

COMMONWEALTH OF PENNSYLVANIA

Department of Environmental Protection

January 24, 2007

484-250-5900

SUBJECT: Aquatic Biology Investigation
Wissahickon Creek, UNT Wissahickon Creek (Rose Valley Run)
Montgomery County
Case: Borit CERCLA Site
Stream Codes: 00844, 00878

TO: Stream File

THRU: Desiree Henning Dudley
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Introduction

The writer, along with PaDEP Solid Waste Supervisor Tim Cherry and USEPA On Scene Coordinators Eduardo Rovira and Jack Kelly, conducted a macroinvertebrate survey on Wissahickon Creek and an unnamed tributary in Upper Dublin and Whitpain Townships, Montgomery County on November 6, 2006. The purpose of the survey was to gather background information on the creeks prior to remediation and stabilization of the Borit Asbestos CERCLA (Comprehensive Environmental Response, Compensation and Liability) Site. The site lies on the northeast bank of the Wissahickon Creek from UNT 00877 (Tannery Run) upstream to Mount Pleasant Avenue, a distance of approximately 800 meters (0.5 miles).

The US Army Corps of Engineers recommended the remediation steps that are listed in the following paragraph. Following four quarterly sampling events (the first was conducted in November, 2006), USEPA and PaDEP will decide if all or any of the actions should be implemented.

The Department considers the Borit Asbestos Site to be three separate entities because of ownership and municipal boundary issues. The northernmost parcel, the former Whitpain Park, in Whitpain Township, is to be regraded and stabilized. The middle parcel, consisting of a reservoir owned by the Wissahickon Valley Watershed Association (WVWA), lies mostly in Upper Dublin Township. The reservoir berm including the portion in Whitpain Township is to be enhanced and capped. The southernmost parcel, the Borit Asbestos Tailings Pile, lies mostly in Ambler Borough between the reservoir and UNT 00877. The latter, a PaDEP HCSA (Hazard Sites Cleanup Act) site, is to be capped. There is a possibility that UNT 00877 will be piped from Maple Avenue to its mouth, a distance of approximately 180 meters, because of the steep topography along the stream bank.

The Wissahickon Creek basin is designated Trout Stocked Fishes (TSF) under current Chapter 93 Water Quality Standards. A December 1997 Unassessed Waters survey and previous watershed surveys (Strekal 1976, Knorr 1982, Boyer 1989, Schubert 1996, Everett 1997, Boyer 1997) found this reach of the Wissahickon Creek to be impaired from municipal point sources (nutrients) and urban runoff/storm sewers (nutrients, water and flow variability, and siltation). Implementation of the TMDL developed for the Wissahickon watershed in 2003 has been postponed in anticipation of the establishment of statewide nutrient criteria.

Methods and Materials

Five stream stations were selected to evaluate potential impacts to the aquatic community from future remediation of the Borit Asbestos Site. Physical characteristics for each station were recorded on standard field data collection forms. The benthic macroinvertebrate communities at each station were sampled using an 800x900 um-mesh kick screen and rock picks until no new taxa were found. The benthic samples were preserved in 70% ethanol and brought back to the Norristown lab for identification using standard taxonomic keys.

In April 2006, USEPA conducted air monitoring and soil sampling on the Borit Asbestos Site. In October 2006, EPA conducted a round of off-site air monitoring. In November 2006, EPA collected stream substrate sediment samples, surface water samples and stream bank dry sediment samples, and conducted another round of on-site air monitoring.

Results and Field Observations

Station W1: Wissahickon Creek approximately 50 meters upstream from Mount Pleasant Avenue; 6.17°N/15.11°W on Ambler, Pa., USGS quad; river mile 13.89.

Station W1 was bordered a woodlot containing moderately dense trees and shrubs, and a SEPTA line. Flow was estimated to be between 30 and 35 cubic feet per second (cfs) based on continuous flows recorded at the USGS stream gage at Route 73. Shading was about 40%. Bank erosion was estimated at approximately 30%. The stream ranged in width from 12 to 15 meters. The pool to riffle ratio was about 4 to 1. The substrate was comprised of 20% boulders, 30% each cobble and gravel, 10% sand and 5% each silt and clay. Moderate periphyton growth was observed on the substrate.

The benthic community contained 12 taxa at Station W1. Five EPT (mayfly, stonefly, caddis fly) genera were collected. The caddis fly *Hydropsyche* were common and dominant. The most sensitive forms found were the caddis fly *Chimarra*, the water penny *Psephenus*, the Asiatic clam *Corbicula* and the scud *Gammarus*. The assemblage contained 10 facultative and 2 tolerant organisms. The invertebrate community was fair at Station W1.

