Stillwater Township

Stream Surface Water Sampling – Chemical Data and Biological Analysis through Macroinvertebrates

Prepared For The Stillwater Township Environmental Commission

> By Steve Grodsky

Sampling Stations and Dates

Sampling stations were selected in four watersheds within Stillwater Township at the following locations to evaluate trends in water quality:

Station Number	Sampling Station	Trout	Location
·		Identification	a a
1	Blair Creek	Trout Maintenance	Off of Old Schoolhouse Rd - along dirt road below confluence of North and South branch of Blair Creek
. 2	Trout Brook	Trout Production	Owassa Rd. at the junction with Fairview lake Rd.
3	Trout Brook	Trout Production	Middleville Rd. and Pond Brook Rd.
4	Spring Brook (Quick Pond)	Trout Maintenance	Mount Benevolence Rd. near Crandon Lodge
5	Spring Brook (Crandon)	Trout Maintenance	Hampton Rd. Bridge
6	Spring Brook	Trout Maintenance	Swartswood Rd. Bridge
7	Paulinskill River	Trout Maintenance	Stillwater Rd. – Main St. Bridge
8	Keen's Mill	Trout Maintenance	Off of Rt. 521 - next to Keen's Mill

Dates of sampling range from the beginning of the project in the spring of 1984 to present, the most recent sampling being the fall of 2003. All water samples were collected in accordance with the New Jersey Department of Environmental Protection (NJDEP) "Field Procedures Manual for Water Data Acquisition" (NJDEP Division of Water Resources) and were remanded to a licensed environmental laboratory (QC Laboratories - Southampton, PA) for analysis.

^{*}No sampling took place during the years of 1991, 1992, 1994, and 1995. As a result, the graphical representation of the data will exclude these time periods.

Tested Chemical Parameters - Stillwater Township

Alkalinity (mg/l)

Aluminum (mg/l)

Ammonia [un-ionized] (mg/l)

Conductivity (umhos)

Fecal Coliform (col/100ml)

Kjeldhal Nitrogen (mg/l)

Lead (mg/l)

Nitrate as N (mg/l)

Nitrite as N (mg/l)

Ortho Phosphate as P (mg/l)

pH (lab-units)

Total Phosphorus (mg/l)

Total Suspended Solids (mg/l)

NJ State Criteria

Fecal Coliforms (col/100ml) - 200col/100ml

Lead (ug/l) - 5ug/l

Nitrate as N(ug/l) - 10,000ug/l

pH (lab-units) -6.5 - 8.5 lab-units

Total Phosphorus (mg/l) - .1mg/l

Total Suspended Solids (mg/l) - 25mg/l

- *All of the state standards have been derived from the New Jersey Department of Environmental Protection (NJDEP) New Jersey Environment Codified Regulations document 7.9B-1.14 "Surface water quality criteria".
- **Although the criteria for un-ionized Ammonia is present in the NJ DEP document, temperature is needed in an equation to derive the standard. Being that there has been no stream temperatures recorded; the criteria will not be applied to this study.

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Damselfly – Blair Creek

Stillwater Township Environmental Commission Water Chemistry Data Set - Site 1: Blair Creek

									Ortho				
	Fecal			Ammonia	Nitrite	Nitrate	Kjeldhal	Total	Phosphate				
	Coliforms	Conductivity	Hd	as N	as N	as N	Nitrogen	Phosphorus	as P	Alkalinity	Lead	Alu	Aluminum
Year	(col/100ml)	(nmhos)	(lab-units)	(l/gm)	(mg/l)	(mg/l)	(I/gm)	(mg/l)	(mg/l)	(I/gm)	(I/gm)	(mg/l)	1/1)
\$ 84	80	140	6.83	0.24	0.01	0.016	0.264	0.065	0.065	17.5	0.003	0.029	6
\$ 85		110	6.35	0.8	0.02	0.07	0.9	0.03	0.03	21	900.0	0.063	
S 86	30	125	7.05	0.1	0.02	0.14	0.1	0.03	0.03	23	600.0	0.088	
\$ 87	36	06	6.89	1.0	0.01	0.1	0.1	0.03	0.03	18	0.004	0.5	
\$ 88	148	149	6.09	0.2	0.02	0.2	0.5	0.02	0.05	18	0.004	0.04	-
\$ 89	70	67	6.75	0.2	0.02	0.2		0.05	0.05	10	0.004	0.01	_
S 90	20	98	7.09	0.2	0.05	0.5	0.5	0.023	0.05	18	0.004	0.1	
S 91													
\$ 92													
S 93	32	102	7.4	0.2	0.05	0.5	0.88	0.105	0.05	34	0.05		- 1
F 94													_ 1
F 95													- 1
F 96	37	72	5.98	90'0	0.01	0.046	1.07	0.04	0.01	14.4	0.05	0.05	
F 97	56	158	6.87	0.05	0.01	0.052	1.26	0.014	0.007	12.5	0.008	0.25	
F 98	86	79.2	6.61	0.03	0.008	0.042	2.83	0.02	900'0	21.1	0.0063	0.1	
F 01	70	152	7.04	0.1	0.2	0.5	1	0.129	0.05	33.8	0.005	0.183	
\$ 02	09	82.4	7.13	0.1	2	0.5	-	Q	0.05	12.9	0.005	ND	
F 02	10	102	7.26	0.1	0.02	0.5	1	0.01	0.01	9.5	0.005	0.133	
E 03	10	72.3	6 65	CN	QN	QN	QN	QN	9	13.9	2	2	

*No State Standard Listed F02 F03 S 02 F 98 F 01 F 97 F 95 F 96 S 92 S 93 F 94 Season/Year S 90 S 91 S 89 S 88 S 87 S 86 \$ 85 S 84 0 Alkalinity (mg/l) 19 S 40 35 30 25 12

Site 1 (Blair Creek) - Alkalinity

*State Standard - Reserved -Aluminum Conc. S 02 F 02 F 03 F 01 F 98 F 97 F 95 F 96 F 94 \$ 93 \$ 92 S 88 S 89 S 90 S 91 S 87 S 86 \$ 85 0 S 84 0.5 0.4 0.1 о 1. (I\pm) munimulA

Site 1 (Blair Creek) - Aluminum

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14

Season/Year

-- Ammonia Conc. *Not Applicable to State Standard F 02 F 03 S 02 F 01 F 98 Site 1 (Blair Creek) - Ammonia as N F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 0 0.1 0.2 (Ngm) N as sinommA 0.0 0.8 0.7 9.0

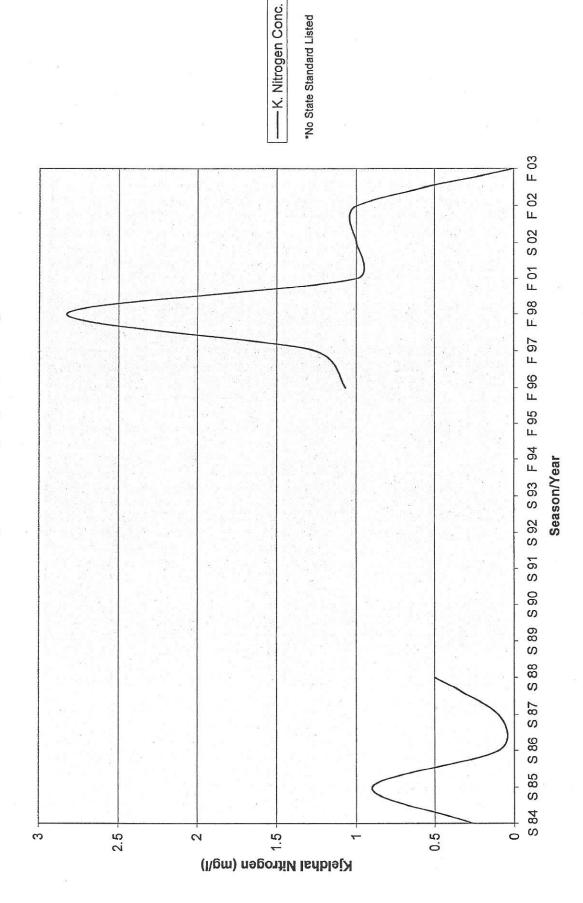
- Conductivity Level *No State Standard Listed F 02 F 03 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 S 85 S 84 20 -180 160 140 120 100 80 9 49 Conductivity (umhos)

Site 1 (Blair Creek) - Conductivity

- Fecal Coliform Conc. *State Standard - 200col/100ml *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F98 F01 S02 F02 F03 F95 F96 F97 S 92 S 93 F 94 Season/Year S 88 S 89 S 90 S 91 S 87 \$ 86 S 85 S 84 90 40 20 140 120 160 8 Fecal Coliforms (col/100ml)

Site 1 (Blair Creek) - Fecal Coliforms

Site 1 (Blair Creek) - Kjeldhal Nitrogen



*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 -*State Standard -Lead Conc. F98 F01 S02 F02 F03 F 96 F 97 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 S 85 S 84 ò 0.8 Lead (mg/l) 0.2 0 4

Site 1 (Blair Creek) - Lead

-- Nitrate Concentration *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 *State Standard - 10mg/l F 95 F 96 F 97 F 98 F 01 S 02 F 02 F 03 S 92 S 93 F 94 Season/Year S 91 S 90 S 88 S 89 S 87 \$ 86 S 85 S 84 0. 9.0 0.5 0.4 (Ilgm) N se estriji

Site 1 (Blair Creek)- Nitrate as N

- Nitrite Concentration *No State Standard Listed F 03 F 02 \$ 02 F 98 F 01 F 96 F 97 F 95 F 94 Season/Year \$ 93 \$ 92 \$ 91 S 90 S 89 S 88 S 87 S 86 \$ 85 0 S 84 0.05 -0.05 0.25 0.2 0.15 0.1 (Ilgm) N as etitite)

Site 1 (Blair Creek) - Nitrite as N

--- O. Phosphate Conc. *No State Standard Listed S 02 F 02 F 03 F 01 Site 1 (Blair Creek) - Ortho Phosphate as P F 98 F 97 F 96 F 95 S 92 S 93 F 94 S 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 0 0.02 0.01 90.0 0.05 0.04 0.03 0.07

Ortho Phosphate as P (mg/l)

Season/Year

— pH Level — *State Standard Standard ranges up to 8.5 *Denotes Surface Water Quali tyCriteria-NJ DEP 7.9B-1.14 F01 S02 F02 F03 S 92 S 93 F 94 F 95 F 96 F 97 F 98 Season/Year S 91 S 90 S 89 \$ 88 S 87 S 86 S 85 0 S 84 'n Š (etinu-dsl) Hq ω ဖ

Site 1 (Blair Creek) - pH

-T. Phosphorus Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 -*State Standard S 02 F 02 F 03 S 93 F 94 F 95 F 96 F 97 F 98 F 01 Season/Year \$ 92 S 88 S 89 S 90 S 91 S 84 S 85 S 86 S 87 0.2 0.8 9.0 Total Phosphorus (mg/l)

Site 1 (Blair Creek) - Total Phosphorus

- *State Standard (TM) -T.S.S. Conc. F 02 F 03 F 98 F 01 S 02 F 97 F 96 F 95 F 94 \$ 93 \$ 92 S 91 S 90 S 89 S 88 S 87 \$ 86 \$ 85 00 9 2 25 5 50 45 40 35 30 20 Total Suspended Solids (mg/l)

Site 1 (Blair Creek) - Total Suspended Solids

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14

Season/Year

Stillwater Township Environmental Commission Water Chemistry Data Set - Site 2: Trout Brook

												The state of the s
Fecal			Ammonia	Nitrite	Nitrate	Kjeldhal	Total	Phosphate				Suspended
Collforms	ms Conductivity	Ha	as N	as N	as N	Nitrogen	Phosphorus	as P	Alkalinity	Lead	Aluminum	Solids
Year (col/100ml)	(nul) (lum	(lab-units)	(l/bm)	(l/gm)	(l/bm)	(l/gm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
	L	6.58	0.62	0.003	0.01	0.26	90.0	90.0	12.5	0.003	0.029	6.7
	110	6.31	0.9	0.002	0.07	6.0	0.03	0.03	15	0.003	0.094	3.8
388	180	6.74	0.1	0.006	0.7	0.1	0.05	0.03	15	0.01	0.163	6.5
-	100	6.88	0.1	0.01	0.1	0.1	0.03	0.03	10	0.004	0.5	2.2
	154	5.92	0.2	0.02	0.2	0.5	0.02	0.05	12	0.004	0.04	က
-	77	6.49	0.2	0.02	0.2	0.5	0.05	0.05	6	0.004	0.1	2
	69	6.65	0.2	0.05	0.5	0.5	0.02	0.05	8	0.004	0.1	2
S 91												
\$ 92												
S 93 80	104	7.25	0.2	0.05	0.5	0.5	0.05	0.05	19.5	0.05		2
F 94			3									
F 95												ļ
F 96 32	138	9	0.5	0.01	0.04	0.54	0.54	0.01	11.3	0.05	0.05	2
F 97 66	199	6.71	0.03	0.01	0.05	1.55	0.01	0.01	11.5	0.014	0.25	11
	149	6.65	0.03	0.008	0.042	0.57	0.023	900.0	16	0.004	0.1	
5		7.08	0.1	0.2	0.5	-	0.05	0.05	21.8	0.005	2	2
		6.83	0.1	QN	0.5	-	2	0.05	10	0.005	S	2
1	134	7.06	0.1	0.02	0.5	-	0.01	0.01	6.9	0.005	Q.	12
				9	0.1	2	9900	02	400	S		ב

*No State Standard Listed ---- Alkalinity Conc. F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 S 85 S 84 Alkalinity (mg/l) ည 25 20

Site 2 (Trout Brook) - Alkalinity

*State Standard - Reserved - Aluminum Conc. F 03 F98 F01 S02 F02 F 97 F 96 F 95 F 94 Season/Year \$ 93 \$ 92 S 87 S 88 S 89 S 90 S 91 S 85 S 86 0 S 84 0.1 0.1 0.2 0.6 0.5 4.0 0.3 (I/gm) munimulA

Site 2 (Trout Brook) - Aluminum

--- Ammonia Conc. *Not Applicable to State Standard F 03 F 02 S 02 F 01 F 97 F 98 Site 2 (Trout Brook) - Ammonia as N F 96 F 95 F 94 \$ 93 \$ 92 \$ 91 S 90 S 89 \$ 88 \$87 \$ 86 S 85 0 S 84 0.5 0.2 0.1 0.1 0.0 0.8 0.7

