BIOLOGICAL STREAM SURVEY

ROCKLAND COUNTY, NEW YORK
LOTIC SCENE INVESTIGATION (LSI)
2014 STREAM BIOMONITORING WATER QUALITY PROJECT

PREPARED BY
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SCHENECTADY, NEW YORK

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

Contents

Introduction

This report summarizes the results from the benthic samples collected for Rockland County in 2014. 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 - 2013 data, see Rockland County reports website: http://rocklandgov.com/departments/environmental-resources/protecting-our-streams-and-waterways/

Benthic kick samples were collected at 20 stations on September 14, 2014. All of the stations sampled had been previously sampled in at least one year during 2006 – 2013; for trend monitoring. 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, Impact Source Determination (ISD) which assessed the most likely source (type of impact) affecting water quality, and the Nutrient Biotic Index (NBI) indicating the trophic state of the water at a particular station (see Table 3).

Figure 1. Map of 2006 - 2014 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.

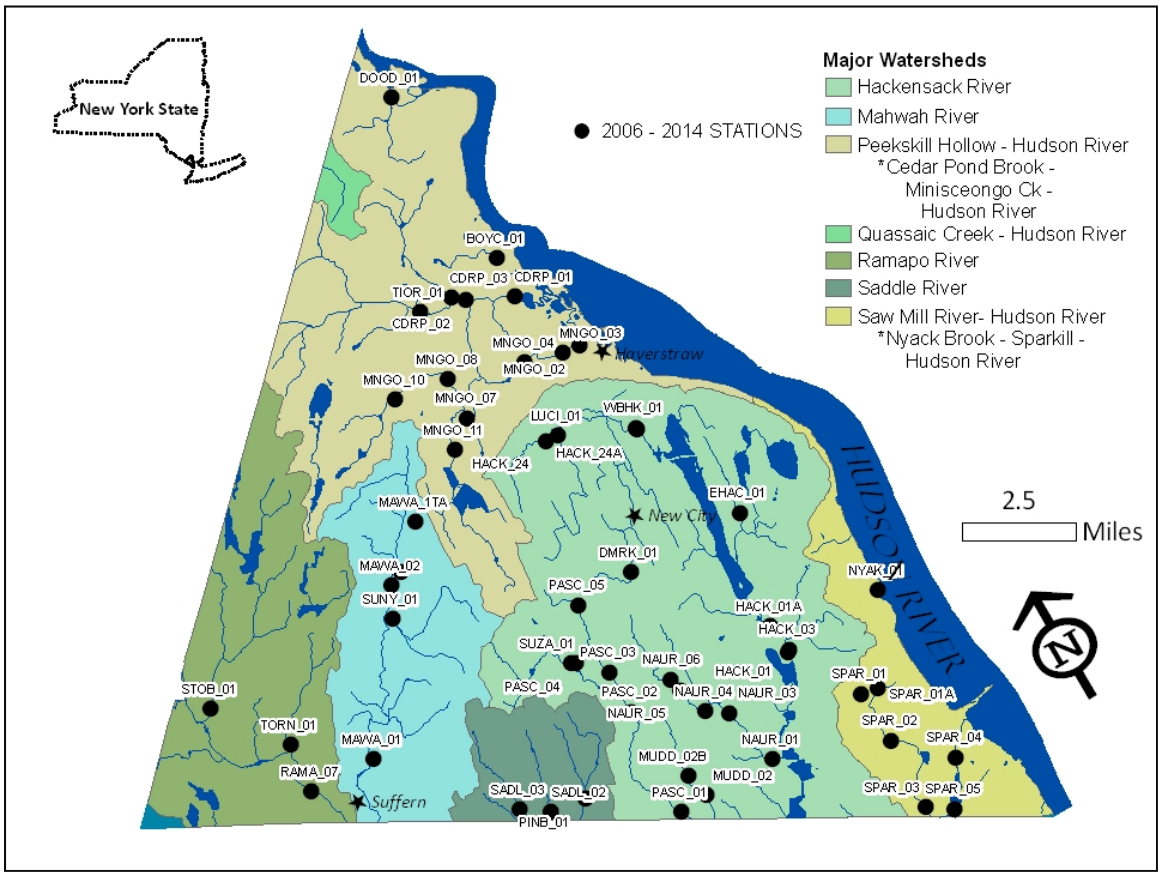
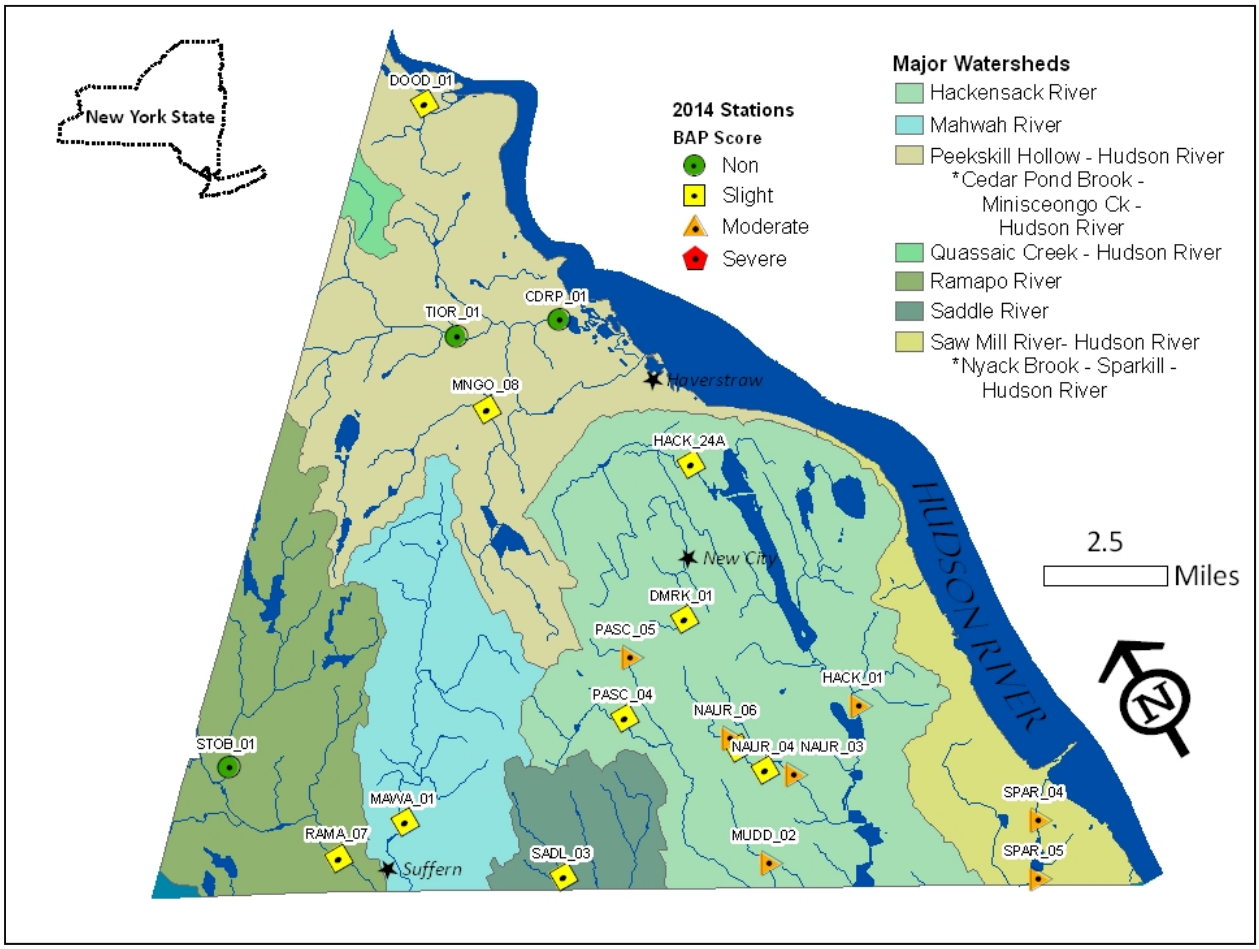


Figure 2. Map of 2014 station locations and BAP scores in Rockland County, NY. Watershed delineation and watershed names are based on hydrological drainage units originated by the U.S. Geological Survey New York Water Science Center and U.S Department of Agriculture, New York State Natural Resources Conservation Service (published in 2008). *Indicates the name of the watershed that it is locally known as.



