

Remedial Action Report – Former Halsted Corporation Property (AOC HSD-1A) Soil  
Garfield Avenue Group  
PPG, Jersey City, New Jersey

## **Appendix F**

### **Compliance Averaging Evaluation for Antimony**

# Memorandum

To	Wayne Howitz, NJDEP	Page 1
CC	Ronald Riccio, Site Administrator James Ray, Site Administrator PM Nancy Colson, Site Administrator Assistant David Doyle, NJDEP Prabal Amin, WESTON Solutions, Inc. Laura Amend-Babcock, WESTON Solutions, Inc. Dorothy Laguzza, K&L Gates Joe Lagrotteria, K&L Gates Mark Terril, PPG Jody Overmyer, PPG Rich Feinberg, PPG Cameron Dixon, AECOM Sandy Paulsen, AECOM	
Subject	78 Halladay Street (the former Halsted Corporation Property) Compliance Averaging for Antimony in Soil (Revision 2)	
From	Claire Hunt	
Date	August 28, 2020	

## Introduction

This memorandum provides documentation of attainment of compliance for antimony in soil with the New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Remediation Standard (RDCSRS) for a site-specific soil sample set from 78 Halladay Street (the former Halsted Corporation property [Halsted]) in accordance with the NJDEP *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (September 24, 2012, Version 1.0).

The following soil samples (**Table 1**) with antimony concentrations greater than the RDCSRS of 31 milligrams per kilogram (mg/kg) remain in place:

**Table 1 Soil Samples Remaining with Antimony Concentrations Greater than the RDCSRS**

Location ID	Sample ID	Date Collected	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Antimony Result (mg/kg)
H3	H3-10.0	12/11/2011	10.0 - 10.5	3.8 – 3.3	36.9 J
H1A	H1A-10.0	12/10/2011	10.0 - 10.5	3.4 – 2.9	48.5 J
EF-122	EF-B122-4.5-5.0	9/10/2012	4.5 - 5.0	5.8 – 5.3	37.9
HSD-PDI-GG11A	HSD-PDI-GG11A-7.0-7.5	6/3/2016	7.0 - 7.5	5.0 – 4.5	57.4

**Notes:**

bgs - below ground surface

ft - foot or feet

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

mg/kg – milligrams per kilogram

NAVD88 - North American Vertical Datum of 1988

**Figure 1** depicts boring/sample locations presented herein, as well as analytical results for samples where antimony remains in place following remedial excavation.

Boring logs, laboratory reports, and data validation reports for samples reported herein are included as part of the *Final Halsted Remedial Action Report Tables and Figures*, dated August 28, 2020, except where otherwise noted.

**Delineation**

Soil samples with antimony concentrations greater than the RDCSRS that remain in place within Halsted following remedial excavation are delineated as presented in **Table 2** through **Table 5**:

**Table 2 Delineation of Sample H3-10.0**

Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Date Collected	Antimony Result (mg/kg)	Direction of Delineation
H2	H2-10.0	10.0 - 10.5	3.4 – 2.9	12/10/2011	4.9 J	NE/Vertical
H3A	H3A-10.0*	10.0 - 10.5	3.6 – 3.1	12/11/2011	10.3 J	SE
HSD-PDI-CC14A	HSD-PDI-CC14A-10.0-10.5*	10.0 - 10.5	4.1 – 3.6	5/26/2016	3.5 J	SW
X29	114-X29D-9.5-10*	9.5 - 10.0	2.7 – 2.2	10/21/2005	22.0	NW
HSD-PDI-CC14A	HSD-PDI-CC14A-12.0-12.5	12.0 - 12.5	2.1 – 1.6	5/26/2016	5.8 J	Vertical

**Notes:**

NE – northeast

NW – northwest

SE – southeast

SW – southwest

\* Boring logs for these sampling locations are provided in **Attachment 2**; laboratory reports and data validation reports for these sampling locations are provided in **Attachment 3** and **Attachment 4**, respectively.

