

## HRS DOCUMENTATION RECORD COVER SHEET

**Name of Site:** Borit Asbestos Tailings Pile

**EPA ID No.:** PAD981034887

### **Contact Persons**

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### **Pathways, Components, or Threats Not Scored**

#### **Ground Water Migration Pathway**

The ground water migration pathway was not scored because no identified ground water targets are located within 4 miles of the sources. Therefore, the ground water pathway score would not contribute significantly to the site score.

#### **Surface Water Migration Pathway**

The surface water migration pathway was not scored because no drinking water intakes have been identified within the 15-mile target distance limit; the hazardous substance associated with the sources, asbestos, has a low bioaccumulation value; and asbestos has a zero eco-toxicity value (Ref. 2, p. A-2). Therefore, the surface water migration pathway would contribute minimally to the site score.

#### **Soil Exposure Pathway**

The soil exposure pathway was not scored. Based on present data, the soil exposure pathway would not contribute to the site score. However, access to potential asbestos containing material (ACM) has been identified along Wissahickon Creek (Ref. 3, Appendix A, p. 12, photograph 23).

## HRS DOCUMENTATION RECORD

Name of the Site: Borit Asbestos Tailings Pile

EPA Region: 3

Street Address of Site:\* 6 Maple Street

City, County, State, Zip Code: Ambler, Montgomery County, Pennsylvania, 19002

General Location in State: The Borit Asbestos Tailings Pile is located in southeastern Pennsylvania, north of Philadelphia, Pennsylvania.

Topographic Map: Ambler, Pennsylvania

\*Latitude: Longitude:

40° 09' 12.50" North 75° 13' 43.05" West

Reference for latitude and longitude: Google Earth ([www.earth.google.com](http://www.earth.google.com)) and Reference 6, measured from the southwestern corner of reservoir (Source 4). There are no fixed structures on the Borit Asbestos Tailings Pile (see References 6 and 18 for location).

*\*The street address, coordinates and contaminant locations presented in this HRS documentation record identify the general area in which the site is located. They represent one or more locations EPA considers to be part of the site based on screening information EPA used to evaluate the site for NPL listing. EPA lists its national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not on precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.*

# **WORKSHEET FOR COMPUTING HRS SITE SCORE**

	S pathway	S <sup>2</sup> pathway
Ground Water Migration Pathway Score (S <sub>gw</sub> )	NS	NS
Surface Water Migration Pathway Score (S <sub>sw</sub> )	NS	NS
Soil Exposure Pathway Score (S <sub>s</sub> )	NS	NS
Air Migration Score (S <sub>a</sub> )	100.00	10,000
$S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		10,000
$(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2)/4$		2,500
$\sqrt{(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2)/4}$		50.00

Notes:

NS      Not scored

**TABLE 6-1 --AIR MIGRATION PATHWAY SCORESHEET**

Factor categories and factors	Maximum Value	Value Assigned
<b>Likelihood of Release:</b>		
1. Observed Release	550	550
2. Potential to Release:		
2a. Gas Potential to Release	500	
2b. Particulate Potential to Release	500	
2c. Potential to Release (higher of lines 2a and 2b)	500	
3. Likelihood of Release (higher of lines 1 and 2c)	550	550
<b>Waste Characteristics:</b>		
4. Toxicity/Mobility	(a)	200
5. Hazardous Waste Quantity	(a)	10000
6. Waste Characteristics	100	32
<b>Targets:</b>		
7. Nearest Individual	50	50
8. Population:		
8a. Level I Concentrations	(b)	18,389.60
8b. Level II Concentrations	(b)	0
8c. Potential Contamination	(c)	0
8d. Population (lines 8a + 8b + 8c)	(b)	18,389.60
9. Resources	5	0
10. Sensitive Environments:		
10a. Actual Contamination	(c)	0
10b. Potential Contamination	(c)	0
10c. Sensitive Environments (lines 10a + 10b)	(c)	0
11. Targets (lines 7 + 8d + 9 + 10c)	(b)	18,439.60
<b>Air Migration Pathway Score:</b>		
12. Pathway Score ( $S_a$ ) [(lines 3 x 6 x 11)/82,500] <sup>d</sup>	100	100

<sup>a</sup> Maximum value applies to waste characteristics category

<sup>b</sup> Maximum value not applicable

<sup>c</sup> No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.

<sup>d</sup> Do not round to nearest integer

## REFERENCES

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## **Site Summary – Borit Asbestos Tailings Pile**

The Borit Asbestos Tailings Pile site is located on the northwest corner of West Butler Pike and West Maple Street in Ambler, Montgomery County, Pennsylvania (Ref. 3, p. 2; Ref. 6). The site includes two disposal areas and a 10-acre water reservoir (Ref. 3, p. 3; Ref. 10, p. 2; Ref. 12, p. 8; Ref. 27; Ref. 32, pp. 6 and 8). The two disposal areas and the reservoir encompass an area of approximately 31.22 acres, as indicated by the boundaries shown in Reference 3, page 3. One of the disposal areas is an asbestos waste pile (Source 1) and the other is an asbestos disposal area (Source 2) (Ref. 3, p. 3; Ref. 10, p. 2; Ref. 12, p. 8). Near Source 1 there is an area of contaminated soil (Source 3) (Ref. 3, pp. 11, 13, 15, 16, and Attachment, pp. 1, 8, 21, 22, 23). The reservoir bank (Source 4) is constructed of materials mixed with asbestos containing material (ACM) (Ref. 10, p. 3; Ref. 12, pp. 13 and 14; Ref. 22, pp. 5 and 8).

The Borit Asbestos Tailings Pile property is bounded on the north by residential properties; on the northeast and east by Chestnut Avenue, West Maple Street, and commercial and residential areas; on the south by commercial properties (McDonalds, Classic Coachworks, and the Sons of Italy); on the southwest by Montgomery County and Pennsylvania Department of Transportation open space; and on the northwest by residential properties. A playground (Westside Tiny Tot Park) and basketball courts are located northeast and north of the property, respectively. Ambler Warehouse, Ambler Manor (an apartment complex), and a shopping plaza are located east of the property (Ref. 3, pp. 3 and 4).

Surface water located in the vicinity of the property includes an intermittent tributary named Tannery Run, which is located south of the asbestos waste pile (Source 1) and Rose Valley Creek, which is located south of the disposal area (Source 2). Both surface water bodies eventually join the Wissahickon Creek, which is located along the western boundary of the asbestos waste pile (Source 1) and disposal area (Source 2) (Ref. 3, p. 3; Ref. 6). The reservoir discharges to Wissahickon Creek (Ref. 32, p. 22; Ref. 33).

The asbestos waste pile (Source 1) is partially enclosed by a 12 foot high chain link fence that borders West Maple Street to the northeast and runs along Tannery Run to the south. Warning signs are posted along the fence line indicating that the enclosed area contains ACM. In January 2006, EPA Region 3's Superfund Technical Assessment and Response Team (START) observed a break in the fence and evidence of trash dumping on the asbestos waste pile and water reservoir properties. No buildings or other structures are located on the waste pile property. The asbestos waste pile is bordered to the north by the reservoir, to the south by Tannery Run, and to the west by Wissahickon Creek. The asbestos waste pile is unfenced along Wissahickon Creek to the west of the pile. The asbestos waste pile is currently about 20 to 30 feet above the ground surface and is heavily vegetated with brush and small trees (Ref. 3, p. 5, Appendix B, pp. 2 and 3; Ref. 6). A two-dimensional electrical survey estimated the volume of the pile as 149,500 cubic yards (Ref. 24, p. 13).

The asbestos disposal area (Source 2) is located in Whitpain Wissahickon Park. The park is closed (Ref. 3, p. 5 and Appendix B, pp. 2 and 3). A reservoir is located between the asbestos waste pile and the disposal area (Ref. 3, pp. 3 and 5 and Appendix B, p. 2). Visible evidence of ACM is apparent along the banks of the reservoir (Source 4), indicating that the reservoir banks were constructed of ACM (Ref. 3, p. 3; Ref. 7, p. 1; Ref. 8, p. 1). An area of soil contamination (Source 3) has been identified near the asbestos pile (Source 1) (see Table 4 of this documentation record).



The Borit Asbestos Tailings Pile was used to dispose of ACM from the Keasbey & Mattison Company asbestos manufacturing plant. The plant was located on West Maple Street approximately 528 feet south of the Borit Asbestos Tailing Pile property. The Keasbey & Mattison Company plant obtained process water from the water reservoir (Ref. 3, p. 5; Ref. 5, p. 1-1; Ref. 9, p. 1-1; Ref. 10, p. 3; Ref. 12, pp. 3, 6; Ref. 30). ACM wastes from the Keasbey & Mattison Company plant were disposed of in a second water reservoir that was located in the southern portion of the Borit Asbestos Tailings Pile property. Disposal of ACM wastes eventually filled in the reservoir and created the asbestos waste pile (Source 1) approximately 20 to 30 feet above the ground surface (Ref. 12, pp. 3, 6, 8, 12, and 14; Ref. 24, pp. 1, 91-94). The Ambler Asbestos Piles site, a former National Priorities List (NPL) site, was also used to dispose of asbestos containing wastewater and ACM waste generated by the Keasbey & Mattison Company plant (Ref. 12, p. 3; Ref. 13, p. 1). The locations of the Borit Asbestos Tailings Pile property and the Ambler Asbestos site are shown in Reference 30.