Summary of Results

The 2014 biological community metrics indicated Rockland County water quality ranged from moderately impacted to non impacted: 3 sites were non impacted, 10 sites were slightly impacted, and 7 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 7 stations, improved at 5 stations, and remained the same at 8 stations (Table 2). Of the 7 stations with declining water quality, the BAP remained within the same impact category as did the five stations with improved water quality.

The variability in water quality is partially a function of land use in each of the major stream basins, which affects the amount and the nature of storm water runoff. In a natural state (grassy or forested areas), rainwater seeps into the ground, where it is filtered, recharges ground water, and contributes to

a steady state flow in lotic systems during times of low rainfall. Agricultural alteration of the land increases the amount of water that flows over the surface directly into streams. The result is diminished amounts of available groundwater, significant changes in river flow during wet or dry periods, and the deposition of chemicals such as fertilizer and pesticides and of animal waste directly into rivers and streams. Urban land use, with large imperious surfaces such as roads, parking lots, driveways, and rooftops results in the highest level of runoff, and is therefore the most likely to cause both flooding and stream channel erosion as large volumes of water carry urban contaminants (oil and petroleum products, road salt, industrial chemicals, lawn fertilizers and pesticides, and litter) rapidly into waterways through storm sewers or across imperious surfaces.

Since 2006, areas of Rockland County with a higher percentage of forested land have exhibited higher water quality scores than areas of considerable urban development or agriculture (figure 3). Forested areas usually contain fewer sources of pollutants and superior ability to buffer impacts; pollutants are removed from the water as it filters through the soil. The overall impact from agricultural and urban areas is dependent on numerous variables, including the amount of land dedicated to these uses, the volume of impervious surfaces, type and abundance of industry, abundance of automobiles, and management practices.

Figure 3. Percentage of land use and mean BAP scores for years 2006 – 2014 within each major watershed. N = number of samples, dashed line indicates minimum and maximum scores.

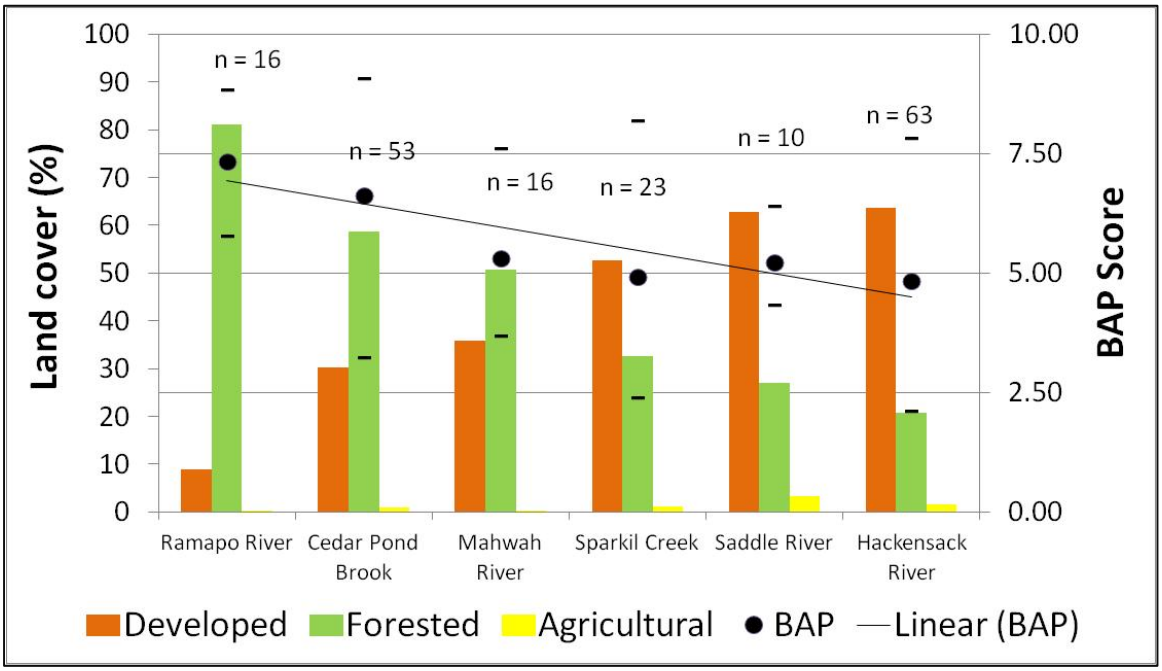


Table 1. Benthic macroinvertebrate metric scores and impact source determination percentages for the 20 stream sites sampled in 2014 throughout Rockland County, NY. Bolded numbers indicate most likely source of impact to stream community. TR= taxa richness; BI= biotic index; EPT = Ephemeroptera-Plecoptera-Trichoptera 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.

Biotic metrics							Impact Source Determination (ISD)							NBI metrics	
Stream name	Station	TR	BI	EPT	PMA	BAP	Nat	NPN	Toxic	Org	Complex	Silt	Imp	NBI-P	NBI-N
Cedar Pond Brook	CDRP_01	24	4.77	12	70	7.63	51	**59**	50	49	49	49	**54**	6.58	6.00
Hackensack Creek	DMRK_01	23	5.84	6	52	5.81	40	**60**	43	57	61	44	**65**	6.36	6.75
Doodletown Brook	DOOD_01	30	5.33	10	48	6.78	35	55	39	52	55	41	**65**	6.73	6.96
Hackensack River	HACK_01	23	6.51	2	42	4.58	17	31	40	50	**61**	33	40	8.40	7.69
Hackensack River	HACK_24A	14	5.80	4	59	5.08	34	45	24	26	26	37	**60**	7.01	6.78
Mahwah River	MAWA_01	19	4.74	8	76	6.88	**61**	55	55	40	49	**59**	46	6.63	6.27
Minisceongo Creek	MNGO_08	20	4.75	9	54	6.35	42	**65**	36	57	50	42	**62**	6.46	7.15
Muddy Creek	MUDD_02	13	5.75	2	51	4.42	28	41	**60**	36	42	39	**55**	7.08	6.99
Nauraushaun Brook	NAUR_03	12	5.91	4	37	3.99	31	60	49	**68**	**70**	49	66	6.85	7.68
Nauraushaun Brook	NAUR_04	18	5.45	6	47	5.30	38	**61**	**56**	50	51	52	**59**	6.77	7.07
Nauraushaun Brook	NAUR_05	26	6.05	2	46	5.10	34	39	42	46	**52**	48	41	6.80	6.50
Nauraushaun Brook	NAUR_06	19	6.83	2	40	4.10	21	36	37	33	33	25	41	7.72	7.12
Pascack Brook	PASC_04	20	6.50	3	58	5.16	28	28	**52**	33	32	24	27	7.37	7.14
Pascack Brook	PASC_05	16	6.91	2	34	3.56	9	11	18	13	17	11	16	7.78	8.44
Ramapo River	RAMA_07	16	5.04	7	56	5.78	38	**66**	56	36	**65**	42	**67**	6.51	5.57
Upper Saddle Brook	SADL_03	19	4.73	6	36	5.20	35	**67**	40	40	**67**	38	60	6.53	6.71
Sparkill	SPAR_04	13	5.74	3	46	4.34	25	42	44	40	**60**	41	**62**	7.27	7.88
Sparkill	SPAR_05	16	5.94	3	46	4.50	27	59	43	58	**63**	45	**66**	7.18	7.57
Stoney Brook	STOB_01	25	3.53	15	77	8.57	**62**	38	33	34	29	41	33	6.24	5.74
Cedar Pond Brook	TIOR_01	32	3.32	21	74	9.08	**51**	30	20	31	21	36	26	6.66	6.30

