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MEMORANDUM

TO: Seekonk Mill Fire Site File

cc: Elise Jakabházy, U.S. Environmental Protection Agency, On-Scene Coordinator

FROM: *for* Christine Scesny, Weston Solutions, Inc., Superfund Technical Assessment and Response Team III

DATE: 25 May 2012

SUBJECT: Emergency Response Activities Conducted at the Seekonk Mill Fire Site, Seekonk, Bristol County, Massachusetts. TDD No. 01-12-05-0002, Task No. 0795, DC No. R-7095.

Introduction

On 1 May 2012, at approximately 0900 hours, Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team III (START) on-call telephone duty responder Bonnie Mace was contacted by U.S. Environmental Protection Agency (EPA) On-Scene Coordinator (OSC) Mike Barry and informed of an emergency response at the Seekonk Mill Fire site (the site) located at 36 Maple Street (St.), Seekonk, Bristol County, Massachusetts (MA) (see Attachment A, Figure 1) [1]. START mobilized four responders to the site to conduct air monitoring and other response activities as requested by EPA OSC Elise Jakabházy. START member Noah Kutsch mobilized to the site directly from the Walton and Lonsbury Removal Action and was shortly joined by START members Christine Dupree, Mark Hall, Gerald Hornok, and Christine Scesny.

Site Description and Background

The site is located in a mixed residential and industrial use area, and is bordered to the north by the Ten Mile River; to the east by residences and the Ten Mile River Reservoir; to the south by residences and the Memorial Baptist Church; and to the west by forested area (see Attachment A, Figure 2) [2]. The site consists of a 105,000-square-foot abandoned industrial building that is currently owned by ROC Realty Corp. The building was condemned in January 2009, after a section of the roof had collapsed. From an unknown time until 1945, the building was utilized in the manufacture of tennis rackets. From 1945 to 1980, Attleboro Dyeing and Finishing Company operated in the building. Other former occupants of the building prior to 2009 included the following: GHP Associates, National Environmental Systems, Martell's Metal Works,

Mike's Machine, Grinnell Cabinet Makers, Walsh Electric, and Hillman Enterprises. On 1 May 2012, fire response personnel were called to the scene of a large fire located in the northern area of the building. EPA requested START assistance in conducting air monitoring support as well as other response activities as requested by EPA OSC Elise Jakabházy.

Response Activities

Tuesday, 1 May 2012

Weather: Rain, approximately 50 degrees Fahrenheit (°F), wind approximately 10 miles per hour (mph).

At approximately 1115 hours, START members Dupree, Hall, Hornok, and Scesny arrived on site. Upon arrival, START members met with OSCs Jakabházy and Sherry Banks, as well as START member Kutsch, who was the first START member on scene. In addition, Massachusetts Department of Environmental Protection (MassDEP), Rhode Island Department of Environmental Management (RI DEM), and U.S. Coast Guard (USCG) personnel were on site, as well as the MassDEP Field Analytical Support Team (FAST) mobile laboratory. Upon arrival, a large abandoned building was observed to be smoldering, with firefighting crews applying water to hotspots within the structure/footprint. A large majority of the northern and eastern sections of the building were observed to have collapsed on and around the former sluiceway. On-scene fire personnel reported numerous explosions of unknown origin during initial firefighting efforts.

Upon arrival, START members reviewed and signed the site Health and Safety Plan (HASP), entitled *Weston Solutions, Inc. Health and Safety Plan for the Seekonk Mill Fire Site, Seekonk, Massachusetts*. OSC Jakabházy conducted a tailgate safety meeting outlining expected on-site activities as well as noting the lack of structural integrity within the remaining building. Due to continuous torrential rains, the array of DataRAMs and VIPER system could not be deployed to monitor the particulates from the fire. At approximately 1130 hours, OSC Jakabházy requested that surface water sampling of the fire fighting runoff be conducted. Surface water samples were to be collected for volatile organic compound (VOC), semivolatile organic compound (SVOC), total metals, and cyanide analyses. Due to health and safety concerns, the samples were to be collected by Seekonk Fire Department personnel and relinquished to START. At 1200 hours, Seekonk Fire Department personnel collected surface water sample SW-01 from standing water located in the northwest portion of the building footprint. At 1230 hours, two Seekonk Fire Department members donned Level B personnel protective equipment (PPE) and collected surface water sample SW-02 from an outfall pipe located on the northern side of the former factory building, which discharged directly into the Ten Mile River. Level B PPE was requested by OSC Jakabházy due to the large amounts of unknown chemicals and thick black smoke still being emitted from the fire.

At approximately 1345 hours, OSC Jakabházy requested that START prepare two AreaRAE units for deployment as well as Dräger Tubes for air sampling within the smoke plume. START personnel prepared the following Dräger tubes: cyanide, hydrocyanic acid, nitric acid, sulfuric acid, and hydrochloric acid.

At 1430 hours, START members Hall and Scesny donned modified Level B PPE and deployed the AreaRAE units within the smoke plume. The sulfuric acid Drager tube was deployed using the Drager Quantimeter, as it required 100 strokes to obtain a measurement. The quantimeter was left within the hot zone to be retrieved by Seekonk Fire Department personnel at a later time, once the required air sampling volume was achieved.

At 1455 hours, START members Hall and Scesny exited the hot zone and noted that the four Drager tubes utilized did not show a discernable color change.

At 1515 hours, a third AreaRAE unit was deployed between the factory building and the Incident Command Post (ICP) located in the parking lot of the Memorial Baptist Church. All AreaRAE units were able to maintain radio contact with the Rapid Deployment Kit, which was monitored during operations and located at the ICP. During air monitoring activities, the AreaRAE units recorded the following parameters (with maximum concentration in parentheses): carbon monoxide (CO) [55.6 parts per million (ppm)]; VOC (64.7 ppm); hydrogen sulfide (H₂S) (0.6 ppm); LEL [0.0%]; and oxygen (O₂) (20.9%).

At 1600 hours, START members were informed that the Exclusion Zone had been evacuated due to a ruptured gas main. According to on-site personnel, a natural gas line was ruptured during demolition of a portion of the building. Although Unified Command had previously confirmed with all of the local utility companies that services to the building were definitively terminated, Columbia Gas later informed Unified Command that they were completely unaware that the 8-inch gas main even existed (and it was not shown on any of their drawings). A loud hissing noise, caused by the gas main leak, could be heard throughout the Exclusion Zone. START continued to monitor the AreaRAE units as requested by OSC Jakabházy, making note of LEL levels. One AreaRAE unit (unit unknown) was utilized by firefighting personnel, as they worked to stop the natural gas leak.