Keasbey & Mattison Company began manufacturing asbestos products in the Borough of Ambler in the late 1800s. Some time during the 1930s, Keasbey & Mattison Company began dumping waste materials from ACM production into a reservoir, the current location of the asbestos waste pile (Source 1). The exact date on which disposal of ACM into the reservoir started is unknown; however, according to Sanborn fire insurance maps, a water reservoir was present at the location of the waste pile from 1921 through 1945. This reservoir does not appear on a 1954 Sanborn map, indicating that sometime between 1945 and 1954, the reservoir had been completely filled with ACM. In 1962, Nicolet Industries purchased Keasbey & Mattison Company and continued to dispose of ACM at the location of the former reservoir (current asbestos waste pile, Source 1) until the 1970s, when Nicolet Industries ceased manufacturing ACM (Ref. 12, pp. 6, 7, 8, 9, 12, and 14; Ref. 24, pp. 91 through 94).

During an undetermined period of time, the Borough of Ambler rented a portion of the asbestos waste pile property for a trash transfer station. A large dumpster was stored on the property for disposal of large household items by Ambler residents. The property was also used to extinguish fires that occurred in trash removal trucks. The trash in the trucks was dumped on the ground surface and spread out, and the fire was extinguished. The Ambler Borough fire company (currently the Wissahickon Fire Department) conducted fire fighter training on a flat portion of the property outside of the waste pile from 1995 to 1996. The training was conducted once to twice a month over a six- to seven-month period. Automobiles were set on fire with a mixture of diesel fuel and gasoline, and the fire then was extinguished. No fuel was discharged to the ground surface (Ref. 5, p. 1-1, 2-1, and 5-2; Ref. 9, p. 1-4; Ref. 24, pp. 28, 29, 107, and 108).

On October 27, 1987, EPA Region 3's Field Investigation Team (FIT 3) conducted a site inspection (SI) of the asbestos waste pile (Source 1) (Ref. 9, pp. 1-4 and 3-2). One soil sample (S-1) was collected from the asbestos waste pile. The soil sample contained 20 percent chrysotile asbestos (Ref. 9, pp. 1-4, 2-2, 2-3, 3-1a and Appendix A, p. A-2 and Appendix B, pp. B-1, B-2; Ref. 20, p. 1).

In 2001, an environmental consultant for the Redevelopment Authority of Montgomery County, Pennsylvania, excavated 11 test pits in the asbestos waste pile (Source 1). Six of the test pits contained fill, ACM waste, soil, and rock. Waste/soil samples were collected from the test pits (Ref. 24, p. 11). The samples contained 4.3 to 28 percent asbestos (Ref. 24, pp. 12, 130, 131, 135, 137, 139, and 144).

On April 27, 2006, EPA Region 3's START collected two waste samples (002-WS-01 and 002-WS-02) from the asbestos waste pile (Source 1) (Ref. 3, pp. 10, 12, and 16) and two soil samples

(004-SS-04 and 004-SS-05) from the asbestos disposal area (Source 2) (Ref. 3, pp. 11, 13, 15, and 16). The waste samples contained asbestos chrysotile fibers of 4,365,000,000 structures per gram and 98,970,000 structures per gram (Ref. 3, p. 18, and Appendix B, p. 16 (photograph 32) and p. 17 (photograph 33) and Appendix B, pp. 19 and 20 and Attachment pp. 8, 13, 23, 48, and 49). The soil samples contained chrysotile structures at 5.974E6 and 5.407E8 per gram of soil (Ref. 3, pp. 11, 13, Appendix A, p. 16, Attachment, pp. 8, 22, 28, 45, and 46).

On October 25, 2006, EPA Region 3's START collected soil samples from the asbestos disposal area (Source 2) (Ref. 22, Table 2, p. 15, and Figure 3, p. 14). The soil samples contained 0.10 to 0.30 structures per gram of chrysotile fibers (Ref. 22, pp. 14 and 15, Attachment A, pp. 1 and 2, Attachment B, pp. 4, 5, and 75).

On August 13 and 14, 2007, and September 18, 2008, EPA Region 3's START collected air samples from 14 air sampling locations in the vicinity of Sources 1, 2, 3, and 4 (Ref. 7, pp. 1, 8; Ref. 8, pp. 1, 7). The air samples document a release to the air migration pathway and a Level I target population of 1,838.96 persons, as documented in Section 6.0 of this HRS documentation record.

Four sources of ACM were evaluated. Source 1, the asbestos waste pile, is a former reservoir filled with ACM waste from the production of ACM at the former Keasbey & Mattison Company plant (Ref. 24, pp. 4, 27, 91 through 94; Ref. 12, pp. 3, 6, 7, 8, 12, 13, and 14). Source 2, the asbestos disposal area, is located in Whitpain Wissahickon Park (Ref. 3, p. 3). The disposal area was an asbestos pile that was leveled and covered with clean fill (Ref. 12, pp. 3 and 6; Ref. 10, p. 2). Source 3, contaminated soil surrounding the asbestos waste pile, includes the sampling locations 002-SS-01, 002-SS-02, and 002-SS-03 (Ref. 3, pp. 11, 13, 15, 16, and Attachment, pp. 1, 8, 21, 22, 23). Source 4 includes the banks of the reservoir where visible evidence of ACM is apparent, indicating that the reservoir banks were constructed of ACM (Ref. 3, p. 3; Ref. 7, p. 1; Ref. 8, p. 1). Samples collected from the eastern bank of the reservoir contained 30 percent chrysotile asbestos and three samples of transite (a mixture of cement and asbestos) from the reservoir bank contained 20 to 25 percent of chrysotile (Ref. 32, p. 29; Ref. 33).

The air sampling locations documenting releases to the air migration pathway are shown in Reference 16. Reference 3, pages 3 and 13, show the locations of the sources. A comparison of these figures shows that the air release sampling locations are surrounding the source locations. Some of the release sampling locations were located in mixed commercial and residential areas and others were located on the property on which the sources are located.

## **2.2 SOURCE CHARACTERIZATION**

### **2.2.1 SOURCE IDENTIFICATION**

**Name of source:** Asbestos Waste Pile  
**Number of source:** 1  
**Source type:** Pile

The asbestos waste pile is a former reservoir filled with ACM waste from the production of ACM at the former Keasbey & Mattison Company plant located south of the pile. The exact date on which disposal activities of ACM into the reservoir started is unknown; however, according to Sanborn fire insurance maps, a water reservoir was present at the location of the waste pile from 1921 through 1945. This reservoir does not appear on a 1954 Sanborn map, indicating that sometime between 1945 and 1954 the reservoir had been completely filled with ACM. In 1962, Nicolet Industries purchased Keasbey & Mattison Company and continued to dispose of ACM at the location of the former reservoir (current asbestos waste pile) until the 1970s, when Nicolet Industries ceased manufacturing ACM. The asbestos waste pile property is currently vacant and not used for any purpose (Ref. 24, pp. 4, 27, 91-94; Ref. 12, pp. 3, 6, 7, 8, 12, 13, and 14).

Observations of the waste pile indicate that the pile is 20 to 30 feet above the ground surface (Ref. 3, Appendix B, p. 2; Ref. 5, p. 5-2; Ref. 9, p. 2-4; Ref. 19, p. 2). A photograph of the asbestos waste pile taken in 2006 shows bare soil (Ref. 3, Appendix A, p. 6, photograph 12). A two-dimensional electrical survey estimated the volume of the pile as 149,500 cubic yards (Ref. 24, p. 13). In 2006, EPA observed ACM on the pile surface during a site reconnaissance (Ref. 10, p. 2). In 2006, an environmental consultant to EPA collected samples of waste material from the surface of the pile. The samples contained asbestos (Ref. 3, p. 18, and Appendix A, p. 16 [photograph 32] and p. 17 [photograph 33] and Appendix B, pp. 19 and 20 and Attachment pp. 8, 13, 23, 48, and 49).

**Location of source, with reference to a map of the facility:** See Reference 3, page 3 (Figure 2), for the location of the source.

**Containment:**

**Release to ground water:** The ground water migration pathway was not scored.

**Release via overland migration and/or flood:** The overland migration and/or flood migration pathway was not scored.

**Gas release to air:** Gas release to the air migration pathway was not scored.

**Particulate release to air:** Asbestos is a particulate (Ref. 2, p. A-1). The asbestos waste pile has been observed to be partially covered with soil and vegetation. Bare areas and wastes have been observed on the surface of the waste pile (Ref. 3, Appendix A, p. 16, photographs 31 and 32 and Appendix B, pp. 5, 19, and 20; Ref. 5, p. 5-2; Ref. 9, p. 2-4; Ref. 10, p. 2). Because waste has been observed on the surface of the waste pile, the pile is not considered covered. Using Table 6-9 of Reference 1, the source is given a particulate containment assigned value of 10. The assigned value was obtained by using "All situations except those specifically listed below," as stated in Table 6-9 of Reference 1.

## **2.4 WASTE CHARACTERISTICS**

### **2.4.1 HAZARDOUS SUBSTANCES**

In 1984, the Pennsylvania Department of Environmental Resources (PADER – now Pennsylvania Department of Environmental Protection, PADEP) collected samples from the asbestos waste pile; all samples contained asbestos (Ref. 4). In 1987, observations of the asbestos waste pile indicated that portions of the pile were not covered (Ref. 5, pp. 1-2, 5-1, 5-2).

On October 27, 1987, EPA Region 3's Field Investigation Team (FIT 3) conducted a site inspection (SI) of the asbestos waste pile. The samples were analyzed using polarized light microscopy (PLM) and the Interim Method for the Determination of Asbestos in Bulk Insulation Samples, EPA-600/M4-82-020 (Ref. 38, pp. 1-2). The laboratory data were validated and no problems with the analysis were identified (Ref. 9, pp. 1-4 and 3-2). A copy of the analytical method is provided as Reference 40. One soil sample (S-1) was collected from the asbestos waste pile. The soil sample contained 20 percent chrysotile asbestos (Ref. 9, pp. 1-4, 2-2, 2-3, 3-1a and Appendix A, pp. A-2 and A-40 and Appendix B, pp. B-1, B-2; Ref. 20, p. 1). The method detection limit is 0 to 1 percent and measures 0.5 micron (Ref. 9, p. 3-2). Appendix A of Reference 9 provides the quality assurance documentation for the sample.

