       |
| Spec. Conduct. (umhos):         | <b>358</b>        |
| Baro pressure:                  | <b>748.6</b>      |
| pH:                             | <b>7.82</b>       |
| Salinity (PSS):                 | <b>0.17</b>       |
| Biological Attributes           |                   |
| Aquatic vegetation              |                   |
| Macrophytes:                    |                   |
| Diatoms:                        | <b>Y</b>          |
| Algae-suspended:                |                   |
| Algae-filamentous:              |                   |
| Occurance of macroinvertebrates |                   |
| Ephemeroptera:                  |                   |
| Plecoptera:                     |                   |
| Trichoptera:                    | <b>Y</b>          |
| Coleoptera:                     |                   |
| Megaloptera:                    |                   |
| Odonata:                        |                   |
| Chironomidae:                   | <b>Y</b>          |
| Simuliidae:                     |                   |
| Decapoda:                       | <b>Y</b>          |
| Gammaridae:                     | <b>Y</b>          |
| Mollusca:                       |                   |
| Oligochaeta:                    |                   |
| Other macro's:                  | <b>Caecidotea</b> |
| Field Faunal Condition:         | <b>Poor</b>       |

Flow  
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Flow





## Lab Data Summary

Waterbody: **Unnamed tributary**

Station: **SUZA\_01**

Latitude: **41.1179**

County: **Rockland** State: **NY**

WAA Sample ID: **W08625**

Longitude: **-74.0436**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order           | Family         | Final Determination        | Total # |
|-----------------|----------------|----------------------------|---------|
| AMPHIPODA       | Crangonyctidae | Crangonyx sp.              | 16      |
| ARHYNCHOBDELLID | Erpobdellidae  | Undetermined Erpobdellidae | 2       |
| COLEOPTERA      | Elmidae        | Stenelmis sp.              | 1       |
| DIPTERA         | Chironomidae   | Polypedilum flavum         | 5       |
|                 |                | Polypedilum scalaenum gr.  | 3       |
|                 |                | Tanytarsus sp.             | 1       |
|                 |                | Thienemanniella sp.        | 1       |
|                 |                | Thienemannimyia gr. spp.   | 1       |
|                 |                | Hemerodromia sp.           | 1       |
| EPHEMEROPTERA   | Baetidae       | Baetis intercalaris        | 17      |
| NEUROPTERA      | Sisyridae      | Undetermined Sisyridae     | 1       |
| TRICHOPTERA     | Hydropsychidae | Cheumatopsyche sp.         | 38      |
|                 |                | Hydropsyche betteni        | 13      |

### Metric Results

Taxa Richness: **13**

EPT Richness: **3**

Biotic Index: **5.60**

PMA: **49**

BAP Score: **4.51**

# Stream Field Data Summary

Waterbody: **E Branch Hackensack River**

Latitude: **41.1713**

River Basin: **Hackensack**

Station: **WBHK 01**

Longitude: **-73.9694**

County: **Rockland**

Coll Date: **7/31/2012**

Field Crew: **jkn**

State: **NY**

Site description: **Just below Haverstraw Rd. bridge**

## Physical Characteristics

|                   |             |
|-------------------|-------------|
| Depth (meters):   | <b>0.25</b> |
| Width (meters):   | <b>9</b>    |
| Current (cm/sec): | <b>84</b>   |
| Canopy (%):       | <b>76</b>   |
| Substrate         |             |
| Rock (%):         | <b>10</b>   |
| Rubble (%):       | <b>30</b>   |
| Gravel (%):       | <b>30</b>   |
| Sand (%):         | <b>20</b>   |
| Silt (%):         | <b>10</b>   |
| Embeddedness (%): | <b>45</b>   |

## Chemical Measurements

|                         |              |
|-------------------------|--------------|
| DO (mg/L):              | <b>7.61</b>  |
| DO sat. (%):            | <b>86.5</b>  |
| Temperature (C):        | <b>21.74</b> |
| Spec. Conduct. (umhos): | <b>339</b>   |
| Baro pressure:          | <b>760.7</b> |
| pH:                     | <b>7.65</b>  |
| Salinity (PSS):         | <b>0.16</b>  |

## Biological Attributes

|                                 |             |
|---------------------------------|-------------|
| Aquatic vegetation              |             |
| Macrophytes:                    | <b>Y</b>    |
| Diatoms:                        | <b>Y</b>    |
| Algae-suspended:                |             |
| Algae-filamentous:              |             |
| Occurance of macroinvertebrates |             |
| Ephemeroptera:                  | <b>Y</b>    |
| Plecoptera:                     |             |
| Trichoptera:                    | <b>Y</b>    |
| Coleoptera:                     | <b>Y</b>    |
| Megaloptera:                    |             |
| Odonata:                        |             |
| Chironomidae:                   | <b>Y</b>    |
| Simuliidae:                     |             |
| Decapoda:                       | <b>Y</b>    |
| Gammaridae:                     |             |
| Mollusca:                       |             |
| Oligochaeta:                    |             |
| Other macro's:                  |             |
| Field Faunal Condition:         | <b>Good</b> |

Flow  
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Flow



## Lab Data Summary

Waterbody: **E Branch Hackensack River**

Station: **WBHK\_01**

Latitude: **41.1713**

County: **Rockland** State: **NY**

WAA Sample ID: **W08620**

Longitude: **-73.9694**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order         | Family         | Final Determination        | Total #          |   |
|---------------|----------------|----------------------------|------------------|---|
| COLEOPTERA    | Elmidae        | Stenelmis sp.              | 20               |   |
| DIPTERA       | Chironomidae   | Polypedilum flavum         | 4                |   |
|               |                | Polypedilum scalaenum gr.  | 1                |   |
|               |                | Undetermined Tanytarsini   | 1                |   |
|               |                | Empididae                  | Hemerodromia sp. | 1 |
|               |                | Simuliidae                 | Simulium sp.     | 4 |
| EPHEMEROPTERA | Baetidae       | Baetis intercalaris        | 6                |   |
|               | Heptageniidae  | Stenacron sp.              | 3                |   |
|               |                | Stenonema modestum         | 16               |   |
| ISOPODA       | Asellidae      | Caecidotea sp.             | 7                |   |
| LUMBRICULIDA  | Lumbriculidae  | Undetermined Lumbriculidae | 1                |   |
| TRICHOPTERA   | Hydropsychidae | Cheumatopsyche sp.         | 19               |   |
|               |                | Hydropsyche betteni        | 11               |   |
|               | Philopotamidae | Chimarra aterrima?         | 6                |   |

### Metric Results

Taxa Richness: **14**

EPT Richness: **6**

Biotic Index: **4.86**

PMA: **62**

BAP Score: **5.82**

# Stream Field Data Summary

Waterbody: **Nauraushaun Brook**

River Basin: **Hackensack**

County: **Rockland**

State: **NY**

Station: **NAUR 01**

Coll Date: **7/31/2012**

Site description: **Just below Sickletown Rd. bridge**

Latitude: **41.0589**

Longitude: **-73.9919**

Field Crew: **jkn**

| <b>Physical Characteristics</b> |                  |
|---------------------------------|------------------|
| Depth (meters):                 | <b>0.25</b>      |
| Width (meters):                 | <b>7</b>         |
| Current (cm/sec):               | <b>66</b>        |
| Canopy (%):                     | <b>67</b>        |
| Substrate                       |                  |
| Rock (%):                       | <b>25</b>        |
| Rubble (%):                     | <b>25</b>        |
| Gravel (%):                     | <b>25</b>        |
| Sand (%):                       | <b>20</b>        |
| Silt (%):                       | <b>5</b>         |
| Embeddedness (%):               | <b>25</b>        |
| <b>Chemical Measurements</b>    |                  |
| DO (mg/L):                      | <b>9.66</b>      |
| DO sat. (%):                    | <b>109.1</b>     |
| Temperature (C):                | <b>21.35</b>     |
| Spec. Conduct. (umhos):         | <b>403</b>       |
| Baro pressure:                  | <b>760.1</b>     |
| pH:                             | <b>8.1</b>       |
| Salinity (PSS):                 | <b>0.19</b>      |
| <b>Biological Attributes</b>    |                  |
| Aquatic vegetation              |                  |
| Macrophytes:                    | <b>Y</b>         |
| Diatoms:                        | <b>Y</b>         |
| Algae-suspended:                |                  |
| Algae-filamentous:              |                  |
| Occurance of macroinvertebrates |                  |
| Ephemeroptera:                  |                  |
| Plecoptera:                     |                  |
| Trichoptera:                    | <b>Y</b>         |
| Coleoptera:                     |                  |
| Megaloptera:                    |                  |
| Odonata:                        |                  |
| Chironomidae:                   | <b>Y</b>         |
| Simuliidae:                     |                  |
| Decapoda:                       |                  |
| Gammaridae:                     |                  |
| Mollusca:                       |                  |
| Oligochaeta:                    | <b>Y</b>         |
| Other macro's:                  | <b>Planarian</b> |
| Field Faunal Condition:         | <b>Poor</b>      |