At 1700 hours, START personnel were requested by OSC Jakabházy to provide three members to potentially deploy monitoring instruments around the former factory building on 2 May 2012, which would be linked via telemetry to the ICP using VIPER instrumentation. In addition, START personnel were requested to be prepared to collect suspected asbestos-containing material (ACM) samples, soil samples, and additional water samples.

At 1800 hours, START personnel departed the site.

Wednesday, 2 May 2012

Weather: cloudy, approximately 50°F, wind approximately 7 mph.

At 0720 hours, START members Hornok and Scesny arrived on site and met with START member Hall. Upon arrival, START personnel held a tailgate safety meeting outlining expected on-site activities, as well as noting building conditions. START members then met with OSC Jakabházy to discuss suspected ACM and soil sample collection activities. At 0800 hours, START members joined OSC Jakabházy on a site walk to select sample locations. OSC Jakabházy requested that a total of nine ACM samples and seven surface soil samples be collected from areas around and within the former building footprint. The ACM samples would

be collected from suspected ACM-containing roofing and pipe-wrap materials throughout areas of the building footprint which could be accessed safely. The ACM samples would be analyzed via polarized light microscopy (PLM). Seven surface soil samples would be collected from the northern area of the site from the rear of the building, directly adjacent to the Ten Mile River. Surface soil samples were to be collected for VOC, SVOC, polychlorinated biphenyl (PCB), total metals, and percent solids analyses.

At 0920 hours, START members began sampling activities. During sampling activities, START members were joined by Seekonk Fire Department personnel because of health and safety concerns. At 0923 hours, START personnel collected sample ACM-01 from pipe lagging located in the collapsed northwestern area of the building footprint. At 0927 hours, START collected sample ACM-02 from roofing material located in the northwestern area of the building footprint. At 0930 hours, START collected sample ACM-03 from pipe joint packing material located in the northwestern area of the building footprint. At 0933 hours, START collected sample ACM-04 from pipe wrap material located in the northwestern area of the building footprint. At 1010 hours, START collected sample ACM-05 from roofing material located in the north-central area of the building footprint.

From 0936 to 1020 hours, START collected seven surface soil samples (including one field duplicate) (SS-01 through SS-07) from an area located north of the building footprint and approximately 10 feet south of the Ten Mile River. START completed surface soil sampling at 1020 hours.

At 1046 hours, START collected sample ACM-06 from roofing material located in the south-central area of the building. At 1052 hours, START collected sample ACM-07 from roofing material located in the south-central area of the building footprint. At 1057 hours, START collected sample ACM-08 from roofing material located in the eastern area of the building footprint. At 1059 hours, START collected sample ACM-09 from roofing material located in the eastern area of the building footprint.

Sampling activities were completed at 1100 hours, and START began preparing the surface soil and suspected ACM samples for submittal to EPA Office of Environmental Measurement and Evaluation (OEME) located in North Chelmsford, MA.

START personnel utilized the TrimbleTM Pathfinder Pro XRS Global Position System (GPS) unit to record sample locations and site features (see Attachment A, Figure 2). In addition, START personnel photodocumented sample locations and site features (see Attachment B, Photodocumentation Log).

At approximately 1330 hours, START departed the site to deliver samples to EPA OEME.

Analytical Results

Surface Water Samples

Five VOCs were detected in the surface water samples and included the following (with maximum concentration in parentheses): 2-butanone [methyl ethyl ketone (MEK)] [13 micrograms per Liter ($\mu\text{g/L}$)]; acetone (34 $\mu\text{g/L}$); benzene (1.2 $\mu\text{g/L}$); naphthalene (7.1 $\mu\text{g/L}$); and tetrahydrofuran (2.1 $\mu\text{g/L}$). None of the VOCs exceeded available US EPA National Recommended Water Quality Criteria (WQC) for Human Health or Aquatic Life (see Attachment C, Table 1) [3].

Twenty-eight SVOCs were detected in the surface water samples and included the following (with maximum concentration in parentheses): 1-methylnaphthalene (9.0 $\mu\text{g/L}$); 2,4-dimethylphenol (71 $\mu\text{g/L}$); 2-methylnaphthalene (11 $\mu\text{g/L}$); 2-methylphenol (100 $\mu\text{g/L}$); 3&4-methylphenol (160 $\mu\text{g/L}$); acenaphthene (33 $\mu\text{g/L}$); acenaphthylene (8.7 $\mu\text{g/L}$); acetophenone (6.7 $\mu\text{g/L}$); anthracene (14 $\mu\text{g/L}$); benzo(a)anthracene (12 $\mu\text{g/L}$); benzo(a)pyrene (8.2 $\mu\text{g/L}$); benzo(b)fluoranthene (9.8 $\mu\text{g/L}$); benzo(g,h,i)perylene (6.9 $\mu\text{g/L}$); benzo(k)fluoranthene (8.0 $\mu\text{g/L}$); benzoic acid (500 $\mu\text{g/L}$); bis(2-ethylhexyl)phthalate (7.1 $\mu\text{g/L}$); carbazole (67 $\mu\text{g/L}$); chrysene (13 $\mu\text{g/L}$); dibenzofuran (18 $\mu\text{g/L}$); diethylphthalate (2.5 $\mu\text{g/L}$); fluoranthene (42 $\mu\text{g/L}$); fluorene (19 $\mu\text{g/L}$); indeno(1,2,3-cd)pyrene (6.2 $\mu\text{g/L}$); naphthalene (19 $\mu\text{g/L}$); phenanthrene (72 $\mu\text{g/L}$); phenol (150 $\mu\text{g/L}$); pyrene (28 $\mu\text{g/L}$); and pyridine (6.5 $\mu\text{g/L}$). Seven SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, and indeno(1,2,3-cd)pyrene) exceeded their respective US EPA National Recommended WQC for Human Health in one or more water samples (see Attachment C, Table 2) [4].