**Table 3 Delineation of H1A-10.0**

Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Date Collected	Antimony Result (mg/kg)	Direction of Delineation
H1	H1-10.0	10.0 - 10.5	3.6 – 3.1	12/10/2011	3.6 J	NW
H0A	H0A-10.5-11.0	10.5 - 11.0	3.4 – 2.9	2/18/2014	0.57 J	NE

Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Date Collected	Antimony Result (mg/kg)	Direction of Delineation
H2A	H2A-10.0	10.0 - 10.5	3.7 – 3.2	12/10/2011	1.8 J	SW
H1B	H1B-10.0	10.0 - 10.5	3.4 – 2.9	12/10/2011	8.9 J	SE
H1A3V	H1A3V-12.0-12.5	12.0 – 12.5	1.4 – 0.9	2/21/2014	11.1	Vertical

**Table 4 Delineation of Sample EF-B122-4.5-5.0**

Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Date Collected	Antimony Result (mg/kg)	Direction of Delineation
H0A	H0A-8.5-9.0	8.5 - 9.0	5.4 – 4.9	2/18/2014	1.7 J	NE
EF-14	EF-B14-6.0*	6.0 - 6.5	4.7 – 4.2	5/9/2011	1.3 UJ	SW
PSEG-SB30	NJD981084668-4/26/2005-1	18.0 – 18.5	-6.9 – -7.4	4/26/2005	0.90 U	Vertical
X36	114-X36C-6-6.5*	6.0 - 6.5	5.7 – 5.2	10/17/2005	25.3	NW
HAL-EX-2+10-130R	HAL-EX-2+10-130R-4.9-5.4	4.9 - 5.4	5.8-5.3	5/23/2019	11.3	SE

**Notes:**

U – The analyte was not detected above the sample reporting limit shown.

UJ – The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

\* Boring logs for these sampling locations are provided in **Attachment 2**; laboratory reports and data validation reports for these sampling locations are provided in **Attachment 3** and **Attachment 4**, respectively.

**Table 5 Delineation of Sample HSD-PDI-GG11A-7.0-7.5**

Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Date Collected	Antimony Result (mg/kg)	Direction of Delineation
H0A	H0A-8.5-9.0	8.5 - 9.0	5.4 – 4.9	2/18/2014	1.7 J	N
X36	114-X36C-6-6.5	6.0 - 6.5	5.7 – 5.2	10/17/2005	25.3	W
H5B	H5B-8.0-8.5*	8.0 - 8.5	5.7 – 5.2	2/26/2014	1.6 J	S
HAL-EX-2+82-134R	HAL-EX-2+82-134R-7.1-7.6 (HAL-EX-2+82-134R-7.1-7.6X)	7.1 - 7.6	4.8 – 4.3	3/24/2020	22.9 J (14 UJ)	E
HSD-PDI-GG11A	HSD-PDI-GG11A-9.0-9.5	9.0 - 9.5	3.0 – 2.5	6/3/2016	3.3	Vertical

**Notes:**

E - east

N - north

S – south

W - west

\* The boring log for this sampling location is provided in **Attachment 2**; the laboratory report and data validation report for this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

### Functional Area

The antimony RDCSRS is based on the ingestion-dermal pathway (**Attachment 1**). The functional area for the ingestion-dermal pathway is limited to 0.25 acre for residential use. The extent of the functional area within the site boundary is shown in **Figure 1**. The shape is square and within the site boundary. Samples remaining following remedial excavation within the functional area extents were collected from deeper than 2 ft bgs and, for the calculation, are considered to be part of the functional area.

### Compliance Averaging

Compliance with the antimony RDCSRS is demonstrated through spatial averaging. Thiessen polygons were created within the functional area as shown in **Figure 1**. The sample selection process is as follows:

1. The samples for antimony with a sample status of “remaining following excavation” that fall within the functional area horizontally and vertically are identified.
2. Samples with the maximum concentration at each location are selected for use in the weighted average (refer to **Table 6** below). The maximum of the concentration for detections or the Method Detection Limit (MDL)/Reporting Limit (RL) for non-detects is selected.

**Table 6 Samples Used to Determine Weighted Average Concentration**

Location ID	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Date Collected	Antimony Result (mg/kg)	Area (sf)	Area x Antimony Result (sf*mg/kg)
EF-122	4.5 - 5.0	5.8 - 5.3	9/10/2012	37.9	326	12,355
EF-123	3.0 - 3.5	9 - 8.5	9/7/2012	7.7	255	1,964
H1	10.0 - 10.5	3.6 - 3.1	12/10/2011	3.6 J	544	1,958
H1A	10.0 - 10.5	3.4 - 2.9	12/10/2011	48.5 J	286	13,871
H1A3V	12.0 - 12.5	1.4 - 0.9	2/21/2014	11.1	559	6,205
H1B	15.0 - 15.5	-1.6 - -2.1	12/10/2011	18.2 J	370	6,734
H2	15.0 - 15.5	-1.6 - -2.1	12/10/2011	7.0 J	1,262	8,834
H2A	10.0 - 10.5	3.7 - 3.2	12/10/2011	1.8 J	1,322	2,380
H2B	15.0 - 15.5	-1.6 - -2.1	12/10/2011	29.4 J	1,212	35,633
H3	10.0 - 10.5	3.8 - 3.3	12/11/2011	36.9 J	969	35,756
H3A	15.0 - 15.5	-1.4 - -1.9	12/11/2011	0.85 UJ	288	245
H3B	10.0 - 10.5	3.2 - 2.7	12/11/2011	7.2 J	499	3,593
HAL-EX-2+10-130R	4.9 - 5.4	5.8 - 5.3	5/23/2019	11.3	126	1,424
HAL-EX-2+10-75R	8.6 - 9.1	4.7 - 4.2	7/11/2018	10.1	1,269	12,817

