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Remedial Action Work Plan (Soil) – Garfield Avenue Roadway

Final

Addendum to the Final Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group Sites

NJDEP Program Interest Number: G000005480

PPG Garfield Avenue Group
Hudson County Chromate Sites
Jersey City, New Jersey

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List of Acronyms/Definitions

The following acronyms and definitions apply to this document:

ACO	Administrative Order on Consent
ADGA	dense-graded aggregate amended with FerroBlack®-H
AMP	Air Monitoring Plan
ARS	Alternative Remediation Standard
bgs	below ground surface
CCRD	Canal Crossing Redevelopment
CCPW	Chromate Chemical Production Waste, a by-product generated from the production of sodium bichromate, including Chromite Ore Processing Residue (COPR), green-gray mud, and fill mixed with COPR or green-gray mud.
chromium (Cr)	An element found in nature that is commonly used in manufacturing activities. Chromium may be present in soil or water as trivalent chromium (Cr^{+3}) and hexavalent chromium (Cr^{+6}). Cr^{+3} is an essential nutrient at trace concentrations. Cr^{+6} can be present in many forms, some of which are carcinogenic at high concentrations. Total chromium, as measured in soil or groundwater, is the sum of Cr^{+3} and Cr^{+6}.
COC	constituent of concern
COPR	Chromite Ore Processing Residue
CrSCC	NJDEP Chromium Soil Cleanup Criteria
Cr^{+3}	trivalent chromium
Cr^{+6}	hexavalent chromium
DGA	dense-graded aggregate
DIGWSSL	Default Impact to Ground Water Soil Screening Levels
El.	elevation
FEMA	Flood Emergency Management Agency
FerroBlack®-H	FerroBlack®-H is a water-based suspension of 7 to 8% ferrous sulfide and 1 to 2% sodium hydrosulfide. The proprietary reagent is manufactured by Redox Solutions, LLC.
FHA	Flood Hazard Area
ft	foot or feet

GA	Garfield Avenue
groundwater	The supply of fresh water found beneath the Earth's surface, which can be extracted by wells or through natural springs.
HDPE	high-density polyethylene
HEPSCD	Hudson-Essex-Passaic Soil Conservation District
HER	Hardship Exception Request
IGWSRS-GAG	Impact to Ground Water Soil Remediation Standard – Garfield Avenue Group
IRM	interim remedial measure
JCMUA	Jersey City Municipal Utilities Authority
JCO	Partial Consent Judgment
LSRP	Licensed Site Remediation Professional
mg/kg	milligrams per kilogram
MM	Meadow Mat
NAVD88	North American Vertical Datum of 1988
NILODN	notice in lieu of deed notice
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NRDCSRS	NJDEP Non-Residential Direct Contact Soil Remediation Standard
PBR	Permit-by-Rule
PDI	pre-design investigation
PI	Program Interest
Project Area	Garfield Avenue Roadway between Carteret Avenue and the New Jersey Transit Light Rail
RA	remedial alternatives
RAP	Remedial Action Permit
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
RDCSRS	NJDEP Residential Direct Contact Soil Remediation Standard
RI	Remedial Investigation

remediation	Actions to reduce, isolate, or remove contamination with the goal of mitigating impacts to human health and the environment.
SESCP	Soil Erosion and Sediment Control Plan
soil	Solid material (other than CCPW). Exceptions to this definition are specifically noted in the text.
SOP	standard operating procedure
SRP	Site Remediation Program
SRS	Soil Remediation Standards
SSRIR	Supplemental Soil Remedial Investigation Report
TEP	Technical Execution Plan
the City	the City of Jersey City, New Jersey
UND	Undisturbed Native Deposits

1.0 Introduction

On behalf of PPG, AECOM has prepared this Soil Remedial Action Work Plan (RAWP) to present the remediation approach for the Garfield Avenue Roadway (the Site), part of the Garfield Avenue (GA) Group Sites (Sites 114, 132, 133, 135, 137, and 143; Phase 4 Roadways; and Phase 5 Off-Site Properties), located in Jersey City, New Jersey. The Garfield Avenue Roadway, which includes the portion of Garfield Avenue located between Carteret Avenue and the New Jersey Transit Light Rail, is located within Phase 4 Roadways of the GA Group Sites. Garfield Avenue is tracked under the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program (SRP) Program Interest (PI) number G000005480 for Site 114. The Site is depicted in **Figures 1-1** and **1-2**.