Seventeen metals and cyanide were detected in the surface water samples, and included the following (with maximum concentration in parentheses): aluminum (9,100 $\mu\text{g/L}$); antimony (35 $\mu\text{g/L}$); arsenic (44 $\mu\text{g/L}$); barium (880 $\mu\text{g/L}$); calcium (320,000 $\mu\text{g/L}$); chromium (110 $\mu\text{g/L}$); cobalt (54 $\mu\text{g/L}$); copper (990 $\mu\text{g/L}$); iron (120,000 $\mu\text{g/L}$); lead (6,800 $\mu\text{g/L}$); magnesium (7,400 $\mu\text{g/L}$); manganese (830 $\mu\text{g/L}$); mercury (1.0 $\mu\text{g/L}$); nickel (1,700 $\mu\text{g/L}$); silver (110 $\mu\text{g/L}$); vanadium (9,900 $\mu\text{g/L}$); zinc (3,300 $\mu\text{g/L}$); and cyanide (6.6 $\mu\text{g/L}$). Ten metals (aluminum, arsenic, chromium, iron, lead, manganese, mercury, nickel, silver, and zinc) and cyanide exceeded their respective US EPA National Recommended WQC for Human Health and/or Aquatic Life in one or more water samples (see Attachment C, Table 3) [5-7].

Surface Soil Samples

One VOC was detected in the surface soil samples and included the following (with maximum concentration in parentheses): naphthalene [210 micrograms per Kilogram ($\mu\text{g/Kg}$)]. Naphthalene was detected below its respective Massachusetts Contingency Plan (MCP) Method 1 S-3 Soil & GW-3 standard (see Attachment C, Table 4) [8].

Twenty-five SVOCs were detected in the surface soil samples and included the following (with maximum concentration in parentheses): 1-methylnaphthalene (400 $\mu\text{g/Kg}$); 2-methylnaphthalene (440 $\mu\text{g/Kg}$); acenaphthene (3,000 $\mu\text{g/Kg}$); acenaphthylene (320 $\mu\text{g/Kg}$);

anthracene (5,200 µg/Kg); benzo(a)anthracene (24,000 µg/Kg); benzo(a)pyrene (24,000 µg/Kg); benzo(b)fluoranthene (27,000 µg/Kg); benzo(g,h,i)perylene (4,000 µg/Kg); benzo(k)fluoranthene (22,000 µg/Kg); benzoic acid (890 µg/Kg); bis(2-ethylhexyl)phthalate (810 µg/Kg); butylbenzylphthalate (390 µg/Kg); carbazole (4,400 µg/Kg); chrysene (26,000 µg/Kg); di-n-butylphthalate (330 µg/Kg); dibenz(a,h)anthracene (2,800 µg/Kg); dibenzofuran (1,700 µg/Kg); fluoranthene (51,000 µg/Kg); fluorene (2,200 µg/Kg); indeno(1,2,3-cd)pyrene (11,000 µg/Kg); naphthalene (800 µg/Kg); phenanthrene (30,000 µg/Kg); phenol (210 µg/Kg); and pyrene (35,000 µg/Kg). None of the SVOCs exceeded their respective MCP Method 1 S-3 Soil & GW-3 standards (see Attachment C, Table 5) [9].

One PCB was detected in the surface soil samples, and included the following (with maximum concentration in parentheses): Aroclor-1254 [5.4 milligrams per Kilogram (mg/Kg)]. One PCB (Aroclor-1254) exceeded the MCP Method 1 S-3 Soil & GW-3 standard in one soil sample (see Attachment C, Table 6) [10].

Eighteen metals were detected in the surface soil samples, and included the following (with maximum concentration in parentheses): aluminum (9,200 mg/Kg); antimony (8.0 mg/Kg); arsenic (6.6 mg/Kg); barium (78 mg/Kg); cadmium (3.3 mg/Kg); calcium (4,400 mg/Kg); chromium (19 mg/Kg); cobalt (7.0 mg/Kg); copper (63 mg/Kg); iron (15,000 mg/Kg); lead (350 mg/Kg); magnesium (2,600 mg/Kg); manganese (440 mg/Kg); mercury (19 mg/Kg); nickel (90 mg/Kg); silver (5.8 mg/Kg); vanadium (290 mg/Kg); and zinc (150 mg/Kg). One metal (lead) exceeded the MCP Method 1 S-3 Soil & GW-3 in one soil sample (see Attachment C, Table 7) [11-12].

Suspected-ACM Samples

Analytical results of suspected-ACM samples indicated the presence of asbestos in three of the nine samples. Asbestos was detected in the following suspected-ACM samples (asbestos type and percentage in parentheses): ACM-01 (15% amosite); ACM-03 (20% chrysotile); and ACM-04 (10% amosite) (see Attachment C, Table 8) [13].

REFERENCES

- [1] U.S. Geological Survey (USGS). 1981. Attleboro, Massachusetts. (7.5-minute series topographic map).
- [2] Massachusetts Geographic Information Systems (MassGIS). 2010. 1:5,000 Color Digital Orthophoto Imagery, RE: Image Numbers 21325495 and 21478495. Available from <http://www.mass.gov/mgis.com>. Internet accessed 4 May 2012.
- [3] U.S. Environmental Protection Agency. 2 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA - VOAs in Water.
- [4] U.S. Environmental Protection Agency. 3 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA - BNAs in Water.
- [5] U.S. Environmental Protection Agency. 3 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – Total Recoverable Metals in Water by ICP.
- [6] U.S. Environmental Protection Agency. 3 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – Total Mercury in Water.
- [7] U.S. Environmental Protection Agency. 3 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – Total Cyanide in Water.
- [8] U.S. Environmental Protection Agency. 4 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – VOAs in Soil High Level Method.
- [9] U.S. Environmental Protection Agency. 4 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – BNAs in Soils Medium Level.
- [10] U.S. Environmental Protection Agency. 7 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – PCBs Medium Level in Soils and Sediments.
- [11] U.S. Environmental Protection Agency. 7 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – Metals in Soil Medium Level by ICP.

REFERENCES (Concluded)

- [12] U.S. Environmental Protection Agency. 7 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – Total Mercury in Soil.
- [13] U.S. Environmental Protection Agency. 3 May 2012. Office of Environmental Measurement and Evaluation. Laboratory Report. Project No. 12050003. Seekonk Fire Response – Seekonk, MA – Bulk Asbestos Analysis by PLM.