In 2001, an environmental consultant for the Redevelopment Authority of Montgomery County, Pennsylvania, excavated 11 test pits in the asbestos waste pile. Six of the test pits contained fill, ACM waste, soil, and rock. Waste/soil samples were collected from the test pits (Ref. 24, p. 11). The samples were analyzed using transmission electron microscopy (TEM) qualitative analysis and Chatfield TEM method. The method detection limit is greater than 1 percent (Ref. 24, p. 142). Table 1 summarizes the analytical results.

**TABLE 1**  
**WASTE/SOIL SAMPLES ANALYTICAL RESULTS**  
**ASBESTOS WASTE PILE**  
**AUGUST 2001**

<b>Sample Identification</b>	<b>Asbestos (Chrysotile) Concentration in % (Avg. Asbestos Range)</b>	<b>Reference</b>
Test Pit 1 (TP-1A1) 8 ft bgs	7.1	24, pp. 12, 130, 144
Test Pit 1 (TP-1A2) 14 ft bgs	4.3	24, pp. 12, 130, 144
Test Pit 2 (TP-2A1) 3-8 ft bgs	13.0	24, pp. 12, 131, 144
Test Pit 6 (TP-6A1) 0-1 ft bgs	28.0	24, pp. 12, 135, 144
Test Pit 8 (TP-8A1) 6-8 ft bgs	9.2	24, pp. 12, 137, 144
Test Pit 10 (TP-10A1) 0-5 ft bgs	35.0	24, pp. 12, 139, 144

Notes:

bgs      Below ground surface  
ft        Feet  
TP       Test pit

On April 27, 2006, EPA Region 3's Superfund Technical Assessment and Response Team (START) collected two waste samples (002-WS-01 and 002-WS-02) from the asbestos waste pile (Ref. 3, pp. 10, 13, 12, and 16). The waste samples were described as light gray potentially asbestos containing material (PACM) from the surface of the asbestos waste pile. The samples

**Source Description-Waste Characteristics**  
**Source No. 1**

were placed in certified-clean bottleware for asbestos analysis (Ref. 3, pp. 12, 13, 16, and 17; Ref. 35). The two waste samples (002-WS-01 and 002-WS-02) collected from the asbestos waste pile contained asbestos chrysotile fibers of 4,365,000,000 structures per gram and 98,970,000 structures per gram (Ref. 3, p. 18, and Appendix A, p. 16 (photograph 32) and p. 17 (photograph 33) and Appendix B, pp. 19 and 20 and Attachment pp. 8, 13, 23, 48, and 49). The samples were validated in accordance with procedures documented in Reference 15. The samples were analyzed using Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Materials, Draft, Revision 1 (Ref. 15, p. 26; Ref. 41). The method detection limit is 1.0E-6 structures per gram (Ref. 31). A copy of the analytical method is included as Reference 41.

## **2.4.1 HAZARDOUS SUBSTANCES**

### **2.4.2.1 Hazardous Waste Quantity**

#### **2.4.2.1.1 Hazardous Constituent Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 1.

#### **2.4.2.1.2 Hazardous Waste Stream Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 1.

#### **2.4.2.1.3 Volume**

A geophysical technique called two-dimensional electrical survey estimated the volume of the pile as 149,500 cubic yards (Ref. 24, pp. 3, 7, 9, 10, 13, 123-128). The hazardous waste quantity (HWQ) assigned value for a pile is 149,500 cubic yards divided by 2.5 or 59,800 (Ref. 1, Table 2-5 and Section 2.4.2.1.3).

**Dimensions of source (cubic yards): 149,500**  
**Volume Assigned Value: 59,800**

#### **2.4.2.1.4 Area**

The area measure is assigned a value of 0 because the volume of the source can be determined (Ref. 1, Section 2.4.2.1.3).

**Area Assigned Value: 0**

#### **2.4.2.1.5 Source Hazardous Waste Quantity Value**

The source area HWQ value for Source No. 1 is assigned a value of 59,800 (Ref. 1, Table 2-5).

**Source HWQ Value: 59,800**

## **2.2 SOURCE CHARACTERIZATION**

### **2.2.1 SOURCE IDENTIFICATION**

**Name of source:** Asbestos Disposal Area  
**Number of source:** 2  
**Source type:** Pile

The asbestos disposal area is located in Whitpain Wissahickon Park (Ref. 3, p. 3). The disposal area was an asbestos pile that was leveled and covered with clean fill (Ref. 12, pp. 3 and 6; Ref. 10, p. 2). Keasbey & Mattison Company disposed of asbestos process waste, including bad manufacturing runs and off-spec products, in the asbestos disposal area (Ref. 12, pp. 7, 12, and 14). The waste was generated at the Keasbey & Mattison Company plant located south of the asbestos waste pile (Ref. 12, pp. 3, 6, 7, 8, 12, and 13).

**Location of source, with reference to a map of the facility:** See Reference 3, page 3 (Figure 2), for the location of the source.

**Containment:**

**Release to ground water:** The ground water migration pathway was not scored.

**Release via overland migration and/or flood:** The overland migration and/or flood migration pathway was not scored.

**Gas release to air:** The gas release to air migration pathway was not scored.

**Particulate release to air:** Asbestos is considered a particulate (Ref. 2, p. A-1). The asbestos disposal area has been observed to be partially covered with soil and vegetation (Ref. 3, Appendix B, p. 17). A test pit, test pit 1, was excavated near the center of the disposal area (Ref. 3, p. 13). Waste was identified under soil at 10 inches below ground surface (bgs) (Ref. 3, Appendix B, p. 17). A second test pit, test pit 2, was excavated in the northern section of the disposal area (Ref. 3, p. 13). Waste was encountered at 4 inches bgs (Ref. 3, Appendix B, p. 17). A soil sample, 004-SS-04, collected from the surface of the disposal area, contained asbestos (Ref. 3, pp. 11, 13, and Attachment pp. 8, 22, and 45). Therefore, the soil covering the disposal area is contaminated. Using Reference 1, Table 6-9, a particulate containment factor value of 10 is assigned to Source 2. The assigned value was obtained by using "All situations except those specifically listed below," as stated in Table 6-9 of Reference 1.

## **2.4 WASTE CHARACTERISTICS**

### **2.4.1 HAZARDOUS SUBSTANCES**

On April 27, 2006, EPA Region 3's Superfund Technical Assessment and Response Team (START) collected two soil samples (004-SS-04 and 004-SS-05) from the asbestos disposal area (Source 2) (Ref. 3, pp. 11, 13, 15, and 16; Ref. 35). The samples collected from Source 2 were identified as soil samples although the samples were collected from the pile containing wastes. The samples were considered soil because Source 2 was an asbestos pile that was leveled and covered with clean fill (Ref. 12, pp. 3 and 6; Ref. 10, p. 2). The soil samples were collected at 0 to 3 inches bgs for asbestos analysis (Ref. 3, pp. 15; Ref. 35). Background soil samples were collected from Montgomery Open Space (Ref. 3, pp. 11, 13, and 16). The background soil sample locations (001-SS-06 and 001-SS-07) are shown in photographs in Reference 3, Appendix A, pages 14 and 15. The photographs indicate the locations of the background samples are vegetated. As shown in Reference 28, the location of the background soil samples is forested (Ref. 3, Figure 3, p. 13; Ref. 28). Because the locations of the background soil samples are forested and vegetated, the soil is native (the area does not appear to have been filled or covered with soil). Additionally, there is no documentation of asbestos occurring naturally in Ambler, Pennsylvania. Both the background and release soil samples were collected from soil characterized as Pennsylvania Silt Loam (Ref. 11; Ref. 3, p. 13). The samples were collected and validated in accordance with procedures documented in Reference 15. The samples were analyzed using Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Materials, Draft, Revision 1 (Ref. 15, p. 26; Ref. 41). The method detection limit is 1.0E-6 structures per gram (Ref. 31). Table 2 summarizes asbestos detections in the soil samples at concentrations greater than or equal to three times the background concentration, or above the detection limit if not detected in the background sample.

**TABLE 2**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**ASBESTOS DISPOSAL AREA**  
**APRIL 2006**

<b>Sample Identification No.</b>	<b>Hazardous Substance</b>	<b>Concentration (structures per gram)</b>	<b>Sample Description</b>	<b>Reference 3</b>
004-SS-04	Asbestos (Chrysotile Structures)	5.974E6	Soil sample collected on the asbestos disposal area (Source 2)	pp. 11, 13; Appendix A, p. 13; Appendix B, p. 16; Attachment, pp. 8, 22, 28, 45
004-SS-05	Asbestos (Chrysotile Structures)	5.407E8	Soil sample collected on the asbestos disposal area (Source 2)	pp. 11, 13; Appendix A, p. 14 Appendix B, p. 16; Attachment, pp. 8, 22, 28, 46
001-SS-06	Asbestos (Chrysotile Structures)	None detected	<b>Background</b> soil sample collected from Montgomery County open space	pp. 11, 13; Appendix A, p. 14; Appendix B, p. 18; Attachment, pp. 8, 22, 28



**Source Description-Waste Characteristics**  
**Source No. 2**

<b>Sample Identification No.</b>	<b>Hazardous Substance</b>	<b>Concentration (structures per gram)</b>	<b>Sample Description</b>	<b>Reference 3</b>
001-SS-07	Asbestos (Chrysotile Structures)	None detected	<b>Background</b> soil sample collected from Montgomery County open space	pp. 11, 13; Appendix A, p. 15; Appendix B, p. 18; Attachment, pp. 8, 22, 28

Note:

Data sheets are not available for 001-SS-06 and 001-SS-07 because no asbestos fibers were detected.