Ammonia as N (mg/l)

Season/Year

-- Conductivity Level *No State Standard Listed S 90 S 91 S 92 S 93 F 94 F 95 F 96 F 97 F 98 F 01 S 02 F 02 F 03 Season/Year S 89 \$ 88 S 87 S 85 S 86 S 84 0 - 09 Conductivity (umhos) 200 250

Site 2 (Trout Brook) - Conductivity

- Fecal Coliform Conc. *Denotes Surface Water Qu altv Criteria-NJ DEP 7.9B-1.14 -*State Standard F 95 F 96 F 97 F 98 F 01 S 02 F 02 F 03 S 92 S 93 F 94 Season/Year S 90 S 91 S 89 S 88 S 87 \$ 86 \$ 85 S 84 0 20 250 200 Fecal Coliforms (col/100ml)

Site 2 (Trout Brook) - Fecal Coliforms

-K. Nitrogen Conc. *No State Standard Listed F 98 F 01 S 02 F 02 F 03 S 90 S 91 S 92 S 93 F 94 F 95 F 96 F 97 Season/Year S 88 S 89 S 86 S 87 S 85 S 84 0 Kjeldhal Nitrogen (mg/l) 0.2 4.0 1.6

Site 2 (Trout Brook) - Kjeldhal Nitrogen

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard -Lead Conc. F98 F01 S02 F02 F03 F 97 F 96 F 95 S 92 S 93 F 94 Seaon/Year S 91 S 90 S 89 S 88 S 87 S 86 \$ 85 \$ 84 0 Lead (mg/l) 0.2 1.2 0.8

Site 2 (Trout Brook) - Lead

-- Nitrate Concentration *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 *State Standard - 10mg/l F98 F01 S 02 F 02 F 03 S 92 S 93 F 94 F 95 F 96 F 97 Season/Year \$ 91 S 90 S 88 S 89 \$ 87 S 86 S 84 S 85 0 0.1 0.2 (Il/gm) N as atsitiN O O O O O 0.8 0.7 9.0

Site 2 (Trout Brook) - Nitrate as N

-Nitrite Concentration *No State Standard Listed F96 F97 F98 F01 S02 F02 F03 F 95 S 92 S 93 F 94 Season/Year S 90 S 91 S 88 S 89 S 85 S 86 S 87 0 S 84 -0.05 0.05 0.2 0.15 0.1 (Ilgm) N es etintiN

Site 2 (Trout Brook) - Nitrite as N

-O. Phosphate Conc. *No State Standard Listed F 02 F 03 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 0 S 84 90.0 (Il/gm) 9 as standaon9 onth0 0.02 0.01 0.05 0.07

Site 2 (Trout Brook) - Ortho Phosphate as P

— pH Level
— *State Standard *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 Standard ranges up to 8.5 F 01 S 02 F 02 F 03 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 \$ 87 \$ 86 S 85 S 84 N (stinu-dsl) Hq 4 ω 9 Ŋ

Site 2 (Trout Brook) - pH

-T. Phosphorus Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard S 02 F 02 F 03 S 92 S 93 F 94 F 95 F 96 F 97 F 98 F 01 Season/Year S 88 S 89 S 90 S 91 S 84 S 85 S 86 S 87 0.8 0.2 -0.2 Total Phosphorus (mg/l)

Site 2 (Trout Brook) - Total Phosphorus

-T.S.S. Conc. (TP) *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 *State Standard - 25 mg/l F 03 F 02 \$ 02 F 01 F 98 F 97 F 96 F 95 F 94 Season/Year \$ 93 S 92 \$ 91 S 90 \$ 89 \$ 88 S 87 S 86 S 85 0 S 84 N 4 9 9 12 Total Suspended Solids (mg/l)

Site 2 (Trout Brook) - Total Suspended Solids

Stillwater Township Environmental Commission Water Chemistry Data Set - Site 3: Trout Brook

Total	Suspended	Solids	(ma/l)	4.1	2.1	6.5	0.8	2	8	2			2			2	10	8	Q.	က	2	9
	0,	Aluminum	(l/bm)	0.029	0.125	0.1	0.5	0.04	0.1	0.1						0.2	0.27	0.17	Q	QN	QN	QN
		Lead	(I/bm)	0.003	0.003	0.01	0.004	0.004	0.004	0.004			0.05			0.05	0.004	0.004	0.005	0.005	0.005	P
		Alkalinity	(l/bm)	22.5	23	15	15	18	11	15			31		700	11.2	19.1	29	37.7	13.9	23.9	24.9
Ortho	Phosphate	as P	(I/bm)	0.065	0.03	0.03	0.03	0.02	0.05	0.025			0.05			0.049	0.007	0.007	R	2	0.01	Q
	Total	Phosphorus	(l/gm)	0.065	0.03	0.03	0.03	0.02	0.05	0.023			0.015			0.064	0.014	0.016	0.05	0.05	0.01	0.206
	Kjeldhal	Nitrogen	(mg/l)	90.0	0.5	9.0	0.3	0.5	0.5	0.5			0.5			0.27	0.42	3.68	-	1	1	Q
	Nitrate	as N	(mg/l)	600.0	0.07	0.07	0.1	0.02	0.02	0.05			0.54			0.03	0.052	0.063	0.5	9.0	0.5	2
	Nitrite	as N	(I/gm)	0.001	0.002	0.002	0.01	0.02	0.02	0.05			0.05			0.01	0.01	0.008	0.2	QN	0.02	Q
	Ammonia	as N	(mg/l)	0.05	0.5	0.1	0.1	0.2	0.2	0.2			0.2			0.05	0.03	0.03	0.1	0.1	0.1	2
		H	(lab-units)	6.9	6.81	7.42	7.44	6.23	66.9	7.25			7.46			6.12	7.23	7.41	7.5	7.31	7.46	6.85
		Conductivity	(soumn)	100	115	180	100	141	84	92			133			89	132	134	185	122	178	114
1	Fecal	Coliforms	(col/100ml)	40		80	30	4	27	4			110			63	18	8	10	20	10	10
L			Year	S 84	S 85	S 86	S 87	S 88	S 89	S 90	8 91	S 92	S 93	F 94	F 95	F 96	F 97	F 98	F 01	\$ 02	F 02	F 03

*No State Standard Listed -Alkalinity Conc. F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 \$ 85 0 S 84 Alkalinity (mg/l) 40 35 30 25 5 9 2

Site 3 (Trout Brook) - Alkalinity

--- Aluminum Conc. *State Standard - Reserved F 03 S 93 F 94 F 95 F 96 F 97 F 98 F 01 S 02 F 02 Season/Year S 89 S 90 S 91 S 92 S 88 S 87 \$ 86 S 85 0 S 84 0.5 9.0 9.4 0.3 0.1 -0.1 (I\gm) munimulA

Site 3 (Trout Brook) - Aluminum

---- Ammonia Conc. *Not Applicable to State Standard F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 S 85 0 S 84 0.1 0.5 (Ilgm) M as sinommA

Site 3 (Trout Brook) - Ammonia as N

-Conductivity Level *No State Standard Listed F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 S 85 0 S 84 40 20 160 Conductivity (umhos) 09 200 180 140

Site 3 (Trout Brook) - Conductivity

- Fecal Coliform Conc. *State Standard - 200col/100ml *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F 01 S 02 F 02 F 03 F 98 F 97 F 96 F 95 S 88 S 89 S 90 S 91 S 92 S 93 F 94 Season/Year S 87 S 86 S 85 S 84 20 0 40 100 9 80 Fecal Coliforms (col/100ml)

Site 3 (Trout Brook) - Fecal Coliforms

--- K. Nitrogen Conc. *No State Standard Listed F 03 F 02 S 02 F 01 Site 3 (Trout Brook) - Kjeldhal Nitrogen F 98 F 97 F 96 F 95 S 92 S 93 F 94 \$ 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 Kjeldhal Nitrogen (mg/l) 0.5 3.5 က

Season/Year

-*State Standard *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 -Lead Conc. F96 F97 F98 F01 S02 F02 F03 S 92 S 93 F 94 F 95 Season/Year S 91 S 90 S 89 S 88 S 87 S 85 S 86 S 84 0 0.2 0.8 Lead (mg/l) 0.4

Site 3 (Trout Brook) - Lead

- Nitrate Concentration *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 *State Standard - 10mg/l F 98 F 01 S 02 F 02 F 03 F 97 F 95 F 96 S 91 S 92 S 93 F 94 Season/Year S 88 S 89 S 90 S 87 \$ 86 S 85 \$ 84 Nitrate as M (mg/l) 0.0 0.5 0.1 0.4 0.2

Site 3 (Trout Brook) - Nitrate as N

Stillwater Township Environmental Commission Water Chemistry Data Set - Site 4: Spring Brook

Total	Iolai	Suspended	Solids	(linu)	lingiii.	4.7	2.1	17.1		4.2	7	8		7			0	1			4	77			က	6		200
L			Aluminum	(Illum)	i di	0.029	0.484	0.125	24.0	0.0	0.04	0.1		- 6							0.2	0.25			2	CN	CIN	2
			Lead	(ma/))	0000	0.003	0.003	0.009	7000	+00.0	0.004	0.004	7000	100.0			0.05				0.05	0.008	0.0045	0.00-0	0.005	0.005	0 005	S
·			Alkalinity	(ma/l)	200	33	20	13	40	2 5	17	18	26				20.5			9 9 1	19.6	37.1	240	0.14	21.8	10.9	19.9	22.9
Ortho	Dhoenhoen	Lilospilate	as P	(l/bm)	0 005	0.00	0.03	0.03	0 03	200	0.00	0.05	0.05				0.05				0.027	0.001	0.00	2000	0.05	0.05	0.01	Q
	Total	10101	Phosphorus	(mg/l)	0.085	0000	0.03	90.0	0.03	000	20.0	0.05	0.017				0.025				0.081	0.014	0.016	200	cn'n	2	0.01	Q.
	Kieldhal	Mildura	Nitrogen	(I/Bm)	90.0			4.0	0.1	0.5	200	0.5	0.5				0.5				0.14	0.14	0.57	-			1	Q
	Nitrate	N ee	CO IN	(mg/l)	0.009	100	0.07	0.07	0.01	00		0.2	0.5				0.5			700	0.0	0.052	0.116	20	2.0	0.5	0.5	R
	Nitrite	Noc	N CB	(mg/I)	0.001	6000	0.002	0.002	0.001	0.2	000	0.02	0.05			100	0.05			500	0.0	0.01	0.008	0.0	410	NO.	0.02	2
	Ammonia	N S	1112001	(mg/l)	0.5	A 0		5	0.1	0.2	00	7.0	0.2			0	7.0			0.05	00.0	0.03	0.03	0.1		Ċ.	0.1	2
		На	(lah-mite)	(an miles)	6.99	6.39	7 33	2001	1.24	6.28	7.05	201	7.45			7 20	77.1			6 34	200	CS./	7.12	7.29	7		7.41	6.81
		Conductivity	(numboa)	000	O.S.	100	110	200	001	165	66	7007	140			100	104			140	707	107	201	158	110	201	148	116
Food	Lecal	Coliforms	(col/100ml)	7	2		40	45	2	90	21	40	2			30				23	7		74	10	40			01
			Year	700	000	S 85	S 86	2 97	100	22.00	S 89	000	200	0.87	\$ 92	8 93	101	***	F 95	F 96	E 07	00	000	F 0.1	\$ 02	200	7 02	50

- Alkalinity Conc. *No State Standard Listed F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 \$ 88 S 87 S 86 S 85 0 S 84 49 35 9 30 25 Alkalinity (mg/l) 12 5

Site 4 (Spring Brook) - Alkalinity

- Aluminum Conc. *State Standard - Reserved F 03 S 02 F 02 F97 F98 F01 S 90 S 91 S 92 S 93 F 94 F 95 F 96 Season/Year S 88 S 89 S 87 S 85 S 86 0 84 9.0 0.5 0.4 0.7 0.1 (I\gm) munimulA

Site 4 (Spring Brook) - Aluminum

- Ammonia Conc. *Not Applicable to State Standard F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 S 85 \$ 84 9.0 0.4 0.1 0 (Ilgm) M as sinommA

Site 4 (Spring Brook) - Ammonia as N

-Conductivity Level *No State Standard Listed F 03 F 02 S 02 F 01 Site 4 (Spring Brook) - Conductivity F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 89 S 90 S 91 \$ 88 S 87 S 85 S 86 \$ 84 250 200 150 20 Conductivity (umhos)

- Fecal Coliform Conc. *State Standard - 200col/100ml *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F 01 S 02 F 02 F 03 F 98 F 97 F 95 F 96 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 \$ 84 20 09 20 9 0 30 20 Fecal Coliforms (col/100ml)

Site 4 (Spring Brook) - Fecal Coliforms

-K. Nitrogen Conc. *No State Standard Listed F 02 F 03 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 90 S 91 S 89 \$ 88 S 87 S 86 S 85 S 84 Kjeldhal Nitrogen (mg/l)

Site 4 (Spring Brook) - Kjeldhal Nitrogen

-*State Standard *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 -Lead Conc. F98 F01 S 02 F 02 F 03 F 97 F 96 F 95 S 91 S 92 S 93 F 94 Season/Year S 90 S 89 \$ 88 S 86 S 87 S 85 \$ 84 0 Lead (mg/l) 4 0.8 0.2

Site 4 (Spring Brook) - Lead

--- Nitrate Concentration *Denotes Surface Water Qu alty Criteria-NJ DEP 7.9B-1.14 *State Standard - 10mg/l F 01 S 02 F 02 F 03 F 98 F95 F96 F97 F 94 Season/Year S 93 S 92 S 88 S 89 S 90 S 91 S 84 S 85 S 86 S 87 0.5 0.4 0.1 0.1 Nitrate as M (mg/l)

Site 4 (Spring Brook) - Nitrate as N

---- Nitrite Concentration *No State Standard Listed F 03 F 02 \$ 02 F 98 F 01 F 95 F 96 F 97 S 93 F 94 Season/Year \$ 92 S 89 S 90 S 91 S 87 S 88 S 85 S 86 0 S 84 -0.05 0.25 0.05 0.2 0.15 0.1 Nitrite as N (mg/l)

Site 4 (Spring Brook) - Nitrite as N

-O. Phosphate Conc. *No State Standard Listed F96 F97 F98 F01 S 02 F 02 F 03 F 95 F 94 Season/Year \$ 93 \$ 92 S 91 S 90 S 89 S 88 \$ 87 \$ 86 S 85 0 S 84 0.06 0.05 0.07 0.04 0.03 0.02 0.01 -0.01 Ortho Phosphate as P (mg/l)