PPG is conducting remediation of Chromate Chemical Production Waste (CCPW)-related impacts in soil within Garfield Avenue in accordance with PPG's obligation under the *Administrative Order on Consent in the Matter of Hudson County Chromate Chemical Production Waste Sites and PPG Industries, Inc.* (ACO), July 19, 1990 (NJDEP, 1990); and the *Partial Consent Judgment Concerning the PPG Sites* (Judicial Consent Order [JCO]), June 26, 2009 (Superior Court of New Jersey Law Division – Hudson County, 2009).

This RAWP has been prepared as an Addendum to the *Final Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group Sites, Jersey City, Hudson County, New Jersey* (GA Group RAWP) (AECOM, 2018a) and presents site-specific details pertaining to the remedial approach to be implemented at the Site. Elements of the GA Group RAWP that are not specific to, and remain accurate for, the Site (e.g., site history, hydrology) have not been resubmitted herein. An updated Receptor Evaluation, incorporating the Garfield Avenue Roadway, will be included as part of the forthcoming Remedial Action Report (RAR) for the Site.

The proposed remedial approach presented herein is consistent with the technical memorandum titled *Garfield Avenue Proposed Remediation Plan Summary – Soil (Revision 2)* (Garfield Remediation Plan) (AECOM, 2018b), which received written concurrence Weston Solutions, Inc. (Weston), on behalf of NJDEP (Weston, 2018), and verbal concurrence from ERFS, on behalf of the City of Jersey City (the City).

The selected remedial alternatives (RAs) for Garfield Avenue (as presented in the Garfield Remediation Plan) are:

- For the current use of Garfield Avenue: engineering controls (asphalt cap) and institutional controls (notice in lieu of deed notice [NILODN] and implementation of standard operating procedures [SOPs] and worker training requirements developed in accordance with the Sewer Protocol).
- For the future Canal Crossing Redevelopment (CCRD): limited excavation of shallow CCPW-related impacts (above elevation [El.] 7 feet (ft) in the North American Vertical Datum of 1988 [NAVD88]) and CCPW source material (visible CCPW and hexavalent chromium [Cr^{+6}] concentrations in soil greater than 1,000 milligrams per kilogram [mg/kg]) (above and below El. 7 ft NAVD88, where technically feasible), backfilling with amended backfill, applying engineering controls (clean soil cap), and applying institutional controls (NILODN and implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol).

The remainder of this RAWP is organized as follows:

- **Section 2** provides background information;
- **Section 3** presents the RA evaluation;
- **Section 4** provides a summary of the selected remedial actions;
- **Section 5** includes a schedule for the Garfield Avenue Roadway current use remedial action and the future CCRD remedial action; and
- **Section 6** provides a list of references.

2.0 Background Information

This section provides a site description, discusses the previously conducted clean corridor excavation, identifies the applicable soil remediation standards and/or criteria, and summarizes the previous investigations and extent of impacts.

2.1 Site Description

A description of the GA Group Sites is presented in the GA Group RAWP.

Garfield Avenue is a heavily traveled urban roadway that runs approximately north-south and is bordered to the east by Site 114 and to the west by Frenchpark Warehouse Co., Jersey Auto Repair, and vacant land. The section of the roadway identified as a GA Group Site extends from Carteret Avenue to the New Jersey Transit Hudson-Bergen Light Rail (**Figure 1-1**). Concrete sidewalks are present on both the east and west sides of the roadway. The Site occupies approximately 0.9 acres.