Station W2: Wissahickon Creek approximately 20 meters upstream from unnamed tributary 00878; 5.39°N/14.83°W on Ambler, Pa., USGS quad; river mile 13.51.

Station W2 was bordered a residential property containing moderately dense trees and shrubs and an asbestos disposal pile. Flow was the same as at Station W1. Shading was about 70% and bank erosion 30%. The pool to riffle ratio was approximately 10 to 1. The stream ranged from 10 to 15 meters in width. The substrate consisted of 20% boulders, 30% cobble, 20% gravel, 10% sand, 15% silt and 5% clay. Moderately dense periphyton was observed.

The Station W2 benthic assemblage contained 10 taxa including 5 EPT genera. *Hydropsyche* and the caddis fly *Cheumatopsyche* were very abundant and dominant. The most sensitive genera found were *Chimarra*, *Psephenus* and the mayfly *Stenacron*. The community was comprised of 8 facultative and 2 tolerant taxa. The assemblage was fair at Station W2

Station W3: Wissahickon Creek approximately 125 meters downstream from unnamed tributary 00878; 5.15°N/14.60°W on Ambler, Pa., USGS quad; river mile 13.42.

Station W3 was bordered by a woodlot with dense trees and shrubs, and the berm of a lake. Flow was the same as at W1 and W2. Shading was estimated as 30% and bank erosion 70%. The stream ranged in width from 8 to 15 meters. The substrate consisted of 10% boulders, 40% cobble, 20% each gravel and sand, and 5% each silt and clay. Moderate periphyton and sparse macrophytes were observed.

A total of 13 taxa, including 4 EPT genera, were collected at Station W3. The flatworm *Dugesia* was very abundant and dominant. The most sensitive forms found were *Chimarra*, *Corbicula* and *Gammarus*. The benthic assemblage was comprised of 10 facultative and 3 tolerant taxa. The Station W3 community was fair.

Station W4: Wissahickon Creek 25 meters downstream from Butler Pike; 4.74°N/14.45°W on Ambler, Pa., USGS quad; river mile 13.12.

Station W4 was bordered by a woodlot containing moderately dense trees and shrubs, and the capped and stabilized former Ambler Asbestos Superfund Site. Stream flow was the same as at the upstream stations. Shading was estimated to be 10% and bank erosion at 25%. The creek ranged in width from 10 to 15 meters, and the pool to riffle ratio was about 3 to 1. The substrate consisted of 10% boulders, 40% cobble, 30% gravel, 15% sand and 5% clay. Moderate periphyton and sparse macrophytes were found.

The benthic community at Station W4 consisted of 11 genera and 3 EPT taxa. The scud *Gammarus* was abundant and dominant. The most sensitive organisms found were *Chimarra*, *Corbicula*, *Gammarus*, *Psephenus* and the crane fly *Tipula*. Nine facultative and two tolerant taxa made up the community. The assemblage again was fair.

Station RV1: UNT 00878 (Rose Valley Run) 30 meters upstream from mouth; 5.40°N/14.71°W on Ambler, Pa., USGS quad, river mile 0.01.

Station RV1 was located between two asbestos dump sites. The terrain consisted of a woodlot with dense trees and shrubs. Stream flow was estimated to be 2 to 3 cfs. Shading was about 20% and bank erosion 40%. The stream ranged in width from 2 to 6 meters and had a pool to riffle ratio of about 3 to 1. The substrate consisted of 10% boulders, 20% cobble, 30% each gravel and sand, and 5 % each silt and clay. Sparse periphyton was observed.

The Station RV1 benthic assemblage consisted of 7 taxa including 3 EPT genera. *Gammarus* was common and dominant. The most sensitive taxa found were *Chimarra*, *Gammarus* and *Psephenus*. The community was made up of 6 facultative and 1 tolerant organisms. The Station RV1 assemblage was fair.

Conclusions

This survey attempted to gather background information on the benthic community of Wissahickon Creek and an unnamed tributary prior to possible remediation of the Borit Asbestos Disposal Site. Station W1, located upstream from the Borit Asbestos Site, served as a reference station. The other stations were all potentially impacted sites. The results of the survey show that the Wissahickon Creek in the reach examined remains impaired from municipal point sources (nutrients) and non-point sources (nutrients, siltation, water and flow variability). Although disposed asbestos products were observed on the stream substrate and banks, there was no evidence that asbestos materials were contributing to these impairments.