Flow  
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Flow



## Lab Data Summary

Waterbody: **Nauraushaun Brook**  
 County: **Rockland** State: **NY**  
 Collection Date: **7/31/2012**

Station: **NAUR\_01**  
 WAA Sample ID: **W08618**  
 Subsample size: **100**

Latitude: **41.0589**  
 Longitude: **-73.9919**

| Order           | Family          | Final Determination        | Total #             |                     |
|-----------------|-----------------|----------------------------|---------------------|---------------------|
| ARHYNCHOBDELLID | Erpobdellidae   | Undetermined Erpobdellidae | 1                   |                     |
| COLEOPTERA      | Elmidae         | Stenelmis sp.              | 8                   |                     |
| DIPTERA         | Chironomidae    | Cardiocladius obscurus     | 1                   |                     |
|                 |                 | Cricotopus sp.             | 1                   |                     |
|                 |                 | Diamesa sp.                | 9                   |                     |
|                 |                 | Polypedilum flavum         | 4                   |                     |
|                 |                 | Polypedilum illinoense     | 1                   |                     |
|                 |                 | Empididae                  | Hemerodromia sp.    | 5                   |
|                 |                 | Simuliidae                 | Simulium sp.        | 1                   |
|                 |                 | Tipulidae                  | Antocha sp.         | 7                   |
|                 |                 |                            | Tipula sp.          | 1                   |
|                 |                 | EPHEMEROPTERA              | Baetidae            | Baetis intercalaris |
| LUMBRICIDA      | Lumbricina      | Undetermined Lumbricina    | 2                   |                     |
| LUMBRICULIDA    | Lumbriculidae   | Undetermined Lumbriculidae | 1                   |                     |
| TRICHOPTERA     | Glossosomatidae | Glossosoma sp.             | 1                   |                     |
|                 |                 | Hydropsychidae             | Cheumatopsyche sp.  | 20                  |
|                 |                 |                            | Hydropsyche betteni | 9                   |
|                 |                 |                            | Hydropsyche bronta  | 3                   |
|                 |                 |                            | Hydropsyche sparna  | 12                  |
|                 |                 | Hydroptilidae              | Leucotrichia sp.    | 1                   |
|                 |                 | Philopotamidae             | Chimarra aterrima?  | 1                   |
| TRICLADIDA      |                 | Undetermined Turbellaria   | 4                   |                     |

### Metric Results

Taxa Richness: **22**  
 EPT Richness: **8**  
 Biotic Index: **5.37**  
 PMA: **54**  
 BAP Score: **6.19**

# Stream Field Data Summary

Waterbody: **Pine Brook**

River Basin: **Passaic**

County: **Rockland**

State: **NY**

Station: **PINB 01**

Coll Date: **8/1/2012**

Site description: **Just above Pinebrook Rd bridge**

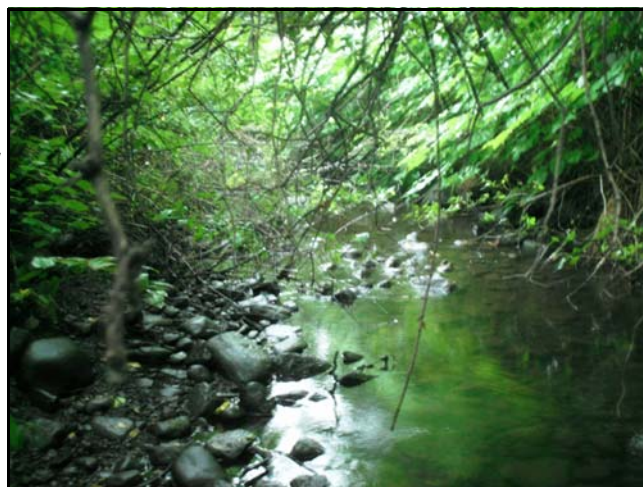
Latitude: **41.078**

Longitude: **-74.0677**

Field Crew: **jkn**

| Physical Characteristics        |             |
|---------------------------------|-------------|
| Depth (meters):                 | 0.2         |
| Width (meters):                 | 2.5         |
| Current (cm/sec):               | 45          |
| Canopy (%):                     | 75          |
| Substrate                       |             |
| Rock (%):                       | 15          |
| Rubble (%):                     | 20          |
| Gravel (%):                     | 25          |
| Sand (%):                       | 25          |
| Silt (%):                       | 15          |
| Embeddedness (%):               | 25          |
| Chemical Measurements           |             |
| DO (mg/L):                      | 7.03        |
| DO sat. (%):                    | 75.8        |
| Temperature (C):                | 19.3        |
| Spec. Conduct. (umhos):         | 312         |
| Baro pressure:                  | 751.2       |
| pH:                             | 7.81        |
| Salinity (PSS):                 | 0.15        |
| Biological Attributes           |             |
| Aquatic vegetation              |             |
| Macrophytes:                    |             |
| Diatoms:                        | Y           |
| Algae-suspended:                |             |
| Algae-filamentous:              |             |
| Occurance of macroinvertebrates |             |
| Ephemeroptera:                  |             |
| Plecoptera:                     |             |
| Trichoptera:                    | Y           |
| Coleoptera:                     |             |
| Megaloptera:                    | Y           |
| Odonata:                        |             |
| Chironomidae:                   | Y           |
| Simuliidae:                     |             |
| Decapoda:                       | Y           |
| Gammaridae:                     |             |
| Mollusca:                       |             |
| Oligochaeta:                    |             |
| Other macro's:                  |             |
| Field Faunal Condition:         | <b>Poor</b> |

Flow  
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Flow



## Lab Data Summary

Waterbody: **Pine Brook**

Station: **PINB\_01**

Latitude: **41.078**

County: **Rockland** State: **NY**

WAA Sample ID: **W08623**

Longitude: **-74.0677**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order         | Family         | Final Determination      | Total # |
|---------------|----------------|--------------------------|---------|
| AMPHIPODA     | Gammaridae     | Gammarus sp.             | 2       |
| COLEOPTERA    | Elmidae        | Stenelmis sp.            | 35      |
|               | Psephenidae    | Psephenus herricki       | 2       |
| DECAPODA      | Cambaridae     | Orconectes sp.           | 1       |
| DIPTERA       | Chironomidae   | Polypedilum flavum       | 3       |
|               |                | Thienemannimyia gr. spp. | 2       |
| EPHEMEROPTERA | Heptageniidae  | Stenacron sp.            | 2       |
| TRICHOPTERA   | Hydropsychidae | Cheumatopsyche sp.       | 27      |
|               |                | Hydropsyche betteni      | 9       |
|               | Philopotamidae | Chimarra aterrima?       | 17      |

### Metric Results

Taxa Richness: **10**

EPT Richness: **4**

Biotic Index: **5.11**

PMA: **30**

BAP Score: **3.73**

# Stream Field Data Summary

Waterbody: **Stoney Brook**

River Basin: **Ramapo**

County: **Rockland**

State: **NY**

Station: **STOB 01**

Coll Date: **8/1/2012**

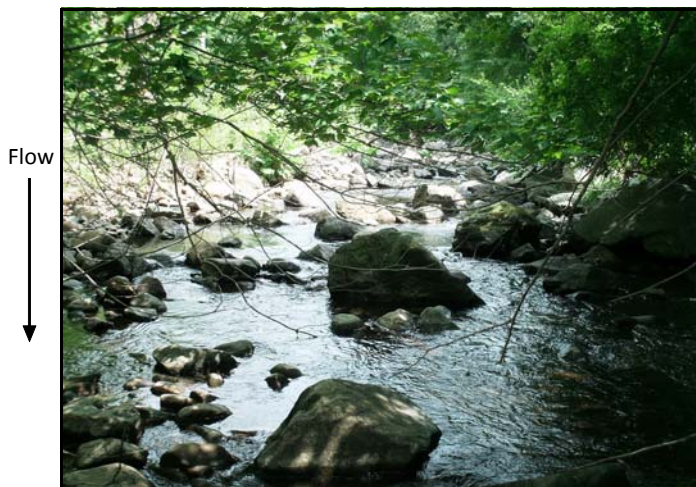
Site description: **Just above Sevens Lakes Rd. bridge**