**Source Description-Waste Characteristics**  
**Source No. 2**

On October 25, 2006, EPA Region 3's Superfund Technical Assessment and Response Team (START) collected soil samples from the asbestos disposal area (Source 2). The soil samples were collected from 0 to 3 inches from the ground surface for asbestos analysis (Ref. 3, p. 15; Ref. 35). One background soil sample also was collected. Reference 22 summarizes the sampling locations in Table 2, page 15, and shows the sampling locations on Figure 3, page 14. The samples collected from Source 2 were identified as soil samples although the samples were collected from pile containing wastes. The samples were considered soil because Source 2 was an asbestos pile that was leveled and covered with clean fill (Ref. 12, pp. 3 and 6; Ref. 10, p. 2). Both the background and release soil samples were collected from soil characterized as Pennsylvania Silt Loam (Ref. 11; Ref. 22, p. 14). Samples were analyzed by California Air Resources Board (CARB) Method 435 "Determination of Asbestos Content of Serpentine Aggregate, Method 435," June 6, 1991, and EPA SOP No. SRC-Libby-03 (Revision 1) "Libby Superfund Site Standard Operating Procedure – Analysis of Asbestos Fibers in Soil by Polarized Light Microscopy," April 20, 2004 (Ref. 22, Attachment B, p. 75). The method detection limit is 0.10 percent (Ref. 31). Table 3 summarizes asbestos detections in the soil samples at concentrations greater than or equal to three times the background concentration, or above the detection limit if not detected in the background sample.

**TABLE 3**  
**SOIL SAMPLE ANALYTICAL RESULTS – NEAR ASBESTOS WASTE PILE**  
**OCTOBER 2006**

<b>Sample Identification No.</b>	<b>Hazardous Substance</b>	<b>Concentration (percent)</b>	<b>Sample Description</b>	<b>Reference 22</b>
BS-2006-SS-PARK-B0	Asbestos (Chrysotile Structures)	0.20	Soil sample collected on the asbestos disposal area (Source 2)	pp. 14 and 15; Attachment A, p. 1; Attachment B, pp. 4, 75
BS-2006-SS-PARK-H0	Asbestos (Chrysotile Structures)	0.10	Soil sample collected on the asbestos disposal area (Source 2)	pp. 14 and 15; Attachment A, p. 1; Attachment B, pp. 4, 75
BS-2006-SS-PARK-C1	Asbestos (Chrysotile Structures)	0.10	Soil sample collected on the asbestos disposal area (Source 2)	pp. 14 and 15; Attachment A, p. 1; Attachment B, pp. 4, 75
BS-2006-SS-PARK-F1	Asbestos (Chrysotile Structures)	0.10	Soil sample collected on the asbestos disposal area (Source 2)	pp. 14 and 15; Attachment A, p. 1; Attachment B, pp. 4, 75
BS-2006-SS-PARK-I1	Asbestos (Chrysotile Structures)	0.30	Soil sample collected on the asbestos disposal area (Source 2)	pp. 14 and 15; Attachment A, p. 3; Attachment B, pp. 5, 75
BS-2006-SS-PARK-G3	Asbestos (Chrysotile Structures)	0.30	Soil sample collected on the asbestos disposal area (Source 2)	pp. 14 and 15; Attachment A, p. 2; Attachment B, pp. 5, 75

**Source Description-Waste Characteristics**  
**Source No. 2**

<b>Sample Identification No.</b>	<b>Hazardous Substance</b>	<b>Concentration (percent)</b>	<b>Sample Description</b>	<b>Reference 22</b>
BS-2006-BACK	Asbestos (Chrysotile Structures)	<0.10	Soil sample collected adjacent to the Cognis parking lot. <b>Background.</b>	pp. 14 and 15; Attachment A, p. 1; Attachment B, pp. 4, 75; Reference 29

Notes:

BS      Borit Asbestos site  
PARK    Soil sample from park area  
SS      Soil sample

## **2.4.1 HAZARDOUS SUBSTANCES**

### **2.4.2.1 Hazardous Waste Quantity**

#### **2.4.2.1.1 Hazardous Constituent Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 2.

#### **2.4.2.1.2 Hazardous Waste Stream Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 2.

#### **2.4.2.1.3 Volume**

The information available is not sufficient to adequately support evaluation of the volume for Source No. 2.

#### **2.4.2.1.4 Area**

As documented in Tables 2 and 3, soil samples collected from Source 2 contain asbestos. Using the soil sampling locations listed in Table 3, the area of contamination is estimated to be 307,800 square feet or 7.07 acres. This area was determined by connecting all the contaminated soil sampling locations with a straight line and determining the area within the outlined area as shown in Reference 27. The area hazardous waste quantity (HWQ) area assigned value is 307,800 square feet ÷ 13 (pile) = 23,676.923 (Ref. 1, Table 2-5).

**Area Assigned Value: 23,676.923**

#### **2.4.2.1.5 Source Hazardous Waste Quantity Value**

The source area HWQ value for Source No. 2 is assigned a value of 23,676.923 (Ref. 1, Table 2-5).

**Source HWQ Value: 23,676.923**

## **2.2 SOURCE CHARACTERIZATION**

### **2.2.1 SOURCE IDENTIFICATION**

**Name of source:** Contaminated Soil Surrounding Asbestos Waste Pile  
**Number of source:** 3  
**Source type:** Contaminated Soil

On April 27, 2006, EPA Region 3's Superfund Technical Assessment and Response Team (START) collected soil samples around the asbestos waste pile. Samples 002-SS-01, 002-SS-02, and 002-SS-03 contained asbestos (Ref. 3, pp. 11, 13, 15, 16, and Attachment, pp. 1, 8, 21, 22, 23). The extent of asbestos soil contamination surrounding the pile has not been adequately documented.

**Location of source, with reference to a map of the facility:** See Reference 3, page 13, for the locations of the soil samples.

**Containment:**

**Release to ground water:** The ground water migration pathway was not scored.

**Release via overland migration and/or flood:** The overland migration and/or flood migration pathway was not scored.

**Gas release to air:** The air migration pathway was not scored.

**Particulate release to air:** Asbestos is considered a particulate (Ref. 2, p. A-1). Asbestos is present in surface soil (Ref. 3, pp. 11, 13, 15, 16, and Attachment, pp. 1, 8, 21, 22, 23). Using Reference 1, Table 6-9, a particulate containment factor value of 10 is assigned to Source 3. The assigned value was obtained by using "All situations except those specifically listed below," as stated in Table 6-9 of Reference 1.

## **2.4 WASTE CHARACTERISTICS**

### **2.4.1 HAZARDOUS SUBSTANCES**

On April 27, 2006, EPA Region 3's Superfund Technical Assessment and Response Team (START) collected three surface soil samples, including a duplicate soil sample for quality assurance and quality control, from the area around the asbestos waste pile (Source 1). Two background samples were also collected. Each sample was collected from a depth of 0 to 3 inches bgs (Ref. 3, pp. 11, 13, 15, and 16; Ref. 35). Background soil samples were collected from Montgomery Open Space (Ref. 3, pp. 11, 13, and 16). The background soil sample locations (001-SS-06 and 001-SS-07) are shown in photographs in Reference 3, Appendix A, pages 14 and 15. The photographs indicate the locations of the background samples are vegetated. As shown in Reference 28, the location of the background soil samples is forested (Ref. 3, Figure 3, p. 13; Ref. 28). Because the locations of the background soil samples are forested and vegetated, the soil is native (the area does not appear to have been filled or covered with soil). Additionally, there is no documentation of asbestos occurring naturally in Ambler, Pennsylvania. The background and release soil samples were collected from soil characterized as Pennsylvania Silt Loam (Ref. 11; Ref. 3, p. 13). The soil samples were analyzed using Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Materials, Draft, Revision 1 and draft counting rules (Ref. 15, p. 26; Ref. 41). As documented in Table 4, the three surface soil samples collected near the asbestos waste pile contained asbestos. The samples were collected and validated in accordance with procedures documented in Reference 15. The samples were analyzed using Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Materials, Draft, Revision 1 (Ref. 15, p. 26; Ref. 41). The method detection limit is 1.0E-6 structures per gram (Ref. 31). Table 4 summarizes asbestos detections in the soil samples at concentrations greater than or equal to three times the background concentration, or above the detection limit if not detected in the background sample.

**TABLE 4**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**NEAR ASBESTOS WASTE PILE**  
**APRIL 2006**

<b>Sample Identification No.</b>	<b>Hazardous Substance</b>	<b>Concentration (structures per gram)</b>	<b>Sample Description</b>	<b>Reference 3</b>
002-SS-01	Asbestos (Chrysotile Structures)	7.719E7	Soil sample collected west of asbestos waste pile	pp. 11, 13; Appendix A, p. 16; Appendix B, p. 19; Attachment, pp. 8, 22, 28, 42
002-SS-02	Asbestos (Chrysotile Structures)	3.712E7	Duplicate of 002-SS-01	pp. 11, 13; Appendix A, p. 15; Appendix B, p. 19; Attachment, pp. 8, 22, 28, 43
002-SS-03	Asbestos (Chrysotile Structures)	1.340E8	Soil sample collected west of asbestos waste pile	pp. 11, 13; Appendix B, p. 19; Attachment, pp. 8, 22, 28, 44

**Source Description-Waste Characteristics**  
**Source No. 3**

<b>Sample Identification No.</b>	<b>Hazardous Substance</b>	<b>Concentration (structures per gram)</b>	<b>Sample Description</b>	<b>Reference 3</b>
001-SS-06	Asbestos (Chrysotile Structures)	None detected	<b>Background</b> soil sample collected from Montgomery County open space	pp. 11, 13; Appendix A, p. 14; Appendix B, p. 18; Attachment, pp. 8, 22, 27
001-SS-07	Asbestos (Chrysotile Structures)	None detected	<b>Background</b> soil sample collected from Montgomery County open space	pp. 11, 13; Appendix A, p. 15; Appendix B, p. 19; Attachment, pp. 8, 22, 28

Note:

Data sheets are not available for 001-SS-06 and 001-SS-07 because no asbestos fibers were detected.