Location ID	Sample Depth Interval (ft bgs)	Sample Elevation Interval (ft NAVD88)	Date Collected	Antimony Result (mg/kg)	Area (sf)	Area x Antimony Result (sf*mg/kg)
HAL-EX-2+82-130R	7.0 - 7.5	5.1 - 4.6	5/23/2019	5.9 U	89	525
HAL-EX-2+82-134R	7.1 - 7.6	4.8 - 4.3	3/24/2020	22.9 J	6	137
HSD-PDI-EE13A	14.0 - 14.5	-0.8 - -1.3	5/25/2016	22.5	713	16,043
HSD-PDI-GG11A	7.0 - 7.5	5 - 4.5	6/3/2016	57.4	21	1,205
PSEG-SB30	62.0 - 62.5	-50.9 - -51.4	4/26/2005	1.3 U	785	1,021
<b>Total</b>					<b>10,901</b>	<b>162,699</b>

**Note:**

sf – square feet

The following equation was used to determine the weighted average concentration:

$$\text{Weighted Average Concentration} = 162,699 \text{ sf} \times \text{mg/kg} / 10,901 \text{ sf} = 15 \text{ mg/kg}$$

**Conclusion**

The spatially weighted average antimony concentration within the study area at Halsted is 15 mg/kg, which is compliant with the RDCSRS for antimony of 31 mg/kg.