Site 4 (Spring Brook) - Ortho Phosphate as P

Standard ranges up to 8.5 F 03 F 01 S 02 F 02 F 98 F 97 F 96 F 95 S 92 S 93 F 94 S 91 S 90 S 89 \$ 88 S 87 S 86 \$ 85 \$ 84 0 φ 9 5 7 (stinu-dsl) Hq 4

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14

Season/Year

Site 4 (Spring Brook) - pH

-T. Phosphorus Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard S 93 F 94 F 95 F 96 F 97 F 98 F 01 S 02 F 02 F b3 Season/Year \$ 92 S 91 S 88 S 89 S 90 S 84 S 85 S 86 S 87 0.8 9.0 0.2 Total Phosphorus (mg/l)

Site 4 (Spring Brook) - Total Phosphorus

—T.S.S. Conc. (TM) *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 *State Standard-25mg/l F 02 F 03 S 02 F 01 F 98 F 97 F 96 F 95 F 94 Season/Year \$ 93 \$ 92 \$ 91 S 90 S 89 \$ 88 S 87 S 86 \$ 85 S 84 2 20 8 16 7 9 4 Total Suspended Solids (mg/I)

Site 4 (Spring Brook) - Total Suspended Solids

Solids 2.7 2.8 3.3 3.3 3.3 이윤일 65 Aluminum (mg/l) 0.906 0.113 0.5 0.04 0.1 0.005 0.005 0.005 0.005 0.005 ND 0.006 0.006 0.009 0.004 0.004 0.004 Lead 0.05 Alkalinity 35.05 (mg/l) 40 23 23 22 13 16.5 27.1 40 41.7 23.9 28.9 2 Ortho Phosphate as P 0.03 0.03 0.03 0.03 0.03 0.05 0.05 0.025 0.007 0.006 ND ND ND ND Phosphorus 0.034 0.016 0.05 0.05 0.05 ND 0.065 0.065 0.04 0.03 0.03 0.05 0.03 Nitrogen 0.06 0.03 0.1 0.5 0.5 0.27 0.14 3.68 0.5 as N (mg/l) 0.009 0.002 0.07 0.1 0.2 0.2 0.01 0.052 0.042 0.5 0.5 0.5 ND 0.88 0.002 0.005 0.005 0.005 0.002 0.02 0.05 (mg/l) 0.05 0.1 0.1 0.2 0.2 NO.010.005 0.2 (lab-units) 6.93 6.42 7.26 7.18 6.58 7.34 7.58 7.23 6.54 7.31 7.31 7.25 7.04 Conductivity (umhos) 140 110 120 110 152 93 164 112 152 152 174 133 103 Coliforms (col/100ml) 30 \$ 8 8 8 5 5 8 8 8 8 8 5 2 6 6 6 5 5 23
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Stillwater Township Environmental Commission Water Chemistry Data Set - Site 5: Spring Brook

*No State Standard Listed - Alkalinity Conc. F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 90 S 91 S 89 S 88 S 87 S 86 S 84 S 85 0 Alkalinity (mg/l) 10 5 45 40 35 30 2

Site 5 (Spring Brook) - Alkalinity

*State Standard - Reserved - Aluminum Conc. F 03 S 02 F 02 F 01 F 98 F 97 F 96 F 95 F 94 S 93 \$ 92 S 90 S 91 S 89 S 88 \$ 87 \$ 86 \$ 85 0 S 84 0.8 0.7 0.6 0.2 0.1 (I\gm) munimulA

Site 5 (Spring Brook) - Aluminum

Season/Year

-Ammonia Conc. *Not Applicable to State Standard F03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 0.35 0.3 0.25 0.05 0.1 0 (Ilgm) M as sinommA

Site 5 (Spring Brook) - Ammonia as N

- Conductivity Level *No State Standard Listed F 03 F 02 S 02 F 01 F 98 Site 5 (Spring Brook) - Conductivity F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 \$ 88 S 87 S 86 S 85 S 84 250 200 150 100 20 Conductivity (umhos)

- Fecal Coliform Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard F98 F01 S02 F02 F03 F 94 F 95 F 96 F 97 Season/Year \$ 93 S 92 \$ 91 S 90 S 89 S 88 S 87 \$ 86 S 85 0 S 84 Fecal Coliforms (col/100ml) 350 8 38 280 B

Site 5 (Spring Brook) - Fecal Coliforms

---- K. Nitrogen Conc. *No State Standard Listed F 02 F 03 S 02 F 01 F 98 F 97 F 96 F 95 F 94 Season/Year \$ 93 \$ 92 S 88 S 89 S 90 S 91 S 86 S 87 S 85 0 S 84 -0.5 3.5 ന 2.5 0.5 Kjeldhal Nitrogen (mg/l)

Site 5 (Spring Brook) - Kjeldhal Nitrogen

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard -Lead Conc. F98 F01 S02 F02 F03 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 0 Lead (mg/l) 0.8

Site 5 (Spring Brook) - Lead

--- Nitrate Concentration *Denotes Surface Water Qu alty Criteria-NJ DEP 7.9B-1.14 *State Standard - 10mg/l F 02 \$ 02 F 01 F 98 F 97 F 95 F 96 F 94 Season/Year \$ 93 \$ 92 S 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 0.0 0.8 0.7 0.0 0.2 0.1 0.1 (Il/gm) N as 9 stratil)

Site 5 (Spring Brook) - Nitrate as N

---- Nitrite Concentration *No State Standard Listed F98 F01 S02 F02 F03 F 96 F 97 F 95 S 93 F 94 S 91 S 92 S 90 S 89 \$ 88 S 85 S 86 S 87 S 84 0.25 0.2 0.15 0.05 -0.05 0.1 (Ille as M (mg/I)

Season/Year

Site 5 (Spring Brook) - Nitrite as N

-O. Phosphate Conc. *No State Standard Listed F 03 F 02 \$ 02 F 01 F 98 F 97 F 96 F 95 F 94 Season/Year \$ 93 S 92 \$ 91 S 90 S 89 S 88 \$ 87 \$ 86 S 85 000 90.0 0.05 0.01 0.07 0.04 0.03 0.02 Ortho Phosphate as P (mg/l)

Site 5 (Spring Brook) - Ortho Phosphate as P

Standard ranges up to 8.5 *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F98 F01 S02 F02 F03 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 0 S 84 ဗ 2 (etinu-dal) Hq ď ω က ~

Site 5 (Spring Brook) - pH

-T. Phosphorus Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard F96 F97 F98 F01 S02 F02 F03 F 95 S 92 S 93 F 94 Season/Year S 91 S 88 S 89 S 90 S 87 \$ 86 \$ 85 S 84 (Il\gm) sunorqeorla IstoT 1.2

Site 5 (Spring Brook) - Total Phosphorus

-T.S.S. Conc. (TM) *State Standard - 25 mg/l *Denotes Surafec Water Quality Criteria-NJ DEP 7.9B-1.14 F 03 F 02 \$ 02 F 01 F 98 F 97 F 96 F 95 F 94 Season/Year \$ 93 \$ 92 \$ 91 S 90 S 89 \$ 88 \$ 87 S 86 S 85 -10 70 9 90 20 4 30 20 Total Suspended Solids (mg/l)

Site 5 (Spring Brook) - Total Suspended Solids

Total Suspended Solids 3 2.1 6.8 2000 Aluminum 0.078 0.088 0.05 0.04 0.01 (mg/l) 0.005 0.005 0.005 0.005 0.005 ND (mg/l) 0.003 0.009 0.004 0.004 0.05 Lead Alkalinity (mg/l) 27.5 28 28 15 18 26 20 20 31.4 18.1 25.8 31.8 19.9 19.9 29.9 29 0.05 Phosphorus 0.015 0.03 0.03 0.03 0.03 0.01 0.01 0.016 0.037 0.014 0.05 0.05 0.044 ND Total Kjeldhal Nitrogen (mg/l) 0.06 0.5 0.5 0.5 0.5 0.14 0.5 0.07 0.07 0.07 0.07 0.1 0.2 0.2 0.01 0.05 0.05 0.5 0.5 ND 0.5 Nitrite 0.002 0.002 0.002 0.02 0.02 0.02 0.05 Ammonia as N (mg/l) 0.05 0.05 0.1 0.1 0.2 0.2 0.2 0.2 0.03 0.1 0.1 0.1 0.1 0.2 pH (lab-units) 6.91 6.92 6.93 7.33 7.21 7.43 7.53 6.46 7.37 7.01 7.38 7.5 7.28 7.14 Conductivity (nmhos) 95 100 100 173 85 145 145 135 135 132 Coliforms (col/100ml) 30 Fecal 9 = 4 2 2 2 20 45

2 5

Stillwater Township Environmental Commission Water Chemistry Data Set - Site 6: Spring Brook

*No State Standard Listed -Alkalinity Conc. F 02 F 03 S 02 F 98 F 01 F 96 F 97 F 95 S 88 S 89 S 90 S 91 S 92 S 93 F 94 Season/Year S 85 S 86 S 87 S 84 Alkalinity (mg/l) 10 S 35 30 25

Site 6 (Spring Brook) - Alkalinity

*State Standard - Reserved ---- Aluminum Conc. F95 F96 F97 F98 F01 S02 F02 F03 F 94 Season/Year \$ 93 S 89 S 90 S 91 S 92 \$ 88 \$87 S 85 S 86 0 84 0.05 -0.05 0.2 0.15 0.1 0.25 (l\gm) munimulA

Site 6 (Spring Brook) - Aluminum

- Ammonia Conc. *Not Applicable to State Standard F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 89 S 90 \$ 88 S 87 \$ 86 S 84 S 85 (I\pm) N as sinommA 0 0.05 0.2

Site 6 (Spring Brook) - Ammonia as N

- Conductivity Level *No State Standard Listed F 03 F 02 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year \$ 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 300 250 200 20 150 100 Conductivity (mg/l)

Site 6 (Spring Brook) - Conductivity

- Fecal Coliform Conc. *State Standard - 200col/100ml *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F 03 F 02 \$ 02 F01 F 98 F 97 F 96 F 95 F 94 Season/Year \$ 93 \$ 92 \$ 91 S 90 S 89 S 88 S 87 \$ 86 \$ 85 0 S 84 9 70 20 80 40 09 20 30 Fecal Coliforms (col/100ml)

Site 6 (Spring Brook) - Fecal Coliforms

---- K. Nitrogen Conc. *No State Standard Listed F 03 S 02 F 02 F 98 F 01 F 96 F 97 F 95 S 93 F 94 Season/Year S 92 \$ 91 S 90 S 89 \$ 88 S 87 S 86 \$ 85 S 84 o -0.5 0.5 1.5 2.5 က 2 Kjeldhal Nitrogen (mg/l)

Site 6 (Spring Brook) - Kjeldhal Nitrogen

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard -Lead Conc. F01 S02 F02 F03 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 \$ 85 \$ 84 0 0.8 Lead (mg/l) 4.0 0.2 12

Site 6 (Spring Brook) - Lead

-- Nitrate Concentration *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 *State Standard - 10mg/l S 88 S 89 S 90 S 91 S 92 S 93 F 94 F 95 F 96 F 97 F 98 F 01 S 02 F 02 F 03 Season/Year S 87 \$ 86 S 84 S 85 9.0 0.5 Nitrate as N (mg/l) 4.0 0.1

Site 6 (Spring Brook) - Nitrate as N

---- Nitrite Concentration *No State Standard Listed F 03 S 02 F 02 F 01 F 98 F 97 F 95 F 96 F 94 Season/Year S 93 S 91 S 92 S 90 S 89 \$ 88 \$ 87 S 85 S 86 S 84 0.2 0.15 0.05 0 -0.05 0.1 Nitrite as N (mg/l)

Site 6 (Spring Brook) - Nitrite as N

----O. Phosphate Conc. *No State Standard Listed F 02 F 98 F 01 S 02 F 97 F 96 F 95 F 94 Season/Year \$ 93 S 92 \$ 91 S 90 S 89 \$ 88 \$ 87 \$ 86 \$ 85 0 S 84 90.0 0.05 0.07 0.04 0.03 0.02 0.01 -0.01 Ortho Phosphate as P (mg/l)

Site 6 (Spring Brook) - Ortho Phosphate as P

Standard ranges up to 8.5 *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F98 F01 S02 F02 F03 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 \$ 88 S 87 \$ 86 \$ 85 0 S 84 ď 2 (etinu-dsl) Hq 4 8 9

Site 6 (Spring Brook) - pH

-T. Phosphorus Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard F98 F01 S 02 F 02 F 03 F 96 F 97 F 95 S 92 S 93 F 94 Season/Year \$ 91 S 90 S 88 S 89 S 87 \$ 86 S 84 S 85 1.2 Total Phosphorus (mg/l)

Site 6 (Spring Brook) - Total Phosphorus

-T.S.S. Conc. (TM) *State Standard - 25 mg/l F 03 F 02 \$ 02 F 01 F 98 F 97 F 96 F 95 F 94 \$ 93 \$ 92 \$ 91 S 90 S 89 \$ 88 S 87 S 86 \$ 85 S 4 7 10 ω Total Suspended Solids (mg/l)