Utilities located within the roadway's footprint include two water lines (a 6-inch diameter line and a 20-inch diameter line), communication lines, an 8-inch diameter gas line, and three combined sewer lines (an 18-inch diameter vitrified clay pipe, a 24-inch diameter concrete block pipe, and a 78-inch carbon steel pipe) (**Figure 2-1**).

Redevelopment for the Site is proposed in the CCRD Plan (T&M, 2013). As part of the proposed redevelopment, Garfield Avenue is designated to be widened. It is anticipated that Garfield Avenue will be temporarily or partially closed during the road widening work. No schedule has been determined for these redevelopment activities.

2.2 Previously Conducted Clean Corridor Excavation

From August through September 2012, PPG excavated a corridor within the Garfield Avenue eastern sidewalk, between the western property line of Site 114 (specifically, Phase 1B, interim remedial measure [IRM] #1, and Phase 1C) and the Garfield Avenue eastern curb line, to a depth of 6 ft below ground surface (bgs). The purpose of this excavation was to provide utility workers with a clean corridor within which to conduct subsurface work. Following excavation, the clean corridor was backfilled with clean dense-graded aggregate (DGA) and the sidewalk was restored. A 40-millimeter high-density polyethylene (HDPE) liner was placed within the clean corridor's extents 6 inches below the bottom of the restored concrete sidewalk. As-built conditions of the clean corridor have been documented in the technical memorandum titled, *Garfield Avenue Sidewalk Clean Corridor As-Built (Revision 1)* (AECOM, 2016). The clean corridor as-built elevations and lateral extents along the curb line and property line (the bounds of the clean corridor excavation) are presented in **Figure 2-2**.

2.3 Soil Remediation Standards/Criteria

PPG's responsibility to remediate soil impacts at the GA Group Sites (other than Site 114) includes CCPW impacts and non-CCPW impacts emanating from Site 114. CCPW impacts include the presence of CCPW and the presence of Cr^{+6} and CCPW metals (antimony, chromium, nickel, thallium, and vanadium) in soil at concentrations exceeding applicable criteria.

According to former NJDEP Commissioner Jackson's February 8, 2007 *Chromium Moratorium* Memorandum (Chromium Policy) (NJDEP, 2007), the remediation standards for Cr^{+6} and trivalent

chromium (Cr^{+3}) are the NJDEP Chromium Soil Cleanup Criteria (CrSCC), which are 20 mg/kg for Cr^{+6} and 120,000 mg/kg for Cr^{+3}, respectively. The soil remediation standards applicable to the remediation of CCPW-metals are the Residential Direct Contact Soil Remediation Standards (RDCSRS), the Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS), or the site-specific Alternative Remediation Standard (ARS) established for vanadium for the Garfield Avenue Group (i.e., the RDCSRS-GAG); and the Default Impact to Ground Water Soil Screening Levels (DIGWSSL), or the site-specific Impact to Ground Water Soil Remediation Standards for the Garfield Avenue Group (IGWSRS-GAG), where applicable. The ARS for vanadium was approved by the NJDEP on December 28, 2016 (NJDEP, 2016). The IGWSRS-GAG for antimony and nickel were developed and proposed in the *Supplemental Soil Remedial Investigation Report* (SSRIR) (AECOM, 2018c), which was approved by NJDEP on October 22, 2018 (NJDEP, 2018a).

The DIGWSSL and IGWSRS-GAGs are applicable only to unsaturated zone soil. The groundwater elevation (above which is the unsaturated zone) for Garfield Avenue was estimated as the 50th percentile groundwater elevation from four monitoring wells, located on or adjacent to Garfield Avenue, gauged between February 2007 and May 2018. The monitoring well locations and data are included in **Appendix A**. The estimated groundwater elevation for Garfield Avenue is El. 8.3 ft NAVD88.