**Attachments:**

**Figure 1** – Soil Boring/Sample Locations, Halsted Compliance Averaging Evaluation – Antimony

**Attachment 1** – NJDEP Environmental Criteria for Antimony

**Attachment 2** – Boring Logs

**Attachment 3** – Laboratory Reports

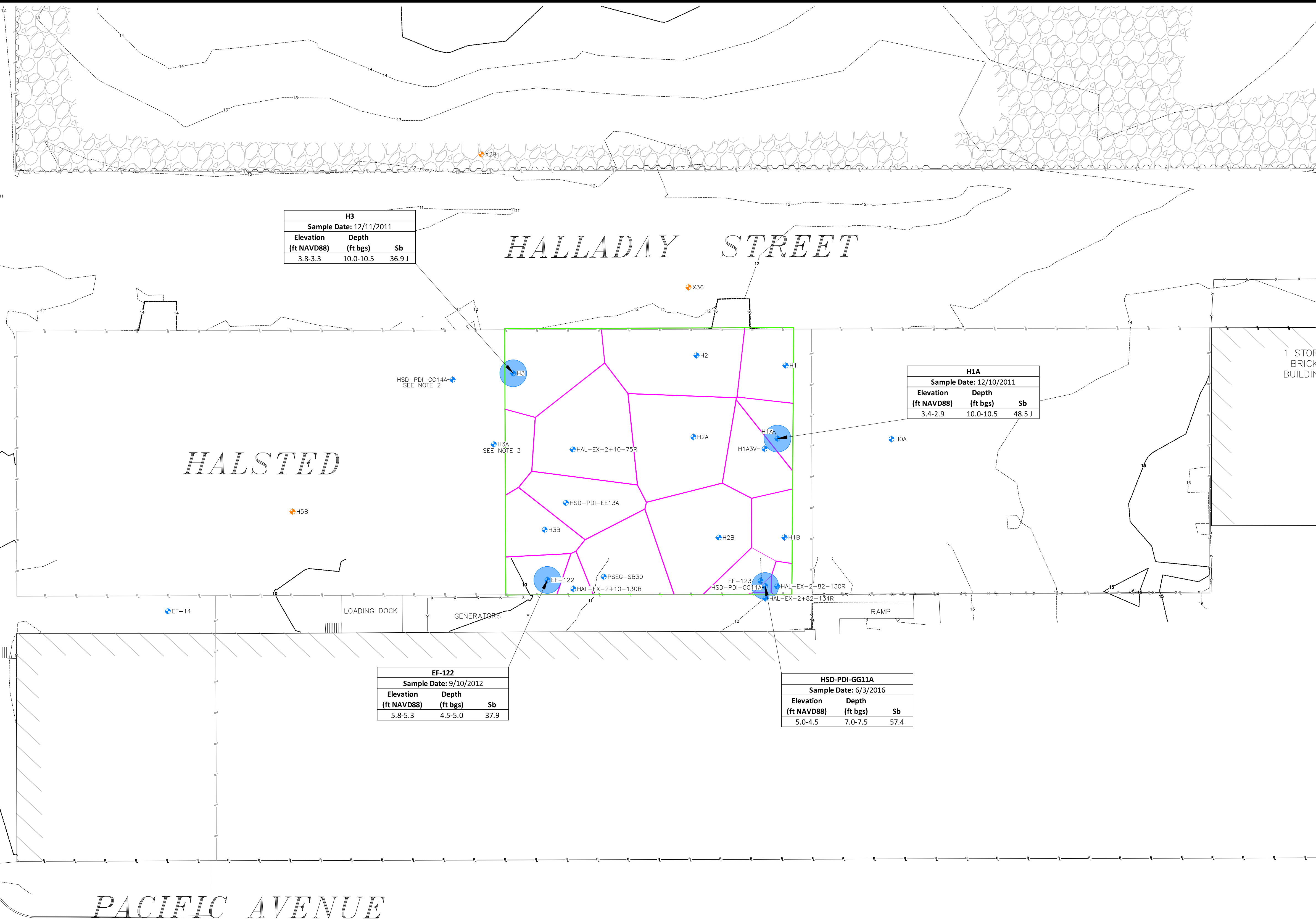
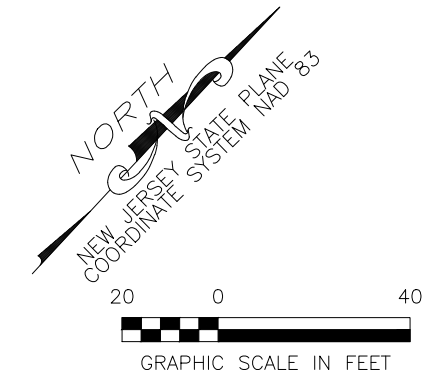
**Attachment 4** – Data Validation Reports

## Figure

File: Q:\910 CAD\20 SHEETS\RAR\Halsted\CAM\2020-04-29 HSN-HAL Comp Ave.dwg Layout: Figure 1 User: Amy.Kroyer Plotted: Apr 30, 2020 - 1:05pm Xref's:

- LEGEND**
- PROPERTY LINE
  - FENCE
  - EDGE OF PAVEMENT
  - EDGE OF CONCRETE
  - EXISTING SHEET PILE
  - CURB
  - EXISTING BUILDING
  - PRE-REMEDATION GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL 5' INDEX
  - STONE SURFACE FINISH
  - SOIL SAMPLE LOCATION (SAMPLES REMAINING FOLLOWING REMEDIAL EXCAVATION)
  - SOIL SAMPLE LOCATION (SAMPLES REMAINING FOLLOWING REMEDIAL EXCAVATION)
  - LOCATION OF SOIL SAMPLE WITH Sb CONCENTRATION GREATER THAN THE RDCSRS REMAINING FOLLOWING REMEDIAL EXCAVATION
  - THEISSEN POLYGON
  - FUNCTIONAL AREA

- NOTES:**
1. Sb RESULTS ARE SHOWN IN MG/KG
  2. SAMPLE HSD-PDI-CC14A-10.0-10.5 REMOVED DURING REMEDIAL EXCAVATION
  3. SAMPLE H3A-10.0 REMOVED DURING REMEDIAL EXCAVATION
- bgs BELOW GROUND SURFACE  
 ft FEET  
 mg/kg MILLIGRAMS PER KILOGRAM  
 NAD83 NORTH AMERICAN DATUM OF 1983  
 NAVD88 NORTH AMERICAN VERTICAL DATUM OF 1988  
 RDCSRS NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION RESIDENTIAL DIRECT CONTACT SOIL REMEDIATION STANDARD ANTIMONY  
 Sb ANTIMONY  
 QUALIFIER  
 J - INDICATES THE RESULT WAS AN ESTIMATED VALUE; THE ASSOCIATED NUMERICAL VALUE WAS AN APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.