Site 6 (Spring Brook) - Total Suspended Solids

Season/Year

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14

Suspended Solids (mg/l) 2.7 4 5 6 9 Aluminum 0.156 0.063 0.5 0.054 0.1 (mg/l) 0.25 0.25 0.15 ND ND ND 0.05 0.004 0.00202 0.005 0.0062 0.0062 ND 0.004 0.004 0.004 0.004 Lead 0.05 Alkalinity (mg/l) 86.8 166 164 169 97.5 133 155 170 1100 105 105 105 Phosphate Ortho (mg/l) 0.065 0.031 as b 0.051 0.007 0.005 0.05 0.05 ND 0.041 0.051 0.051 0.051 Phosphorus 0.0148 0.039 0.008 0.05 ND ND ND 0.045 0.065 0.05 0.05 0.05 0.05 0.05 0.05 Total Nitrogen 0.09 0.09 0.6 0.4 0.54 0.54 0.57 0.67 0.98 3.68 9 Nitrate as N (mg/l) 0.028 0.57 0.08 0.11 0.11 0.8 0.949 2.28 0.5 0.5 0.8 0.8 0.5 Nitrite as N 0.05 0.015 0.013 0.008 0.02 ND ND ND 0.05 0.00 Ammonia as N (mg/l) (.05 0.05 0.1 0.1 0.1 0.2 0.2 0.2 0.2 0.03 0.1 0.1 0.1 0.1 0.2 PH (lab-units) 8.05 7.91 7.95 7.66 7.71 7.78 7.78 8.24 7.3 8.26 7.91 7.89 7.89 Conductivity (soyuun) 321 508 409 642 395 479 478 380 380 307 307 314 314 447 Coliforms (col/100ml) Fecal 100 28 28 28 28 240 198888
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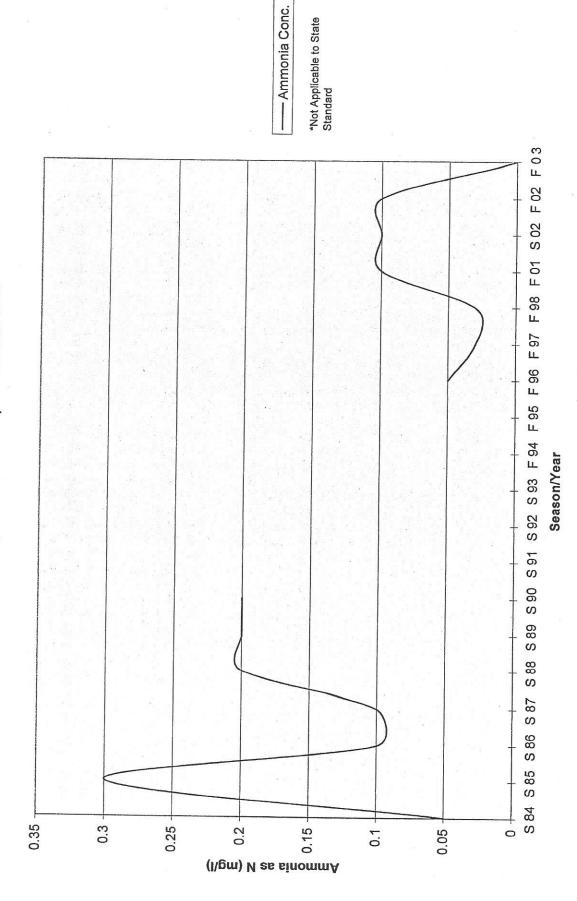
Stillwater Township Environmental Commission Water Chemistry Data Set - Site 7: Paulinskill River

*No State Standard Listed -Alkalinity Conc. F 03 F 02 S 02 F 01 F 98 Site 7 (Paulinskill River) - Alkalinity F 97 F 95 F 96 S 92 S 93 F 94 Season/Year S 90 S 91 S 89 S 88 S 87 S 86 S 85 S 84 160 Alkalinity (mg/l) 180 140 120 09 40 20

-Aluminum Conc. *State Standard - Reserved F 01 S 02 F 02 F 03 F 98 F 97 F 95 F 96 F 94 Season/Year \$ 93 S 92 \$ 91 S 90 S 89 S 88 S 87 S 85 S 86 0 S 84 9.0 0.5 0.4 0.1 **.**0 (I/pm) munimulA

Site 7 (Paulinskill River) - Aluminum

Site 7 (Paulinskill River) - Ammonia as N



--- Conductivity Level *No State Standard Listed F 02 F 03 F98 F01 S02 F 96 F 97 F 95 S 92 S 93 F 94 Season/Year S 91 S 88 S 89 S 90 S 87 S 86 S 85 S 84 0 Conductivity (mg/l) 009 200 100 700 200

Site 7 (Paulinskill River) - Conductivity

- Fecal Coliform Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 -*State Standard F 02 F 03 S 02 F 01 F 97 F 98 F.95 F.96 F 94 Season/Year S 93 \$ 92 \$ 91 S 88 S 89 S 90 \$ 87 \$ 86 \$ 85 0 S 84 1000 900 800 700 009 200 400 200 100 300 Fecal Coliforms (col/100ml)

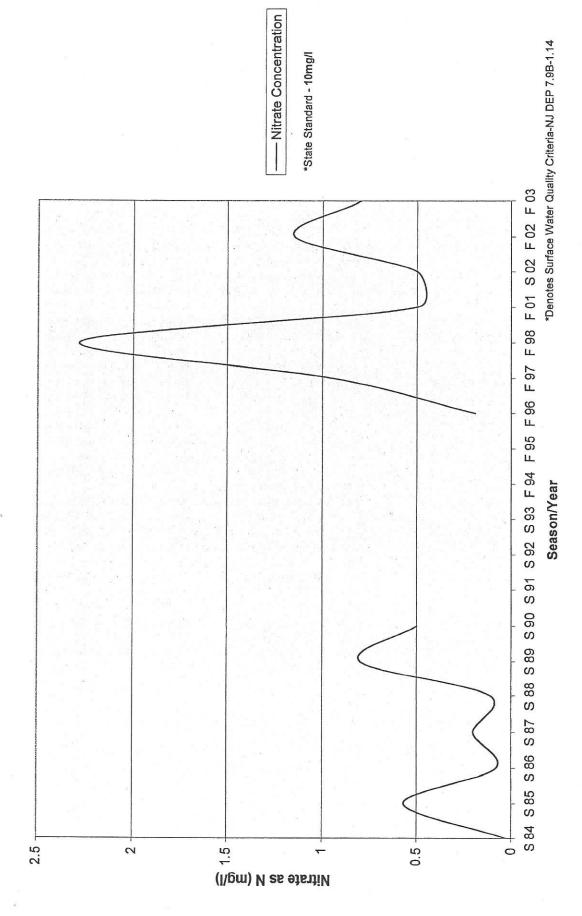
Site 7 (Paulinskill River) - Fecal Coliforms

-K. Nitrogen Conc. *No State Standard Listed F 03 F 02 S 02 F 01 Site 7 (Paulinskill River) - Kjeldhal Nitrogen F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 \$ 86 \$ 85 S 84 Kjeldhal Mitrogen (mg/l) 3.5 0.5 က

----*State Standard *Denotes Surface Water Quali tyCriteria-NJ DEP 7.9B-1.14 -Lead Conc. F94 F95 F96 F97 F98 F01 S02 F02 F03 Season/Year \$ 93 S 92 \$ 91 S 89 S 90 S 88 S 87 S 85 S 86 0 S 84 0.2 0.8 read (mg/l)

Site 7 (Paulinskill River) - Lead

Site 7 (Paulinskill River) - Nitrate as N



- Nitrite Concentration *No State Standard Listed S 02 F 02 F 03 F 9 Site 7 (Paulinskill River) - Nitrite as N F 98 F 96 F 97 F 95 F 94 \$ 93 \$ 92 \$ 91 S 90 S 89 S 88 S 87 \$ 86 \$ 85 0 S 84 -0.05 0.2 0.15 0.05 0.1 Nitrite as N (mg/l)

Season/Year

-0. Phosphate Conc. *No State Standard Listed F 02 F 03 S 02 F 01 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 90.0 0.05 0.03 0.02 0.07 0.04 0.01 Ortho Phosphate as P (mg/l)

Site 7 (Paulinskill River) - Ortho Phosphate as P

— pH Level — *State Standard *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F01 S02 F02 F03 F 98 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 \$ 88 S 87 \$ 86 S 85 S 84 (etinu-del) Hq 2 ဖ် က o o ω _

Site 7 (Paulinskill River) - pH

-T. Phosphorus Conc. *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard F 03 F96 F97 F98 F01 S02 F02 F 95 S 92 S 93 F 94 Season/Year S 84 S 85 S 86 S 87 S 88 S 89 S 90 S 91 4 0.8 9.0 Total Phosphorus (mg/l)

Site 7 (Paulinskill River) - Total Phosphorus

-T.S.S. Conc. (TM) *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 * State Standard - 25 mg/l F 02 F 03 S 02 Site 7 (Paulinskill River) - Total Suspended Solids F 98 F 01 F 97 F 96 F 95 S 92 S 93 F 94 Season/Year S 91 S 90 S 89 S 88 S 87 S 86 S 85 S 84 0 N 20 8 10 4 12 9 4 Total Suspended Solids (mg/l)

Stillwater Township Environmental Commission Water Chemistry Data Set - Site 8: Keen's Mill

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								- TO THE REPORT OF THE PERSON	Ortho				Total
	Fecal			Ammonia	Nitrite	Nitrate	Kjeldhal	Total	Phosphate				Suspended
	Coliforms	Conductivity	Hd	as N	as N	as N	Nitrogen	Phosphorus	as P	Alkalinity	Lead	Aluminum	Solids
Year	(col/100ml)	(nmhos)	(lab-units)	(l/gm)	(l/gm)	(l/gm)	(l/gm)	(l/gm)	(l/gm)	(l/gm)	(I/gm)	(I/gm)	(I/Bm)
F 98	2	172	7.65	0.03	0.01	0.08	2.83	0.192	0.01	20	0.004	0.1	59
F01	20	258	7.7	0.1	0.2	0.5	-	0.05	0.05	83.6	0.005	QN	20
\$ 02	10	240	7.9	0.1	Q	0.5	-	QN	0.05	57.7	0.005	QN	2
F 02	10	252	8.12	0.1	0.02	0.5	-	0.01	0.01	73.6	0.005	QN	2
F 03	10	242	7.38	9	Q	QN	QN	QN	Q	75.6	2	QN	2

*No State Standard Listed ---- Alkalinity Conc. F 03 F 02 Season/Year S 02 F 01 0 F 98 10 Alkalinity (mg/l) 20 30 - 09 2 06 80

Site 8 (Keen's Mill) - Alkalinity

*State Standard - Reserved ---- Aluminum Conc. F 02 Season/Year \$ 02 0 86 86 0.12 0.08 0.06 0.04 0.02 -0.02 0.1 (I\gm) munimulA

Site 8 (Keen's Mill) - Aluminum

---- Ammonia Conc. *Not Applicable to State Standard F 03 F 02 Season/Year S 02 F 01 0 F 98 0.02 (I\pm) IV as sinommA O O 0.12 0.08 0.04 0.1

Site 8 (Keen's Mill) - Ammonia as N

-Conductivity Level *No State Standard Listed F 03 F 02 Season/Year S 02 F 01 0 F 98 20 200 -250 150 100 300 Conductivity (umhos)

Site 8 (Keen's Mill) - Conductivity

---- Fecal Coliform Conc. *State Standard - 200col/100ml *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F 03 F 02 Season/Year S 02 F 01 0 F 98 25 50 5 9 Fecal Coliforms (col/100ml)

Site 8 (Keen's Mill) - Fecal Coliforms

-K. Nitrogen Conc. *No State Standard Listed F 03 F 02 Season/Year S 02 F 01 F 98 0 0.5 Kjeldhal Nitrogen (mg/l) بت က

Site 8 (Keen's Mill) - Kjeldhal Nitrogen

*Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 - *State Standard -Lead Conc. F 03 F 02 Season/Year S 02 F 01 0 F 98 0.2 4.0 Lead (mg/l) 0.8 1.2

Site 8 (Keen's Mill) - Lead

--- Nitrate Concentration *Denotes Surface Watewr Quality Criteria-NJ DEP 7.9B-1.14 *State Standard - 10mg/l F 03 F 02 Season/Year S 02 F 01 F 98 0 0.1 (Ngm) N es 91k1)i O O 0.0 0.5 0.4

Site 8 (Keen's Mill) - Nitrate as N

- Nitrite Concentration *No State Standard Listed F 03 F 02 Season/Year \$ 02 F 01 0 F 98 -0.05 0.05 0.1 0.2 0.15 0.25 (Ngm) N as 91ititle

Site 8 (Keen's Mill) - Nitrite as N

-O. Phosphate Conc. *No State Standard Listed F 03 F 02 Season/Year S 02 F 01 0 F 98 0.01 0.03 0.02 90.0 0.05

Site 8 (Keen's Mill) - Ortho Phosphate as P

—pH Level —*State Standard *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F 03 Season/Year S 02 F 01 F 98 + d (e)inu-dsl) Hq ω 9 က / တ

Site 8 (Keen's Mill) - pH

-T. Phosphorus Conc. - *State Standard *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 F 02 Season/Year \$ 02 F 01 0 86 88 1.2 0.8 Total Phosphorus (mg/l)

Site 8 (Keen's Mill) - Total Phosphorus

-T.S.S. Conc. (TM) *Denotes Surface Water Quality Criteria-NJ DEP 7.9B-1.14 -*State Standard F 02 Season/Year S 02 F 01 F 98 0 9 707 30 20 40 20 09 Total Suspended Solids (mg/l)

Site 8 (Keen's Mill) - Total Suspended Solids

Methods and Materials

The biological sampling sites for each of the eight streams were determined by identifying a "riffle-pool sequence" nearest to where the chemical sampling took place. Once this specific stretch of the stream is determined as the sampling site, a slow moving pool, a fast riffle, and a transitional riffle are picked out from the larger schemed "rifflepool sequence". Within each of these stream habitats, a rock is selected, with each of the three rocks being embedded in the sediment at differing levels. The rock is then upturned and brushed with a hand or paintbrush by one worker while a net is held downstream by the second worker, to collect whatever biota is removed from the rock. If a suitable rock is not available, a square meter of bottom substrate is disturbed and the drifting sediments and biota are collected. The contents of the net are then emptied into a white collection tub for streamside examination. These steps are repeated until the pool, the fast riffle, and the transitional riffle are all sampled. The macroinvertebrates in the white tub are transferred into a cooler for transport to the laboratory. Once at the lab, the macroinvertebrates are counted and identified with the use of stereoscopes. The tally for each species is divided by three to obtain the total number of macroinvertebrate specie (for each of the species) for the stream. This number is then placed into one of three categories. Category "A", which designates 1-9 individuals, "B" designates 10-99, and "C" designates 100 or more. Once the number of individuals within each species is acquired, the letter will be placed on the chart on a 1994 Stream Quality Survey Izaak Walton League of America document, which is being used to simplify and portray the analysis of the stream study results. Although the species abundance designations (A, B,

and C) are not used in determining each stream's index of biological integrity, these data may be useful for comparisons of future stream studies.

The study format is set up for different species to fall into one of the three categories of pollution sensitivity. The categories are sensitive, somewhat sensitive, and tolerant. By their presence or absence, macroinvertebrates indicate water quality with some species being found in both pristine and degraded sites, while others can only be found in pristine sites. The letter, or species abundance designation, for the specie is then placed into one of these categories and then added up, with the pollution sensitive being of a more weighted score than the somewhat sensitive, and so on. A composite score is reached when all the letters in each category are added up. This is the water quality rating for the stream, with the highest numbers (>22) being *excellent*, followed by *good*, then *fair*, and lastly *poor*.