Table 2 Biological Assessment Profile (BAP) scores from 2006 - 2014, the relative difference between 2014 and the most previous BAP values, and the overall change in water quality status (a difference of ≥±0.5 points).

		BAP										
Stream name	Station	2006	2007	2008	2009	2010	2011	2012	2013	2014	Diff	Change
Cedar Pond Brook	CDRP_01	7.20	8.61		7.56			4.62	8.47	7.63	-0.84	Decline
Hackensack Creek	DMRK_01	6.60	6.83							5.81	-1.02	Decline
Doodletown Brook	DOOD_01			4.72	7.96	6.13				6.78	0.65	Improve
Hackensack River	HACK_01		4.02	2.13		4.97				4.58	-0.39	No change
Hackensack River	HACK_24A		6.01			5.59				5.08	-0.51	Decline
Mahwah River	MAWA_01	5.20	5.07	3.91	5.22	6.38	5.10			6.88	1.78	Improve
Minisceongo Creek	MNGO_08	7.46	7.61			8.64			5.65	6.35	0.70	Improve
Muddy Creek	MUDD_02	4.97	4.92		5.09	4.35	4.40	3.49	4.72	4.42	-0.30	No change
Nauraushaun Brook	NAUR_03	5.30	4.97			4.77				3.99	-0.78	Decline
Nauraushaun Brook	NAUR_04					4.94				5.30	0.36	No change
Nauraushaun Brook	NAUR_05					4.54				5.10	0.56	Improve
Nauraushaun Brook	NAUR_06					4.37				4.10	-0.27	No change
Pascack Brook	PASC_04	5.68	4.85			5.19				5.16	-0.03	No change
Pascack Brook	PASC_05								4.30	3.56	-0.74	Decline
Ramapo River	RAMA_07	7.29	6.01	5.97	7.58	6.54	6.50	6.98	6.70	5.78	-0.92	Decline
Upper Saddle Brook	SADL_03			4.84	5.34		5.20	5.36	5.33	5.20	-0.13	No change
Sparkill	SPAR_04	5.09	5.89	4.64	4.54	4.29	4.60	4.20	5.09	4.34	-0.75	Decline
Sparkill	SPAR_05						4.70			4.50	-0.20	No change
Stoney Brook	STOB_01	8.41	8.66	8.11	8.20			7.40	8.86	8.57	-0.29	No change
Cedar Pond Brook	TIOR_01	7.11	8.87	8.40		7.06	8.00			9.08	1.08	Improve

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. 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

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Hackensack Creek**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **DMRK 01**
Coll Date: **9/8/2014 3:45:00 PM**
Site description: **Just above Sittle Torr Rd. bridge**

Latitude: **41.1328**
Longitude: **-74.0024**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.25**
Width (meters):	**2**
Current (cm/sec):	**55**
Canopy (%):	**20**
Substrate	
Rock (%):	**10**
Rubble (%):	**25**
Gravel (%):	**25**
Sand (%):	**25**
Silt (%):	**15**
Embeddedness (%):	**25**

Chemical Measurements

DO (mg/L):	**9.13**
DO sat. (%):	**95.9**
Temperature (C):	**17.6**
Spec. Conduct. (umhos):	**435**
Baro pressure:	**764.2**
pH:	**7.56**
Salinity (PSS):	**0.21**

Biological Attributes

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Hackensack Creek** Station: **DMRK_01**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
COLEOPTERA	Elmidae	Stenelmis sp.	3
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	7
		Cryptochironomus sp.	1
		Micropsectra sp.	5
		Microtendipes pedellus gr.	1
		Parametriocnemus sp.	1
		Polypedilum aviceps	4
		Polypedilum flavum	2
		Polypedilum illinoense	1
		Tanytarsus sp.	1
		Thienemannimyia gr. spp.	2
		Tribelos/Endochironomus/Phaenops	1
		Tvetenia bavarica gr.	1
	Muscidae	Undetermined Muscidae	1
	Simuliidae	Simulium sp.	2
	Tipulidae	Limonia sp.	1
		Tipula sp.	1
EPHEMEROPTERA	Baetidae	Baetis intercalaris	14
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	21
		Hydropsyche betteni	27
		Hydropsyche bronta	1
	Hydroptilidae	Hydroptila sp.	1
	Philopotamidae	Chimarra aterrima?	1

Metric Results

Taxa Richness:	**23**
EPT Richness:	**6**
Biotic Index:	**5.84**
PMA:	**52**
BAP Score:	**5.81**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Doodletown Brook**
River Basin: **Hudson**
County: **Rockland**
State: **NY**

Station: **DOOD 01**
Coll Date: **9/8/2014 5:33:00 PM**
Site description: **100 meters above route 9W/202 bridge and above route 9W/202 bridge**

Latitude: **41.3010**
Longitude: **-73.9860**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.3**
Width (meters):	**4**
Current (cm/sec):	**48**
Canopy (%):	**80**
Substrate	
Rock (%):	**25**
Rubble (%):	**20**
Gravel (%):	**20**
Sand (%):	**20**
Silt (%):	**15**
Embeddedness (%):	**25**

Chemical Measurements

DO (mg/L):	**7.17**
DO sat. (%):	**76.8**
Temperature (C):	**18.74**
Spec. Conduct. (umhos):	**128**
Baro pressure:	**769.6**
pH:	**7.48**
Salinity (PSS):	**0.06**

Biological Attributes

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Doodletown Brook** Station: **DOOD_01**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
BASOMMATOPHOR	Planorbidae	Gyraulus sp.	2
COLEOPTERA	Elmidae	Oulimnius latiusculus	2
	Hydrophilidae	Undetermined Hydrophilidae	1
	Psephenidae	Psephenus herricki	1
DIPTERA	Chironomidae	Cricotopus sp.	2
		Eukiefferiella devonica gr.	2
		Phaenopsectra obdiens gr.	1
		Polypedilum aviceps	1
		Polypedilum fallax gr.	1
		Polypedilum illinoense	1
		Rheotanytarsus sp.	1
		Stenochironomus sp.	1
		Sublettea sp.	1
		Tvetenia sp.	1
	Tipulidae	Antocha sp.	1
EPHEMEROPTERA	Baetidae	Baetis intercalaris	8
	Heptageniidae	Stenonema sp.	2
ISOPODA	Asellidae	Caecidotea sp.	1
LUMBRICIDA	Lumbricina	Undetermined Lumbricina	1
MEGALOPTERA	Corydalidae	Nigronia serricornis	6
ODONATA	Aeschnidae	Boyeria vinosa	1
	Calopterygidae	Calopteryx sp.	1
PLECOPTERA	Perlidae	Acroneuria sp.	1
TRICHOPTERA	Glossosomatidae	Glossosoma sp.	1
	Hydropsychidae	Cheumatopsyche sp.	21
		Diplectrona sp.	6
		Hydropsyche betteni	20
		Hydropsyche bronta	1
		Hydropsyche sparna	7
	Philopotamidae	Chimarra aterrima?	4