H3		
Sample Date: 12/11/2011		
Elevation (ft NAVD88)	Depth (ft bgs)	Sb
3.8-3.3	10.0-10.5	36.9 J

H1A		
Sample Date: 12/10/2011		
Elevation (ft NAVD88)	Depth (ft bgs)	Sb
3.4-2.9	10.0-10.5	48.5 J

EF-122		
Sample Date: 9/10/2012		
Elevation (ft NAVD88)	Depth (ft bgs)	Sb
5.8-5.3	4.5-5.0	37.9

HSD-PDI-GG11A		
Sample Date: 6/3/2016		
Elevation (ft NAVD88)	Depth (ft bgs)	Sb
5.0-4.5	7.0-7.5	57.4



PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, HUDSON COUNTY, NEW JERSEY	<b>SOIL BORING/SAMPLE LOCATIONS          HALSTED COMPLIANCE AVERAGING          EVALUATION          ANTIMONY</b>
DATE: 04/29/2020	DRWN: ASK
<b>FIGURE 1</b>	



## **Attachment 1**

### **NJDEP Environmental Criteria for Antimony**



**New Jersey Department of Environmental Protection**

**Standards for Drinking Water, Ground Water, Soil and Surface Water**

**Antimony (Total)**

**CAS #: 7440-36-0**

**Drinking Water Standards** ( $\mu$  g/l or ppb)

**Standard:** 6

**Type:** Primary

FEDERAL MCL

**Ground Water Quality Standards** ( $\mu$  g/l or ppb)

**Standard:** 6

**Type:** Specific

**GW-Quality Criterion:** 6

**PQL:** 3

**Surface Water Quality Standards** ( $\mu$  g/l or ppb)

**Fresh Water-**

**Human Health:** 5.6(h)(T)

**Aquatic-Acute:**

**Aquatic-Chronic:**

**Saline Water-**

**Human Health:** 640(h)(T)

**Aquatic-Acute:**

**Aquatic-Chronic:**

**Soil Standards** (mg/kg)

**Residential Direct Contact Health Based Criteria and Soil Remediation Standard**

**Soil Remediation Standard:** 31

**Effective:** 6/2/2008

**Interim:**

**Ingestion Dermal:** 31

**Inhalation:** 360,000

**Soil PQL:** 6

**Non-Residential Direct Contact Health Based Criteria and Soil Remediation Standard**

**Soil Remediation Standard:** 450

**Effective:** 6/2/2008

**Interim:**

**Ingestion Dermal:** 450

**Inhalation:** 23,000

**Soil PQL:** 6

## **Attachment 2**

### **Boring Logs**

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611459.371
<b>Date Started Drilling:</b> 5/9/2011	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 682763.459
<b>Date Finished Drilling:</b> 5/9/2011	<b>Core Size:</b> 12 in	<b>Boring Total Depth:</b> 25 ft
<b>Logged By:</b> B. Daniels, M. Merdinger	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b>		<b>Surface Elevation:</b> 10.7 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID	
		0.0		ASPHALT		Black Asphalt		
1	5		dry	FILL		Brown (7.5YR 4/2) fine to coarse SAND and Gravel, some concrete, little Fill Material (coal, wood, ash, brick), medium dense, dry, no odor.	EF-14-0.5	
2		0.0	dry	FILL			EF-14-2.0	
3		0.3	moist	FILL			EF-14-2.5	
4		0.4	moist	FILL			EF-14-4.0	
5	1.1	0.0	wet	FILL		Black (7.5YR 2.5/1) fine to coarse SAND, some fine to medium gravel, some fill (ash, cinders, coal, glass), medium dense, moist, slight petroleum odor.	EF-B14_6.0	
6				NR		Dark Gray (2.5Y 4/1) SILT and CINDERS, some Ash, Little Coal fragments, wet at 5.3', loose. No odor.	EF-B14-6.0	
7						No Recovery		
8								
9								
10	2	1.3	wet	FILL		Dark Gray (2.5Y 4/1) SILT and CINDERS, some Ash, Little Coal fragments, wet, loose. No odor.	EF-B14-10.0	
11		22.8	moist	PT			Dark Brown (10YR 4/4) PEAT, Organics, little Silt, semi-cohesive, moist. Sulfur odor. Soils consistent with MM.	EF-B14_12.0
12				NR			No Recovery	EF-B14-12.0
13								
14								
15	3	3.8	moist	OL		Dark Brown (10YR 4/4) PEAT, little silt, some to little Organics, moist, sulfur odor. Trace grey fine sand @ 17.9'. Soils consistent with MM.		
16		91.6						
17		4.0						
18				NR		No Recovery	EF-B14-17.5	
19								
20	4	23.2	wet	SM		Gray (Gley1 5/0) fine to medium SAND (SM), little interbedded Silt, medium dense to loose, wet. Slight coal tar odor.		
21		11.2						
22		3.8						
23		0.8						
24				NR		No Recovery	EF-B14-22.5	
25								