In addition to the collection of the biological data, other important information is collected and recorded while streamside. These data include water and air temperature, water depth and width, flow rate, barriers to fish movement, surface water appearance, and stream bed composition. In addition, the odor, stability in the stream bed, percentile of bank covered by plants and rock, stream channel shade, stream bank composition and erosion, riffle composition, and land uses in the watershed are also recorded and integrated into the study. These are also recorded within the 1994 Stream Quality Survey IWL document. All materials were removed at the conclusion of the sampling, leaving the streams in their pre-sample condition.

Stream Quality Survey

Name of review	er.
Marie of review	U1.
Date reviewed:	
Data sent to:	

October 1994		U	ata sent to:		-
#####################################		, ,		2 6 6	
The purpose of this form is to aid you in gatherin and consistent records of your observations a quality. Refer to the SOS insect card and monithous to complete this form.	nd data from y	our macroinvertebrate of	count, you can docume	nt changes in w	rater
Stream BlAir Creek		_ Station.#_*	# of participants	8	_
County_SUSSEX	State_NJ	_ Group or individual	fillwater Environmenta	CUANISSION	-
ocation Stillwater - Old Schorlhar	ie Rd.	±			<u> </u>
Veather conditions (last 72 hours)					
Date Average stream	width	tt. Avera	ge stream depth	5 inches	_#
Start Time 15:30 End Time 15:51	Flow rate:	ligh Normal	Low #	legligible	
vater temperature	s samples in the red of 3. required numb (4 scoops), roo OINVER ct a macroinver foot by 3 foot a	e same general area. Co er of scoops from each ck/gravel/sand substrate TEBRATE CO tebrate count. Use letter trea. Add up the number	unt each separately and habitat type: steep bank is (3 scoops) and silty UNT codes (A = 1-9, B = 10-1) of letters in each column	d report the high s/vegetated ma bottom with org	rgir anic
SENSITIVE **B caddisfly larvae**		HAT SENSITIVE	TOLERANT	uatic worms	
A hellgrammite		clams	black	ckfly larvae	
mayfly nymphs gilled snails	_ <u>n</u>	crane fly larvae crayfish	A mic	lge larvae	
riffle beetle adult B stonefly nymphs		damselflynymphs dragonfly-nymphs	A pou	ch (and other) sr	ails
water-penny larvae-	2	scuds::	5	**	
* .		fishfly larvae	g **	2	
		alderfly larvae		14	
# letters times 3 =	3	# letters times 2 =		tters times 1 =	g g
index value	_6	index value		ex value	
Now add together the three index values from	m each column	for your total index valu	e-Totalrindex-value-	91	
compare this total index value to the lollowing raidicated by a variety of different kinds of organisatings do not contribute to the water quality rating	ms, with no one	kind making up the maj	quality of your stream. (Good water quali	ityris nd: C

Excellent (>22)

	Fish water quality Indicators: Scattered individuals scattered schools trout (pollution sensitive) bass (somewhat sensitive) catfish (pollution tolerant) carp (pollution tolerant)	ns Stream _	Blair Crek 1 1/6/04
*	Surface water appearance: Stream bed deposit (bottom): grey clear, but tea-colored orange/red colored sheen (oily) yellow foamy black milky blown muddy sitt black sand grey other	Odor: rotten eggs musky oil sewage other none	Stability of stream bed: Bed sinks beneath your feet in: no spots atew spots many spots
	% bank covered by plants, rocks and logs (no exposed soll) is: >70% 30%-70% 230% Stream banks (sides) Top bank (slope and floodplain)	Algae color: light green dark green brown coated matted on stream bed hairy	Algae located: everywhere in spots % of bed covered
	Stream channel shade: Stream bank composition (=100%): ✓ >80% excellent 50 % trees ☐ 50%-80% high 35 % shrubs ☐ 20%-49% moderate 65 % grass ☐ 20% almost none % bare soil — % rocks % other	Stream bank erosion: >80% severe 50%-80% high 20%-49% moderate	### Riffle composition (=100%): ### % silt (mud) ### % sand (1/16"-1/4"grains) ### % gravel (1/4"-2" stones) ### % cobbles (2"-10" stones) ### boulders (>10" stones)
•	MUDDY BOTTOM ONLY: Record the number of scoops taken fro etc.) to best describe the habitat. Steep bank/vegetated margin Woody debris with organic matter	om each habitat type. Provide Rock/gravel/sand substra Silty bottom with organic	tes
	Land uses in the watershed: Record all land uses observed in the Indicate whether the following land uses have a high (H), moderate stream. Refer to the SOS stream survey instructions to determine I watershed, leave the space blank. Oil & gas drilling Housing developments Forest Logging Urban uses (parking lots, highways, etc.) Cropland (types)	e watershed area upstream a e (M), slight (S), or none (N) po how to assess H, M, S, or N. II Trash Fields Livest	nd surrounding your sampling site. otential to impact the quality of your the land use is not present in your dump
		ow many? er) describe:ry	
	Did you test above and below the pipes to determine any cha answer Yes, you must submit two different survey forms, one for abo	inge in water quality? Were	changes noticed? NOTE: If you verthe pipe, to document your claim.
1	Describe amount of litter in and around the stream as % of ground	cover. Also describe the type	of litter in and around the stream.
	Comments Indicate what you think are the current and potential fut pages or photographs to better describe the condition of your streat	ure threats to your stream's he	ealth. Feel free to attach additional
•	4 COOW SIL		



Stream Quality Survey

Name of rev	viewer:
Date review	ed:
Data sent to	
	and the second s

October 1994		Data sch-iu.
and consistent records of your observation	ns and data from your macroinvertebrat	the health of your stream. By keeping accurate e count, you can document changes in water ap and identify stream macroinvertebrates and
Stream Fout Brook (OWASS	A Station # A	# of participants
County SVSSex	StateNJ Group or individua	1 Stillmater Environmental Commission
Location & Stillmates (UWASSA)	porview bake Ry.	
Weather conditions (last 72 hours)		
Date 6/19/14 Average stre	am width 5 tt. Ave	erage stream depth 6.5 inches K
Start Time 10:10 End Time 10:45	Flow rate: High Norma	Low + Negligible
and the bed consists of cobble-sized stones Water temperature	or larger. Monitored riffle area (3' x 3' squake 3 samples in the same general area. (eported of 3. the required number of scoops from each ter (4 scoops), rock/gravel/sand substrations of the same general area. (eported of 3. ROINVERTEBRATE Conduct a macroinvertebrate count. Use letter a 3 foot by 3 foot area. Add up the number of same and substrations of the same and substrations.	er codes (A = 1-9, B = 10-99, C = 100 or more) er of letters in each column and multiply by the
SENSITIVE	SOMEWHAT SENSITIVE	TOLERANT
_A caddisfly larvae=	beetle larvae	A aquatic worms
hellgrammite	clams	A blackfly larvae
A mayfly nymphs	crane fly larvae	leeches
gilled snails	A crayfish	_A midge larvae
riffle beetle adult	damselfly.nymphs	pouch (and other) snails
stonefly nymphs water-penny larvae-	dragonfly-nymphs .	
water penny larvaes	scuds::	*
	sowbugs	
	fishfly larvae+=	
	alderfly larvae	1 1 1
	atherix	4
2 # letters times 3 =	# letters times 2 =	3 # letters times 1 =
index value	index value	3 index value
Now add together the three index values-	from each column for your total index val	ue-Total:index-value
indicated by a variety of different kinds of orga	nisms, with no one kind making up the ma	r quality of your stream. Good water quality is a jority of the sample. Although the A, B, and © acroinvertebrate populations change over time.
W	ATER QUALITY RATIN	G

11 Fair (11-16)

Good (17-22)

Excellent (>22)

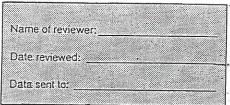
Steve Gradsky

	Fish water quality Indicators: scattered individuals beaver do not not possible to the possible trout (pollution sensitive) waterfalls bass (somewhat sensitive) other carfish (pollution tolerant) none	le dams	Stream: 10vt Rook (6w854A) Station #: 2 Date: 6/19/09		
	Surface water appearance: Clear Clear Clear Colored Sheen (oily) Coamy Complete Colored Sheen (oily) Colored Stream bed deposit (bottom) Colored Stream bed deposit (bottom) Colored Sheen (oily) Colored Sheen (ol): Odor: rotten eggs musky oil sewage efther vone	Stability of stream bed: Bed sinks beneath your feet in: no spots few spots many spots		
	% bank covered by plants, rocks and logs (no exposed soil) is: >70% 30%-70% <30% Stream banks (sides) Top bank (slope and floodplain)	Algae color: light green dark green brown coated matted on stream bed hairy	Algae located: everywhere in spots 6 of bed covered		
2	Stream channel shade: Stream bank composition (=100%) ✓ >80% excellent % trees ✓ 50%-80% high ✓ % shrubs ✓ 20%-49% moderate ✓ % grass ✓ 20% almost none % bare soil ✓ % other % other	>80% severe 50%-80% high 20%-49% moderat	% silt (mud) // % sand (1/16"-1/4"grains)		
	MUDDY BOTTOM ONLY: Record the number of scoops taken fretc.) to best describe the habitat. Steep bank/vegetated margin Woody debris with organic matter	☐ Rock/gravel/sand subs			
	Land uses in the watershed: Record all land uses observed in the Indicate whether the following land uses have a high (H), moderate stream. Refer to the SOS stream survey instructions to determine watershed, leave the space blank. Oil & gas drilling Housing developments Forest Ogging Urban uses (parking lots, highways, etc.)	he watershed area upstream te (M), slight (S), or none (N) how to assess H, M, S, or N ra M Fiel Live	n and surrounding your sampling site. potential to impact the quality of your . If the land use is not present in your sh dump		
	Are there any discharging pipes? In o yes If yes, If what types of pipes are they? In runoff (field or stormwath sewage treatment Industrial: type of industrial: type of industrial:	now many? er) describe:			
	Did you test above and below the pipes to determine any change and answer Yes, you must submit two different survey forms, one for about	ange in water quality? We sove the pipe and one for belonger	re changes noticed? NOTE: If you ow the pipe, to document your claim.		
	Describe amount of litter in and around the stream as % of ground	cover. Also describe the typ	pe of litter in and around the stream.		
1	Comments Indicate what you think are the current and potential fur pages or photographs to better describe the conditioning your stream	ture threats to your stream's am.	health. Feel free to attach additional		
	N18.W0001 L		124		



Save Our Streams Stream Quality Survey

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v	CL	UL	ノヒ	ı ı	フフ	+



October 1994			
The purpose of this form is to aid you in gather and consistent records of your observations quality. Refer to the SOS insect card and mo how to complete this form.	and data from your macroinvertebrate	count; you can docu	ment changes in water
Stream Rut Brok Middley	(1/E) Station.# 3	# oʻrparticipa	nts 8
County Susex	_ State_NJ Group or individual_	tillnoter Environm	ental Counission
Location Still WATOS - Middlevill	e Rd.		
Weather conditions (last 72 hours)			
Date 5/04/14 Average stream	width /0 ft. Avera	ge streem depth	9.6 inches to
Start Time 16:10 End Time 16:10	Flow rate: 4-ligh Normal_	Low #	Negligible
If conducting muddy bottom sampling, take the (10 scoops), woody debris with organic matter matter (3 scoops). At temp. See MACR Use the stream monitoring instructions to conductor record the numbers of organisms found in a second stores.	3 samples in the same general area. Co orted of 3. e required number of scoops from eacher (4 scoops), rock/gravel/sand substrate COINVERTEBRATE CO Loct a macroinvertebrate count. Use letter 3 foot by 3 foot area. Add up the number of	unt each separately nabitatelypes steep b s-(3 scoops); and si UNT codes (A = 1-9, B = 1) of letters in each colu	and report the highest- anks/vegetated margin bottom with organic
indicated index value. The following columns a	re divided based on the organism's sens	itivity to pollution.	
SENSITIVE B caddisfly larvae hellgrammite mayfly nymphs gilled snails riffle beetle adult stonefly nymphs water-penny larvae-	SOMEWHAT SENSITIVE A beetle larvae clams A crane fly larvae crayfish damselflysnymphs dragonflysnymphs soudses sowbugs fishfly larvae	E	iquatic worms clackfly larvae eeches nidge larvae ouch (and other) snails
# letters times 3 = index value	# letters times 2 =		letters times 1 =
Now add together the three index values-from	ndex value		dex value
Compare this total index value to the following rain ndicated by a variety of different kinds of organis atings do not contribute to the water quality rating	ms, with no one kind making up the major	ity of the sample Alt	houghthe A R and C

WATER QUALITY RATING



Excellent (>22)

	Fish water quality Indicators: scattered individuals scattered schools trout (pollution sensitive) bass (somewhat sensitive) catfish (pollution tolerant) carp (pollution tolerant)	Barriers to fish beaver dams man-made da waterfalls (>1 other	ams	Stream:	Track Book 3 5/24/14	(Acddlevi)	<u>[e]</u>
	Surface water appearance: efear	deposit (bottom):	Odor: rotten egg musky oil sewage other	gs		oots	
	% bank covered by plants, rocks and logs (no exposed soil) is: >70% 30	Fair Poor A 20% C	Algae color: light green dark green brown coated matted on str		Algae loca everywt in spots % of bet	ere	
	Stream channel shade: Stream bank com **Now-excellent** 50%-80% high 20%-49% moderate 20% almost none Stream bank com % trees 60 % shrubs 70 % grass	position (=100%):	Stream bank □ >80% sev □ 50%=80% □ 20%-49% ☑ <20% slig	ere high moderate	<u>40</u> % grav	(müd) d (1/16"-1/4"g vel (1/4"-2" st	rains) ones) ones)
	MUDDY BOTTOM ONLY: Record the number of etc.) to best describe the habitat. Steep bank/vegetated margin Woody debris with organic matter		Rock/gravel/sa	and substrate	es		1
	☐ Housing developments ☐ An ☐ Forest ☐ M ☐ Logging	nigh (H), moderate (N	watershed area	upstream and none (N) potential (N) potential (N) potential (N)	d surrounding y ential to impact the land use is r dump ck pasture	the quality of	vour
	Are there any discharging pipes? In no what types of pipes are they? Industry realment Industry industry.	yes If yes, how field or stormwater)	describe:				
	Did you test above and below the pipes to de answer Yes, you must submit two different survey	termine any chang forms, one for above	ge in water qua e the pipe and or	lity? Were one for below t	changes notice the pipe, to doct	ed? NOTE: If ument your cl	you laim.
	Describe amount of litter in and around the stream	n as % of ground co	ver. Also descri	be the type o	f litter in and ar	ound the stre	eam.
ļ	Comments Indicate what you think are the current pages or photographs to better describe the cond	and potential future	threats to your	stream's hea	ulth. Feel free to	attach additi	onal
	ME. WOODS	*					