Metric Results

Taxa Richness:	**30**
EPT Richness:	**10**
Biotic Index:	**5.33**
PMA:	**48**
BAP Score:	**6.78**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

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

Station: **HACK 01**
Coll Date: **9/8/2014 1:17:00 PM**
Site description: **Just below Western Highway bridge**

Latitude: **41.0860**
Longitude: **-73.9622**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	
Width (meters):	**9.5**
Current (cm/sec):	**42**
Canopy (%):	**20**
Substrate	
Rock (%):	**10**
Rubble (%):	**25**
Gravel (%):	**20**
Sand (%):	**30**
Silt (%):	**15**
Embeddedness (%):	**40**

Chemical Measurements

DO (mg/L):	**7.31**
DO sat. (%):	**86**
Temperature (C):	**23.56**
Spec. Conduct. (umhos):	**430**
Baro pressure:	**769.7**
pH:	**7.64**
Salinity (PSS):	**0.21**

Biological Attributes

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Hackensack River** Station: **HACK_01**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Gammaridae	Gammarus sp.	22
BASOMMATOPHOR	Ancylidae	Undetermined Ancylidae	1
COLEOPTERA	Elmidae	Stenelmis sp.	1
DECAPODA	Cambaridae	Orconectes sp.	1
DIPTERA	Chironomidae	Chironomus sp.	1
		Cricotopus sp.	4
		Dicrotendipes sp.	4
		Endochironomus sp.	1
		Glyptotendipes sp.	1
		Polypedilum fallax gr.	1
		Polypedilum flavum	2
		Polypedilum illinoense	20
		Polypedilum scalaenum gr.	8
		Thienemannimyia gr. spp.	1
		Undetermined Tanytarsini	1
		Xenochironomus xenolabis	1
ISOPODA	Asellidae	Caecidotea sp.	8
NEUROPTERA	Sisyridae	Undetermined Sisyridae	1
ODONATA	Calopterygidae	Calopteryx sp.	1
	Coenagrionidae	Argia sp.	8
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	8
		Hydropsyche betteni	3
TUBIFICIDA	Tubificidae	Branchiura sowerbyi	1

Metric Results

Taxa Richness:	**23**
EPT Richness:	**2**
Biotic Index:	**6.51**
PMA:	**42**
BAP Score:	**4.58**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

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

Station: **HACK 24A**
Coll Date: **9/8/2014 4:06:00 PM**
Site description: **Just above Haverstraw Rd. bridge**

Latitude: **41.1706**
Longitude: **-73.9694**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.25**
Width (meters):	**4.5**
Current (cm/sec):	**66**
Canopy (%):	**70**
Substrate	
Rock (%):	**10**
Rubble (%):	**25**
Gravel (%):	**25**
Sand (%):	**30**
Silt (%):	**10**
Embeddedness (%):	**40**

Chemical Measurements

DO (mg/L):	**8.1**
DO sat. (%):	**89.5**
Temperature (C):	**20.22**
Spec. Conduct. (umhos):	**432**
Baro pressure:	**768.5**
pH:	**7.69**
Salinity (PSS):	**0.20**

Biological Attributes

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

Flow

Flow

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Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Hackensack River** Station: **HACK_24A**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Crangonyctidae	Crangonyx sp.	2
	Gammaridae	Gammarus sp.	5
COLEOPTERA	Elmidae	Ancyronyx variegatus	1
		Macronychus glabratus	1
DECAPODA	Cambaridae	Orconectes sp.	1
DIPTERA	Chironomidae	Polypedilum flavum	2
		Polypedilum illinoense	1
		Tvetenia bavarica gr.	1
	Simuliidae	Simulium sp.	36
EPHEMEROPTERA	Baetidae	Baetis intercalaris	1
	Heptageniidae	Stenacron interpunctatum	29
		Stenonema sp.	5
ISOPODA	Asellidae	Caecidotea sp.	7
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	8

Metric Results

Taxa Richness:	**14**
EPT Richness:	**4**
Biotic Index:	**5.8**
PMA:	**59**
BAP Score:	**5.08**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Mahwah River**
River Basin: **Ramapo**
County: **Rockland**
State: **NY**

Station: **MAWA 01**
Coll Date: **9/8/2014** **10:50:00 AM**
Site description: **Just off Montebello Rd**

Latitude: **41.1240**
Longitude: **-74.1353**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	
Width (meters):	**3.5**
Current (cm/sec):	**62**
Canopy (%):	**60**
Substrate	
Rock (%):	**10**
Rubble (%):	**25**
Gravel (%):	**30**
Sand (%):	**20**
Silt (%):	**20**
Embeddedness (%):	**45**

Chemical Measurements	
DO (mg/L):	**8.43**
DO sat. (%):	**90.6**
Temperature (C):	**18.39**
Spec. Conduct. (umhos):	**659**
Baro pressure:	**762**
pH:	**7.84**
Salinity (PSS):	**0.32**

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Mahwah River** Station: **MAWA_01**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Gammaridae	Gammarus sp.	7
COLEOPTERA	Elmidae	Optioservus trivittatus	5
		Stenelmis sp.	4
	Psephenidae	Psephenus herricki	2
DECAPODA	Cambaridae	Orconectes sp.	3
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	1
		Parametriocnemus sp.	1
		Polypedilum flavum	4
EPHEMEROPTERA	Baetidae	Baetis intercalaris	18
	Heptageniidae	Stenonema sp.	19
	Isonychiidae	Isonychia sp.	3
ISOPODA	Asellidae	Caecidotea sp.	1
MEGALOPTERA	Corydalidae	Corydalus cornutus	2
		Nigronia serricornis	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	9
		Hydropsyche betteni	5
		Hydropsyche bronta	7
	Hydroptilidae	Leucotrichia sp.	2
	Philopotamidae	Chimarra aterrima?	6

Metric Results

Taxa Richness:	**19**
EPT Richness:	**8**
Biotic Index:	**4.74**
PMA:	**76**
BAP Score:	**6.88**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Minisceongo Creek**
River Basin: **Hudson**
County: **Rockland**
State: **NY**

Station: **MNGO 08**
Coll Date: **9/8/2014 4:38:00 PM**
Site description: **Just above Storrs Rd. bridge**

Latitude: **41.2153**
Longitude: **-74.0263**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	**0.25**
Width (meters):	**5**
Current (cm/sec):	**52**
Canopy (%):	**40**
Substrate	
Rock (%):	
Rubble (%):	**25**
Gravel (%):	**30**
Sand (%):	**25**
Silt (%):	**20**
Embeddedness (%):	**40**

Chemical Measurements	
DO (mg/L):	**9.26**
DO sat. (%):	**102.3**
Temperature (C):	**20.16**
Spec. Conduct. (umhos):	**350**
Baro pressure:	**760.8**
pH:	**7.59**
Salinity (PSS):	**0.17**