Attachment A

Figure 1 - Site Location Map

Figure 2 - Site Diagram and Sample Location Map

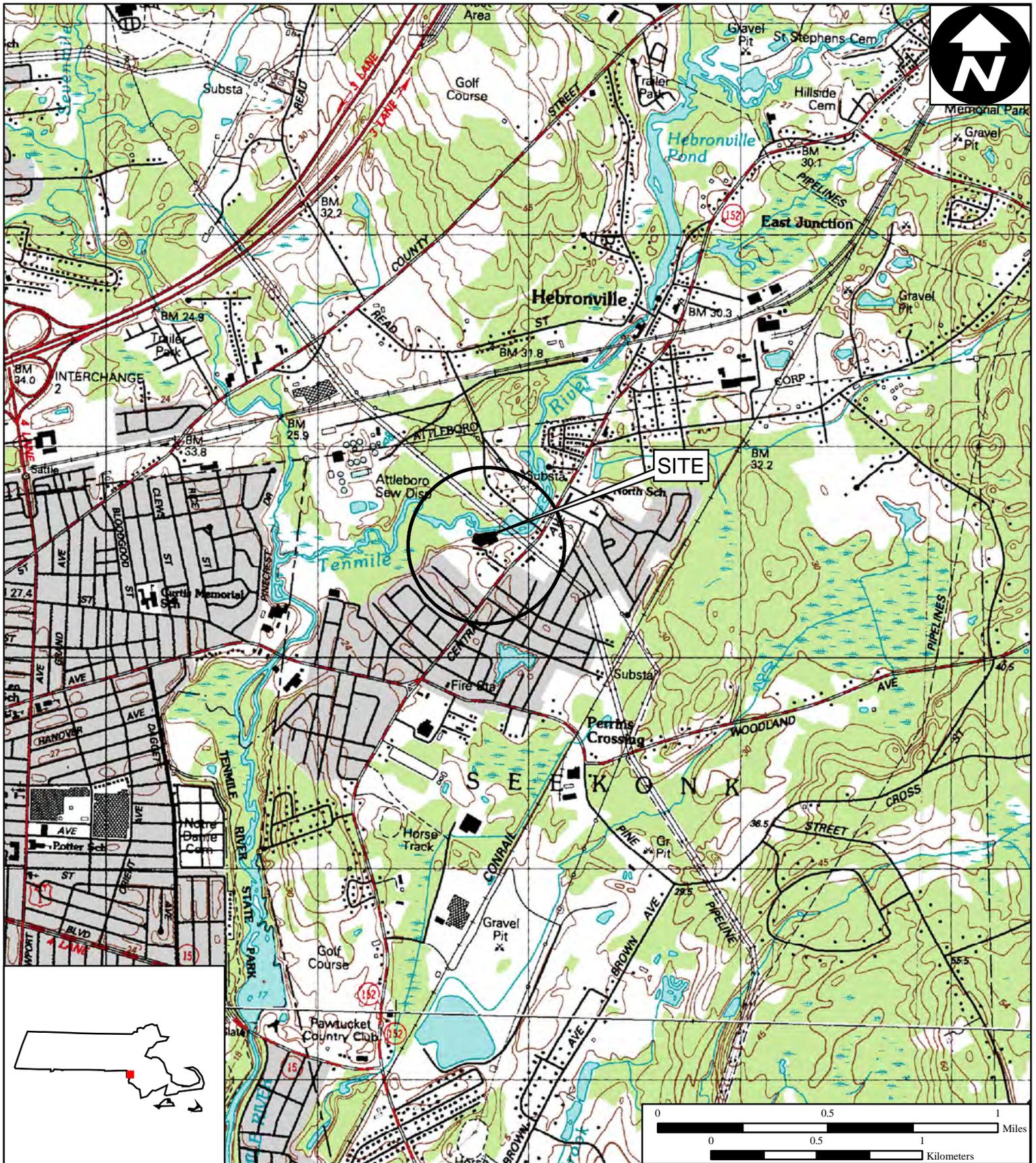


Figure 1

Site Location Map

**Seekonk Mill Fire
36 Maple Avenue
Seekonk, MA**

**EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042**

TDD Number: 12-05-0002
 Created by: B. Mace
 Created on: 4 May 2012
 Modified by:
 Modified on:

Data Sources:
 Topos: MicroPath/USGS
 Quadrangle Name(s): Attleboro, MA and
 Providence, RI
 All other data: START



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Figure 2
Site Diagram and
Sample Location Map
Seekonk Mill Fire
36 Maple Avenue
Seekonk, Massachusetts

EPA Region I
Superfund Technical Assessment and
Response Team (START) III
Contract No. EP-W-05-042
TDD Number: 12-05-0002
Created by: B. Mace
Created on: 4 May 2012
Modified by: Christine Scesny
Modified on: 17 May 2012

Legend

-  Approximate Site Boundary
-  Surface Soil Samples
-  Surface Water Samples*
-  ACM Samples

ACM = Asbestos-containing material.

* - Note surface water sample locations are approximate, they were not recorded using GPS.





Data Sources:
 Imagery: Massachusetts Geographic Information System (MassGIS)
 Topos: MicroPath
 All other data: START

Attachment B

Photodocumentation Log

PHOTODOCUMENTATION LOG
Seekonk Mill Fire • Seekonk, Massachusetts



SCENE: View of the south-central portion of the former factory building. Photograph taken facing east.

DATE: 1 May 2012

PHOTOGRAPHER: Christine Scesny

TIME: 1153 hours

CAMERA: iPhone4S



SCENE: View of northwestern area of the former factory building footprint. Photograph taken facing east.

DATE: 1 May 2012

PHOTOGRAPHER: Christine Scesny

TIME: 1143 hours

CAMERA: iPhone4S

PHOTODOCUMENTATION LOG
Seekonk Mill Fire • Seekonk, Massachusetts



SCENE: View of drums located inside the southern-central area of the former factory building. Photograph taken facing west.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0753 hours

CAMERA: FinePix XP20



SCENE: View of sample location ACM-05. Photograph taken facing south.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0808 hours

CAMERA: FinePix XP20

PHOTODOCUMENTATION LOG
Seekonk Mill Fire • Seekonk, Massachusetts



SCENE: View of debris located in the southeastern building footprint. Photograph taken facing southwest.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0827 hours

CAMERA: FinePix XP20



SCENE: View of sample location ACM-08. Photograph taken facing northwest.