Stream Quality Survey

Name of revie	wer:	
Date reviewed	d:	
Data sent to:		

October 1994	a a	
and consistent records of your observations quality. Refer to the SOS insect card and more how to complete this form.	and data from your macroinvertebrat nitoring instructions to learn how to tra	the health of your stream. By keeping accurate e count, you can document changes in water and identify stream macroinvertebrates and
Stream Spring Book Cavick low,	d) Station # 4	# of-participants _ &
County Sussex	State NJ Group or individua	Stillmater Environmental Committian
Location: Stillwater - Blue Mount	italy Ind	
Weather conditions (last 72 hours)		
Date 6/04/64 Average stream	widthft. Ave	rage stream depth 6 inches x
Start Time 14:30 End Time 14:50	Flow rate: High Norma	Low Negligible
Use the stream monitoring instructions to condu	larger, Monitored riffle area (3' x 3' squa 3' samples in the same general area, (orted of 3, e required number of scoops from each (4 scoops), rock/gravel/sand substrated to the same general area (4 scoops), rock/gravel/sand substrated to the same general area (4 scoops), rock/gravel/sand substrated to the same general area (4 scoops), rock/gravel/sand substrated to the same general area (4 scoops), rock/gravel/sand substrated to the same general area (5 scoops), rock/gravel/sand substrated to the same general area (5 scoops), rock/gravel/sand substrated to the same general area (5 scoops), rock/gravel/sand substrated to the same general area. (5 scoops)	Water depthin., in riffle. Count each separately and report the highest- highabitatetypes steep banks/vegetated margin tites (3 scoops); and silty bottom with organic OUNT er codes (A = 1-9; B = 10-99; C = 100 or more)
to record the numbers of organisms found in a 3 indicated index value. The following columns a	re divided based on the organism's se	er of letters in each column and multiply by the institivity to pollution.
SENSITIVE B caddisfly larvae** hellgrammite A mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs water-penny larvae- # letters times 3 =	SOMEWHAT SENSITIVE A beetle larvae clams A crane fly larvae A crayfish damselfly nymphs dragonfly nymphs scuds:: sowbugs fishfly larvae:: alderfly larvae:: atherix # letters times 2 =	TOLERANT aquatic worms A blackfly larvae leeches midge larvae pouch (and other) snails # letters times 1 =
index value	index value	index value
Now add together the three index values-from		
compare this total index value to the following rand adicated by a variety of different kinds of organism atings do not contribute to the water quality rating	ms, with no one kind making up the ma	jority of the sample. Although the A. B. and C.

WATER QUALITY RATING

Good.(17-22)



Excellent (>22)

	Fish water quality indicators scattered individuals scattered schools trout (pollution sensitive) bass (somewhat sensitive) catfish (pollution tolerant) carp (pollution tolerant)	□ beaver □ man-m	o fish movement: dams hade dams halls (>1 ft.)	Stream: Station #:	ing Brook (Gui 4/64	ck Pard
	Surface water appearance: clear clear, but tea-colored colored sheen (oily) foamy milky muddy black grey other	Stream bed deposit (botto grey orange/red yellow black brown silt sand other	om): Odor: rotten egg musky oil sewage ether none	gs	Stability of stream Bed sinks beneath y no spots a few spots many spots	
1	% bank covered by plants, roo and logs (no exposed soll) Is: Stream banks (sides) Top bank (slope and floodplain)				Algae located: everywhere in spots % of bed covere	d .
	Stream channel shade: Str >80% excellent 50%-80% high 20%-49% moderate <20% almost none		0%): Stream bank □ >80% sev □ 50%-80% □ 20%-49% □ <20% slig	rere high moderate	iffle composition (=% silt (müd)% sand (1/16"-	1/4"grains) 2" stones) 10" stones)
[MUDDY BOTTOM ONLY: Recoretc.) to best describe the habitated of Steep bank/vegetated marginal woody-debris with organic woody-debris woody-debr	d the number of scoops taken		pe. Provide any and substrates_ ith organic matte	*	
1 s	Land uses In the watershed: Rendicate whether the following lanstream. Refer to the SOS stream vatershed, leave the space blank Oil & gas drilling Mousing developments Forest Organia Urban uses (parking lots, highways, etc.)	ecord all land uses observed in duses have a high (H), mode survey instructions to determine	in the watershed area erate (M), slight (S), or ine how to assess H, M	upstream and su	urrounding your sam al to impact the qual and use is not prese p pasture	ity of your
٧	re there any discharging pipe. That types of pipes are they? I sewage treatment	runoff (field or storm)	s, how many? water) describe:			
D	id you test above and below the name of Yes, you must submit two	he pipes to determine any	change in water qua	lity? Were char ne for below the	nges noticed? NOT pipe, to document yo	E: If you our claim.
D	escribe amount of litter in and ar	ound the stream as % of grou	und cover. Also descri	be the type of lit	ter in and around the	e stream.
C pa	omments Indicate what you think ages or photographs to better de	k are the current and potentia scribe the condition of your s	I future threats to your tream.	stream's health.	Feel free to attach a	dditional
_	- WAS					



Stream Quality Survey

Name of review	rer:
Date reviewed:	
Data sent to:	
_	

October 1994		
The purpose of this form is to aid you in gathering a and consistent records of your observations and quality. Refer to the SOS insect card and monitor how to complete this form.	data from your macroinvertebrate	count; you can document changes in water
Stream Spong Brok (Cravillon.)	Station #	# of-participants 8
County Sussex	State_NJ_ Group or individual_	Stillmate Environmental Commission
Location Stillwater - Haupilou Rd	. Bridge	
Weather conditions (last 72 hours)	5	
Date 6/11/09 Average stream win	dthft Aver	age stream depth 5 inches
Start Time 15:60 End Time 15:15	Flow rate: High Normal	Low Negligible
If conducting rocky bottom sampling, select a riffle and the bed consists of cobble-sized stones or larg Water temperature 1 F°? Take 3 s scoring sample below. Sample reporter If conducting muddy bottom sampling, take the result of scoops), woody debris with organic matter (4 matter (3 scoops). Air femp. 15°c MACRO Use the stream monitoring instructions to conduct to record the numbers of organisms found in a 3 for indicated index value. The following columns are	ter. Monitored riffle area (3' x 3' square amples in the same general area. Consider of 3. equired number of scoops from each scoops), rock/gravel/sand substrated in the same general area. Consider of 3. equired number of scoops from each scoops), rock/gravel/sand substrated in the scoops of the same content of the same content in the same general area. Add up the number of same content in the same general area.	Water depthin., in riffle. ount each separately and report the highest- inhabitatetype steep banks/vegetated margin es-(3 scoops) and silty bottom with organic OUNT or codes (A = 1-9, B = 10-99, C = 100 or more) or of letters in each column and multiply by the
SENSITIVE	SOMEWHAT SENSITIVE	TOLERANT
caddisfly larvae	A beetle larvae	aguatic worms
caddisfly larvae	beetle larvae clams	aquatic worms blackfly larvae
caddisfly larvaer hellgrammite mayfly nymphs	beetle larvae clams crane fly larvae	aquatic worms blackfly larvae leeches
caddisfly larvae: hellgrammite mayfly nymphs gilled snails	beetle larvae clams crane fly larvae crayfish	aquatic worms blackfly larvae
caddisfly larvae A hellgrammite B mayfly nymphs gilled snails riffle beetle adult	beetle larvae clams crane fly larvae crayfish damselfly/nymphs	aquatic worms blackfly larvae leeches midge larvae
caddisfly larvae: hellgrammite mayfly nymphs gilled snails	beetle larvae clams crane fly larvae crayfish	aquatic worms blackfly larvae leeches midge larvae
caddisfly larvae: A hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs	beetle larvae clams crane fly larvae crayfish damselfly nymphs dragonfly nymphs	aquatic worms blackfly larvae leeches midge larvae
caddisfly larvae: A hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs	A beetle larvae clams crane fly larvae crayfish damselfly, nymphs dragonfly, nymphs scudsy; sowbugs	aquatic worms blackfly larvae leeches midge larvae
caddisfly larvae: A hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs	A beetle larvae clams crane fly larvae crayfish damselfly: nymphs dragonfly: nymphs scuds: sowbugs fishfly larvae	aquatic worms blackfly larvae leeches midge larvae
caddisfly larvae: A hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs	A beetle larvae clams crane fly larvae crayfish damselfly, nymphs dragonfly, nymphs scudsy; sowbugs	aquatic worms blackfly larvae leeches midge larvae
C caddisfly larvae: A hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs water-penny larvae-	A beetle larvae clams crane fly larvae crayfish damselfly: nymphs dragonfly: nymphs scuds: sowbugs fishfly larvae: alderfly larvae: atherix	aquatic worms blackfly larvae leeches midge larvae pouch (and other) snails
caddisfly larvae: A hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs	beetle larvae clams crane fly larvae crayfish damselfly nymphs dragonfly nymphs scuds: sowbugs fishfly larvae alderfly larvae	aquatic worms blackfly larvae leeches midge larvae
C caddisfly larvae: A hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs water-penny larvae-	beetle larvae clams crane fly larvae crayfish damselfly:nymphs dragonfly:nymphs scuds: sowbugs fishfly larvae: alderfly larvae: atherix # letters times 2 = index value	aquatic worms blackfly larvae leeches midge larvae pouch (and other) snails # letters times 1 = index value
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caddisfly larvae** hellgrammite B mayfly nymphs gilled snails riffle beetle adult A stonefly nymphs water-penny larvae* # letters times 3 = index value	beetle larvae clams crane fly larvae crayfish damselfly:nymphs dragonfly:nymphs scuds: sowbugs fishfly larvae: alderfly larvae: atherix # letters times 2 = index value each column for your total index-val	aquatic worms blackfly larvae leeches midge larvae pouch (and other) snails # letters times 1 = 0 index value uer-Totalsindex-value

Excellent (>22)

	Fish water quality Indicators: scattered individuals scattered schools trout (pollution sensitive) bass (somewhat sensitive) catfish (pollution tolerant) carp (pollution tolerant)	Barriers to fi beaver da man-made waterfalls other none	e dams (>1 ft.)	tream: <u>SQLING B(86) 4 (SAW) (w)</u> tation #: <u>6///84</u>
20	Surface water appearance: clear clear, but tea-colored colored sheen (oily) foamy milky muddy black grey other	Stream bed deposit (bottom) grey orange/red yellow black frown silt sand other	c: Odor: rotten eggs musky oil sewage other none	Stability of stream bed: Bed sinks beneath your feet in: 10 spots 2 a few spots 1 many spots
	% bank covered by plants, rock and logs (no exposed soll) is: Stream banks (sides) Top bank (slope and floodplain)	ks Good Fair Poor >70% 30%-70% <30%	Algae color: light green dark green brown coated	Algae located: everywhere in spots % of bed covered
		€ 9	☐ matted on stream ☐ hairy) bed
	M >80% excellent 30 50%-80% high 60	am bank composition (=100%) % trees % shrubs % grass % bare soil % rocks % other	Stream bank ero >80% severe 50%-80% hig 20%-49% mo 20% slight	% silt (müd) h % sand (1/16"-1/4"grains)
•	MUDDY BOTTOM ONLY: Record etc.) to best describe the habitat. Steep bank/vegetated margin Woody debris with organic mat	the number of scoops taken fr		Provide any details (mostly sand, little silt, substrates
	Land uses in the watershed: Reclindicate whether the following land stream. Refer to the SOS streams watershed, leave the space blank. Oil & gas drilling Housing developments Forest Ogging Urban uses (parking lots, highways, etc.)	cord all land uses observed in the druses have a high (H), moderate survey instructions to determine Sanitary landfill Active construction Mining (types)	he watershed area ups e (M), slight (S), or noon how to assess H, M, S	tream and surrounding your sampling site. e (N) potential to impact the quality of your, or N. If the land use is not present in your Trash dump Fields Livestock pasture Other
	Are there any discharging pipes What types of pipes are they? sewage treatment	runoff (field or stormwat	now many?er) describe:	3
	Did you test above and below th	industrial: type of indus ne pipes to determine any cha ifferent survey forms, one for ab	ange in water quality	? Were changes noticed? NOTE: If you or below the pipe, to document your claim.
31	Describe amount of litter in and arc	ound the stream as % of ground	l cover. Also describe t	he type of litter in and around the stream.
	Comments Indicate what you think pages or photographs to better des	are the current and potential fur	ture threats to your stre	am's health. Feel free to attach additional



Stream Quality Survey

0	ct	0	b	er	1	9	9	4

Name of review	er:
Date reviewed:	
Data sent to:	

The purpose of this form is to aid you in gathering and recording important data about the health of your stream. By keeping accurate and consistent records of your observations and data from your macroinvertebrate count, you can document changes in water quality. Refer to the SOS insect card and monitoring instructions to learn how to trap and identify stream macroinvertebrates and how to complete this form. State_NJ Group or individual Stillwater Environmental Weather conditions (last 72 hours) Average stream width Average stream depth Flow rate: High Negligible If conducting rocky bottom sampling, select a rifle where the Water is not funning too fast, the water depth is between 3-12 inches. and the bed consists of cobble-sized stones or larger. Monitored riffle area (3' x 3' square). Water depth _____in., in riffle. Water temperature - 24 F° ? O? Take 3 samples in the same general area. Count each separately and report the highestscoring sample below. Sample reported of 3. If conducting muddy bottom sampling, take the required number of scoops from each habitatives steep banks/vegetated margin (10 scoops), woody debris with organic matter (4 scoops), rock/gravel/sand substrates-(3 scoops); and silty bottom with organic matter (3 scoops). Air temp. 26°C MACROINVERTEBRATE COUNT Use the stream monitoring instructions to conduct a macroinvertebrate count. Use letter codes (A = 1-9, B = 10-99, C = 100 or more) to record the numbers of organisms found in a 3 foot by 3 foot area. Add up the number of letters in each column and multiply by the indicated index value. The following columns are divided based on the organism's sensitivity to pollution. SENSITIVE SOMEWHAT SENSITIVE TOLERANT caddisfly larvae= beetle larvae aquatic worms hellgrammite clams blackfly larvae mayfly nymphs crane fly larvae leeches gilled snails crayfishmidge larvae riffle beetle adult. damselfly nymphs pouch (and other) snails stonefly nymphs dragonfly:nymphs... water-penny larvaescuds::: sowbuas fishfly larvae alderfly larvae atherix 3 # letters times 3 = # letters times 2 = # letters times 1 = index value index value index value Now add together the three index values from each column for your total index-value. Total index-value and together the three index-values from each column for your total index-value. Compare this total index value to the following ranges of numbers to determine the water quality of your stream. Good:water quality is --

indicated by a variety of different kinds of organisms, with no one kind making up the majority of the sample. Although the A, B, and © ratings do not contribute to the water quality rating, keep track of them to see how your macroinvertebrate populations change over-time.