**Notes:**  
bgs - below surface grade COPR - chromite ore processing residue UNdno - non-organic undisturbed native deposits MGP - manufactured gas plant  
MM - meadow mat GGM - green grey mud UNdorg - organic undisturbed native deposits CCPW - chromate chemical production waste

Comments: No COPR/GGM identified at this location.

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611506.011502
<b>Date Started Drilling:</b> 12/11/2011	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 682893.463873
<b>Date Finished Drilling:</b> 12/11/2011	<b>Core Size:</b> 2 in	<b>Boring Total Depth:</b> 20 ft
<b>Logged By:</b> M. Merdinger	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Inside building - 3rd transect		<b>Surface Elevation:</b> 13.6 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0-1			Dry	CONCRETE		Concrete, no staining.	
1-2			Dry	FILL		Dark Brown (7.5YR 3/4) SILT and FILL (Ash, Cinders, coal, glass), loose. No odor.	H3A-0.5
2-3			Dry	VOID		No Recovery	
3-4							
4-5							
5-6			Dry	FILL		Dark Brown (7.5YR 3/4) SILT and FILL (Ash, Cinders, coal, glass), loose. No odor.	H3A-5.0
6-7			Dry to moist	FILL		Black SILT, little Organics, trace Peat, soft. No odor.	
7-8							H3A-7.0
8-9			Moist	FILL		Light Brown (7.5YR 6/3) ASH and CINDERS, loose. No odor.	
9-10			Moist	VOID		No Recovery	
10-11			Moist	FILL		Dark Brown (7.5YR 3/4) SILT and FILL (Ash, Cinders, coal, glass), loose. No odor. Water at 11 ft.	H3A-10.0
11-12			Wet	VOID		No Recovery	
12-13							
13-14							
14-15							
15-16			Moist	PEAT		Dark Brown (7.5YR 3/4) PEAT, Organics, little Silty Clay, medium stiff. Sulfur odor.	H3A-15.0
16-17			Moist	VOID		No Recovery	
17-18							
18-19							
19-20							
20				NULL		End of boring at 20 ft.	

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

Comments:

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611468
<b>Date Started Drilling:</b> 2/26/2014 1:00:00 PM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 682823
<b>Date Finished Drilling:</b> 2/26/2014 12:44:00 PM	<b>Core Size:</b> 3.0 in	<b>Boring Total Depth:</b> 20.5 ft
<b>Logged By:</b> FM	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b>		<b>Surface Elevation:</b> 13.7 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID		
	0.5	0.0		CONCRETE		CONCRETE	H5B-CT		
1	4.5	0.0	damp to moist	FILL		fine to coarse sandy ASH, dark gray, 10YR 6/1, cinders and mixed fill including glass and brick fragments, damp to moist, no odor or staining.	H5B-CB		
2							H5B-0.5-1.0		
3							H5B-2.0-2.5		
4		0.0	damp to moist	FILL		fine to coarse sandy ASH, gray-brown, some cinders, trace silt, damp to moist, no odor or staining.	H5B-4.0-4.5		
5									
6	5	0.0	damp to moist	FILL		fine to coarse sandy CINDERS, gray to brown, mixed fill, ash and coal slag, loose, non-plastic, damp-moist, no odor or staining.	H5B-6.0-6.5		
7									
8									
9									
10	5	0.0	moist	FILL		fine to coarse sandy ASH, light gray, 10YR 6/2, loose and hard, ash, cinders and coal slag mix, trace glass and brick fragments, no odor or staining, moist.	H5B-10.0-10.5		
11									
12									
13		0.0	moist to wet	FILL		fine to coarse sandy CINDERS, dark gray, ash and coal slag, trace gray silt, moist to wet, no odor or staining.	H5B-12.0-12.5		
14									
15	5.5	0.0	wet to very wet	FILL		fine to medium silty SAND, gray, 10YR 6/1, 20% ash and cinders, loose, non-plastic, wet to very wet, no odor or staining.	H5B-16.0-16.5		
16									
17		0.0	damp	PT				fine silty PEAT (degraded vegetated material), brown-gray, 80% organic fibers, 20% organic silt, firm, brittle, damp, slight sulfur odor, no staining. Soils consistent with UNDorg.	H5B-18.0-18.5
18									
19									
20							H5B-20.0-20.5		