Latitude: **41.1642**

Longitude: **-74.1831**

Field Crew: **jkn**

| Physical Characteristics        |                  |
|---------------------------------|------------------|
| Depth (meters):                 | 0.25             |
| Width (meters):                 | 6                |
| Current (cm/sec):               | 72               |
| Canopy (%):                     | 43               |
| Substrate                       |                  |
| Rock (%):                       | 20               |
| Rubble (%):                     | 25               |
| Gravel (%):                     | 25               |
| Sand (%):                       | 25               |
| Silt (%):                       | 5                |
| Embeddedness (%):               | 25               |
| Chemical Measurements           |                  |
| DO (mg/L):                      | 9.2              |
| DO sat. (%):                    | 101.6            |
| Temperature (C):                | 20.27            |
| Spec. Conduct. (umhos):         | 66               |
| Baro pressure:                  | 750.2            |
| pH:                             | 8.12             |
| Salinity (PSS):                 | 0.03             |
| Biological Attributes           |                  |
| Aquatic vegetation              |                  |
| Macrophytes:                    |                  |
| Diatoms:                        | Y                |
| Algae-suspended:                |                  |
| Algae-filamentous:              |                  |
| Occurance of macroinvertebrates |                  |
| Ephemeroptera:                  | Y                |
| Plecoptera:                     | Y                |
| Trichoptera:                    | Y                |
| Coleoptera:                     | Y                |
| Megaloptera:                    |                  |
| Odonata:                        |                  |
| Chironomidae:                   | Y                |
| Simuliidae:                     |                  |
| Decapoda:                       |                  |
| Gammaridae:                     |                  |
| Mollusca:                       |                  |
| Oligochaeta:                    |                  |
| Other macro's:                  |                  |
| Field Faunal Condition:         | <b>Very good</b> |





## Lab Data Summary

Waterbody: **Stoney Brook**

Station: **STOB\_01**

Latitude: **41.1642**

County: **Rockland** State: **NY**

WAA Sample ID: **W08627**

Longitude: **-74.1831**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order         | Family          | Final Determination    | Total # |
|---------------|-----------------|------------------------|---------|
| COLEOPTERA    | Psephenidae     | Psephenus herricki     | 1       |
| DECAPODA      | Cambaridae      | Orconectes sp.         | 1       |
| DIPTERA       | Chironomidae    | Polypedilum aviceps    | 1       |
|               | Empididae       | Undetermined Empididae | 1       |
| EPHEMEROPTERA | Baetidae        | Baetis intercalaris    | 3       |
|               |                 | Plauditus sp.          | 2       |
|               | Heptageniidae   | Leucrocuta sp.         | 3       |
|               |                 | Stenonema modestum     | 19      |
|               |                 | Stenonema vicarium     | 12      |
|               | Isonychiidae    | Isonychia sp.          | 28      |
| PLECOPTERA    | Leuctridae      | Leuctra sp.            | 3       |
|               | Perlidae        | Acroneuria abnormis    | 3       |
|               |                 | Perlesta sp.           | 1       |
| TRICHOPTERA   | Glossosomatidae | Glossosoma sp.         | 1       |
|               | Hydropsychidae  | Cheumatopsyche sp.     | 16      |
|               |                 | Hydropsyche bronta     | 3       |
|               |                 | Hydropsyche sparna     | 2       |

### Metric Results

Taxa Richness: **17**

EPT Richness: **13**

Biotic Index: **2.59**

PMA: **59**

BAP Score: **7.40**

# Stream Field Data Summary

Waterbody: **Sunny Brook**

River Basin: **Passaic**

County: **Rockland**

State: **NY**

Station: **SUNY 01**

Coll Date: **8/1/2012**

Site description: **Just below Haverstraw Rd bridge**

Latitude: **41.1592**

Longitude: **-74.0983**

Field Crew: **jkn**

| Physical Characteristics        |              |
|---------------------------------|--------------|
| Depth (meters):                 | <b>0.2</b>   |
| Width (meters):                 | <b>3</b>     |
| Current (cm/sec):               | <b>72</b>    |
| Canopy (%):                     | <b>47</b>    |
| Substrate                       |              |
| Rock (%):                       | <b>20</b>    |
| Rubble (%):                     | <b>25</b>    |
| Gravel (%):                     | <b>25</b>    |
| Sand (%):                       | <b>15</b>    |
| Silt (%):                       | <b>15</b>    |
| Embeddedness (%):               | <b>45</b>    |
| Chemical Measurements           |              |
| DO (mg/L):                      | <b>4.94</b>  |
| DO sat. (%):                    | <b>58.1</b>  |
| Temperature (C):                | <b>23.46</b> |
| Spec. Conduct. (umhos):         | <b>395</b>   |
| Baro pressure:                  | <b>756.1</b> |
| pH:                             | <b>7.89</b>  |
| Salinity (PSS):                 | <b>0.19</b>  |
| Biological Attributes           |              |
| Aquatic vegetation              |              |
| Macrophytes:                    | <b>Y</b>     |
| Diatoms:                        | <b>Y</b>     |
| Algae-suspended:                |              |
| Algae-filamentous:              |              |
| Occurance of macroinvertebrates |              |
| Ephemeroptera:                  | <b>Y</b>     |
| Plecoptera:                     |              |
| Trichoptera:                    | <b>Y</b>     |
| Coleoptera:                     |              |
| Megaloptera:                    | <b>Y</b>     |
| Odonata:                        |              |
| Chironomidae:                   | <b>Y</b>     |
| Simuliidae:                     |              |
| Decapoda:                       | <b>Y</b>     |
| Gammaridae:                     |              |
| Mollusca:                       |              |
| Oligochaeta:                    |              |
| Other macro's:                  |              |
| Field Faunal Condition:         | <b>Good</b>  |

Flow  
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Flow



## Lab Data Summary

Waterbody: **Sunny Brook**

Station: **SUNY\_01**

Latitude: **41.1592**

County: **Rockland** State: **NY**

WAA Sample ID: **W08626**

Longitude: **-74.0983**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order       | Family         | Final Determination      | Total # |
|-------------|----------------|--------------------------|---------|
| COLEOPTERA  | Elmidae        | Stenelmis sp.            | 16      |
| DIPTERA     | Chironomidae   | Glyptotendipes sp.       | 1       |
|             |                | Polypedilum flavum       | 40      |
|             |                | Rheotanytarsus sp.       | 2       |
|             |                | Thienemannimyia gr. spp. | 3       |
|             |                | Xenochironomus xenolabis | 2       |
| TRICHOPTERA | Hydropsychidae | Cheumatopsyche sp.       | 9       |
|             |                | Hydropsyche betteni      | 20      |
|             | Philopotamidae | Chimarra aterrima?       | 7       |

### Metric Results

Taxa Richness: **9**

EPT Richness: **3**

Biotic Index: **5.81**

PMA: **40**

BAP Score: **3.69**

# Stream Field Data Summary

Waterbody: **Torne Brook**  
 River Basin: **Ramapo River**  
 County: **Rockland**  
 State: **NY**

Station: **TORN 01**  
 Coll Date: **8/1/2012**  
 Site description: **Just below Torne Brook Rd. bridge**

Latitude: **41.1416**  
 Longitude: **-74.1620**  
 Field Crew: **jkn**

| Physical Characteristics        |                  |
|---------------------------------|------------------|
| Depth (meters):                 | 0.25             |
| Width (meters):                 | 3                |
| Current (cm/sec):               | 52               |
| Canopy (%):                     | 81               |
| Substrate                       |                  |
| Rock (%):                       | 20               |
| Rubble (%):                     | 25               |
| Gravel (%):                     | 25               |
| Sand (%):                       | 25               |
| Silt (%):                       | 5                |
| Embeddedness (%):               | 25               |
| Chemical Measurements           |                  |
| DO (mg/L):                      | 8.46             |
| DO sat. (%):                    | 92.6             |
| Temperature (C):                | 19.96            |
| Spec. Conduct. (umhos):         | 88               |
| Baro pressure:                  | 751.4            |
| pH:                             | 7.96             |
| Salinity (PSS):                 | 0.04             |
| Biological Attributes           |                  |
| Aquatic vegetation              |                  |
| Macrophytes:                    | Y                |
| Diatoms:                        | Y                |
| Algae-suspended:                |                  |
| Algae-filamentous:              |                  |
| Occurance of macroinvertebrates |                  |
| Ephemeroptera:                  | Y                |
| Plecoptera:                     | Y                |
| Trichoptera:                    | Y                |
| Coleoptera:                     | Y                |
| Megaloptera:                    | Y                |
| Odonata:                        |                  |
| Chironomidae:                   | Y                |
| Simuliidae:                     |                  |
| Decapoda:                       |                  |
| Gammaridae:                     |                  |
| Mollusca:                       |                  |
| Oligochaeta:                    |                  |
| Other macro's:                  |                  |
| Field Faunal Condition:         | <b>Very good</b> |