## **2.4.1 HAZARDOUS SUBSTANCES**

### **2.4.2.1 Hazardous Waste Quantity**

#### **2.4.2.1.1 Hazardous Constituent Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 3.

#### **2.4.2.1.2 Hazardous Waste Stream Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 3.

#### **2.4.2.1.3 Volume**

The information available is not sufficient to adequately support evaluation of the volume for Source No. 3.

#### **2.4.2.1.4 Area**

As documented in Section 2.4, soil samples collected from Source No. 3 revealed the presence of asbestos in soil; however, a limited number of soil samples were collected. An area of contaminated soil cannot be documented based on the available laboratory analytical data; therefore, the area of soil contamination associated with Source No. 3 is undetermined but greater than zero, and is assigned a HWQ factor value of  $> 0$  (Ref. 1, Table 2-5).

**Area Assigned Value:  $> 0$**

#### **2.4.2.1.5 Source Hazardous Waste Quantity Value**

The source area HWQ value for Source No. 3 is assigned a value of  $>0$  (Ref. 1, Table 2-5).

**Source HWQ Value:  $>0$**



## 2.2 SOURCE CHARACTERIZATION

### 2.2.1 SOURCE IDENTIFICATION

**Name of source:** Banks of the Water Reservoir  
**Number of source:** 4  
**Source type:** Other

Source 4 includes the banks of the reservoir where visible evidence of ACM is apparent (Ref. 3, p. 3, 5, and 8; Ref. 7, p. 1; Ref. 8, p. 1; Ref. 10, p. 1). The reservoir bank is constructed of materials mixed with ACM (Ref. 10, p. 3; Ref. 12, pp. 13 and 14; Ref. 22, pp. 5 and 8). Samples collected from the eastern bank of the reservoir contained 30 percent chrysotile asbestos and three samples of transite collected from the bank contained 20 to 25 percent of chrysotile (Ref. 32, p. 29; Ref. 33).

In 2004, an environmental consultant for the Wissahickon Valley Watershed Association conducted a Phase I environmental site assessment (ESA) of the water reservoir area. The ESA identified non-friable ACM along the banks of the water reservoir, which were constructed of asbestos shingles, millboard, and soil. ACMs were also observed within the reservoir. Cement-asbestos pipe sections and ACMs were scattered around the reservoir, along Rose Valley Creek, and along and in Wissahickon Creek (Ref. 32, p. 28; Ref. 33). ACM observed near the reservoir consisted of transite. These materials are generally nonfriable; however, the transite was beginning to degrade and become friable at the weathered ends of the material (Ref. 32, p. 29; Ref. 33).

The Phase I ESA included the collection of waste samples from the banks of the reservoir. Gray-white soil or soil-like material in 5- to 10-square-foot patches was observed on the eastern side of the reservoir. One sample of this material was collected and found to contain 30 percent chrysotile asbestos. Three samples of this transite material were collected and contained 20 to 25 percent chrysotile asbestos (Ref. 32, pp. 28 and 29; Ref. 33).

**Location of source, with reference to a map of the facility:** See Reference 3, page 13, for the location of the banks of the reservoir (Source 4) and Reference 32, page 43, for the layout of the reservoir (Ref. 33).

**Containment:**

**Release to ground water:** The ground water migration pathway was not scored.

**Release via overland migration and/or flood:** The overland migration and/or flood migration pathway was not scored.

**Gas release to air:** The air migration pathway was not scored.

**Particulate release to air:** Asbestos is considered a particulate (Ref. 2, p. A-1). Asbestos is present in the banks of the reservoir. ACM has been observed on the surface of the bank (Ref. 32, pp. 28 and 29; Ref. 33). Using Reference 1, Table 6-9, a particulate containment factor value of 10 is assigned to Source 4. The assigned value was obtained by using "All situations except those specifically listed below," as stated in Table 6-9 of Reference 1.

## **2.4 WASTE CHARACTERISTICS**

### **2.4.1 HAZARDOUS SUBSTANCES**

In 2004, an environmental consultant for the Wissahickon Valley Watershed Association conducted a Phase I ESA of the water reservoir area. The ESA included the collection of waste samples (PAB-6, PAB-1, PAB-2, and PAB-3) from the banks of the reservoir. Gray-white soil or soil-like material in 5- to 10-square-foot patches was observed on the east side of the reservoir. One sample (PAB-6) of this waste material was collected and found to contain 30 percent chrysotile asbestos. Three samples of waste material (PAB-1, PAB-2, and PAB-3) contained 20 to 25 percent chrysotile asbestos (Ref. 32, pp. 28, 29, 191, 192, and 194; Ref. 33). The sample locations are shown on page 43 of Reference 32 (Ref. 33). The samples were analyzed using polarized light microscopy (PLM) (Ref. 32, pp. 29, 190; Ref. 33).

**TABLE 5**  
**SOURCE 4 WASTE SAMPLES**

<b>Sample Identification Number</b>	<b>Hazardous Substance</b>	<b>Percent Asbestos</b>	<b>Method Detection Limit (%)</b>	<b>Sample Description</b>	<b>Reference</b>
PAB-1	Asbestos	25	1	Cement asbestos waste	32, pp. 29, 191, 194; 33; 37, p. 2
PAB-2	Asbestos	20	1	Cement asbestos waste	32, pp. 29, 191, 194; 33; 37, p. 2
PAB-3	Asbestos	20	1	Cement asbestos waste	32, pp. 29, 191, 194; 33
PAB-6	Asbestos	30	1	Gray-white soil	32, pp. 29, 192, 194; 33; 37, p. 2

**2.4.2.1 HAZARDOUS WASTE QUANTITY**

**2.4.2.1.1 Hazardous Constituent Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous constituent quantity for Source No. 4.

**2.4.2.1.2 Hazardous Waste Stream Quantity**

The information available is not sufficient to adequately support evaluation of the hazardous waste stream quantity for Source No. 4.

**2.4.2.1.3 Volume**

The information available is not sufficient to adequately support evaluation of the volume for Source No. 4.

**2.4.2.1.4 Area**

Waste samples collected from the banks of the reservoir (Source No. 4) revealed the presence of asbestos (Ref. 32, p. 28 and 29; Ref. 33); however, a limited number of waste samples were collected. The area of the banks of the reservoir cannot be determined. Additionally, documentation regarding the extent of ACM in the banks of the reservoir is not available. An area for Source 4 cannot be documented; therefore, the area of Source No. 4 is undetermined but greater than zero, and is assigned a HWQ factor value of > 0 (Ref. 1, Table 2-5).

**Area Assigned Value: > 0**

**2.4.2.1.5 Source Hazardous Waste Quantity Value**

The source area HWQ value for Source No. 4 is assigned a value of >0 (Ref. 1, Table 2-5).

**Source HWQ Value: >0**

### Possible Sources Not Scored

Observations of Wissahickon and Rose Valley Creeks indicate that the banks of the creek are filled with potentially asbestos containing material (PACM) (Ref. 3, Appendix A, p. 12, photograph 23 and photograph 30, p. 15 and Appendix B, pp. 13 and 19; Ref. 7, p. 1; Ref. 8, p. 1; Ref. 10, p. 1).

A water reservoir is located directly north and northwest of the asbestos waste pile (Ref. 3, pp. 4 and 13). The water reservoir is a source of asbestos; however, the source was not scored because the reservoir is filled with water. A source that contains only particulate hazardous substances (asbestos) and is totally covered by liquids gets a containment factor value of 0 for the air migration pathway (Ref. 1, Table 6-9). Therefore, for purposes of applying the HRS, the asbestos in the water of the reservoir is not available to the air migration pathway.

Visible evidence of ACM is apparent along the banks of the reservoir, indicating that the reservoir banks were constructed of ACM (Ref. 3, p. 3; Ref. 7, p. 1; Ref. 8, p. 1; Ref. 10, p. 1). On April 27, 2006, EPA Region 3's Superfund Technical Assessment and Response Team (START) collected surface water samples from the reservoir. Surface water sample 003-SW-05 contained asbestos at 110 million fibers per liter with a method detection limit of 10 million fibers per liter (Ref. 3, pp. 12, 13, 16, and 18; Appendix A, pp. 9 and 10; Appendix B, pp. 12 and 13; and Attachment, pp. 9, 12, and 52). The Wissahickon Valley Watershed Association has recently purchased the existing water reservoir and adjacent land for a bird sanctuary (Ref. 3, p. 5; Ref. 17).

## **6.0 AIR MIGRATION PATHWAY**

The air migration pathway is based on three factor categories: likelihood of release, waste characteristics and targets. Each of these factors is described in the following sections (Ref. 1, Section 6.0). Targets within the air migration pathway include populations within a 4-mile radius from sources. If a sample location documents Level I or II concentrations, the entire human population within the target distance category shown in Reference 1, Table 6-15, is included as being subject to Level I or II concentrations. If a sampling location meets the criteria for an observed release beyond the 4-mile radius, the sample location defines the outer boundary of the target distance limit (Ref. 1, Section 6.3). At this site, targets were evaluated in the >0 to 0.25 mile and >0.25 to 0.50 mile distance categories from Source 2 (see Section 6.3 of this HRS documentation record).

### **6.1 Likelihood of Release**

As documented in the section below, an observed release to the air migration pathway can be documented.

#### **6.1.1 OBSERVED RELEASE**

An observed release to the air migration pathway can be documented by chemical analysis.