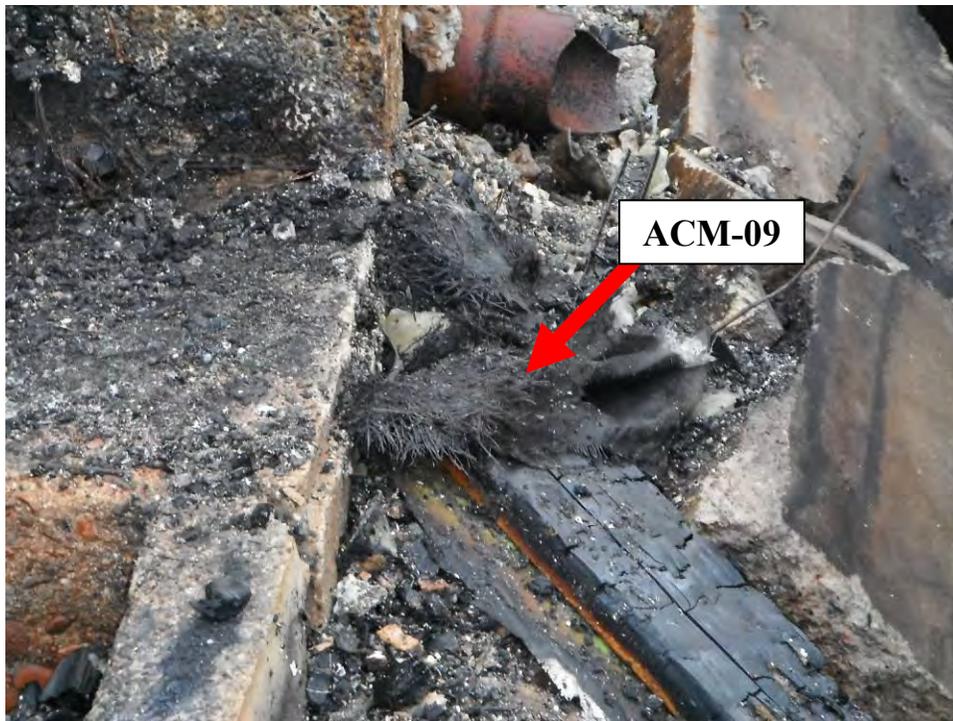
DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0827 hours

CAMERA: FinePix XP20

PHOTODOCUMENTATION LOG
Seekonk Mill Fire • Seekonk, Massachusetts



SCENE: View of sample location ACM-09. Photograph taken facing northwest.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0830 hours

CAMERA: FinePix XP20



SCENE: View of the Ten Mile River from the former sluiceway at the northeastern corner of the former factory building footprint. Photograph taken facing north.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0830 hours

CAMERA: FinePix XP20

PHOTODOCUMENTATION LOG
Seekonk Mill Fire • Seekonk, Massachusetts



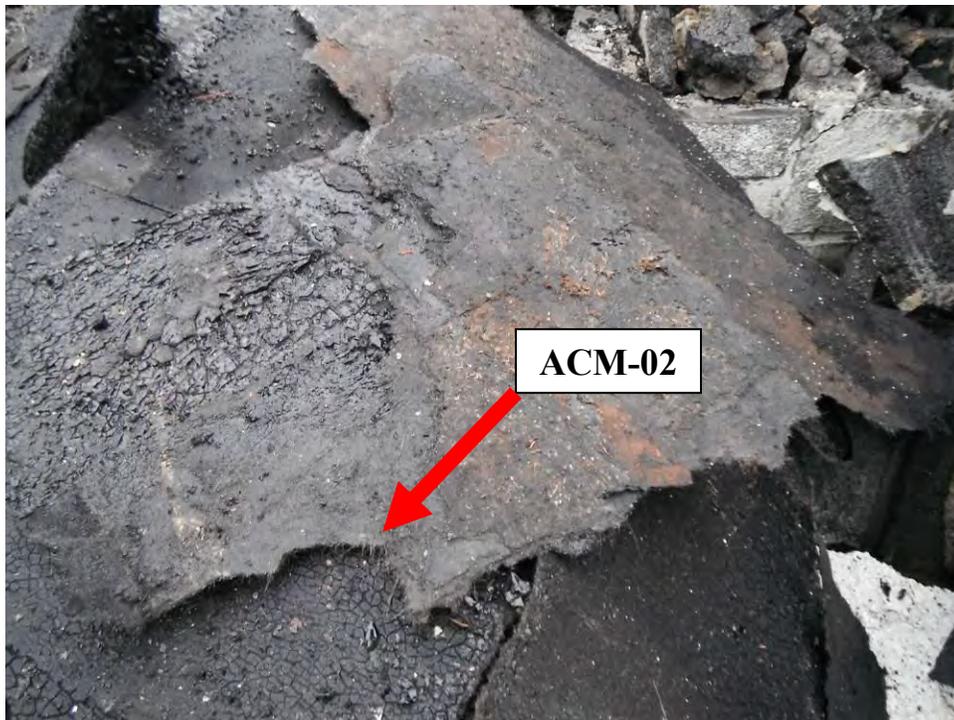
SCENE: View of sample location ACM-01. Photograph taken facing east.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0924 hours

CAMERA: FinePix XP20



SCENE: View of sample location ACM-02. Photograph taken facing east.

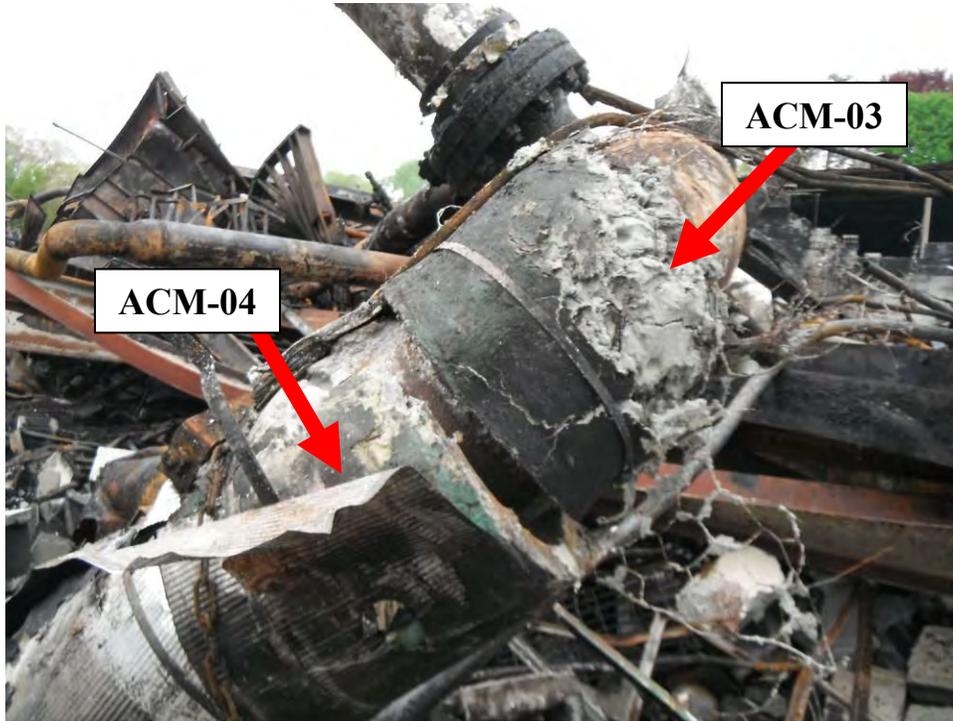
DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0928 hours