## Lab Data Summary

Waterbody: **Torne Brook**

Station: **TORN\_01**

Latitude: **41.1416**

County: **Rockland** State: **NY**

WAA Sample ID: **W08612**

Longitude: **-74.162**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order        | Family         | Final Determination        | Total #              |
|--------------|----------------|----------------------------|----------------------|
| COLEOPTERA   | Elmidae        | Stenelmis sp.              | 1                    |
|              | Psephenidae    | Ectopria sp.               | 1                    |
|              |                | Psephenus herricki         | 5                    |
| DIPTERA      | Chironomidae   | Microtendipes pedellus gr. | 1                    |
|              |                | Polypedilum flavum         | 1                    |
|              |                | Thienemannimyia gr. spp.   | 1                    |
|              | Tipulidae      | Dicranota sp.              | 5                    |
|              | EPHEMEROPTERA  | Leptophlebiidae            | Paraleptophlebia sp. |
| LUMBRICULIDA | Lumbriculidae  | Undetermined Lumbriculidae | 4                    |
| MEGALOPTERA  | Corydalidae    | Nigronia serricornis       | 3                    |
| ODONATA      | Aeschnidae     | Boyeria vinosa             | 1                    |
|              | Gomphidae      | Undetermined Gomphidae     | 1                    |
| PLECOPTERA   | Leuctridae     | Leuctra sp.                | 14                   |
|              | Perlidae       | Acroneuria abnormis        | 17                   |
| TRICHOPTERA  | Hydropsychidae | Cheumatopsyche sp.         | 32                   |
|              |                | Hydropsyche sparna         | 3                    |
|              | Philopotamidae | Chimarra aterrima?         | 5                    |
|              | Rhyacophilidae | Rhyacophila manistee       | 1                    |

### Metric Results

Taxa Richness: **18**

EPT Richness: **7**

Biotic Index: **3.04**

PMA: **43**

BAP Score: **5.92**

# Stream Field Data Summary

Waterbody: **Saddle River**

River Basin: **Passaic**

County: **Rockland**

State: **NY**

Station: **SADL 02**

Coll Date: **8/1/2012**

Site description: **Just above Hillside Ave bridge**

Latitude: **41.0807**

Longitude: **-74.0829**

Field Crew: **jkn**

|                                 |              |
|---------------------------------|--------------|
| <b>Physical Characteristics</b> |              |
| Depth (meters):                 | <b>0.25</b>  |
| Width (meters):                 | <b>2.5</b>   |
| Current (cm/sec):               | <b>45</b>    |
| Canopy (%):                     | <b>87</b>    |
| Substrate                       |              |
| Rock (%):                       | <b>10</b>    |
| Rubble (%):                     | <b>25</b>    |
| Gravel (%):                     | <b>30</b>    |
| Sand (%):                       | <b>25</b>    |
| Silt (%):                       | <b>10</b>    |
| Embeddedness (%):               | <b>45</b>    |
| <b>Chemical Measurements</b>    |              |
| DO (mg/L):                      | <b>8.43</b>  |
| DO sat. (%):                    | <b>91.4</b>  |
| Temperature (C):                | <b>19.36</b> |
| Spec. Conduct. (umhos):         | <b>429</b>   |
| Baro pressure:                  | <b>751.2</b> |
| pH:                             | <b>7.96</b>  |
| Salinity (PSS):                 | <b>0.24</b>  |
| <b>Biological Attributes</b>    |              |
| Aquatic vegetation              |              |
| Macrophytes:                    |              |
| Diatoms:                        | <b>Y</b>     |
| Algae-suspended:                |              |
| Algae-filamentous:              |              |
| Occurance of macroinvertebrates |              |
| Ephemeroptera:                  |              |
| Plecoptera:                     |              |
| Trichoptera:                    | <b>Y</b>     |
| Coleoptera:                     |              |
| Megaloptera:                    |              |
| Odonata:                        |              |
| Chironomidae:                   | <b>Y</b>     |
| Simuliidae:                     |              |
| Decapoda:                       |              |
| Gammaridae:                     |              |
| Mollusca:                       |              |
| Oligochaeta:                    | <b>Y</b>     |
| Other macro's:                  |              |
| Field Faunal Condition:         | <b>Poor</b>  |

Flow  
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Flow



## Lab Data Summary

Waterbody: **Saddle River**

Station: **SADL\_02**

Latitude: **41.0807**

County: **Rockland** State: **NY**

WAA Sample ID: **W08629**

Longitude: **-74.0829**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order         | Family          | Final Determination   | Total # |
|---------------|-----------------|-----------------------|---------|
| COLEOPTERA    | Elmidae         | Macronychus glabratus | 1       |
|               |                 | Stenelmis sp.         | 29      |
| DIPTERA       | Chironomidae    | Chaetocladius sp.     | 1       |
|               |                 | Diamesa sp.           | 2       |
|               |                 | Polypedilum flavum    | 2       |
|               | Empididae       | Neoplasta sp.         | 1       |
|               | Tipulidae       | Antocha sp.           | 1       |
| EPHEMEROPTERA | Baetidae        | Baetis flavistriga    | 1       |
| ISOPODA       | Asellidae       | Caecidotea sp.        | 1       |
| TRICHOPTERA   | Glossosomatidae | Glossosoma sp.        | 1       |
|               | Hydropsychidae  | Cheumatopsyche sp.    | 36      |
|               |                 | Hydropsyche betteni   | 8       |
|               |                 | Hydropsyche sparna    | 7       |
|               | Philopotamidae  | Chimarra aterrima?    | 9       |

### Metric Results

Taxa Richness: **14**

EPT Richness: **6**

Biotic Index: **5.13**

PMA: **29**

BAP Score: **4.35**

# Stream Field Data Summary

Waterbody: **Muddy Creek**

River Basin: **Hackensack**

County: **Rockland**

State: **NY**

Station: **MUDD 02**

Coll Date: **8/1/2012**

Site description: **Just below East Washington Ave**

Latitude: **41.0600**

Longitude: **-74.0235**

Field Crew: **jkn**

| Physical Characteristics        |                   |
|---------------------------------|-------------------|
| Depth (meters):                 | <b>0.2</b>        |
| Width (meters):                 | <b>2.5</b>        |
| Current (cm/sec):               | <b>45</b>         |
| Canopy (%):                     | <b>21</b>         |
| Substrate                       |                   |
| Rock (%):                       |                   |
| Rubble (%):                     | <b>20</b>         |
| Gravel (%):                     | <b>35</b>         |
| Sand (%):                       | <b>30</b>         |
| Silt (%):                       | <b>15</b>         |
| Embeddedness (%):               | <b>45</b>         |
| Chemical Measurements           |                   |
| DO (mg/L):                      | <b>6.97</b>       |
| DO sat. (%):                    | <b>76.6</b>       |
| Temperature (C):                | <b>19.84</b>      |
| Spec. Conduct. (umhos):         | <b>787</b>        |
| Baro pressure:                  | <b>752.1</b>      |
| pH:                             | <b>7.64</b>       |
| Salinity (PSS):                 | <b>0.39</b>       |
| Biological Attributes           |                   |
| Aquatic vegetation              |                   |
| Macrophytes:                    | <b>Y</b>          |
| Diatoms:                        | <b>Y</b>          |
| Algae-suspended:                |                   |
| Algae-filamentous:              |                   |
| Occurance of macroinvertebrates |                   |
| Ephemeroptera:                  |                   |
| Plecoptera:                     |                   |
| Trichoptera:                    |                   |
| Coleoptera:                     |                   |
| Megaloptera:                    |                   |
| Odonata:                        |                   |
| Chironomidae:                   | <b>Y</b>          |
| Simuliidae:                     |                   |
| Decapoda:                       | <b>Y</b>          |
| Gammaridae:                     | <b>Y</b>          |
| Mollusca:                       |                   |
| Oligochaeta:                    | <b>Y</b>          |
| Other macro's:                  | <b>Caecidotea</b> |
| Field Faunal Condition:         | <b>Very poor</b>  |