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

**Comments:** 1) MM/UND confirmed to be 1 ft thick 2) No CCPW (COPR or GGM) present in any interval of this boring.

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Direct Push	<b>Coordinates (NJSPNAD83) x:</b> 611478
<b>Date Started Drilling:</b> 5/26/2016 8:25:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 682900.6
<b>Date Finished Drilling:</b> 5/26/2016 9:50:00 AM	<b>Core Size:</b> 3.0 in	<b>Boring Total Depth:</b> 20 ft
<b>Logged By:</b> HBB	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Actual - HSD PDI		<b>Surface Elevation:</b> 14.1 ft NAVD88

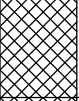
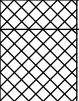
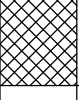
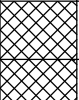
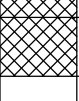
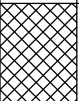
Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
		0.0		CONCRETE		Concrete	
1	4.5		dry	FILL		CINDERS, trace ash and wood, (5YR 2.5/1) black, loose, dry, no odor, no staining.	HSD-PDI-CC14A-0.5-1.0
2							HSD-PDI-CC14A-2.0-2.5
3							HSD-PDI-CC14A-4.0-4.5
4							
5	3.5	0.0		NR		NO RECOVERY	
6			dry	FILL		CINDERS, trace ash, (5YR 2.5/1) black, loose, dry, no odor, no staining.	HSD-PDI-CC14A-6.0-6.5
7			moist	FILL		ASH, trace glass and coal, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	
8			saturated	FILL		CINDERS, trace silt, (5Y 5/1) gray, loose, saturated, no odor, no staining, water at 8.5 feet.	HSD-PDI-CC14A-8.0-8.5
9				NR		NO RECOVERY	
10	4.5	0.0	saturated	FILL		CINDERS, trace ash and wood, (5Y 5/1) gray, loose, saturated, no odor, no staining.	HSD-PDI-CC14A-10.0-10.5
11							HSD-PDI-CC14A-12.0-12.5
12							HSD-PDI-CC14A-14.0-14.5
13							
14				NR		NO RECOVERY	
15	4.5	0.0	saturated	FILL		CINDERS, trace ash, wood and metal debris, (2.5Y 5/1) gray, loose, saturated, no odor, no staining.	HSD-PDI-CC14A-16.0-16.5
16							
17			wet	FILL		fine SAND, little silt, trace fine gravel, (7.5YR 4/3) brown, medium dense, wet, slight petroleum odor, slight black staining.	HSD-PDI-CC14A-17.0-17.5
18			dry	PT		PEAT (degraded vegetated material), 80% organic fibers, 20% organic silt, (5YR 3/2) dark reddish brown, stiff, dry, moderate organic odor, no staining. Soils consistent with MM.	HSD-PDI-CC14A-17.5-18.0
19			moist	OL		Organic SILT, 90% organic silt, 10% organic fibers, (5Y 5/1) gray, medium stiff, moist, no odor, no staining. Soils consistent with UNDorg.	
20				NR		NO RECOVERY	

**Notes:**

bgs - below surface grade COPR - chromite ore processing residue UNDno - non-organic undisturbed native deposits MGP - manufactured gas plant  
MM - meadow mat GGM - green grey mud UNDorg - organic undisturbed native deposits CCPW - chromate chemical production waste

**Comments:** 1) 3 attempts were made to obtain best recovery 2) MM/UND confirmed to be 1 ft thick 3) No CCPW (COPR or GGM) present in any interval of this boring.