CAMERA: FinePix XP20

PHOTODOCUMENTATION LOG
Seekonk Mill Fire • Seekonk, Massachusetts



SCENE: View of sample locations ACM-03 and ACM-04. Photograph taken facing east.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0932 hours

CAMERA: FinePix XP20



SCENE: View of area located north of the former factory building, and south of the Ten Mile River. Surface soil samples SS-01 through SS-07 were collected in this area. The Ten Mile River is located on left side of the photo just beyond the tree line. Photograph taken facing northeast.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 0946 hours

CAMERA: FinePix XP20

PHOTODOCUMENTATION LOG
Seekonk Mill Fire • Seekonk, Massachusetts



SCENE: View of sample location ACM-06. Photograph taken facing southwest.

DATE: 2 May 2012

PHOTOGRAPHER: Gerald Hornok

TIME: 1044 hours

CAMERA: FinePix XP20

Attachment C

Table 1 - Summary of Volatile Organic Compounds Detected Above Reporting Limits,
Surface Water Samples

Table 2 - Summary of Semivolatile Organic Compounds Detected Above Reporting Limits,
Surface Water Samples

Table 3 - Summary of Metals and Cyanide Detected Above Reporting Limits,
Surface Water Samples

Table 4 - Summary of Volatile Organic Compounds Detected Above Reporting Limits,
Surface Soil Samples

Table 5 - Summary of Semivolatile Organic Compounds Detected Above Reporting Limits,
Surface Soil Samples

Table 6 - Summary of Polychlorinated Biphenyl Compounds Detected Above Reporting Limits,
Surface Soil Samples

Table 7 - Summary of Metals Detected Above Reporting Limits, Surface Soil Samples

Table 8 - Summary of Bulk Asbestos Sample Results Detected Above Reporting Limits

TABLE 1

**SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED ABOVE REPORTING LIMITS
SURFACE WATER SAMPLES
SEEKONK MILL FIRE
SEEKONK, MASSACHUSETTS**

SAMPLE LOCATION SAMPLE NUMBER	SW-01	SW-02	US EPA National Recommended Water Quality Criteria	
	R01-120501EJ-0001	R01-120501EJ-0002	Human Health	Aquatic Life
COMPOUND				
2- Butanone (MEK)	4.8	13	NL	NL
2-Propanone (acetone)	20	34	NL	NL
Benzene	1.0	1.2	2.2	NL
Naphthalene	7.1	6.3	NL	NL
Tetrahydrofuran	ND	2.1	NL	NL

NOTES:

- 1) Samples analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) using EPA Region I SOP, EIASOP-VOAGCMS9, VOAs in Water.
- 2) All Results in Micrograms per Liter (µg/L).
- 3) ND = Not Detected.
- 4) NL = Not Listed.
- 5) Sample results are compared to the US EPA National Recommended Water Quality Criteria, Human Health Criteria, for the consumption of water and organisms, and Aquatic Life Criteria for freshwater; presented for comparison purposes only. Units are in µg/L.
- 6) MEK = methyl ethyl ketone

TABLE 2

**SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS DETECTED ABOVE REPORTING LIMITS
SURFACE WATER SAMPLES
SEEKONK MILL FIRE
SEEKONK, MASSACHUSETTS**

SAMPLE LOCATION SAMPLE NUMBER	SW-01 R01-120501EJ-0001	SW-02 R01-120501EJ-0001	US EPA National Recommended Water Quality	
			Human Health	Aquatic Life
COMPOUND				
1-Methylnaphthalene	9.0	ND	NL	NL
2,4-dimethylphenol	13	71	NL	NL
2-Methylnaphthalene	11	ND	NL	NL
2-Methylphenol	19	100	NL	NL
3&4-Methylphenol	42	160	NL	NL
Acenaphthene	33	4.4	670	NL
Acenaphthylene	ND	8.7	NL	NL
Acetophenone	ND	6.7	NL	NL
Anthracene	14	4.8	8,300	NL
Benzo(a)anthracene	12	2.6	0.0038	NL
Benzo(a)pyrene	8.2	ND	0.0038	NL
Benzo(b)fluoranthene	9.8	2.6	0.0038	NL
Benzo(g,h,i)perylene	6.9	ND	NL	NL
Benzo(k)fluoranthene	8.0	ND	0.0038	NL
Benzoic acid	500	87	NL	NL
Bis(2-ethylhexyl)phthalate	ND	7.1	1.2	NL
Carbazole	67	6.0	NL	NL
Chrysene	13	2.9	0.0038	NL
Dibenzofuran	18	3.9	NL	NL
Diethylphthalate	ND	2.5	17,000	NL
Fluoranthene	42	9.3	130	NL
Fluorene	19	6.0	1,100	NL
Indeno(1,2,3-cd)pyrene	6.2	ND	0.0038	NL
Naphthalene	19	ND	NL	NL
Phenanthrene	72	22	NL	NL
Phenol	39	150	10,000	NL
Pyrene	28	6.4	830	NL
Pyridine	2.5	6.5	NL	NL

NOTES:

- 1) Samples analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) using EPA Region I SOP, EIASOP-BNAW2, Base Neutral Acids (BNAs) in Water.
- 2) All Results in Micrograms per Liter (µg/L).
- 3) ND = Not Detected.
- 4) NL = Not Listed.
- 5) Sample results are compared to the US EPA National Recommended Water Quality Criteria, Human Health Criteria, for the consumption of water and organisms, and Aquatic Life Criteria for freshwater; presented for comparison purposes only. Units are in µg/L.
- 6) **Bolded and shaded results exceed US EPA National Recommended Water Quality Criteria.**

TABLE 3

SUMMARY OF METALS AND CYANIDE DETECTED ABOVE REPORTING LIMITS
 SURFACE WATER SAMPLES
 SEEKONK MILL FIRE
 SEEKONK, MASSACHUSETTS