Flow  
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Flow





## Lab Data Summary

Waterbody: **Muddy Creek**

Station: **MUDD\_02**

Latitude: **41.06**

County: **Rockland** State: **NY**

WAA Sample ID: **W08621**

Longitude: **-74.0235**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order       | Family         | Final Determination        | Total # |
|-------------|----------------|----------------------------|---------|
| AMPHIPODA   | Gammaridae     | Gammarus sp.               | 23      |
| COLEOPTERA  | Elmidae        | Stenelmis sp.              | 35      |
| DECAPODA    | Cambaridae     | Orconectes sp.             | 2       |
| DIPTERA     | Chironomidae   | Chaetocladius sp.          | 1       |
|             |                | Cricotopus sp.             | 5       |
|             |                | Cryptochironomus sp.       | 3       |
|             |                | Microtendipes pedellus gr. | 1       |
|             |                | Thienemannimyia gr. spp.   | 2       |
|             | Empididae      | Hemerodromia sp.           | 2       |
|             | Tipulidae      | Antocha sp.                | 1       |
| ISOPODA     | Asellidae      | Caecidotea sp.             | 15      |
| TRICHOPTERA | Hydropsychidae | Cheumatopsyche sp.         | 9       |
| VENEROIDEA  | Sphaeriidae    | Pisidium sp.               | 1       |

### Metric Results

Taxa Richness: **13**

EPT Richness: **1**

Biotic Index: **5.94**

PMA: **41**

BAP Score: **3.49**

# Stream Field Data Summary

Waterbody: **Muddy Creek**

River Basin: **Hackensack**

County: **Rockland**

State: **NY**

Station: **MUDD 02B**

Coll Date: **8/1/2012**

Site description: **Just above W. Crooked Hill Rd. bridge**

Latitude: **41.0681**

Longitude: **-74.0259**

Field Crew: **jkn**

|                                 |              |
|---------------------------------|--------------|
| <b>Physical Characteristics</b> |              |
| Depth (meters):                 | <b>0.2</b>   |
| Width (meters):                 | <b>2.5</b>   |
| Current (cm/sec):               | <b>55</b>    |
| Canopy (%):                     | <b>84</b>    |
| Substrate                       |              |
| Rock (%):                       | <b>10</b>    |
| Rubble (%):                     | <b>25</b>    |
| Gravel (%):                     | <b>25</b>    |
| Sand (%):                       | <b>25</b>    |
| Silt (%):                       | <b>15</b>    |
| Embeddedness (%):               | <b>45</b>    |
| <b>Chemical Measurements</b>    |              |
| DO (mg/L):                      | <b>7.81</b>  |
| DO sat. (%):                    | <b>87.8</b>  |
| Temperature (C):                | <b>21.19</b> |
| Spec. Conduct. (umhos):         | <b>854</b>   |
| Baro pressure:                  | <b>754.1</b> |
| pH:                             | <b>7.67</b>  |
| Salinity (PSS):                 | <b>0.42</b>  |
| <b>Biological Attributes</b>    |              |
| Aquatic vegetation              |              |
| Macrophytes:                    |              |
| Diatoms:                        | <b>Y</b>     |
| Algae-suspended:                |              |
| Algae-filamentous:              |              |
| Occurance of macroinvertebrates |              |
| Ephemeroptera:                  |              |
| Plecoptera:                     |              |
| Trichoptera:                    | <b>Y</b>     |
| Coleoptera:                     |              |
| Megaloptera:                    |              |
| Odonata:                        |              |
| Chironomidae:                   | <b>Y</b>     |
| Simuliidae:                     |              |
| Decapoda:                       | <b>Y</b>     |
| Gammaridae:                     | <b>Y</b>     |
| Mollusca:                       |              |
| Oligochaeta:                    |              |
| Other macro's:                  |              |
| Field Faunal Condition:         | <b>Poor</b>  |

Flow  
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Flow



## Lab Data Summary

Waterbody: **Muddy Creek**

Station: **MUDD\_02B**

Latitude: **41.0681**

County: **Rockland** State: **NY**

WAA Sample ID: **W08622**

Longitude: **-74.0259**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order        | Family         | Final Determination        | Total # |
|--------------|----------------|----------------------------|---------|
| AMPHIPODA    | Gammaridae     | Gammarus sp.               | 17      |
| COLEOPTERA   | Elmidae        | Stenelmis sp.              | 16      |
| DIPTERA      | Chironomidae   | Polypedilum flavum         | 2       |
|              |                | Thienemannimyia gr. spp.   | 5       |
|              |                | Tvetenia bavarica gr.      | 2       |
| LUMBRICULIDA | Lumbriculidae  | Undetermined Lumbriculidae | 8       |
| TRICHOPTERA  | Hydropsychidae | Cheumatopsyche sp.         | 16      |
|              |                | Hydropsyche betteni        | 17      |
|              |                | Hydropsyche sparna         | 1       |
|              | Philopotamidae | Chimarra aterrima?         | 16      |

### Metric Results

Taxa Richness: **10**

EPT Richness: **4**

Biotic Index: **5.41**

PMA: **44**

BAP Score: **4.23**

# Stream Field Data Summary

Waterbody: **Hackensack River**

River Basin: **Hackensack**

County: **Rockland**

State: **NY**

Station: **HACK 03**

Coll Date: **7/31/2012**

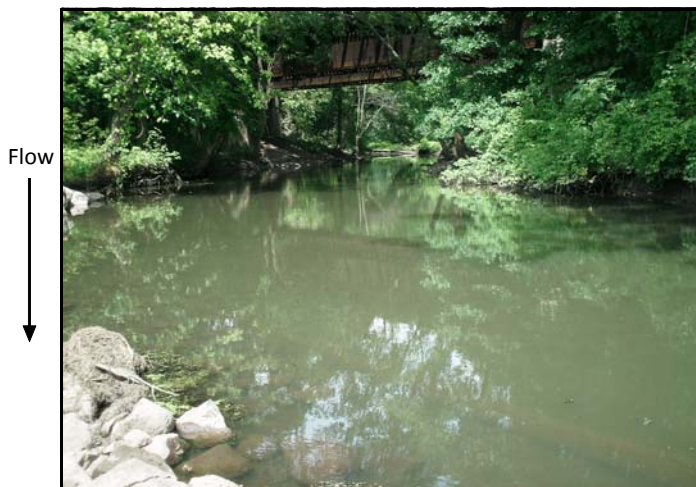
Site description: **Just below Western Highway bridge**

Latitude: **41.0860**

Longitude: **-73.9622**

Field Crew: **jkn**

|                                 |                   |
|---------------------------------|-------------------|
| <b>Physical Characteristics</b> |                   |
| Depth (meters):                 | <b>0.25</b>       |
| Width (meters):                 | <b>12</b>         |
| Current (cm/sec):               | <b>46</b>         |
| Canopy (%):                     | <b>33</b>         |
| Substrate                       |                   |
| Rock (%):                       | <b>5</b>          |
| Rubble (%):                     | <b>25</b>         |
| Gravel (%):                     | <b>25</b>         |
| Sand (%):                       | <b>30</b>         |
| Silt (%):                       | <b>15</b>         |
| Embeddedness (%):               | <b>45</b>         |
| <b>Chemical Measurements</b>    |                   |
| DO (mg/L):                      | <b>5.76</b>       |
| DO sat. (%):                    | <b>68.1</b>       |
| Temperature (C):                | <b>23.95</b>      |
| Spec. Conduct. (umhos):         | <b>351</b>        |
| Baro pressure:                  | <b>760.4</b>      |
| pH:                             | <b>7.61</b>       |
| Salinity (PSS):                 | <b>0.17</b>       |
| <b>Biological Attributes</b>    |                   |
| Aquatic vegetation              |                   |
| Macrophytes:                    |                   |
| Diatoms:                        | <b>Y</b>          |
| Algae-suspended:                |                   |
| Algae-filamentous:              |                   |
| Occurance of macroinvertebrates |                   |
| Ephemeroptera:                  | <b>Y</b>          |
| Plecoptera:                     |                   |
| Trichoptera:                    |                   |
| Coleoptera:                     |                   |
| Megaloptera:                    |                   |
| Odonata:                        |                   |
| Chironomidae:                   | <b>Y</b>          |
| Simuliidae:                     |                   |
| Decapoda:                       | <b>Y</b>          |
| Gammaridae:                     | <b>Y</b>          |
| Mollusca:                       |                   |
| Oligochaeta:                    | <b>Y</b>          |
| Other macro's:                  | <b>Caecidotea</b> |
| Field Faunal Condition:         | <b>Good</b>       |