Recommendations

A follow-up benthic macroinvertebrate survey of this reach of the Wissahickon Creek should be conducted after remediation of the Borit Asbestos Site has been completed. An effort should be made to duplicate the methods and station locations implemented during the November 6, 2006 survey.

References

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AQUATIC BIOLOGY INVESTIGATION

Benthic Invertebrates

Qualitative Data

Table: 1

Name of Stream: Wissahickon Creek, UNT Wissahickon Creek (Rose Valley Creek)

Case: Borit CERCLA Site

County: Montgomery

Date of Collection: November 6, 2006

<u>TAXA</u>	<u>STATIONS</u>				
	W1	W2	W3	W4	RV1
PLATYHELMINTHES (flatworms)					
Turbellaria					
Tricladida					
Planariidae					
<i>Dugesia</i> sp. (7)	P	P	VA	C	P
MOLLUSCA (mollusks)					
Bivalvia (Pelecypoda; clams, mussels)					
Veneroida					
Cobiculiidae					
<i>Corbicula</i> sp. (4)	R		C	P	
ANNELIDA (segmented worms)					
Oligochaeta (aquatic worms)					
Lumbriculida					
<i>Lumbriculidae</i> (8)	R		R	R	
Hirudinea (leeches)					
Archychobdellida					
Erpobdellidae					
<i>Erpobdella</i> sp. (8)			R		
ARTHROPODA					
Crustacea					
Malacostraca					
Amphipoda (scuds)					
Gammaridae					
<i>Gammarus</i> sp. (4)	P		C	A	C
Insecta					
Pterygota (winged insects)					
Ephemeroptera (mayflies)					
Baetidae					
<i>Baetis</i> sp. (6)			P		R
Heptageniidae					
<i>Stenacron</i> sp. (4)		R			
Odonata					
Zygoptera (damselflies)					
Coenagrionidae					

<i>Argia</i> sp. (6)	P	P	R	P	
Trichoptera (caddis flies)					
Hydropsychidae					
<i>Cheumatopsyche</i> sp. (6)	P	VA	P	C	
<i>Hydropsyche morosa</i> gp. (5)	C	VA	P	C	
<i>Hydropsyche</i> sp. (5)	C	VA	P	C	P
Philopotamidae					
<i>Chimarra</i> sp. (4)	P	P	C	C	P
Hydrophilidae					
<i>Leucotrichia</i> sp. (6)	P	P			
Coleoptera (beetles)					
Elmidae					
<i>Stenelmis</i> sp. (5)		R	P	R	
Psephenidae					
<i>Psephenus</i> sp. (4)	P	P	P	P	P
Diptera (midges, flies)					
Brachycera					
Nematocera					
Chironomidae					
Orthocladiinae					
<i>Cricotopus</i> sp. (7)		R			
Simuliidae					
<i>Simulium</i> sp. (6)	R		R		P
Tipulidae					
<i>Tipula</i> sp. (4)				P	
<hr/>					
Total Taxa	12	10	13	11	7
EPT Taxa	5	5	4	3	3
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VA=very abundant (>100)

A=abundant (25-100)

C=common (10-24)

P=present (3-9)

R=rare (1 or 2)

Sensitivity indices in parentheses

Table 2. Invertebrate taxa and sensitivity indices for 11/6/06 Wissahickon Creek and UNT Wissahickon Creek (Rose Valley Creek) survey.

<u>Sensitivity Rating</u>	<u>Station W1</u>	<u>Station W2</u>	<u>Station W3</u>	<u>Station W4</u>	<u>Station RV1</u>
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	4	3	4	5	3
5	2	2	2	2	1
6	4	3	4	2	2
7	1	2	1	1	1
8	1	2	2	1	0
9	0	0	0	0	0
<u>10</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	12	10	13	11	7

Table 3. Number of sensitive, facultative and tolerant taxa for 11/6/06 Wissahickon Creek and UNT Wissahickon Creek (Rose Valley Creek) survey.

<u>Sensitivity Rating</u>	<u>Station W1</u>	<u>Station W2</u>	<u>Station W3</u>	<u>Station W4</u>	<u>Station RV1</u>	
0 to 3	0	0	0	0	0	Sensitive
4 to 6	10	8	10	9	6	Facultative
<u>7 to 10</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>1</u>	Tolerant
Total	12	10	13	11	7	