SAMPLE LOCATION SAMPLE NUMBER	SW-01	SW-02	US EPA National Recommended Water Quality Criteria		
	R01-120501EJ-0001	R01-120501EJ-0002	Human Health	Aquatic Life	
PARAMETER				Acute	Chronic
Aluminum	9,100	580	NL	750	87
Antimony	35	ND	5.6	NL	NL
Arsenic	44	ND	0.018	340	150
Barium	880	110	1,000	NL	NL
Calcium	320,000	51,000	NL	NL	NL
Chromium	110	29	Z	570	74
Cobalt	54	ND	NL	NL	NL
Copper	990	180	1,300	NL	NL
Iron	120,000	1,300	NL	NL	1,000
Lead	6,800	64	NL	65	2.5
Magnesium	7,400	6,100	NL	NL	NL
Manganese	830	230	50	NL	NL
Mercury	1.0	0.57	NL	1.4	0.77
Nickel	1,700	ND	610	470	52
Silver	16	110	NL	3.2	NL
Vanadium	9,900	150	NL	NL	NL
Zinc	3,300	890	7,400	120	120
Cyanide	ND	6.6	140	22	5.2

NOTES:

- 1) Samples analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) using EPA Region I SOPs, EIASOP-INGDVICP1, Total Recoverable Metals in Water by Inductively Coupled Plasma (ICP); EIA-INGMERC9.SOP, Total Mercury in Water; and EIASOP-INGCN12, Total Cyanide in Water.
- 2) All Results in Micrograms per Liter (µg/L).
- 3) ND = Not Detected.
- 4) NL = Not Listed.
- 5) Sample results are compared to the US EPA National Recommended Water Quality Criteria, Human Health Criteria, for the consumption of water and organisms, and Aquatic Life Criteria for freshwater; presented for comparison purposes only. Units are in µg/L.
- 6) Z = A more stringent Maximum Contaminant Level has been issued by the EPA under the Safe Drinking Water Act; refer to drinking water regulations 40CFR141.
- 7) US EPA National Recommended Water Quality Criteria values for Trivalent Chromium are presented for comparison to Total Chromium results.
- 8) **Bolded and shaded results exceed US EPA National Recommended Water Quality Criteria.**

TABLE 4

**SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED ABOVE REPORTING LIMITS
SURFACE SOIL SAMPLES
SEEKONK MILL FIRE
SEEKONK, MASSACHUSETTS**

SAMPLE LOCATION SAMPLE NUMBER DEPTH	SS-01 R01-120501EJ-0012 0 - 0.5 ft.	SS-02 R01-120501EJ-0013 0 - 0.5 ft.	SS-03 R01-120501EJ-0014 0 - 0.5 ft.	SS-04 R01-120501EJ-0015 0 - 0.5 ft.	SS-05 R01-120501EJ-0016 0 - 0.5 ft.	SS-06 R01-120501EJ-0017 0 - 0.5 ft.	SS-07 R01-120501EJ-0018 0 - 0.5 ft.	MCP Method S-3 Standard
COMPOUND								
Naphthalene	210	55	ND	ND	ND	ND	ND	3,000,000

NOTES:

- 1) Samples analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) using EPA Region I SOP, EIASOP-VOAGCMS9, VOAs in Soil High Level Method.
- 2) All Results in Micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).
- 3) MCP = Massachusetts Contingency Plan. The MCP Method S-3 Standard is provided for comparison purposes only. Standards are provided in $\mu\text{g}/\text{Kg}$.
- 4) ND = Not Detected.
- 5) ft. = feet

TABLE 5

**SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS DETECTED ABOVE REPORTING LIMITS
SURFACE SOIL SAMPLES
SEEKONK MILL FIRE
SEEKONK, MASSACHUSETTS**

SAMPLE LOCATION SAMPLE NUMBER DEPTH	SS-01 R01-120501EJ-0012 0 - 0.5 ft.	SS-02 R01-120501EJ-0013 0 - 0.5 ft.	SS-03 R01-120501EJ-0014 0 - 0.5 ft.	SS-04 R01-120501EJ-0015 0 - 0.5 ft.	SS-05 R01-120501EJ-0016 0 - 0.5 ft.	SS-06 R01-120501EJ-0017 0 - 0.5 ft.	SS-07 R01-120501EJ-0018 0 - 0.5 ft.	MCP Method 1 S-3 Standard
COMPOUND								
1- Methylanthalene	400	ND	ND	350	ND	ND	ND	NL
2- Methylanthalene	440	ND	ND	370	ND	ND	ND	500,000
Acenaphthene	3,000	840	ND	2,100	1,400	970	ND	5,000,000
Acenaphthylene	320	ND	ND	ND	ND	ND	ND	10,000
Anthracene	5,200	1,300	ND	3,000	2,200	1,600	ND	5,000,000
Benzo(a)anthracene	24,000	3,700	610	8,200	6,900	6,000	380	300,000
Benzo(a)pyrene	24,000	3,600	580	8,100	6,800	6,400	390	30,000
Benzo(b)fluoranthene	27,000	3,500	550	8,700	8,500	7,100	430	300,000
Benzo(g,h,i)perylene	ND	2,100	250	4,000	2,800	2,900	ND	5,000,000
Benzo(k)fluoranthene	22,000	2,900	530	7,300	7,000	5,400	330	3,000,000
Benzoic acid	510	420	ND	500	890	440	ND	NL
Bis(2-ethylhexyl)phthalate	330	ND	ND	ND	810	ND	ND	3,000,000
Butylbenzylphthalate	ND	ND	ND	ND	390	ND	ND	NL
Carbazole	4,400	850	ND	2,200	1,700	800	ND	NL
Chrysene	26,000	4,100	650	9,300	7,800	6,200	420	3,000,000
Di-n-butylphthalate	280	ND	ND	ND	330	ND	ND	NL
Dibenz(a,h)anthracene	2,800	280	ND	1,300	ND	910	ND	30,000
Dibenzofuran	1,700	400	ND	1,100	810	280	ND	NL
Fluoranthene	51,000	7,700	1,500	21,000	16,000	12,000	990	5,000,000
Fluorene	2,200	570	ND	1,400	980	640	ND	5,000,000
Indeno(1,2,3-cd)pyrene	11,000	2,100	260	4,100	2,900	2,900	ND	300,000
Naphthalene	770	270	ND	800	630	ND	ND	3,000,000
Phenanthrene	30,000	5,800	1,000	14,000	11,000	6,000	700	3,000,000
Phenol	210	ND	ND	ND	ND	ND	ND	20,000
Pyrene	35,000	6,500	1,100	15,000	11,000	8,700	730	5,000,000