WATER OUALITY RATING

	WAILII GO	ALITITATING	55
Excellent (>22)	Good (17-22)	13 / Fair (11-16)	Poor (<11)



	trout (pollution sensitive)	eam: Spring Brook tion #: 6 10/3/04
	Surface water appearance: Stream bed deposit (bottom): Odor: clear	Stability of stream bed: Bed sinks beneath your feet in: no spots a few spots many spots
	% bank covered by plants, rocks and logs (no exposed soil) is: >70% 30% 230% Algae color: light green dark green brown coated matted on stream being plants light green brown coated matted on stream being plants light green brown coated matted on stream being plants light green light	Algae located: everywhere in spots % of bed covered
	Stream channel shade: Stream bank composition (=100%): Stream bank erosi Stream bank composition (=100%): Stream bank erosi Stream bank erosi >80% severe Stream bank erosi <	% silt (mud) % sand (1/16"-1/4"prains)
•	MUDDY BOTTOM ONLY: Record the number of scoops taken from each habitat type. Proetc.) to best describe the habitat. Steep bank/vegetated-margin	bstrates
	Land uses In the watershed: Record all land uses observed in the watershed area upstress Indicate whether the following land uses have a high (H), moderate (M), slight (S), or none (I stream. Refer to the SOS stream survey instructions to determine how to assess H, M, S, or watershed, leave the space blank. Oit & gas drilling Sanitary landfill Forest Mining (types)	am and surrounding your sampling site.
	Are there any discharging pipes?	_ *
	Did you test above and below the pipes to determine any change in water quality? We answer Yes, you must submit two different survey forms, one for above the pipe and one for below 0,000.	Vere changes noticed? NOTE: If you below the pipe, to document your claim.
	Describe amount of litter in and around the stream as % of ground cover. Also describe the	type of litter in and around the stream.
	Comments Indicate what you think are the current and potential future threats to your stream pages or photographs to better describe the condition of your stream.	n's health. Feel free to attach additional
9	NI. WOOD?	



Save Our Streams Stream Quality Survey

Name of re	viewer:	
Date review	red:	
Data sent t	I.	

October 1994		Data sent-to:
and consistent records of your observation	ns and data from your macroinver	about the health of your stream. By keeping accurate tebrate count, you can document changes in water to trap and identify stream macroinvertebrates and
Stream Pauliuskill Biver	Station #	7 # of-participants 8
County_Sussex	StateNJ Group or ind	ividual Stillwater Environmental Com, 35icon
Location = Stillwater - Green	Bridge	e
Weather conditions (last 72 hours)		
Date 6/9/04 Average stre	am width 15-35 ft.	Average stream depthtt.
Start Time 11:01 End Time 11:45	Flow rate: 4-ligh1	Normal Low Negligible
Water temperature	ke 3 samples in the same general eported of 3. the required number of scoops fro tter (4 scoops), rock/gravel/sand should be a macroinvertebrate count. U a 3 foot by 3 foot area. Add up the	se letter codes (A = 1-9, B = 10-99, C = 100 or more) number of letters in each column and multiply by the
SENSITIVE	SOMEWHAT SENSITIVE	TOLERANT
_A caddisfly larvae=	beetle larvae	. A aquatic worms
hellgrammite	_A clams	blackfly larvae
mayfly nymphs A gilled snails	crane fly larvae	10 April 10
rifle beetle adult	crayfish damselfly.nymp	midge larvae pouch (and other) snails
A stonefly nymphs		
A water-penny larvae-	dragonfly:nymp	
yr	sowbugs	* *
	fishfly larvae	
	alderfly larvae-	
# letters times 3 =	3 # letters times 2	? =
15 index value	_6 index value	l index value
Now add together the three index values-	from each column for your total inc	dex-value-Total:index-value

	WATER QU.	ALITY HATING	
Excellent (>22)	200d-(17-22)	Fair (11-16)	Poor. (<11)
	20		T

	Fish water quality Indicators: scattered individuals beaver dan scattered schools man-made trout (pollution sensitive) other catrish (pollution tolerant) none carp (pollution tolerant)	ns Stream _	1. /
	Surface water appearance: Stream bed deposit (bottom): grey clear, but tea-colored colored sheen (oily) foamy milky muddy black black grey other other	Odor: rotten eggs musky oil sewage other	Stability of stream bed: Bed sinks beneath your feet in: so spots a few spots many spots
	% bank covered by plants, rocks and logs (no exposed soll) is: >70% 30%-70% <30% Stream banks (sides) Top bank (slope and floodplain)	Algae color: light green dark green brown coated matted on stream bed hairy	Algae located: everywhere in spots % of bed covered
	Stream channel shade: Stream bank composition (=100%): 50%-80% high 20%-49% moderate 60% bare soil 70% other	☐ >80%-severe ☐ 50%-80% high ☑ 20%-49% moderate	Riffle composition (=100%):
	MUDDY BOTTOM ONLY: Record the number of scoops taken fro etc.) to best describe the habitat. Steep bank/vegetated margin		es
	Land uses in the watershed: Record all land uses observed in the Indicate whether the following land uses have a high (H), moderate stream. Refer to the SOS stream survey instructions to determine hwatershed, leave the space blank. Oil & gas drilling Housing-developments Active construction Forest Logging Urban uses (parking lots, highways, etc.)	e watershed area upstream and (M), slight (S), or none (N) pot now to assess H, M, S, or N. If Frask (M) Fields	id surrounding your sampling site. sential to impact the quality of your the land use is not present in your
1	Are there any discharging pipes?	r) describe:	
1	Did you test above and below the pipes to determine any charanswer <i>Yes</i> , you must submit two different survey forms, one for abo	nge in water quality? Were	changes noticed? NOTE: If you the pipe, to document your claim.
	Describe amount of litter in and around the stream as % of ground of	cover. Also describe the type of	of litter in and around the stream.
p	Comments Indicate what you think are the current and potential future bages or photographs to better describe the conditioning your stream	ure threats to your stream's heam.	alth. Feel free to attach additional
-			



Stream Quality Survey

Name of reviewer:		
Date reviewed:		
Data sent to:		- 1

October 1994 The purpose of this form is to aid you in gathering and recording important data about the health of your stream. By keeping accurate and consistent records of your observations and data from your macroinvertebrate count; you can document changes in water quality. Refer to the SOS insect card and monitoring instructions to learn how to trap and identify stream macroinvertebrates and how to complete this form. Keen's Mill Station# * State NJ Group or individual Still was to Environmental Commission Weather conditions (last 72 hours) Average stream width Average stream-depth Flow rate: High Start Time 5:10 End Time 15:30 If conducting rocky bottom sampling, select a riffle where the water is not funning too fast, the water depth is between 3-12 inches. and the bed consists of cobble-sized stones or larger. Monitored riffle area (3' x 3' square): ______ Water depth _____in., in riffle. Water temperature ___ 35 ____ F° ? C° ? Take 3 samples in the same general area. Count each separately and report the highest-scoring sample below. Sample _____ reported of 3. If conducting muddy bottom sampling, take the required number of scoops from each habitatetype: steep banks/vegetated margin (10 scoops), woody debris with organic matter (4 scoops), rock/gravel/sand substrates (3 scoops); and silty bottom with organic matter (3 scoops). Air kmp. Holc MACROINVERTEBRATE COUNT Use the stream monitoring instructions to conduct a macroinvertebrate count. Use letter codes (A = 1-9, B = 10-99, C = 100 or more) to record the numbers of organisms found in a 3 foot by 3 foot area. Add up the number of letters in each column and multiply by the indicated index value. The following columns are divided based on the organism's sensitivity to pollution, SENSITIVE SOMEWHAT SENSITIVE aquatic worms beetle larvae caddisfly larvae= blackfly larvae hellgrammite clams leeches crane fly larvae mayfly nymphs midge larvae gilled snails crayfishpouch (and other) snails riffle beetle adult... damselfly.nymphs dragonfly-nymphs... stonefly nymphs water-penny farvaescuds::: sowbugs fishfly larvae alderfly larvaeatherix # letters times 1 = # letters times 3 = # letters times 2 = index value index value index value

Compare this total index value to the following ranges of numbers to determine the water quality of your stream. Good water quality is a indicated by a variety of different kinds of organisms, with no one kind making up the majority of the sample. Although the A, B, and C ratings do not contribute to the water quality rating, keep track of them to see how your macroinvertebrate populations change over time.

Now add together the three index values from each column for your total index-value. Total index-value and index-value and index-value and index-value and index-value.



Excellent (>22)

WATER QUAL	ITY RATING	181	i.
Good (17-22)	Fair (11-16)		Poor

Fish water quality Indicators: scattered individuals scattered schools trout (pollution sensitive) bass (somewhat sensitive) catfish (pollution tolerant) carp (pollution tolerant)	Barriers to fish movement: beaver dams man-made dams waterfalls (>1 ft.) other none	Stream:		
□ otear □ grey	sewage other none	no spots a few spots many spots		
	od Fair Poor Algae color: Solution Solution Solution			
Stream channel shade: Stream bank >80% excellent	ubs ☐ 50%-80% ss ☐ 26%-49% e soil ☐ 20% sli cs	were % silt (mud) % high % sand (1/16"-1/4"grains) moderate % gravel (1/4"-2" stones)		
MUDDY BOTTOM ONLY: Record the number of scoops taken from each habitat type. Provide any details (mostly sand, little silt, etc.) to best describe the habitat. Steep bank/vegetated margin Rock/gravel/sand substrates Silty bottom with organic matter				
Land uses In the watershed: Record all land uses observed in the watershed area upstream and surrounding your sampling site. Indicate whether the following land uses have a high (H), moderate (M), slight (S), or none (N) potential to impact the quality of your stream. Refer to the SOS stream survey instructions to determine how to assess H, M, S, or N. If the land use is not present in your watershed, leave the space blank. Oil & gas drilling Sanitary landfill Trash dump Housing developments Active construction Fields Forest Mining (types) Other Other Urban uses (parking lots, highways, etc.)				
Are there any discharging pipes? In o yes If yes, how many? What types of pipes are they? runoff (field or stormwater) describe: industrial: type of industry				
Did you test above and below the pipes to determine any change in water quality? Were changes noticed? NOTE: If you answer Yes, you must submit two different survey forms, one for above the pipe and one for below the pipe, to document your claim.				
Describe amount of litter in and around the stream as % of ground cover. Also describe the type of litter in and around the stream.				
Comments Indicate what you think are the current and potential future threats to your stream's health. Feel free to attach additional pages or photographs to better describe the conditioning your stream.				
II WOOD				

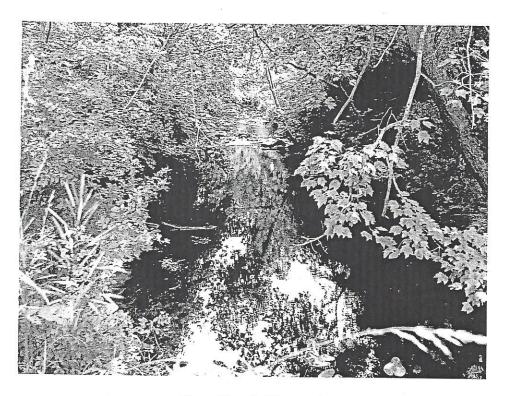




Blair Creek Site 1

The sampling of Blair Creek took place on June 8, 2004 under partly cloudy skies, with a temperature around 27 degrees Celsius. Sampling began at approximately 1530h and finished at 1551h EDT. The sample site was accessed off of Old Schoolhouse Road, along a dirt road below the confluence of the North and South branch of Blair Creek. The site was in the county of Sussex and in the town of Stillwater. The average stream width recorded was approximately 5 feet and the average depth, approximately 5 inches. The water temperature at the time of the sample was 22 degrees Celsius and the stream maintained a fairly low flow rate. There was no man-made structure in the area besides the bridge near which the sample took place. The surface water and stream bed deposit were both of healthy color, with the bottom being mostly silt and sand, causing the stream bed to sink beneath ones feet in most spots. The stream was heavily shaded and the banks were composed of nearly all trees and shrub, with some grass types present.

There was not any erosion sighted and the riffle composition consisted solely of sand. There were no discharging pipes present in the sample area and the only land uses apparent were that of the forest category on the 1994 Stream Quality Survey. Blair Creek placed very high in the "Good" category of the survey sheet. It exhibited its health by maintaining the key sensitive species of macros, including caddisfly larvae, mayfly nymphs, and stonefly nymphs. Also present in the stream were hellgrammites, beetle larvae (most liking that of the predacious diving beetle), crane fly larvae, and a dragonfly nymph. Other tolerant species included aquatic worms, midge larvae, and pouch (and other) snails. Blair Creek's biological assessment along with its nearly perfect chemical record proves that it is a stream of high biological integrity and water quality.