## Lab Data Summary

Waterbody: **Hackensack River**

Station: **HACK\_03**

Latitude: **41.086**

County: **Rockland** State: **NY**

WAA Sample ID: **W08614**

Longitude: **-73.9622**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order       | Family         | Final Determination       | Total #       |
|-------------|----------------|---------------------------|---------------|
| AMPHIPODA   | Gammaridae     | Gammarus sp.              | 16            |
| COLEOPTERA  | Elmidae        | Stenelmis sp.             | 2             |
| DECAPODA    | Cambaridae     | Orconectes sp.            | 1             |
| DIPTERA     | Chironomidae   | Dicrotendipes sp.         | 8             |
|             |                | Glyptotendipes sp.        | 3             |
|             |                | Polypedilum flavum        | 1             |
|             |                | Polypedilum scalaenum gr. | 2             |
|             |                | Tanytarsus sp.            | 2             |
|             |                | EPHEMEROPTERA             | Heptageniidae |
| ISOPODA     | Asellidae      | Caecidotea sp.            | 18            |
| TRICHOPTERA | Hydropsychidae | Cheumatopsyche sp.        | 15            |
| TUBIFICIDA  | Tubificidae    | Branchiura sowerbyi       | 22            |
|             |                | Limnodrilus hoffmeisteri  | 5             |

### Metric Results

Taxa Richness: **13**

EPT Richness: **2**

Biotic Index: **6.72**

PMA: **48**

BAP Score: **3.98**

# Stream Field Data Summary

Waterbody: **Upper Saddle Brook**

River Basin: **Upper Saddle**

County: **Rockland**

State: **NY**

Station: **SADL 03**

Coll Date: **8/1/2012**

Site description: **Just off Cherry Lane**

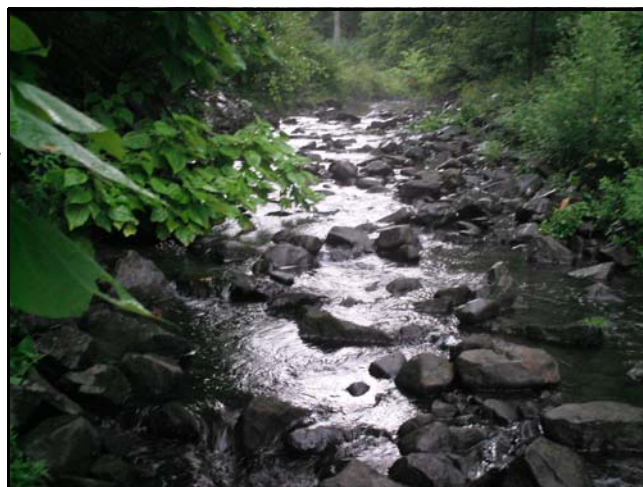
Latitude: **41.0866**

Longitude: **-74.0938**

Field Crew: **jkn**

| <b>Physical Characteristics</b> |              |
|---------------------------------|--------------|
| Depth (meters):                 | <b>0.25</b>  |
| Width (meters):                 | <b>2.5</b>   |
| Current (cm/sec):               | <b>60</b>    |
| Canopy (%):                     | <b>44</b>    |
| Substrate                       |              |
| Rock (%):                       | <b>20</b>    |
| Rubble (%):                     | <b>25</b>    |
| Gravel (%):                     | <b>25</b>    |
| Sand (%):                       | <b>20</b>    |
| Silt (%):                       | <b>10</b>    |
| Embeddedness (%):               | <b>25</b>    |
| <b>Chemical Measurements</b>    |              |
| DO (mg/L):                      | <b>8.44</b>  |
| DO sat. (%):                    | <b>86.9</b>  |
| Temperature (C):                | <b>16.65</b> |
| Spec. Conduct. (umhos):         | <b>589</b>   |
| Baro pressure:                  | <b>752.3</b> |
| pH:                             | <b>7.56</b>  |
| Salinity (PSS):                 | <b>0.29</b>  |
| <b>Biological Attributes</b>    |              |
| Aquatic vegetation              |              |
| Macrophytes:                    |              |
| Diatoms:                        | <b>Y</b>     |
| Algae-suspended:                |              |
| Algae-filamentous:              |              |
| Occurance of macroinvertebrates |              |
| Ephemeroptera:                  |              |
| Plecoptera:                     |              |
| Trichoptera:                    | <b>Y</b>     |
| Coleoptera:                     |              |
| Megaloptera:                    |              |
| Odonata:                        |              |
| Chironomidae:                   | <b>Y</b>     |
| Simuliidae:                     |              |
| Decapoda:                       | <b>Y</b>     |
| Gammaridae:                     |              |
| Mollusca:                       |              |
| Oligochaeta:                    |              |
| Other macro's:                  |              |
| Field Faunal Condition:         | <b>Poor</b>  |

Flow  
↓



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Flow



## Lab Data Summary

Waterbody: **Saddle River**

Station: **SADL\_03**

Latitude: **41.0807**

County: **Rockland** State: **NY**

WAA Sample ID: **W08628**

Longitude: **-74.0829**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order         | Family         | Final Determination      | Total #             |                            |
|---------------|----------------|--------------------------|---------------------|----------------------------|
| AMPHIPODA     | Crangonyctidae | Crangonyx sp.            | 1                   |                            |
| COLEOPTERA    | Elmidae        | Promoesia tardella       | 1                   |                            |
| DIPTERA       | Chironomidae   | Cardiocladius obscurus   | 2                   |                            |
|               |                | Parametriocnemus sp.     | 1                   |                            |
|               |                | Polypedilum flavum       | 4                   |                            |
|               |                | Rheocricotopus sp.       | 1                   |                            |
|               |                | Tanytarsus sp.           | 2                   |                            |
|               |                | Thienemanniella sp.      | 1                   |                            |
|               |                | Thienemannimyia gr. spp. | 3                   |                            |
|               |                | Tvetenia bavarica gr.    | 3                   |                            |
|               |                | Empididae                | Hemerodromia sp.    | 1                          |
|               |                | Simuliidae               | Simulium sp.        | 3                          |
| EPHEMEROPTERA | Tipulidae      | Antocha sp.              | 1                   |                            |
|               |                | Baetidae                 | Baetis intercalaris | 7                          |
|               |                | LUMBRICULIDA             | Lumbriculidae       | Undetermined Lumbriculidae |
| TRICHOPTERA   | Hydropsychidae | Cheumatopsyche sp.       | 10                  |                            |
|               |                | Hydropsyche betteni      | 12                  |                            |
|               |                | Hydropsyche sparna       | 17                  |                            |
|               |                | Philopotamidae           | Chimarra aterrima?  | 23                         |
| TRICLADIDA    |                | Undetermined Turbellaria | 5                   |                            |

### Metric Results

Taxa Richness: **20**

EPT Richness: **5**

Biotic Index: **5.28**

PMA: **47**

BAP Score: **5.36**

# Stream Field Data Summary

Waterbody: **Sparkill**  
 River Basin: **Hudson**  
 County: **Rockland**  
 State: **NY**

Station: **SPAR 04**  
 Coll Date: **7/31/2012**  
 Site description: **Just below Valentine St. bridge**

Latitude: **41.0303**  
 Longitude: **-73.9257**  
 Field Crew: **jkn**

| Physical Characteristics        |             |
|---------------------------------|-------------|
| Depth (meters):                 | 0.25        |
| Width (meters):                 | 5.5         |
| Current (cm/sec):               | 45          |
| Canopy (%):                     | 69          |
| Substrate                       |             |
| Rock (%):                       | 20          |
| Rubble (%):                     | 25          |
| Gravel (%):                     | 25          |
| Sand (%):                       | 20          |
| Silt (%):                       | 10          |
| Embeddedness (%):               | 45          |
| Chemical Measurements           |             |
| DO (mg/L):                      | 7.47        |
| DO sat. (%):                    | 84.2        |
| Temperature (C):                | 21.32       |
| Spec. Conduct. (umhos):         | 517         |
| Baro pressure:                  | 762.3       |
| pH:                             | 7.65        |
| Salinity (PSS):                 | 0.25        |
| Biological Attributes           |             |
| Aquatic vegetation              |             |
| Macrophytes:                    | Y           |
| Diatoms:                        | Y           |
| Algae-suspended:                |             |
| Algae-filamentous:              | Y           |
| Occurance of macroinvertebrates |             |
| Ephemeroptera:                  |             |
| Plecoptera:                     |             |
| Trichoptera:                    | Y           |
| Coleoptera:                     |             |
| Megaloptera:                    |             |
| Odonata:                        |             |
| Chironomidae:                   | Y           |
| Simuliidae:                     |             |
| Decapoda:                       |             |
| Gammaridae:                     | Y           |
| Mollusca:                       |             |
| Oligochaeta:                    | Y           |
| Other macro's:                  |             |
| Field Faunal Condition:         | <b>Poor</b> |