NOTES:

- 1) Samples analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) using EPA Region I SOP, EIASOP-BNAS4, Base Neutral Acids (BNAs) in Soils Medium Level.
- 2) All Results in Micrograms per Kilogram ($\mu\text{g}/\text{Kg}$).
- 3) MCP = Massachusetts Contingency Plan.
The MCP Method S-3 Standard is provided for comparison purposes only. Standards are provided in $\mu\text{g}/\text{Kg}$.
- 4) ND = Not Detected.
- 5) NL = Not Listed.
- 6) ft. = feet

TABLE 6

**SUMMARY OF POLYCHLORINATED BIPHENYL COMPOUNDS DETECTED ABOVE REPORTING LIMITS
SURFACE SOIL SAMPLES
SEEKONK MILL FIRE
SEEKONK, MASSACHUSETTS**

SAMPLE LOCATION SAMPLE NUMBER DEPTH	SS-01 R01-120501EJ-0012 0 - 0.5 ft.	SS-02 R01-120501EJ-0013 0 - 0.5 ft.	SS-03 R01-120501EJ-0014 0 - 0.5 ft.	SS-04 R01-120501EJ-0015 0 - 0.5 ft.	SS-05 R01-120501EJ-0016 0 - 0.5 ft.	SS-06 R01-120501EJ-0017 0 - 0.5 ft.	SS-07 R01-120501EJ-0018 0 - 0.5 ft.	MCP Method S-3 Standard
COMPOUND								
Aroclor-1254	ND	ND	ND	ND	0.25	5.4	ND	3

NOTES:

- 1) Samples analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) using EPA Region I. SOP, EIASOP-PESTSOIL3.SOP, PCBs Medium Level in Soils and Sediments.
- 2) All Results in Milligrams per Kilogram (mg/Kg).
- 3) MCP = Massachusetts Contingency Plan. The MCP Method S-3 Standard is provided for comparison purposes only. Standards are provided in mg/Kg.
- 4) ND = Not Detected.
- 5) ft. = feet

TABLE 7

**SUMMARY OF METALS DETECTED ABOVE REPORTING LIMITS
SURFACE SOIL SAMPLES
SEEKONK MILL FIRE
SEEKONK, MASSACHUSETTS**

SAMPLE LOCATION SAMPLE NUMBER DEPTH	SS-01 R01-120501EJ-0012 0 - 0.5 ft.	SS-02 R01-120501EJ-0013 0 - 0.5 ft.	SS-03 R01-120501EJ-0014 0 - 0.5 ft.	SS-04 R01-120501EJ-0015 0 - 0.5 ft.	SS-05 R01-120501EJ-0016 0 - 0.5 ft.	SS-06 R01-120501EJ-0017 0 - 0.5 ft.	SS-07 R01-120501EJ-0018 0 - 0.5 ft.	MCP Method 1 S-3 Standards
PARAMETER								
Aluminum	6,200	7,800	9,200	7,000	5,500	7,100	8,500	NL
Antimony	ND	ND	ND	2.2	8.0	ND	ND	30
Arsenic	5.2	4.4	6.6	5.1	5.9	4.1	4.8	20
Barium	66	59	34	38	40	78	25	5,000
Cadmium	ND	ND	ND	0.98	3.3	ND	ND	30
Calcium	4,400	1,400	1,300	1,700	2,100	1,500	1,900	NL
Chromium	19	9.2	13	17	13	12	11	200
Cobalt	4.8	3.8	4.6	4.2	4.3	7.0	4.9	NL
Copper	63	12	22	28	35	29	14	NL
Iron	14,000	13,000	14,000	14,000	13,000	15,000	13,000	NL
Lead	350	33	64	120	150	65	31	300
Magnesium	2,300	2,200	2,300	2,600	1,800	2,500	2,300	NL
Manganese	200	440	270	230	290	350	230	NL
Mercury	0.086	0.038	0.15	0.062	0.16	19	0.041	30
Nickel	90	7.9	12	26	21	16	8.5	700
Silver	5.8	ND	1.1	2.3	4.3	1.6	ND	200
Vanadium	290	17	27	68	42	39	21	1,000
Zinc	120	29	57	73	150	100	36	5,000

NOTES:

- 1) Samples analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) using EPA Region I SOPs, EIASOP-INGDVICP1, Metals in Soil Medium Level by Inductively Coupled Plasma (ICP); EIASOP-INGMERC9, Total Mercury in Soil.
- 2) All Results in Milligrams per Kilograms (mg/Kg).
- 3) ND = Not Detected.
- 4) NL = Not Listed.
- 5) MCP = Massachusetts Contingency Plan.
The MCP S-3 Standard is provided for comparison purposes only. Standards are provided in mg/Kg.
- 6) **Bolded and shaded results exceed MCP S-3 Standards.**
- 7) ft. = feet

TABLE 8

**SUMMARY OF BULK ASBESTOS SAMPLE RESULTS DETECTED ABOVE REPORTING LIMITS
SEEKONK MILL FIRE
SEEKONK, MASSACHUSETTS**

SAMPLE LOCATION	SAMPLE NUMBER	DATE SAMPLED	COMPOUND		COMMENTS
			Amosite (%)	Chrysotile (%)	
ACM-01	R01-120501EJ-0003	5/2/12	15	ND	Pipe lagging
ACM-02	R01-120501EJ-0004	5/2/12	ND	ND	Roofing material
ACM-03	R01-120501EJ-0005	5/2/12	ND	20	Pipe joint packing
ACM-04	R01-120501EJ-0006	5/2/12	10	ND	Pipe wrap
ACM-05	R01-120501EJ-0007	5/2/12	ND	ND	Roofing material
ACM-06	R01-120501EJ-0008	5/2/12	ND	ND	Roofing material
ACM-07	R01-120501EJ-0009	5/2/12	ND	ND	Roofing material
ACM-08	R01-120501EJ-0010	5/2/12	ND	ND	Roofing material
ACM-09	R01-120501EJ-0011	5/2/12	ND	ND	Roofing material

NOTES:

- 1) Samples were analyzed by U.S. EPA Office of Environmental Measurement and Evaluation (OEME) EPA Region I SOP, EIASOP - INGASBSD2, Bulk Asbestos by Polarized Light Microscopy (PLM).
- 2) All quantities are estimated volume percent.
- 3) ND = Not Detected.
- 4) % = Percent