Biological Attributes	
Aquatic vegetation	
Macrophytes:	
Diatoms:	**Y**
Algae-suspended:	
Algae-filamentous:	**Y**
Occurance of macroinvertebrates	
Ephemeroptera:	**Y**
Plecoptera:	
Trichoptera:	**Y**
Coleoptera:	**Y**
Megaloptera:	**Y**
Odonata:	
Chironomidae:	
Simuliidae:	
Decapoda:	
Gammaridae:	
Mollusca:	
Oligochaeta:	
Other macro's:	**Diptera**
Field Faunal Condition:	**Good**

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Minisceongo Creek** Station: **MNGO_08**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
COLEOPTERA	Elmidae	Oulimnius latiusculus	1
	Psephenidae	Psephenus herricki	2
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	1
		Polypedilum aviceps	3
		Polypedilum flavum	4
		Rheocricotopus sp.	2
		Rheotanytarsus sp.	1
		Tvetenia bavarica gr.	1
		Tvetenia vitracies	1
	Tipulidae	Hexatoma sp.	3
EPHEMEROPTERA	Baetidae	Baetis intercalaris	2
	Ephemerellidae	Ephemerella sp.	1
	Heptageniidae	Stenonema modestum	7
	Isonychiidae	Isonychia sp.	14
MEGALOPTERA	Corydalidae	Nigronia serricornis	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	5
		Hydropsyche betteni	29
		Hydropsyche bronta	8
		Hydropsyche morosa	3
	Philopotamidae	Chimarra aterrima?	11

Metric Results

Taxa Richness:	**20**
EPT Richness:	**9**
Biotic Index:	**4.75**
PMA:	**54**
BAP Score:	**6.35**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Muddy Creek**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **MUDD 02**
Coll Date: **9/8/2014 11:59:00 AM**
Site description: **Just below East Washington Ave**

Latitude: **41.0600**
Longitude: **-74.0235**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.25**
Width (meters):	**2.5**
Current (cm/sec):	**51**
Canopy (%):	**10**
Substrate	
Rock (%):	
Rubble (%):	**10**
Gravel (%):	**30**
Sand (%):	**30**
Silt (%):	**30**
Embeddedness (%):	**65**

Chemical Measurements

DO (mg/L):	**9.31**
DO sat. (%):	**97.1**
Temperature (C):	**18.52**
Spec. Conduct. (umhos):	**817**
Baro pressure:	**764.7**
pH:	**7.62**
Salinity (PSS):	**0.40**

Biological Attributes

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Muddy Creek** Station: **MUDD_02**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Gammaridae	Gammarus sp.	16
ARHYNCHOBDELLID	Erpobdellidae	Undetermined Erpobdellidae	1
COLEOPTERA	Elmidae	Stenelmis sp.	40
DIPTERA	Chironomidae	Chironomus sp.	2
		Cladotanytarsus sp.	2
		Cricotopus bicinctus	13
		Cricotopus/Orthocladius Complex	7
		Cryptochironomus sp.	2
		Microtendipes pedellus gr.	1
		Stictochironomus sp.	1
		Thienemannimyia gr. spp.	2
EPHEMEROPTERA	Baetidae	Baetis intercalaris	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	12

Metric Results

Taxa Richness:	**13**
EPT Richness:	**2**
Biotic Index:	**5.75**
PMA:	**51**
BAP Score:	**4.42**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Cedar Pond Brook**
River Basin: **Hudson**
County: **Rockland**
State: **NY**

Station: **CDRP 01**
Coll Date: **9/8/2014 5:08:00 PM**
Site description: **Just above Lowland Hill Rd.**

Latitude: **41.2268**
Longitude: **-73.9846**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.25**
Width (meters):	**12**
Current (cm/sec):	**72**
Canopy (%):	**40**
Substrate	
Rock (%):	**25**
Rubble (%):	**25**
Gravel (%):	**25**
Sand (%):	**15**
Silt (%):	**10**
Embeddedness (%):	**25**

Chemical Measurements

DO (mg/L):	**8.94**
DO sat. (%):	**97.9**
Temperature (C):	**19.86**
Spec. Conduct. (umhos):	**237**
Baro pressure:	**770**
pH:	**7.81**
Salinity (PSS):	**0.11**

Biological Attributes

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Cedar Pond Brook** Station: **CDRP_01**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Gammaridae	Gammarus sp.	1
BASOMMATOPHOR	Lymnaeidae	Undetermined Lymnaeidae	1
COLEOPTERA	Psephenidae	Psephenus herricki	2
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	1
		Orthocladius sp.	1
		Polypedilum flavum	4
		Rheotanytarsus sp.	4
		Tvetenia bavarica gr.	11
	Simuliidae	Simulium sp.	1
	Tipulidae	Antocha sp.	1
		Tipula sp.	1
EPHEMEROPTERA	Baetidae	Acentrella turbida	5
		Baetis intercalaris	11
		Plauditus sp.	1
	Heptageniidae	Stenonema sp.	11
	Isonychiidae	Isonychia sp.	4
HOPLONEMERTEA	Tetrastemmatidae	Prostoma graecense	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	5
		Hydropsyche betteni	6
		Hydropsyche bronta	4
		Hydropsyche morosa	13
		Hydropsyche sparna	1
	Philopotamidae	Chimarra aterrima?	9
	Rhyacophilidae	Rhyacophila fuscula	1

Metric Results

Taxa Richness:	**24**
EPT Richness:	**12**
Biotic Index:	**4.77**
PMA:	**70**
BAP Score:	**7.63**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Cedar Pond Brook**
River Basin: **Hudson**
County: **Rockland**
State: **NY**

Station: **TIOR 01**
Coll Date: **9/8/2014**
Site description: **Just above Rt. 210 bridge**

Latitude: **41.2382**
Longitude: **-74.0221**
Field Crew: **jkn**

Physical Characteristics

Depth (meters):	**0.3**
Width (meters):	**7**
Current (cm/sec):	**72**
Canopy (%):	**40**
Substrate	
Rock (%):	**10**
Rubble (%):	**25**
Gravel (%):	**25**
Sand (%):	**25**
Silt (%):	**15**
Embeddedness (%):	**25**

Chemical Measurements

DO (mg/L):	**8.76**
DO sat. (%):	
Temperature (C):	**18.91**
Spec. Conduct. (umhos):	**84**
Baro pressure:	**764.8**
pH:	**7.41**
Salinity (PSS):	**0.04**

Biological Attributes

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Cedar Pond Brook** Station: **TIOR_01**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
COLEOPTERA	Elmidae	Stenelmis sp.	1
	Psephenidae	Psephenus herricki	14
DIPTERA	Chironomidae	Cricotopus sp.	2
		Microtendipes pedellus gr.	1
		Polypedilum aviceps	2
		Tvetenia vitracies	2
	Simuliidae	Simulium sp.	1
	Tipulidae	Dicranota sp.	1
EPHEMEROPTERA	Baetidae	Acentrella turbida	1
		Acerpenna sp.	1
		Baetis intercalaris	4
		Plauditus sp.	2
	Ephemerellidae	Ephemerella sp.	2
		Eurylophella funeralis	1
	Heptageniidae	Leucrocuta sp.	1
		Stenacron sp.	9
		Stenonema modestum	26
	Isonychiidae	Isonychia sp.	9
ODONATA	Calopterygidae	Calopteryx sp.	1
	Gomphidae	Undetermined Gomphidae	1
	Libellulidae	Undetermined Libellulidae	1
PLECOPTERA	Leuctridae	Leuctra sp.	1
	Perlidae	Paragnetina media	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	2
		Hydropsyche betteni	1
		Hydropsyche bronta	1
		Hydropsyche morosa	4
	Hydroptilidae	Hydroptila sp.	1
	Odontoceridae	Psilotreta sp.	2
	Philopotamidae	Chimarra aterrima?	1
	Polycentropodidae	Polycentropus sp.	1
	Rhyacophilidae	Rhyacophila fuscula	2