##### **Chemical Analysis**

During the investigations of the Ambler Asbestos NPL site, an environmental consultant to EPA conducted air sampling in 1988 in the area of Sources 1, 2, 3, and 4 of the Borit site. The air sampling identified Sources 1 and 2 as potential sources of asbestos releases to air (Ref. 12, pp. 15, 18, 19). The most recent air sampling conducted in the area of Sources 1, 2, 3, and 4 is used to document an observed release to air by chemical analysis. EPA's environmental consultant collected air samples on August 13 and 14, 2007, and September 18, 2007, from 14 sampling locations in the vicinity of Sources 1, 2, 3, and 4 (Ref. 7, pp. 1, 8; Ref. 8, pp. 1, 8). Air sampling for asbestos was conducted using the EPA Environmental Response Team (ERT) Standard Operation Procedures (SOP) #2015, Asbestos Sampling. Samples were analyzed using TEM following the International Standards Organization (ISO) Method 10312, Ambient Air Determination of Asbestos Fibers: Direct Transfer Transmission Electron Microscopy Method (Ref. 7, p. 2; Ref. 8, p. 2). The Quality Assurance Project Plan for the air sampling is provided in Reference 36. Soil samples were analyzed for moisture content following the method in Reference 37.

Both background and release air samples were collected using a 0.45-micron, 25-millimeter mixed cellulose ester filter connected to a sampling pump. All air samples were collected approximately 4 to 5 feet above the ground surface (Ref. 7, p. 2; Ref. 8, p. 2). The air sampling location map is shown in Reference 7, p. 8 and Reference 8, p. 9. The background and release air samples were collected in accordance with EPA ERT SOP as documented in Reference 21.

No logbook notes were recorded during the August and September 2007 air sampling. Air sampling worksheets were used during the sampling event to document sampling activities (Ref. 25). The worksheets are in attachments to References 7 and 8.

The air samples collected during these sampling events are used to document background and release concentrations in the sections below.

Activity-based air samples were collected during the September 18, 2007 sampling event. A low flow sampling pump was attached to the two participants and an asbestos sample was collected in the breathing zone of each participant for a total of two samples. While the sample was being collected, the participants operated a brush hog and cleared brush growing in Whitpain Wissahickon Park, the location of Source 2. The participants operated the brush hog for sixty and sixty-eight minutes. The air samples collected from the stationary air stations were collected over a period of 8 hours. The brush hog activity may have contributed to the amount of asbestos collected at the stationary air sampling locations (Ref. 8, p. 2). Activity-based air sampling is conducted to determine if an individual can be exposed to levels of airborne asbestos from sources on the site at concentrations that might pose an unacceptable or significant health risk when there is direct disturbance of the on-site soils (Ref. 39, p. 4).

### **Background Concentrations:**

Table 6 summarizes the background sampling location concentrations from the August 13 and 14, 2007, and September 18, 2007, air sampling events. The background sampling locations were selected based on the direction of the wind. The background air sampling locations were upwind of Sources 1, 2, 3, and 4 as documented in Table 6. The locations of the background and release samples are provided in Reference 16. The concentrations of asbestos detected in the background samples and the detection limits are presented in Table 7.

### **Release Concentrations:**

Table 8 summarizes the release sampling locations from August 13 and 14, 2007, and September 18, 2007, air sampling events. The release sampling locations were selected based on the direction of the wind. The release locations were downwind of the sources, as documented in Table 8. The concentrations of asbestos detected in the release samples and the detection limits are presented in Table 9.

**TABLE 6**  
**BACKGROUND SAMPLING LOCATIONS**

<b>Sample Location</b>	<b>Sample ID</b>	<b>Date</b>	<b>Start Time</b>	<b>End Time</b>	<b>Height<sup>1</sup> (ft)</b>	<b>Wind Direction (From)<sup>2</sup></b>	<b>Location Relative to Sources</b>	<b>References</b>
<b>Background Samples for 8/13/2007</b>								
Loc # 9 Onsite H	43552	8/13/2007	09:04	1724	4 to 5	NW	NW, on Source 2	7, pp. 5, 8a, 118, 126, 129; 16, p. 1
Point 5 H	43716	8/13/2007	09:07	1727	4 to 5	NW	N of Source 2	7, pp. 5, 8a, 122, 126, 129; 16, p. 1
Point 5 H Collocated	43717	8/13/2007	09:07	1755	4 to 5	NW	N of Source 2	7, pp. 5, 8a, 122, 126, 129; 16, p. 1
<b>Background Samples for 8/14/2007</b>								
Loc # 9 Onsite H	43558	8/14/2007	07:57	1617	4 to 5	NW	NW, on Source 2	7, pp. 5, 8a, 120 127, 130; 16, p. 2
Point 5 H	43723	8/14/2007	08:07	1640	4 to 5	NW	N of Source 2	7, pp. 5, 8a, 124, 127, 130; 16, p. 2
Point 5 H Collocated	43724	8/14/2007	08:07	1640	4 to 5	NW	N of Source 2	7, pp. 5, 8a, 124, 127, 130; 16, p. 2
<b>Background Samples for 9/18/2007</b>								
Loc # 9 Onsite	43952	9/18/2007	09:14	1720	4 to 5	NE	S Source 2	8, pp. 5, 9, 139, 146, 156; 16, p. 3
Point 5	43954	9/18/2007	09:05	1706	4 to 5	NE	N of Source 2	8, pp. 5, 9, 139, 147, 156; 16, p. 3
Point 5 Collocated	43955	9/18/2007	09:05	1707	4 to 5	NE	N of Source 2	8, pp. 5, 9, 139, 147, 156; 16, p. 3

Notes:

<sup>1</sup> The height of the air sample is measured above the ground surface (Ref. 7, p. 2; Ref. 8, p. 2).<sup>2</sup> The wind direction cited in the table is from the prevalent wind direction.

# Number  
ft Feet  
ID Identification  
LOC Location  
NE Northeast  
NW Northwest  
S South  
N North

**TABLE 7**  
**BACKGROUND CONCENTRATIONS**

<b>Sample Identification</b>	<b>Sample ID</b>	<b>Hazardous Substance</b>	<b>Concentration (Fibers/cc)</b>	<b>Method Detection Limit (Fibers/cc)</b>	<b>References</b>
<b>Background Samples for 8/13/2007</b>					
Loc # 9 Onsite H	43552	asbestos	<0.0005	0.0005	7, pp. 5, 18, 126; 16, p. 1
Point 5 H	43716	asbestos	<0.0005	0.0005	7, pp. 5, 27, 126; 16, p. 1
Point 5 H Collocated	43717	asbestos	<0.0005	0.0005	7, pp. 5, 28, 126; 16, p. 1
<b>Background Samples for 8/14/2007</b>					
Loc # 9 Onsite H	43558	asbestos	<0.0005	0.0005	7, pp. 5, 67, 127; 16, p. 2
Point 5 H	43723	asbestos	<0.0005	0.0005	7, pp. 5, 78, 127; 16, p. 2
Point 5 H Collocated	43724	asbestos	<0.0005	0.0005	7, pp. 5, 79, 127; 16, p. 2
<b>Background Samples for 9/18/2007</b>					
Loc # 9 Onsite	43952	asbestos	<0.0005	0.0005	8, pp. 5, 32, 139; 16, p. 3
Point 5	43954	asbestos	<0.0005	0.0005	8, pp. 5, 34, 139; 16, p. 3
Point 5 Collocated	43955	asbestos	<0.0005	0.0005	8, pp. 5, 35, 139; 16, p. 3

## Notes:

< Less than, indicates that no asbestos fibers were detected and reports the detection limit  
 # Number  
 cc Cubic centimeters  
 ID Identification  
 LOC Location



**TABLE 8**  
**RELEASE SAMPLING LOCATIONS**

<b>Sample Location</b>	<b>Sample ID</b>	<b>Date</b>	<b>Start Time</b>	<b>End Time</b>	<b>Height<sup>1</sup> (ft)</b>	<b>Wind Direction (From)<sup>2</sup></b>	<b>Location Relative to Sources</b>	<b>References</b>
<b>Release Samples for 8/13/2007</b>								
Loc # 5 Onsite H	43556	8/13/2007	09:56	1730	4 to 5	NW	SE of Source 2	7, pp. 5, 8, 119, 126, 129; 16, p. 1
Point 3 H	43714	8/13/2007	08:39	1659	4 to 5	NW	On Source 2	7, pp. 5, 8, 122, 126, 129; 16, p. 1
<b>Release Samples for 8/14/2007</b>								
Loc #2 Onsite H	43560	8/14/2007	08:06	1626	4 to 5	NW	On Source 2	7, pp. 5, 8, 120, 127, 130; 16, p. 2
Loc #10 Onsite H	43561	8/14/2007	08:13	1633	4 to 5	NW	SE of Source 2	7, pp. 5, 8, 120, 127, 130; 16, p. 2
Loc #6 Onsite H <sup>3</sup>	43564	8/14/2007	08:40	1702	4 to 5	NW	SE of Source 2	7, pp. 5, 8, 121, 127, 130; 16, p. 2
Loc #7 Onsite H <sup>3</sup>	43565	8/14/2007	08:44	1706	4 to 5	NW	S of Source 2	7, pp. 5, 8, 121, 127, 130; 16, p. 2
Point 2 H	43721	8/14/2007	07:48	1608	4 to 5	NW	S of Source 2	7, pp. 5, 8, 124, 127, 130; 16, p. 2
Point 4 H	43722	8/14/2007	07:56	1631	4 to 5	NW	E of Source 2	7, pp. 5, 8, 124, 127, 130; 16, p. 2
<b>Release Samples for 9/18/2007</b>								
Point 3	43732	9/18/2007	09:30	1735	4 to 5	NE	SE of Source 2	8, pp. 5, 9, 139, 145, 156; 16, p. 3
Onsite #10	43949	9/18/2007	08:56	1729	4 to 5	NE	On Source 2	8, pp. 5, 9, 139, 146, 156; 16, p. 3
Onsite #2	43950	9/18/2007	09:03	1707	4 to 5	NE	On Source 2	8, pp. 5, 9, 139, 146, 156; 16, p. 3

## Air-Observed Release

Sample Location	Sample ID	Date	Start Time	End Time	Height <sup>1</sup>	Wind Direction (From) <sup>2</sup>	Location Relative to Sources	Reference
<b>Release Samples for 9/18/2007</b>								
Onsite #5	43954	9/18/2007	10:00	1753	4 to 5	NE	SE of Source 2	8, pp. 5, 9, 139, 147, 156; 16, p. 3
Onsite #6 <sup>3</sup>	43955	9/18/2007	10:09	1815	4 to 5	NE	SE of Source 2	8, pp. 5, 9, 139, 147, 156; 16, p. 3

Notes:

<sup>1</sup> The height of the air sample is measured from the ground surface (Ref. 7, p. 2; Ref. 8, p. 2).