Flow  
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## Lab Data Summary

Waterbody: **Sparkill**

Station: **SPAR\_04**

Latitude: **41.0303**

County: **Rockland**

State: **NY**

WAA Sample ID: **W08630**

Longitude: **-73.9257**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order         | Family         | Final Determination      | Total # |
|---------------|----------------|--------------------------|---------|
| AMPHIPODA     | Gammaridae     | Gammarus sp.             | 28      |
| BASOMMATOPHOR | Planorbidae    | Micromenetus dilatatus   | 1       |
| COLEOPTERA    | Elmidae        | Stenelmis sp.            | 10      |
| DIPTERA       | Chironomidae   | Chaetocladius sp.        | 1       |
|               |                | Paratendipes sp.         | 1       |
|               |                | Stictochironomus sp.     | 1       |
|               | Tipulidae      | Antocha sp.              | 3       |
| EPHEMEROPTERA | Baetidae       | Baetis intercalaris      | 1       |
|               | Heptageniidae  | Stenacron interpunctatum | 1       |
| ISOPODA       | Asellidae      | Caecidotea sp.           | 3       |
| TRICHOPTERA   | Hydropsychidae | Cheumatopsyche sp.       | 20      |
|               |                | Hydropsyche betteni      | 21      |
|               | Hydroptilidae  | Hydroptila sp.           | 1       |
| TRICLADIDA    |                | Undetermined Turbellaria | 8       |

### Metric Results

Taxa Richness: **14**

EPT Richness: **5**

Biotic Index: **5.91**

PMA: **35**

BAP Score: **4.20**

# Stream Field Data Summary

Waterbody: **Minisecongo Creek**

River Basin: **Hudson**

County: **Rockland**

State: **NY**

Station: **MNGO 04**

Coll Date: **7/31/2012**

Site description: **Just off Church St.**

Latitude: **41.2073**

Longitude: **-73.9955**

Field Crew: **jkn**

### Physical Characteristics

|                   |             |
|-------------------|-------------|
| Depth (meters):   | <b>0.25</b> |
| Width (meters):   | <b>15</b>   |
| Current (cm/sec): | <b>48</b>   |
| Canopy (%):       | <b>42</b>   |
| Substrate         |             |
| Rock (%):         | <b>25</b>   |
| Rubble (%):       | <b>25</b>   |
| Gravel (%):       | <b>25</b>   |
| Sand (%):         | <b>10</b>   |
| Silt (%):         | <b>15</b>   |
| Embeddedness (%): | <b>45</b>   |

### Chemical Measurements

|                         |              |
|-------------------------|--------------|
| DO (mg/L):              | <b>9.51</b>  |
| DO sat. (%):            | <b>104</b>   |
| Temperature (C):        | <b>21.12</b> |
| Spec. Conduct. (umhos): | <b>462</b>   |
| Baro pressure:          | <b>760.2</b> |
| pH:                     | <b>7.78</b>  |
| Salinity (PSS):         | <b>0.22</b>  |

### Biological Attributes

|                                 |             |
|---------------------------------|-------------|
| Aquatic vegetation              |             |
| Macrophytes:                    | <b>Y</b>    |
| Diatoms:                        | <b>Y</b>    |
| Algae-suspended:                |             |
| Algae-filamentous:              | <b>Y</b>    |
| Occurance of macroinvertebrates |             |
| Ephemeroptera:                  |             |
| Plecoptera:                     |             |
| Trichoptera:                    | <b>Y</b>    |
| Coleoptera:                     | <b>Y</b>    |
| Megaloptera:                    |             |
| Odonata:                        | <b>Y</b>    |
| Chironomidae:                   | <b>Y</b>    |
| Simuliidae:                     |             |
| Decapoda:                       |             |
| Gammaridae:                     | <b>Y</b>    |
| Mollusca:                       |             |
| Oligochaeta:                    |             |
| Other macro's:                  |             |
| Field Faunal Condition:         | <b>Poor</b> |

Flow  
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## Lab Data Summary

Waterbody: **Minisecongo Creek**

Station: **MNGO\_04**

Latitude: **41.2073**

County: **Rockland** State: **NY**

WAA Sample ID: **W08616**

Longitude: **-73.9955**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order          | Family             | Final Determination | Total # |
|----------------|--------------------|---------------------|---------|
| AMPHIPODA      | Gammaridae         | Gammarus sp.        | 8       |
| COLEOPTERA     | Elmidae            | Stenelmis sp.       | 19      |
| DIPTERA        | Chironomidae       | Tvetenia vitracies  | 2       |
|                | Empididae          | Hemerodromia sp.    | 2       |
|                | Tipulidae          | Antocha sp.         | 3       |
| EPHEMEROPTERA  | Baetidae           | Baetis intercalaris | 12      |
| TRICHOPTERA    | Glossosomatidae    | Glossosoma sp.      | 2       |
|                |                    | Cheumatopsyche sp.  | 14      |
|                | Hydropsychidae     | Hydropsyche betteni | 13      |
|                |                    | Hydropsyche bronta  | 2       |
|                |                    | Hydropsyche morosa  | 12      |
|                |                    | Hydropsyche sparna  | 2       |
| Philopotamidae | Chimarra aterrima? | 9                   |         |

### Metric Results

Taxa Richness: **13**

EPT Richness: **8**

Biotic Index: **5.27**

PMA: **44**

BAP Score: **5.10**

# Stream Field Data Summary

Waterbody: **Ramapo River**

River Basin: **Ramapo**

County: **Rockland**

State: **NY**

Station: **RAMA 07**

Coll Date: **8/1/2012**

Site description: **Just above 4th St bridge**

Latitude: **41.1252**

Longitude: **-74.1646**

Field Crew: **jkn**

| Physical Characteristics        |                  |
|---------------------------------|------------------|
| Depth (meters):                 | <b>0.25</b>      |
| Width (meters):                 | <b>25</b>        |
| Current (cm/sec):               | <b>84</b>        |
| Canopy (%):                     | <b>21</b>        |
| Substrate                       |                  |
| Rock (%):                       | <b>10</b>        |
| Rubble (%):                     | <b>25</b>        |
| Gravel (%):                     | <b>25</b>        |
| Sand (%):                       | <b>30</b>        |
| Silt (%):                       | <b>10</b>        |
| Embeddedness (%):               | <b>25</b>        |
| Chemical Measurements           |                  |
| DO (mg/L):                      | <b>8.63</b>      |
| DO sat. (%):                    | <b>97.3</b>      |
| Temperature (C):                | <b>21.21</b>     |
| Spec. Conduct. (umhos):         | <b>388</b>       |
| Baro pressure:                  | <b>752.6</b>     |
| pH:                             | <b>7.9</b>       |
| Salinity (PSS):                 | <b>0.19</b>      |
| Biological Attributes           |                  |
| Aquatic vegetation              |                  |
| Macrophytes:                    |                  |
| Diatoms:                        | <b>Y</b>         |
| Algae-suspended:                |                  |
| Algae-filamentous:              | <b>Y</b>         |
| Occurance of macroinvertebrates |                  |
| Ephemeroptera:                  | <b>Y</b>         |
| Plecoptera:                     | <b>Y</b>         |
| Trichoptera:                    | <b>Y</b>         |
| Coleoptera:                     |                  |
| Megaloptera:                    |                  |
| Odonata:                        |                  |
| Chironomidae:                   | <b>Y</b>         |
| Simuliidae:                     |                  |
| Decapoda:                       |                  |
| Gammaridae:                     |                  |
| Mollusca:                       |                  |
| Oligochaeta:                    |                  |
| Other macro's:                  |                  |
| Field Faunal Condition:         | <b>Very good</b> |



## Lab Data Summary

Waterbody: **Ramapo River**

Station: **RAMA\_07**

Latitude: **41.1252**

County: **Rockland** State: **NY**

WAA Sample ID: **W08624**

Longitude: **-74.1646**

Collection Date: **8/1/2012**

Subsample size: **100**

| Order         | Family         | Final Determination    | Total # |
|---------------|----------------|------------------------|---------|
| COLEOPTERA    | Elmidae        | Optioservus sp.        | 1       |
|               |                | Stenelmis sp.          | 2       |
| DIPTERA       | Chironomidae   | Cardiocladius obscurus | 1       |
|               |                | Cricotopus sp.         | 1       |
|               |                | Polypedilum flavum     | 10      |
|               |                | Tvetenia vitracies     | 1       |
|               |                | Hemerodromia sp.       | 1       |
| EPHEMEROPTERA | Baetidae       | Baetis intercalaris    | 24      |
|               | Heptageniidae  | Stenonema modestum     | 1       |
|               |                | Stenonema vicarium     | 2       |
|               | Isonychiidae   | Isonychia sp.          | 12      |
| PLECOPTERA    | Perlidae       | Acroneuria abnormis    | 1       |
|               |                | Paragnetina media      | 1       |
| TRICHOPTERA   | Hydropsychidae | Cheumatopsyche sp.     | 11      |
|               |                | Hydropsyche betteni    | 1       |
|               |                | Hydropsyche bronta     | 21      |
|               |                | Hydropsyche sparna     | 1       |
|               | Philopotamidae | Chimarra aterrima?     | 8       |