Metric Results

Taxa Richness:	**32**
EPT Richness:	**21**
Biotic Index:	**3.32**
PMA:	**74**
BAP Score:	**9.08**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **NAUR 03**
Coll Date: **9/8/2014 1:35:00 PM**
Site description: **Just below Town Line Rd. bridge**

Latitude: **41.0785**
Longitude: **-73.9973**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	**0.25**
Width (meters):	**3**
Current (cm/sec):	**44**
Canopy (%):	**75**
Substrate	
Rock (%):	**10**
Rubble (%):	**25**
Gravel (%):	**25**
Sand (%):	**25**
Silt (%):	**15**
Embeddedness (%):	**25**

Chemical Measurements	
DO (mg/L):	**9.57**
DO sat. (%):	**107.2**
Temperature (C):	**21.01**
Spec. Conduct. (umhos):	**1116**
Baro pressure:	**766.2**
pH:	**7.89**
Salinity (PSS):	**0.56**

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook** Station: **NAUR_03**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Gammaridae	Gammarus sp.	1
COLEOPTERA	Elmidae	Stenelmis sp.	13
DIPTERA	Chironomidae	Cryptochironomus sp.	1
		Microtendipes pedellus gr.	2
		Polypedilum flavum	10
		Polypedilum illinoense	1
		Tvetenia bavarica gr.	1
ODONATA	Coenagrionidae	Argia sp.	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	18
		Hydropsyche betteni	37
		Hydropsyche bronta	7
	Philopotamidae	Chimarra aterrima?	8

Metric Results

Taxa Richness:	**12**
EPT Richness:	**4**
Biotic Index:	**5.91**
PMA:	**37**
BAP Score:	**3.99**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **NAUR 04**
Coll Date: **9/8/2014 1:58:00 PM**
Site description: **Off Elks Lodge parking lot.**

Latitude: **41.083**
Longitude: **-74.00588**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	
Width (meters):	**3.5**
Current (cm/sec):	**48**
Canopy (%):	**40**
Substrate	
Rock (%):	**20**
Rubble (%):	**15**
Gravel (%):	**25**
Sand (%):	**25**
Silt (%):	**15**
Embeddedness (%):	**40**

Chemical Measurements	
DO (mg/L):	**9.94**
DO sat. (%):	**118.3**
Temperature (C):	**24.08**
Spec. Conduct. (umhos):	**659**
Baro pressure:	**765.2**
pH:	**8.05**
Salinity (PSS):	**0.32**

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook** Station: **NAUR_04**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Crangonyctidae	Crangonyx sp.	1
COLEOPTERA	Elmidae	Stenelmis sp.	26
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	1
		Microtendipes pedellus gr.	2
		Orthocladius sp.	1
		Parametriocnemus sp.	7
		Polypedilum flavum	17
		Rheotanytarsus sp.	1
		Thienemannimyia gr. spp.	1
		Tvetenia bavarica gr.	1
		Undetermined Tanytarsini	1
EPHEMEROPTERA	Baetidae	Baetis intercalaris	5
ODONATA	Coenagrionidae	Argia sp.	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	9
		Hydropsyche betteni	12
		Hydropsyche bronta	2
	Hydroptilidae	Hydroptila sp.	3
	Philopotamidae	Chimarra aterrima?	9

Metric Results

Taxa Richness:	**18**
EPT Richness:	**6**
Biotic Index:	**5.45**
PMA:	**47**
BAP Score:	**5.3**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **NAUR 05**
Coll Date: **9/8/2014 2:12:00 PM**
Site description: **Off of First St.**

Latitude: **41.09264**
Longitude: **-74.01007**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	**0.25**
Width (meters):	**5**
Current (cm/sec):	**40**
Canopy (%):	**20**
Substrate	
Rock (%):	**40**
Rubble (%):	**25**
Gravel (%):	**15**
Sand (%):	**10**
Silt (%):	**10**
Embeddedness (%):	**40**

Chemical Measurements	
DO (mg/L):	**8.33**
DO sat. (%):	**97.7**
Temperature (C):	**23.26**
Spec. Conduct. (umhos):	**620**
Baro pressure:	**763.8**
pH:	**8.06**
Salinity (PSS):	**0.30**

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook** Station: **NAUR_05**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Crangonyctidae	Crangonyx sp.	15
BASOMMATOPHOR	Planorbidae	Menetus dilatatus	1
COLEOPTERA	Elmidae	Stenelmis sp.	4
DECAPODA	Cambaridae	Orconectes sp.	1
DIPTERA	Chironomidae	Chironomus sp.	1
		Cricotopus sp.	2
		Cricotopus/Orthocladius Complex	2
		Cryptochironomus sp.	3
		Dicrotendipes sp.	5
		Micropsectra sp.	1
		Paratanytarsus sp.	1
		Polypedilum flavum	7
		Polypedilum illinoense	1
		Polypedilum scalaenum gr.	1
		Procladius sp.	1
		Tanytarsus sp.	9
		Thienemannimyia gr. spp.	4
		Undetermined Tanytarsini	4
	Empididae	Hemerodromia sp.	1
	Tipulidae	Antocha sp.	1
		Tipula sp.	2
EPHEMEROPTERA	Baetidae	Baetis sp.	2
ODONATA	Coenagrionidae	Enallagma sp.	4
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	23
TRICLADIDA		Undetermined Turbellaria	1
VENEROIDEA	Sphaeriidae	Pisidium sp.	3

Metric Results

Taxa Richness:	**26**
EPT Richness:	**2**
Biotic Index:	**6.05**
PMA:	**46**
BAP Score:	**5.1**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **NAUR 06**
Coll Date: **9/8/2014 2:28:00 PM**
Site description: **Next to All County Motors on Main St.**

Latitude: **41.09728**
Longitude: **-74.01141**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	**0.25**
Width (meters):	**5**
Current (cm/sec):	**35**
Canopy (%):	**25**
Substrate	
Rock (%):	**5**
Rubble (%):	**15**
Gravel (%):	**30**
Sand (%):	**30**
Silt (%):	**20**
Embeddedness (%):	**45**

Chemical Measurements	
DO (mg/L):	**2.03**
DO sat. (%):	**23.9**
Temperature (C):	**21.72**
Spec. Conduct. (umhos):	**921**
Baro pressure:	**763.4**
pH:	**7.44**
Salinity (PSS):	**0.45**

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Nauraushaun Brook** Station: **NAUR_06**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
ARHYNCHOBDELLID	Erpobdellidae	Undetermined Erpobdellidae	1
DECAPODA	Cambaridae	Orconectes sp.	1
DIPTERA	Ceratopogonidae	Probezzia sp.	1
	Chironomidae	Chironomus sp.	19
		Cricotopus sp.	1
		Cryptochironomus sp.	1
		Polypedilum flavum	1
		Polypedilum scalaenum gr.	2
		Thienemannimyia gr. spp.	18
		Tvetenia bavarica gr.	1
	Culicidae	Undetermined Culicidae	2
	Empididae	Undetermined Empididae	1
	Simuliidae	Simulium sp.	20
	Stratiomyidae	Undetermined Stratiomyidae	4
	Tipulidae	Tipula sp.	2
ISOPODA	Asellidae	Caecidotea sp.	9
ODONATA	Aeshnidae	Undetermined Aeshnidae	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	8
		Hydropsyche betteni	7