<sup>2</sup> The wind direction cited is from the prevalent wind direction

<sup>3</sup> Sampling locations, on-site #6 and #7, appear to be located on the asbestos waste pile in Reference 16. However, the two locations are not actually located on the asbestos waste pile (Ref. 26). The symbol used to denote the locations in Reference 16 is so large that the locations appear to be on the pile; however they are not.

#        Number  
E        East  
Ft       Feet  
ID       Identification  
LOC      Location  
N        North  
NE       Northeast  
NW       Northwest  
S        South  
SE       Southeast

**TABLE 9**  
**RELEASE CONCENTRATIONS**

<b>Sample Identification</b>	<b>Sample ID</b>	<b>Hazardous Substance</b>	<b>Concentration (Fibers/cc)</b>	<b>Method Detection Limit (Fibers/cc)</b>	<b>References</b>
<b>Release Samples for 8/13/2007</b>					
Loc # 5 Onsite H	43556	asbestos	0.0015	0.0005	7, pp. 5, 8, 11, 22, 119, 126; 16, p. 1
Point 3 H	43714	asbestos	0.0005	0.0005	7, pp. 5, 8, 11, 25, 122, 126; 16, p. 1
<b>Release Samples for 8/14/2007</b>					
Loc #2 Onsite H	43560	asbestos	0.0005	0.0005	7, pp. 5, 8, 62, 69, 120, 127; 16, p. 2
Loc #10 Onsite H	43561	asbestos	0.0005	0.0005	7, pp. 5, 8, 62, 70, 120, 127; 16, p. 2
Loc #6 Onsite H	43564	asbestos	0.0005	0.0005	7, pp. 5, 8, 63, 73, 121, 127; 16, p. 2
Loc #7 Onsite H	43565	asbestos	0.0014	0.0005	7, pp. 5, 8, 63 74, 121, 127; 16, p. 2
Point 2 H	43721	asbestos	0.0005	0.0005	7, pp. 5, 8, 63, 69, 124, 127; 16, p. 2
Point 4 H	43722	asbestos	0.0005	0.0005	7, pp. 5, 8, 63, 68, 77, 124, 127; 16, p. 2
Point 1 H	43725	asbestos	0.0005	0.0005	7, pp. 5, 8, 64, 80, 124, 127; 16, p. 2
<b>Release Samples for 9/18/2007</b>					
Point 3	43732	asbestos	0.0005	0.0005	8, pp. 5, 9, 24, 139, 145, 156; 16, p. 3
Onsite #10	43949	asbestos	0.0029	0.0005	8, pp. 5, 9, 29, 139, 146, 156; 16, p. 3
Onsite #2	43950	asbestos	0.0005	0.0005	8, pp. 5, 9, 30, 139, 146, 156; 16, p. 3
Onsite #5	43954	asbestos	0.0005	0.0005	8, pp. 5, 9, 34, 139, 147, 156; 16, p. 3
Onsite #6	43955	asbestos	0.0005	0.0005	8, pp. 5, 9, 35, 139, 147, 156; 16, p. 3

## Notes:

< Less than, indicates that no asbestos fibers were detected and reports the detection limit  
# Number  
cc Cubic centimeters  
ID Identification  
LOC Location

**Attribution:**

The Borit Asbestos Tailings Pile was used to dispose of ACM from the Keasbey & Mattison Company asbestos manufacturing plant (Ref. 5, p. 1-1; Ref. 9, p. 1-1; Ref. 10, p. 3; Ref. 12, pp. 3 and 6).

References 7 and 8 contain the documentation related to the release of asbestos to the air migration pathway. While the air samples were collected, a meteorological station was constructed to collect data related to wind direction (Ref. 7, p. 1; Ref. 8, p. 1). Windroses were plotted based on the data collected. The data and windroses are provided in References 7 and 8, in Appendix D. These windroses were used to identify background and release sampling locations presented in Tables 6 and 8 of this HRS documentation record. Background samples were collected upwind of the sources based on the predominant wind direction identified by the windrose. A review of the windroses shows that the wind changes direction over time, but does come from a predominant direction (Ref. 7, pp. 129 and 130; Ref. 8, pp. 156 and 157). As documented in Tables 7 and 9, the background samples did not contain asbestos while the release samples did contain asbestos.

Sources 1, 2, 3, and 4 are not contained. A cover is not present on top of these sources; therefore, ACM is able to be released to the air migration pathway. Bare areas and wastes have been observed on the surface of the waste pile (Source 1) (Ref. 3, Appendix A, p. 16, photographs 31 and 32 and Appendix B, pp. 19 and 20; Ref. 5, p. 5-2; Ref. 9, p. 2-4; Ref. 10, p. 2). A soil sample collected from the surface of Source 2 (asbestos disposal area) contained asbestos (Ref. 3, pp. 11, 13, and Attachment pp. 8, 22, and 37). Asbestos was detected in surface soil samples collected from Source 3 (contaminated soil surrounding the asbestos waste pile [Source 1]) (Ref. 3, pp. 11, 13, 15, 16, and Attachment, pp. 1, 7, 21, 22, 23). Asbestos is present in the banks of the reservoir, Source 4 (Ref. 32, pp. 28 and 29; Ref. 33).

Another source of asbestos in the area may be the ACM that has been observed in the banks of Wissahickon and Rose Creeks. However, the material has not been sampled to document the presence of asbestos (Ref. 3, Appendix A, p. 12, photograph 23 and photograph 30, p. 15 and Appendix B, pp. 13 and 19; Ref. 7, p. 1; Ref. 8, p. 1; Ref. 10, p. 1).

The Ambler Asbestos Piles Site is located 528 feet south of Source 1. The site was used for the disposal of the same asbestos wastes that were disposed of in Sources 1, 2, 3, and 4 (Ref. 13, pp. 1 and 3; Ref. 12, pp. 3, 6, 8, 12, 13, and 14). The Ambler Asbestos Piles Site was listed on the NPL on June 10, 1986, and was removed from the list on December 27, 1996 (Ref. 13, p. 1). The Ambler Asbestos Piles Site is composed of three piles of asbestos containing wastes and a series of waste water settling and filter bed lagoons. These sources of asbestos have been covered. The cover is maintained. Therefore, these sources of asbestos contamination are contained and the asbestos contained within the sources does not have the potential to release to the air migration pathway (Ref. 23, p. 6).

Other than the sources described in the paragraphs above, no other sources of asbestos were identified within a 1.0-mile radius of Sources 1, 2, 3, and 4 (Ref. 24, pp. 34, 35, 62, and 63).

## 6.2 WASTE CHARACTERISTICS

### 6.2.1 TOXICITY/MOBILITY

Table 10 summarizes the toxicity factor value, particulate mobility factor value, and the combined toxicity/mobility factor value for asbestos. Asbestos meets the criteria for an observed release to the atmosphere. Therefore, a mobility factor value of 0.02 is assigned to asbestos (Ref. 1, Section 6.2.1.2).

**TABLE 10**  
**TOXICITY/MOBILITY FACTOR VALUES**

<b>Hazardous Substance</b>	<b>Toxicity Factor Value</b>	<b>Mobility Factor Value</b>	<b>Toxicity/Mobility Factor Value (Table 6-13)</b>	<b>Reference</b>
Asbestos	10,000	0.02*	200	2, p. A-1; 1, Section 6.2.1

Note:

\* Asbestos meets the criteria for an observed release to the atmosphere; therefore, a mobility factor value of 0.02 is assigned (Ref. 1, Section 6.2.1.2)

**Toxicity/Mobility Factor Value: 200**

### 6.2.2 HAZARDOUS WASTE QUANTITY

The hazardous waste quantity value is summarized in Table 11 and documented in Section 2.4.2.

**TABLE 11**  
**HAZARDOUS WASTE QUANTITY VALUES**  
**SOURCES 1, 2, 3, AND 4**

Source No.	Source Name	Source HWQ Value	Are Source Hazardous Constituent Quantity Data Complete? (Yes/No)
1	Asbestos Waste Pile	59,800	No
2	Asbestos Disposal Area	23,676.923	No
3	Contaminated Soil Surrounding Asbestos Waste Pile	>0	No
4	Banks of the Reservoir	>0	No
Total HWQ Values		83,476.923	

Notes:

HWQ Hazardous Waste Quantity

From Reference 1, Table 2-6, the pathway HWQ factor value of 10,000 is obtained.

**Source HWQ Value: 10,000**

### 6.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

The waste characteristics factor category value is obtained by multiplying the toxicity/mobility factor value (200) by the HWQ factor value (10,000), yielding a product of  $2 \times 10^6$  and obtaining a waste characteristics factor category value from Reference 1, Table 2-7.

$$200 \text{ (toxicity/mobility factor value)} \times 10,000 \text{ (HWQ value)} = 2 \times 10^6$$

**HWQ Factor Value: 10,000**  
**Waste Characteristics Factor Category Value: 32**

### 6.3 TARGETS

The Level I and II targets are summarized in the sections below.