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> Ameridrill	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611427.77
<b>Date Started Drilling:</b> 10/21/2005	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 682970.06
<b>Date Finished Drilling:</b> 10/21/2005	<b>Core Size:</b> 2 inches	<b>Boring Total Depth:</b> 24 ft
<b>Logged By:</b> D. Sherman	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> proposed		<b>Surface Elevation:</b> 12.2 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1			dry	FILL		Reddish Brown (2.5YR 4/4) fine SAND, some silty Sand, little coarse Gravel, dry. 100% COPR.	114-X29A-0.5-1
2			moist	FILL NR		Gray (GLE1 6/N) medium to coarse GRAVEL, little fine to coarse Sand, moist. No Recovery	
3							
4			moist	FILL		Reddish Brown (2.5YR 4/4) silty SAND, some fine to coarse Sand, little fine Gravel, moist.	114-X29B-4-4.5
5			wet	FILL		Pale Yellow (5Y 8/3) LIME, paste, some Coal Ash, little Teal Gravel, wet. 80% Mud Waste, 20% COPR	
6				NR		No Recovery	114-X29C-6-6.2
7							
8			wet	FILL		Reddish Brown (2.5YR 4/4) fine to coarse SAND, some fine to coarse Gravel, oily material, wet. 100% COPR.	
9			wet	FILL		Light Olive Gray (5Y 6/2) silty SAND, some clayey Silt, little sandy Silt, wet. 100% Mud Waste.	114-X29D-9.5-10
10				NR		No Recovery	
11							
12			wet	FILL		Gray (5Y 5/1) sandy SILT, some fine Sand, little silty Sand, wet. 100% Mud Waste.	
13							
14							114-X29E-14-14.5
15							
16				PEAT PEAT		Black (5Y 2.5/1) PEAT, some sandy Silt, little clayey Silt, Oily Material. Black (5Y 2.5/1) PEAT, oily.	
17			wet	SILTY SAND		Reddish Brown (2.5YR 4/4) silty SAND, some fine Sand, little sandy Silt, oily, wet.	114-X29F-17.1-17.6
18				NR		No Recovery	
19							
20			wet	SAND		Reddish Brown (2.5YR 4/3) fine to coarse SAND, some fine to coarse Gravel, little silty Sand, oily material, wet.	
21							X29G
22							
23							
24				NULL		End of Boring at 24 ft.	

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDOrg - organic undisturbed native deposits    CCPW - chromate chemical production waste

Comments:

PPG - 2012-09 RA PPG LOGS - A.GDT. - 10/21/16 13:40



<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> Ameridrill	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Soft Dig/Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611519.13
<b>Date Started Drilling:</b> 10/17/2005	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 682986.9
<b>Date Finished Drilling:</b> 10/17/2005	<b>Core Size:</b> 2 inches	<b>Boring Total Depth:</b> 24 ft
<b>Logged By:</b> S. McCray	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> proposed		<b>Surface Elevation:</b> 11.7 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
				ASPHALT		(Soft Dig 0'-6') ASPHALT	
1				FILL		Coarse and angular GRAVEL	114-X36A-0.8-1.3
				FILL		Dark reddish brown (2.5YR 3/4) coarse to fine SAND, some gray angular and dark reddish brown sub-rounded Gravel. 75% COPR. (Hand Augered for Sample)	
2				NR		No Recovery	114-X36B-2-2.5
				FILL		Very dark gray (2.5YR 3/0) GRAVEL, and coarse to fine Sand, little Silt. (Hand Augered for Sample)	
3			wet at 4.0'	NR		No Recovery	
4							
5							
6			damp	FILL		Very dark gray (2.5YR 3/0) SILT, and Wood, trace Glass and Brick, damp.	114-X36C-6-6.5
7			damp to wet	FILL		Very dark gray (5YR 3/1) CLAY and SILT, trace fine to very fine Sand, damp to wet	
8			damp to wet	NR		No Recovery	
9			damp to wet	FILL		Dusky red (10R 3/3) SILT, some fine to very fine Sand, damp to wet.	
10			damp to wet	FILL		Dark reddish brown (5YR 3/2) Same as above (SAA)	114-X36D-10-10.5
11				NR		No Recovery	
12							
13							
14							
15							
16			damp to wet moist	FILL PEAT		Reddish brown (2.5YR 4/4) fine to very fine SAND, little Silt, damp to wet PEAT, moist	X36E
17							
18			damp	SAND NR		Gray (GLE Y N5) medium to very fine SAND, little Meadow Mat, damp No Recovery	
19							
20			wet	SAND		Gray SAA, wet	
21							X36F
22				NR		No Recovery	
23							
24				NULL		End of Boring at 24 ft.	

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDOrg - organic undisturbed native deposits    CCPW - chromate chemical production waste

Comments:

## **Attachment 3**

### **Laboratory Reports (*Provided Separately*)**

## **Attachment 4**

### **Data Validation Reports (*Provided Separately*)**