### Metric Results

Taxa Richness: **18**

EPT Richness: **11**

Biotic Index: **4.76**

PMA: **68**

BAP Score: **6.98**

# Stream Field Data Summary

Waterbody: **Minisceongo Creek**  
 River Basin: **Peekskill Hollow**  
 County: **Rockland**  
 State: **NY**

Station: **MNGO 07**  
 Coll Date: **7/31/2012**  
 Site description: **Just below Thiells Mt. Ivy Road bridge**

Latitude: **41.2017**  
 Longitude: **-74.0283**  
 Field Crew: **jkn**

| Physical Characteristics        |                  |
|---------------------------------|------------------|
| Depth (meters):                 | 0.2              |
| Width (meters):                 | 6                |
| Current (cm/sec):               | 62               |
| Canopy (%):                     | 47               |
| Substrate                       |                  |
| Rock (%):                       | 5                |
| Rubble (%):                     | 28               |
| Gravel (%):                     | 25               |
| Sand (%):                       | 30               |
| Silt (%):                       | 15               |
| Embeddedness (%):               | 45               |
| Chemical Measurements           |                  |
| DO (mg/L):                      | 9.21             |
| DO sat. (%):                    | 104.2            |
| Temperature (C):                | 21.47            |
| Spec. Conduct. (umhos):         | 403              |
| Baro pressure:                  | 754.7            |
| pH:                             | 7.8              |
| Salinity (PSS):                 | 0.19             |
| Biological Attributes           |                  |
| Aquatic vegetation              |                  |
| Macrophytes:                    |                  |
| Diatoms:                        | Y                |
| Algae-suspended:                |                  |
| Algae-filamentous:              | Y                |
| Occurance of macroinvertebrates |                  |
| Ephemeroptera:                  |                  |
| Plecoptera:                     | Y                |
| Trichoptera:                    | Y                |
| Coleoptera:                     | Y                |
| Megaloptera:                    | Y                |
| Odonata:                        | Y                |
| Chironomidae:                   | Y                |
| Simuliidae:                     |                  |
| Decapoda:                       |                  |
| Gammaridae:                     | Y                |
| Mollusca:                       |                  |
| Oligochaeta:                    |                  |
| Other macro's:                  |                  |
| Field Faunal Condition:         | <b>Very good</b> |

Flow  
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Flow



## Lab Data Summary

Waterbody: **Minisceongo Creek**

Station: **MNGO\_07**

Latitude: **41.2017**

County: **Rockland** State: **NY**

WAA Sample ID: **W08617**

Longitude: **-74.0283**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order         | Family          | Final Determination        | Total # |
|---------------|-----------------|----------------------------|---------|
| AMPHIPODA     | Gammaridae      | Gammarus sp.               | 4       |
| COLEOPTERA    | Elmidae         | Stenelmis sp.              | 24      |
|               | Psephenidae     | Psephenus herricki         | 3       |
| DIPTERA       | Chironomidae    | Microtendipes pedellus gr. | 2       |
|               |                 | Polypedilum flavum         | 1       |
|               |                 | Rheotanytarsus sp.         | 1       |
|               |                 | Tvetenia vitracies         | 4       |
|               | Empididae       | Hemerodromia sp.           | 1       |
| EPHEMEROPTERA | Baetidae        | Baetis intercalaris        | 1       |
| MEGALOPTERA   | Corydalidae     | Corydalis cornutus         | 3       |
| ODONATA       | Gomphidae       | Undetermined Gomphidae     | 1       |
| TRICHOPTERA   | Glossosomatidae | Glossosoma sp.             | 1       |
|               | Hydropsychidae  | Cheumatopsyche sp.         | 5       |
|               |                 | Hydropsyche betteni        | 26      |
|               |                 | Hydropsyche bronta         | 4       |
|               |                 | Hydropsyche morosa         | 4       |
|               |                 | Hydropsyche slossonae      | 3       |
|               | Philopotamidae  | Chimarra sp.               | 12      |

### Metric Results

Taxa Richness: **18**

EPT Richness: **8**

Biotic Index: **5.42**

PMA: **38**

BAP Score: **5.18**

# Stream Field Data Summary

Waterbody: **East Branch Hackensack River**

Latitude: **41.1311**

River Basin: **Hackensack**

Station: **EHAC 01**

Longitude: **-73.9502**

County: **Rockland**

Coll Date: **7/31/2012**

Field Crew: **jkn**

State: **NY**

Site description: **Just above Svahan Drive culvert**

## Physical Characteristics

|                   |             |
|-------------------|-------------|
| Depth (meters):   | <b>0.15</b> |
| Width (meters):   | <b>2</b>    |
| Current (cm/sec): | <b>40</b>   |
| Canopy (%):       | <b>51</b>   |
| Substrate         |             |
| Rock (%):         |             |
| Rubble (%):       | <b>25</b>   |
| Gravel (%):       | <b>25</b>   |
| Sand (%):         | <b>25</b>   |
| Silt (%):         | <b>25</b>   |
| Embeddedness (%): | <b>45</b>   |

## Chemical Measurements

|                         |              |
|-------------------------|--------------|
| DO (mg/L):              | <b>5.48</b>  |
| DO sat. (%):            | <b>62.4</b>  |
| Temperature (C):        | <b>22.35</b> |
| Spec. Conduct. (umhos): | <b>353</b>   |
| Baro pressure:          | <b>758.7</b> |
| pH:                     | <b>7.6</b>   |
| Salinity (PSS):         | <b>0.17</b>  |

## Biological Attributes

|                                 |                  |
|---------------------------------|------------------|
| Aquatic vegetation              |                  |
| Macrophytes:                    | <b>Y</b>         |
| Diatoms:                        | <b>Y</b>         |
| Algae-suspended:                |                  |
| Algae-filamentous:              | <b>Y</b>         |
| Occurance of macroinvertebrates |                  |
| Ephemeroptera:                  |                  |
| Plecoptera:                     |                  |
| Trichoptera:                    |                  |
| Coleoptera:                     |                  |
| Megaloptera:                    |                  |
| Odonata:                        |                  |
| Chironomidae:                   | <b>Y</b>         |
| Simuliidae:                     |                  |
| Decapoda:                       |                  |
| Gammaridae:                     | <b>Y</b>         |
| Mollusca:                       |                  |
| Oligochaeta:                    |                  |
| Other macro's:                  |                  |
| Field Faunal Condition:         | <b>Very poor</b> |

Flow  
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Flow





## Lab Data Summary

Waterbody: **East Branch Hackensack River** Station: **EHAC\_01**

Latitude: **41.1311**

County: **Rockland** State: **NY**

WAA Sample ID: **W08613**

Longitude: **-73.9502**

Collection Date: **7/31/2012**

Subsample size: **100**

| Order        | Family         | Final Determination        | Total # |
|--------------|----------------|----------------------------|---------|
| AMPHIPODA    | Crangonyctidae | Crangonyx sp.              | 1       |
| DIPTERA      | Chironomidae   | Micropsectra sp.           | 8       |
|              |                | Paratanytarsus sp.         | 1       |
|              |                | Paratendipes sp.           | 1       |
|              |                | Polypedilum flavum         | 10      |
|              |                | Polypedilum illinoense     | 1       |
|              |                | Polypedilum scalaenum gr.  | 10      |
|              |                | Rheotanytarsus sp.         | 3       |
|              |                | Tanytarsus sp.             | 3       |
|              |                | Thienemannimyia gr. spp.   | 10      |
| LUMBRICULIDA | Lumbriculidae  | Undetermined Lumbriculidae | 1       |
| TRICLADIDA   |                | Undetermined Turbellaria   | 11      |
| TUBIFICIDA   | Naididae       | Haemonais waldvogeli       | 1       |
|              | Tubificidae    | Aulodrilus pluriseta       | 1       |
|              |                | Limnodrilus hoffmeisteri   | 37      |
| VENEROIDEA   | Sphaeriidae    | Pisidium sp.               | 1       |

### Metric Results

Taxa Richness: **16**

EPT Richness: **0**

Biotic Index: **7.59**

PMA: **35**

BAP Score: **2.64**