#### Level I Distance Categories

Level I sampling locations are documented in Reference 16 and Table 8 of this HRS documentation record. Sampling locations, on-site #6 and #7, appear to be located on the asbestos waste pile in the coded aerial photos in Reference 16. However, the two locations are not actually located on the asbestos waste pile (Ref. 26). The symbol used to denote the locations in Reference 16 is so large that the locations appear to be on the pile; however they are not. A summary of the Level I sampling locations are as follows:

**Sample Identification:** Loc #5 Onsite H  
**Location:** Southeast of Source 2  
**Distance Category:** Greater than 0- to 0.25-mile of Source 2  
**Reference:** 7, pp. 5 and 8; 16, p. 1; Table 8 of this documentation record

**Sample Identification:** Point 1 H  
**Location:** Southwest of Source 2  
**Distance Category:** Greater than 0- to 0.25-mile of Source 2  
**Reference:** 7, pp. 5 and 8; 16, p. 2; Table 8 of this documentation record

**Sample Identification:** Point 4 H  
**Location:** Southeast of Source 2  
**Distance Category:** Greater than 0- to 0.25-mile of Source 2  
**Reference:** 7, pp. 5 and 8; 16, p. 2; Table 8 of this documentation record

**Sample Identification:** Loc #6 Onsite H  
**Location:** Southeast of Source 2  
**Distance Category:** Greater than 0.25- to 0.50-mile Source 2  
**Reference:** 7, pp. 5 and 8; 16, p. 2; Table 8 of this documentation record

**Sample Identification:** Loc #7 Onsite H  
**Location:** South of Source 2  
**Distance Category:** Greater than 0- to 0.25-mile of Source 2  
**Reference:** 7, pp. 5 and 8; 16, p. 2; Table 8 of this documentation record

**Sample Identification:** Point 2 H  
**Location:** Southeast of Source 2  
**Distance Category:** Greater than 0.25- to 0.50-mile of Source 2  
**Reference:** 7, pp. 5 and 8; 16, p. 1; Table 8 of this documentation record

**Sample Identification:** Point 3  
**Location:** Southeast of Source 2  
**Distance Category:** Greater than 0.25- to 0.50-mile Source 2  
**Reference:** 8, pp. 5 and 9; 16, p. 3; Table 8 of this documentation record

Level I Distance Categories (Continued)

**Sample Identification:** Onsite #5  
**Location:** Southeast of Source 2  
**Distance Category:** Greater than 0- to 0.25-mile Source 2  
**Reference:** 8, pp. 5 and 9; 16, p. 3; Table 8 of this documentation record

**Sample Identification:** Onsite #6  
**Location:** Southeast of Source 2  
**Distance Category:** Greater than 0- to 0.25-mile Source 2  
**Reference:** 8, pp. 5 and 9; 16, p. 3; Table 8 of this documentation record

**Distance category subject to Level I concentrations:** On-source; > 0- to 0.25-mile; and > 0.25- to 0.50-mile of Source 2

Level II Distance Categories

No Level II concentrations have been identified.

**6.3.1 NEAREST INDIVIDUAL FACTOR**

The nearest individual factor value is determined in the section below.

Nearest Individual – Level I Concentrations

The sampling locations documented in Section 6.3 are located within the on-source; > 0- to 0.25-mile; and > 0.25- to 0.50-mile distance categories of Source 2 (Ref. 16). As documented in Section 6.3.2.2, targets within these distance categories are subject to Level I concentrations (Ref. 1, Section 6.3.1). However, no targets were evaluated in the on source category because they are not present.

**Residence, building, or area subject to Level I concentrations:** Residents and workers are located within the > 0- to 0.25-mile; and the > 0.25- to 0.50-mile distance categories of Source 2.  
**Source:** Source 2 (asbestos disposal area)  
**Distance from the nearest source in miles:** > 0 to 0.25 mile and > 0.25 to 0.50 mile  
**Reference:** 16 and 34

Because residents and workers are subject to Level I concentrations, a nearest individual factor value of 50 is assigned (Ref. 1, Table 6-16).

**Nearest Individual Factor Value: 50**

**6.3.2 POPULATION**

**6.3.2.2 LEVEL I CONCENTRATIONS**

The samples documenting an observed release of asbestos to air, the concentrations of asbestos detected in the samples, and the benchmark (cancer risk screening concentration) for asbestos are summarized in the Table 10.



**TABLE 10**  
**ASBESTOS RELEASE CONCENTRATIONS AND BENCHMARKS**

Sample Identification	Sample ID	Hazardous Substance	Concentration (Fibers/cc)	Benchmark (Fibers/cc)	References
<b>Release Samples for 8/13/2007</b>					
Loc # 5 Onsite H	43556	asbestos	0.0015	4.5E-6	2, p. A-2; 7, pp. 5, 8, 11, 22, 119, 126; 16, p. 1
Point 3 H	43714	asbestos	0.0005	4.5E-6	2, p. A-2; 7, pp. 5, 8, 11, 25, 122, 126; 16, p. 1
<b>Release Samples for 8/14/2007</b>					
Loc #2 Onsite H	43560	asbestos	0.0005	4.5E-6	2, p. A-2; 7, pp. 5, 8, 62, 69, 124, 127; 16, p. 2
Loc #10 Onsite H	43561	asbestos	0.0005	4.5E-6	2, p. A-2; 7, pp. 5, 8, 62, 70, 120, 127; 16, p. 2
Loc #6 Onsite H	43564	asbestos	0.0005	4.5E-6	2, p. A-2; 7, pp. 5, 8, 63, 73, 121, 127; 16, p. 2
Loc #7 Onsite H	43565	asbestos	0.0014	4.5E-6	2, p. A-2; 7, pp. 5, 8, 63 74, 121, 127; 16, p. 2
Point 2 H	43721	asbestos	0.0005	4.5E-6	2, p. A-2; 7, pp. 5, 8, 63, 69, 124, 127; 16, p. 2
Point 4 H	43722	asbestos	0.0005	4.5E-6	2, p. A-2; 7, pp. 5, 8, 63, 68, 77, 124, 127; 16, p. 2
Point 1 H	43725	asbestos	0.0005	4.5E-6	2, p. A-2; 7, pp. 5, 8, 64, 80, 124, 127; 16, p. 2
<b>Release Samples for 9/18/2007</b>					
Point 3	43732	asbestos	0.0005	4.5E-6	2, p. A-2; 8, pp. 5, 9, 24, 139, 145, 156; 16, p. 3
Onsite #10	43949	asbestos	0.0029	4.5E-6	2, p. A-2; 8, pp. 5, 9, 29, 139, 146, 156; 16, p. 3
Onsite #2	43950	asbestos	0.0005	4.5E-6	2, p. A-2; 8, pp. 5, 9, 30, 139, 146, 156; 16, p. 3
Onsite #5	43954	asbestos	0.0005	4.5E-6	2, p. A-2; 8, pp. 5, 9, 34, 139, 147, 156; 16, p. 3
Onsite #6	43955	asbestos	0.0005	4.5E-6	2, p. A-2; 8, pp. 5, 9, 35, 139, 147, 156; 16, p. 3

## Notes:

cc       Cubic centimeters  
ID       Identification

As shown on Reference 34, the number of homes within a > 0- to 0.25-mile distance category of Source 2 is 245. To determine the population within a > 0- to 0.25-mile distance category of Source 2, the number of homes (245) within the distance category is multiplied by the average number of individuals per home for Montgomery County, Pennsylvania (2.54), yielding a product of 622.30 persons (245 homes × 2.54 persons per home = 622.30 persons) (Ref. 14; Ref. 34). As shown on Reference 34, the number of homes within a > 0.25- to 0.50-mile distance category of Source 2 is 479. To determine the population within a > 0.25- to 0.50-mile radius of Source 2, the number of homes (479) within the distance category is multiplied by the average number of individuals per home for Montgomery County, Pennsylvania (2.54), yielding a product of

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1,216.66 persons (479 homes  $\times$  2.54 persons per home = 1,216.66 persons) (Ref. 14; Ref. 16).  
The Level I factor value is the population exposed to Level I concentrations or 1,838.96 (622.30 + 1,216.66) (Ref. 1, Section 6.3.2.3). The population is summarized in Table 11.

**TABLE 11**  
**POPULATION – LEVEL I CONCENTRATION**

<b>Distance Category</b>	<b>Population</b>	<b>References</b>
On-source	0	14; 34
> 0 to 0.25 mile	622.30	14; 34
> 0.25 to 0.50 mile	1,216.66	14; 34

**Sum of Population Exposed to Level I Concentrations:** 1,838.96  
**Sum of Population Exposed to Level I Concentrations  $\times$  10 :** 18,389.60  
**Level I Concentration Factor Value:** 18,389.60

### 6.3.2.3 LEVEL II CONCENTRATIONS

No Level II concentrations have been identified

**Level II Concentration Factor Value:** 0

**6.3.2.4 POTENTIAL CONTAMINATION**

The population subject to potential contamination within the 4-mile target distance limit is not scored because the population subject to Level I concentrations is adequate to maximize the air migration pathway score. The inclusion of the potential contamination factor value will not affect the air migration pathway score.

**Distance-weighted Population Subject to Potential Contamination:** Not Scored  
**Potential Contamination Factor Value:** Not Scored

**6.3.3 RESOURCES**

No commercial agriculture, commercial silviculture, or major or designated recreation areas have been identified within 0.5 mile of the sources (Ref. 1, Section 6.3.3).

**Resources Factor Value:** 0

**6.3.4 SENSITIVE ENVIRONMENTS**

No sensitive environments as defined in Reference 1, Section 6.3.4, have been identified within the distance categories subject to Level I concentrations. The sensitive environments subject to potential contamination are not evaluated because the value would not contribute significantly to the overall site score.