Metric Results

Taxa Richness:	**19**
EPT Richness:	**2**
Biotic Index:	**6.83**
PMA:	**40**
BAP Score:	**4.1**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Pascack Brook**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **PASC 04**
Coll Date: **9/8/2014 3:04:00 PM**
Site description: **Just off Memorial Park Dr.**

Latitude: **41.1170**
Longitude: **-74.0417**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.25**
Width (meters):	**5**
Current (cm/sec):	**35**
Canopy (%):	**40**
Substrate	
Rock (%):	
Rubble (%):	**25**
Gravel (%):	**25**
Sand (%):	**30**
Silt (%):	**20**
Embeddedness (%):	**45**

Chemical Measurements

DO (mg/L):	**9.26**
DO sat. (%):	**98.2**
Temperature (C):	**18.14**
Spec. Conduct. (umhos):	**753**
Baro pressure:	**759.7**
pH:	**8.17**
Salinity (PSS):	**0.37**

Biological Attributes

Aquatic vegetation	
Macrophytes:	
Diatoms:	**Y**
Algae-suspended:	
Algae-filamentous:	**Y**
Occurance of macroinvertebrates	
Ephemeroptera:	
Plecoptera:	
Trichoptera:	**Y**
Coleoptera:	
Megaloptera:	
Odonata:	
Chironomidae:	**Y**
Simuliidae:	
Decapoda:	
Gammaridae:	
Mollusca:	
Oligochaeta:	
Other macro's:	**Amphipoda,Leech**
Field Faunal Condition:	**Poor**

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Pascack Brook** Station: **PASC_04**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Crangonyctidae	Crangonyx sp.	8
DIPTERA	Chironomidae	Chironomus sp.	9
		Cricotopus/Orthocladius Complex	3
		Cryptochironomus sp.	4
		Microtendipes pedellus gr.	1
		Polypedilum flavum	4
		Procladius sp.	1
		Stictochironomus sp.	2
		Thienemannimyia gr. spp.	26
EPHEMEROPTERA	Baetidae	Baetis flavistriga	4
		Baetis intercalaris	11
ISOPODA	Asellidae	Caecidotea sp.	9
LUMBRICIDA	Lumbricina	Undetermined Lumbricina	1
LUMBRICULIDA	Lumbriculidae	Undetermined Lumbriculidae	1
ODONATA	Coenagrionidae	Argia sp.	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	9
TUBIFICIDA	Enchytraeidae	Undetermined Enchytraeidae	1
	Tubificidae	Undet. Tubificidae w/o cap. setae	1
VENEROIDEA	Corbiculidae	Corbicula fluminea	2
	Sphaeriidae	Pisidium sp.	2

Metric Results

Taxa Richness:	**20**
EPT Richness:	**3**
Biotic Index:	**6.5**
PMA:	**58**
BAP Score:	**5.16**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Pascack Brook**
River Basin: **Hackensack**
County: **Rockland**
State: **NY**

Station: **PASC 05**
Coll Date: **9/8/2014 3:25:00 PM**
Site description: **6 houses below Dwight Ave bridge**

Latitude: **41.1325**
Longitude: **-74.02846**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	**0.25**
Width (meters):	**3**
Current (cm/sec):	**40**
Canopy (%):	**75**
Substrate	
Rock (%):	**10**
Rubble (%):	**10**
Gravel (%):	**30**
Sand (%):	**30**
Silt (%):	**20**
Embeddedness (%):	**45**

Chemical Measurements	
DO (mg/L):	**6.69**
DO sat. (%):	**71.6**
Temperature (C):	**18.84**
Spec. Conduct. (umhos):	**419**
Baro pressure:	**759**
pH:	**7.95**
Salinity (PSS):	**0.20**

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Pascack Brook** Station: **PASC_05**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
ARHYNCHOBDELLID	Erpobdellidae	Undetermined Erpobdellidae	6
Basommatophora	Physidae	Physa sp.	6
DIPTERA	Chironomidae	Cryptochironomus sp.	5
		Polypedilum illinoense	2
		Stictochironomus sp.	18
		Thienemannimyia gr. spp.	5
		Tribelos sp.	1
ISOPODA	Asellidae	Caecidotea sp.	2
ODONATA	Aeschnidae	Boyeria vinosa	1
	Aeshnidae	Undetermined Aeshnidae	4
	Calopterygidae	Calopteryx sp.	33
	Coenagrionidae	Argia sp.	6
		Undetermined Coenagrionidae	2
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	2
		Hydropsyche betteni	2
VENEROIDEA	Sphaeriidae	Pisidium sp.	5

Metric Results

Taxa Richness:	**16**
EPT Richness:	**2**
Biotic Index:	**6.91**
PMA:	**34**
BAP Score:	**3.56**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

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

Station: **RAMA 07**
Coll Date: **9/8/2014 10:12:00 AM**
Site description: **Just above 4th St bridge**

Latitude: **41.1252**
Longitude: **-74.1646**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.15**
Width (meters):	**18**
Current (cm/sec):	**56**
Canopy (%):	**25**
Substrate	
Rock (%):	**10**
Rubble (%):	**25**
Gravel (%):	**30**
Sand (%):	**15**
Silt (%):	**20**
Embeddedness (%):	**25**

Chemical Measurements

DO (mg/L):	**7.84**
DO sat. (%):	**86.7**
Temperature (C):	**20.33**
Spec. Conduct. (umhos):	**427**
Baro pressure:	**762.8**
pH:	**7.56**
Salinity (PSS):	**0.21**

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:	
Simuliidae:	
Decapoda:	
Gammaridae:	
Mollusca:	
Oligochaeta:	
Other macro's:	
Field Faunal Condition:	**Very good**

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Ramapo River** Station: **RAMA_07**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
COLEOPTERA	Elmidae	Optioservus sp.	1
		Promoresia elegans	1
		Stenelmis sp.	1
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	2
		Polypedilum flavum	14
		Polypedilum illinoense	1
		Tvetenia vitracies	1
		Undetermined Orthocladiinae	1
	Simuliidae	Simulium sp.	7
EPHEMEROPTERA	Baetidae	Baetis intercalaris	16
	Isonychiidae	Isonychia sp.	1
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	3
		Hydropsyche bronta	13
		Hydropsyche morosa	4
		Hydropsyche sparna	5
	Philopotamidae	Chimarra aterrima?	29

Metric Results

Taxa Richness:	**16**
EPT Richness:	**7**
Biotic Index:	**5.04**
PMA:	**56**
BAP Score:	**5.78**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Upper Saddle Brook**
River Basin: **Upper Saddle**
County: **Rockland**
State: **NY**

Station: **SADL 03**
Coll Date: **9/8/2014 11:25:00 AM**
Site description: **Just off Cherry Lane**

Latitude: **41.0866**
Longitude: **-74.0938**
Field Crew: **cmf**

Physical Characteristics	
Depth (meters):	**0.25**
Width (meters):	**2.5**
Current (cm/sec):	**72**
Canopy (%):	**85**
Substrate	
Rock (%):	**25**
Rubble (%):	**25**
Gravel (%):	**25**
Sand (%):	**15**
Silt (%):	**10**
Embeddedness (%):	**25**

Chemical Measurements	
DO (mg/L):	**9.53**
DO sat. (%):	**100.8**
Temperature (C):	**18.1**
Spec. Conduct. (umhos):	**669**
Baro pressure:	**761.4**
pH:	**8.09**
Salinity (PSS):	**0.33**