Trout Brook (Owassa)
Site 2

The sampling of Trout Brook (Owassa) was done on June 19, 2004. Weather conditions were stable, with sunny skies and a recorded air temperature of 19 degrees Celsius. Sampling began at approximately 1010h and was completed at 1045h EDT. This stream can be accessed from Owassa road at its junction with Fairview Lake road. The stream is in the county of Sussex and the township of Stillwater. The average stream width recorded was approximately 5 feet and the average depth was around six and a half inches. The water temperature at the time of the sample was 21 degrees Celsius and the flow rate was recorded as normal. The stream contained no visible man-made structures or barriers to fish movement. An area of concern for the stream's visual check was an oily surface water appearance in several spots in addition to the orange/red stream bed deposit color. The stream bed also sunk under the feet in almost every spot. These three

conditions may imply that the general health of the stream is not up to par. There was ample shade, with 80 percentile or higher stream channel shade. The banks were nearly all shrub, with some grass and stream bank erosion was minimal, with most of the bank covered by plant, rock, etc...Riffles consisted of mostly cobbles, with some sand and silt cover. There were no discharging pipes at this site. Land uses include forest, some field, and urban uses in the form of fairly heavily used roads. Trout Brook (Owassa) put up one of the lowest scores, barely placing in the "Fair" category of the scoring system. In terms of biological data, the macroinvertebrates found were few and mostly of high tolerance to poor stream water. Though there were sparse counts of caddisfly larvae and mayfly nymphs, the rest of the sample contained animals of very high tolerance. These include crayfish, aquatic worms, blackfly larvae, and midge larvae. The site has, in the past, suffered chemically as well, in comparison to others streams in the study as well as the state mandated standards. The stream has already peaked over the state standard fecal coliform levels near 1998 and total phosphorous followed the same trend peaking in 96, rising nearly .5 mg/l above the state standard. Currently, the chemical levels have plateaued to at or below state mandates. Despite the cleaner chemical record, the biological sample as well as the general stream appearance imply that the stream is not as healthy as it should be.



Trout Brook (Middleville)
Site 3

The sampling of Trout Brook (Middleville) took place on May 24, 2004 with partly cloudy conditions and thunderstorms the previous nights. The recorded air temperature was around 28 degrees Celsius. Sampling began at approximately 1600h and ended at approximately 1610h EDT. The site can be found at the intersection of Middleville road and Pond Brook road in the county of Sussex and the town of Stillwater. The average recorded stream width was approximately 10 feet and the average depth, approximately 9.6 inches. At the time of the sample, the flow rate was normal and the water temperature was around 20 degrees Celsius. There were no visible man-made structures in or near the site as well as no barriers to fish movement. The surface water appearance was clear, but tea colored (the picture above was taken at a later date, and do to heavy rains the water appeared murky from short term runoff-it is not representative of

the appearance of the stream at the time of the sample.) The stream bed deposit was a healthy silt and sand combination and there were no apparent odors emitted from the stream. Also, the stream bed did not sink in any spots beneath ones feet. The stream sides were sufficiently covered with little exposed soil but the slope and floodplain had much less cover, with most of the area consisting of road. There was very little stream channel shade, with the majority of stream bank consisting of small shrub and brush. There was little to no bank erosion in sight of the sample. The riffle composition was a split between gravel and cobbles. The surrounding lands were used as livestock pasture and urban uses in the form of road. There were no discharging pipes at the site. Trout Brook (Middleville) was an average stream in the study coming in the low end of the "Good" category. Chemically, total phosphorus seems to be on the rise, jumping .1mg/l above the state standard .1mg/l in the fall of 2003. All other chemical parameters are right up to par, with fecal coliforms well below state limitations despite the streams proximity to the livestock pasture. The biological assessment through the macroinvertebrates produced a standard but solid outcome. Animals sensitive to water quality, such as water-penny larvae, caddisfly larvae, and mayfly nymphs were numerous, with the mayflies reaches numbers upwards of one hundred. The somewhat sensitive category was filled by beetle larvae (predacious diving beetle) and cranefly larvae. A midge larva was also found. Trout brook (Middleville) meets some of the biocriteria of a stream of high water quality and its chemical record is nearly perfect. With a little more macroinvertebrate biodiversity, the stream would be upgraded from the "average" category in which it falls in currently.



Spring Brook (Blue Mountain Inn)
Site 4

The Spring Brook (Quick Pond) sample took place on June 26, 2004, with clear, sunny weather conditions and a recorded air temperature of 30 degrees Celsius.

Sampling began at approximately 1420h and was completed at 1450h EDT. The sample can be accessed off of Mt. Benevolence road near the Blue Mountain Inn (previously the Crandon Lodge) in the county of Sussex and the town of Stillwater. The average stream width recorded was about 10 feet, with the approximate stream depth being 6 inches.

The water temperature at the time of the sample was 25 degrees Celsius and the stream maintained a normal flow rate. The site contained no visible man-made structure or barriers to fish movement. The surface water appearance was clear and the bed deposit was a mixed brown and silt. Spring Brook was odor free and had healthy stream bed

quality. information one can concur that Spring Brook (Quick Pond) maintains a high water animal found was blackfly larvae. From examining the biological and chemical diving beetle larvae, cranefly larvae, and a crayfish. The only low water quality tolerant found that belong to the somewhat sensitive column of the score sheet include Predacious caddisfly larvae, and slightly smaller counts of mayfly and stonefly nymphs. Animals in addition to three other sensitive macroinvertebrates. These include high counts of category of the scoring table. The stream produced the only Riffle beetle count recorded good results in the macroinvertebrate bioassesment. It placed highly in the "Good" (Quick Pond) has maintained an excellent chemical record as well as putting out fairly fairly far off parking lot. There were no discharging pipes at the site. Spring Brook nearly all cobbles. Land uses include forest and urban use in the form of roadway and a channel shade. There was no visible erosion at the site and the riffle composition was composition was mostly that of shrub, the density of the plants made for excellent stream most of the slope and floodplain being heavily wooded. Despite the fact that the bank stability. There was no exposed soil in the sampling site due to both the bank sides and



Spring Brook (Crandon)
Site 5

The sampling of Spring Brook (Crandon) took place on June 11, 2004, beginning at 1500h and ending at approximately 1515h EDT. The recorded air temperature was 25 degrees Celsius and the weather was standard, with no storming or precipitation. The site can be accessed from the Hampton road bridge, in the county of Sussex and the town of Stillwater. The average stream width recorded was about 5 feet, with the average stream depth being approximately 5 inches. The flow rate at the time of the sample was very low and the water temperature at the time of the sample was around 21 degrees Celsius. The stream site contained no man-made structure as well as no barriers to fish movement (in exception to the significantly low water level.) The surface water appearance was clear and the stream bed deposit maintained a silt and sand composition. There were no apparent odors at the site. Stream bed stability was mid-range, with the bed sinking

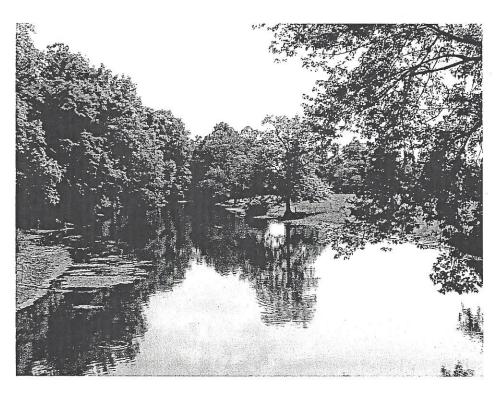
under the foot in a few spots. There was little to no exposed soil, with both the banks and the floodplain covered with plant matter. A mix of trees and shrubs provided ample stream channel shade. Stream bank erosion was minimal within the range of the site. Most riffles were composed of cobbles, with some gravel. In terms of land use, urban use in the form of roadway is the most significant. The site contained no discharging pipes. Chemically, Spring Brook (Crandon) has experienced difficulty in fecal coliform levels, from a rise in the spring of 1988 to its decline in 1991, with the pinnacle reaching more than 100col/100ml over the state standard. The stream seems to be another placed in the "average" category. The macroinvertebrate count produced a mid-range score, just missing the bottom of the "Good" category. The site contained a fairly diverse group of sensitive animals including caddisfly, hellgrammite, mayfly nymphs, and stonefly nymphs. Yet, the only other two macroinvertebrate species found were in the somewhat sensitive category. They were beetle larvae and dragonfly nymphs. The stream lacked the macroinvertebrate biodiversity needed for a more solid score. The stream is probably of a moderate water quality but there is room for improvement.



Spring Brook (Swartswood)
Site 6

The sampling of Spring Brook took place on June 3, 2004, with no outstanding weather conditions and the air temperature at 26 degrees Celsius. Sampling began at approximately 1610h and ended around 1630h EDT. The site can be accessed off of the Swartswood road bridge in the county of Sussex and the town of Stillwater. The recorded average stream width was approximately 10 feet, with the average depth approximately 11 inches. At the time of the sample, the flow rate was recorded as high; probably do to heavy precipitation the nights before. The water temperature was recorded at 24 degrees Celsius. There were no apparent man-made structures in the stream site as well as no barriers to fish movement. The surface water appearance was clear, but tea-colored and there were no evident odors in the sample area. The stream bed

deposit appeared to be sandy and the bed was mostly stable, with the bed sinking beneath ones feet in very few spots. The bank and floodplain was well covered with plant matter as well as several tracts of rock which was most likely once a stream bed. With the stream bank consisting of nearly all tree and shrub, the stream channel shade was very good. There was little to no bank erosion in the vicinity of the site. The riffle composition of the stream was nearly all cobbles with some boulders as well. The land uses for the area surrounding the test site were forest, parking lots, and roadway. There were 2 discharging pipes in the area used for storm-water runoff for the roadway. The sampling was done below these pipes. Spring Brook was one of the lowering scoring streams in the study. The stream lacked both diversity and quality in the macroinvertebrate count. There were good counts of caddisfly larvae, mayfly nymphs, and predacious diving beetle larvae but that is the extent of the quality of the count. Some stonefly nymphs were found as well as some lower quality and tolerant species such as aquatic worms and midge larvae. The final macroinvertebrate score was a 13, placing the stream in the mid-range "Fair" category. Spring Brook has a nearly perfect chemical record which leads one to believe that either not all the macroinvertebrate inhabitants were found or that there is a misbalance in the biological workings of the watercourse.



Paulinskill River Site 7

The sampling of Paulinskill River was done on June 19, 2004, with the weather conditions being stable and the air temperature at a recorded 22 degrees Celsius.

Sampling began at approximately 1101h and finished at 1145h EDT. The sample site can be accessed off of the Main St. green bridge in the town of Stillwater and the county of Sussex. The average recorded stream width was approximately 25 to 35 feet and the average depth, about one foot. The water temperature at the time of the sample was around 24 degrees Celsius. The water temperature was most likely warmer than the air because of the river's large size and shallow depth. The river maintained a normal flow rate at the time of the sample. The cement base of the bridge acted as a man-made structure but it had little impact on water movement or river ecology. There were no barriers to fish movement in the test site. The surface water appearance was clear but,

tea-colored and the stream bed deposit was of a healthy color and composition, consisting mostly of silt and sand. It should be noted that on parts of the river edge there were thick concentrations of highly organic "muck". There was no odor in the actual sampling site, but the "muck" gave off a musky, earthly smell. The river bed was mostly stable, but with the edges, the foot sunk in a few spots. There was little to no open soil on the river banks or floodplain, with most of the surrounding area consisting of pasture grass, along with some trees and shrub. The river channel shade was moderate, with 20 to 50 percent of the water being covered at the time of the sample. River bank erosion was moderate as well. The riffle composition for the river was mostly gravel, with some cobbles and even less silt. Being the largest waterway of the water quality study, there were many land uses in the vicinity of the sample site. These included forest, roadways, livestock pastures, and fields. There is a discharging pipe in the sample site and all sampling was done below this pipe. In the past, Paulinskill River has had a well known problem with chemical parameters, in specific fecal coliforms. In the spring of 1989, fecal coliform levels were found to be 700col/100ml over the state limit. That was an obvious problem, but currently the coliform levels are well below the state mandate standard. Also, in 1985 and 1986, the river experienced a slight jump over state regulations in total phosphorus as well as just peaking over the pH standard of 8.5 lab-units in 1997. Despite its past chemical record, the river has shown great improvement and the biological data confirms this fact. Paulinskill produced the second highest score in the study, just barely missing the excellent water quality category. The river maintained 5 pollution sensitive species including caddisfly larvae, mayfly nymphs, gilled snails, stonefly nymphs, and water-penny larvae. The high number of pollution sensitive species in the

macroinvertebrate survey is great evidence of improving water quality. The river was also inhabited by freshwater clams, which is always a good sign for larger rivers, as well as dragonfly nymphs, and a huge population of scuds. All of the above species fall under the somewhat pollution sensitive category. Pollution tolerant aquatic worms were also found. The rivers index of biological integrity is very high and the chemical data has improved. With both these factors, it is safe to assume that Paulinskill River is of a fairly high water quality.



Keen's Mill Site 8

The sampling of Keen's Mill took place on May 25, 2004, under stable weather conditions. The recorded air temperature was approximately 26 degrees Celsius. The sampling began at about 1510h and finished around 1530h EDT. The sample site can be accessed near Keen's mill off of Route 521, in the town of Stillwater and the county of Sussex. The average stream width recorded was approximately 20 feet and the average depth, approximately 1 foot. The water temperature at the time of the sample was 25 degrees Celsius and the stream maintained a normal flow rate (the picture above was taken at a later date and as it exhibits evidence of a low water level, it is not representative of the stream's condition at the time of the sample.) The only man-made structure and barrier to fish movement is a small dam at the head of the stream. The

silt/sand color and composition. There was an obvious fish odor emitted from the waterway. The stream bed was extremely stable, with no apparent sinking of the bed in any spots. There was no exposed soil in the vicinity of the site, due to the surrounding area consisting of established forest, with trees and shrub dominating the terrain. There was no erosion noted within the test site and the riffle composition was nearly all cobbles with some gravel. Keen's Mill has only been chemically tested for 4 years, with the sampling starting in the fall of the year 1998. Within its first year of testing, the stream had two noticeable chemical problems. One of them was a .1mg/l deficit from the state standard for total phosphorus and the other was a very high number of total suspended solids in the stream, with the count being 35mg/l more than the state allotted 25mg/l. Both of these tribulations dissipated by the time the stream was tested again in the fall of 2001. Keen's Mill had extremely impressive results for its biological sampling. The stream had the best macroinvertebrate count, while maintaining quality, pollution sensitive animals as well as a very impressive biodiversity. It had 6 macroinvertebrates out of the 7 pollution sensitive species in the category, only missing the riffle beetle. These included caddisfly larvae, hellgrammite, mayfly nymphs, gilled snails, stonefly nymphs, and water-penny larvae. The stream was also inhabited by somewhat pollution tolerant species like predacious diving beetle larvae, clams, scuds, and sowbugs. In addition, the stream had tolerant species including aquatic worms, blackfly larvae, and midge larvae. This stream's macroinvertebrate quality and diversity, along with its good chemical record, make it one of the best, if not the best stream in the study in terms of water quality and biological integrity.