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Upper Saddle Brook** Station: **SADL_03**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Crangonyctidae	Crangonyx sp.	1
COLEOPTERA	Elmidae	Macronychus glabratus	2
		Microcylloepus pusillus	1
		Stenelmis sp.	7
DECAPODA	Cambaridae	Orconectes sp.	1
DIPTERA	Chironomidae	Chaetocladius sp.	1
		Cricotopus/Orthocladius Complex	1
		Diamesa sp.	3
		Micropsectra/Tanytarsus Complex	2
		Polypedilum aviceps	2
		Thienemannimyia gr. spp.	1
	Simuliidae	Simulium sp.	1
EPHEMEROPTERA	Baetidae	Baetis intercalaris	2
MEGALOPTERA	Corydalidae	Nigronia serricornis	1
TRICHOPTERA	Glossosomatidae	Glossosoma sp.	1
	Hydropsychidae	Cheumatopsyche sp.	20
		Hydropsyche betteni	3
		Hydropsyche sparna	10
	Philopotamidae	Chimarra aterrima?	40

Metric Results

Taxa Richness:	**19**
EPT Richness:	**6**
Biotic Index:	**4.73**
PMA:	**36**
BAP Score:	**5.2**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

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

Station: **SPAR 04**
Coll Date: **9/8/2014 12:41:00 PM**
Site description: **Just below Valentine St. bridge**

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

Physical Characteristics

Depth (meters):	**0.25**
Width (meters):	**3.5**
Current (cm/sec):	**52**
Canopy (%):	**60**
Substrate	
Rock (%):	**20**
Rubble (%):	**20**
Gravel (%):	**20**
Sand (%):	**20**
Silt (%):	**20**
Embeddedness (%):	**40**

Chemical Measurements

DO (mg/L):	**6.75**
DO sat. (%):	**72.2**
Temperature (C):	**7.64**
Spec. Conduct. (umhos):	**775**
Baro pressure:	**770.4**
pH:	**7.62**
Salinity (PSS):	**0.38**

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:	**Y**
Decapoda:	
Gammaridae:	**Y**
Mollusca:	
Oligochaeta:	
Other macro's:	
Field Faunal Condition:	**Poor**

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Sparkill** Station: **SPAR_04**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Gammaridae	Gammarus sp.	40
COLEOPTERA	Elmidae	Macronychus glabratus	1
		Stenelmis sp.	5
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	2
		Micropsectra/Tanytarsus Complex	2
		Microtendipes pedellus gr.	1
		Parametriocnemus sp.	2
		Polypedilum flavum	17
	Simuliidae	Simulium sp.	4
ISOPODA	Asellidae	Caecidotea sp.	3
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	20
		Hydropsyche betteni	2
	Philopotamidae	Chimarra aterrima?	1

Metric Results

Taxa Richness:	**13**
EPT Richness:	**3**
Biotic Index:	**5.74**
PMA:	**46**
BAP Score:	**4.34**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

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

Station: **SPAR 05**
Coll Date: **9/8/2014 12:58:00 PM**
Site description: **Just below Oak Tree Rd. bridge**

Latitude: **41.0157**
Longitude: **-73.9373**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.3**
Width (meters):	**2.5**
Current (cm/sec):	**63**
Canopy (%):	**60**
Substrate	
Rock (%):	**25**
Rubble (%):	**25**
Gravel (%):	**20**
Sand (%):	**25**
Silt (%):	**32**
Embeddedness (%):	**40**

Chemical Measurements

DO (mg/L):	**8.15**
DO sat. (%):	**86.3**
Temperature (C):	**18.21**
Spec. Conduct. (umhos):	**778**
Baro pressure:	**770**
pH:	**7.72**
Salinity (PSS):	**0.38**

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:	
Mollusca:	
Oligochaeta:	
Other macro's:	**Diptera**
Field Faunal Condition:	**Poor**

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Sparkill** Station: **SPAR_05**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
AMPHIPODA	Gammaridae	Gammarus sp.	1
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	3
		Parametriocnemus sp.	1
		Polypedilum flavum	5
		Polypedilum illinoense	9
		Tanytarsus sp.	1
		Thienemannimyia gr. spp.	2
		Tvetenia bavarica gr.	2
	Simuliidae	Simulium sp.	5
	Tipulidae	Antocha sp.	1
EPHEMEROPTERA	Baetidae	Baetis intercalaris	4
LUMBRICULIDA	Lumbriculidae	Undetermined Lumbriculidae	2
ODONATA	Gomphidae	Stylogomphus albystilus	2
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	18
		Hydropsyche betteni	32
TRICLADIDA		Undetermined Turbellaria	12

Metric Results

Taxa Richness:	**16**
EPT Richness:	**3**
Biotic Index:	**5.94**
PMA:	**46**
BAP Score:	**4.5**

Stream Field Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

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

Station: **STOB 01**
Coll Date: **9/8/2014 9:10:00 AM**
Site description: **Just above Sevens Lakes Rd. bridge**

Latitude: **41.1642**
Longitude: **-74.1831**
Field Crew: **cmf**

Physical Characteristics

Depth (meters):	**0.25**
Width (meters):	**5**
Current (cm/sec):	**57**
Canopy (%):	**50**
Substrate	
Rock (%):	**10**
Rubble (%):	**50**
Gravel (%):	**45**
Sand (%):	**5**
Silt (%):	
Embeddedness (%):	**25**

Chemical Measurements

DO (mg/L):	**9.2**
DO sat. (%):	**98.6**
Temperature (C):	**18.73**
Spec. Conduct. (umhos):	**75**
Baro pressure:	**759.6**
pH:	**7.21**
Salinity (PSS):	

Biological Attributes

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

Flow

Flow

WAA Project: RC 14

Lab Data Summary

Watershed Assessment Associates
Environmental Services / Biomonitoring / Invertebrate Taxonomy / Professional Training

Waterbody: **Stoney Brook** Station: **STOB_01**
County: **Rockland** State: **NY** Replicate: **A**
Collection Date: **9/8/2014** Subsample size: **100**

Order	Family	Final Determination	Total #
COLEOPTERA	Dryopidae	Helichus sp.	1
	Elmidae	Promoresia tardella	5
		Stenelmis sp.	4
	Psephenidae	Psephenus herricki	2
DECAPODA	Cambaridae	Orconectes sp.	1
DIPTERA	Chironomidae	Cricotopus/Orthocladius Complex	2
		Polypedilum aviceps	2
	Simuliidae	Simulium sp.	2
	Tipulidae	Antocha sp.	2
EPHEMEROPTERA	Baetidae	Acentrella turbida	3
		Baetis intercalaris	11
	Heptageniidae	Epeorus (Iron) sp.	3
		Stenonema sp.	25
		Stenonema vicarium	2
	Isonychiidae	Isonychia sp.	4
MEGALOPTERA	Corydalidae	Nigronia serricornis	3
PLECOPTERA	Peltoperlidae	Tallaperla sp.	1
	Perlidae	Acroneuria abnormis	4
		Paragnetina media	4
	Pteronarcidae	Pteronarcys biloba	4
TRICHOPTERA	Hydropsychidae	Cheumatopsyche sp.	3
		Hydropsyche betteni	5
		Hydropsyche bronta	2
		Hydropsyche sparna	2
	Philopotamidae	Chimarra aterrima?	3

Metric Results

Taxa Richness:	**25**
EPT Richness:	**15**
Biotic Index:	**3.53**
PMA:	**77**
BAP Score:	**8.57**