An evaluation of non-CCPW impacts emanating from Site 114 to Garfield Avenue is presented in the technical memorandum titled *Halladay Street North, Carteret Avenue, and Garfield Avenue – Emanating from Parameters* (AECOM, 2018d), submitted to NJDEP on September 20, 2018. The technical memorandum concludes that no non-CCPW impacts are identified as emanating from Site 114 onto Garfield Avenue. On February 14, 2019, Weston, on behalf of NJDEP, provided comments in which NJDEP concurred with this conclusion (Weston, 2019).

For soil at Garfield Avenue, PPG is only responsible for CCPW and CCPW-related impacts and not for any other constituents exceeding NJDEP Soil Remediation Standards (SRS) that may be present at the Site (e.g., constituents of historic fill). This RAWP addresses only the soil impacts for which PPG is responsible. Remediation of impacts within Garfield Avenue that are not subject to the ACO and JCO are to be managed by the City's Licensed Site Remediation Professional (LSRP) under the NJDEP LSRP program.

The NJDEP SRS or criteria relevant to the remediation at Garfield Avenue are presented in **Table 2-1**.

2.4 Previous Investigations

The following investigations were conducted at Garfield Avenue:

- Historic investigations were completed between 2003 and 2008;
- A remedial investigation (RI) was conducted from April 2011 through August 2011 to delineate constituents of concern (COCs) at the GA Group Sites;
- Post-excavation bottom and sidewall samples were collected from August through September 2012 from the clean corridor excavation described in **Section 2.2**;
- A pre-design investigation (PDI) for the Garfield Avenue Sidewalk was conducted from August 18, 2014 through August 22, 2014;
- A PDI for Garfield Avenue was conducted from August 29, 2017 through February 21, 2017 to delineate CCPW impacts within the roadway; and

- Supplemental Soil RI activities were conducted from August 2011 through November 2017 and reported in the SSRIR (AECOM, 2018c), which was approved by NJDEP on October 22, 2018 (NJDEP, 2018a).

No significant events or seasonal variations have influenced soil sampling procedures or analytical results.

2.5 Extent of Impacts

The Cr^{+6} results from the previous investigation activities are presented in the memorandum titled *Transmittal of the Garfield Avenue Cross Sections and Request for Remediation Plan Modification* (AECOM, 2017a), which is attached as **Appendix B**. Figure 1 of **Appendix B** presents boring and sample locations. Figures 2 through 12 of **Appendix B** present the Cr^{+6} analytical results and CCPW observations generated to date within Garfield Avenue. These figures are presented in a cross-sectional format to facilitate the review of conditions within Garfield Avenue. Note that boring and test pit locations are not included on the figures if no Cr^{+6} data was available and if no Undisturbed Native Deposits (UND), Meadow Mat (MM), or CCPW was observed.

Note that the cross sections present data from the Western Sliver (located between the Garfield Avenue Right of Way/Site 114 property line and the IRM #1 sheet pile. These results are being evaluated separately and are not within the scope of this RAWP.

Table 2-2 provides the analytical results for Cr^{+6} associated with the samples collected from Garfield Avenue in-place soil compared to the CrSCC. **Table 2-3** provides the analytical results for CCPW metals for in-place soil compared to Soil Remediation Standards. **Table 2-4** provides the CCPW metals analytical results for in-place soil in the unsaturated soil zone compared to DIGWSSL and IGWSRS-GAG.

Boring logs are presented in Attachment A of **Appendix B**. The laboratory analytical reports are provided in Attachment B of **Appendix B**. The data validation reports for Cr^{+6} are provided in Attachment C of **Appendix B**. The laboratory analytical reports and data validation reports for other CCPW metals are provided in **Appendix C** (provided separately).

CCPW is present sporadically within the Garfield Avenue right-of-way and, based on the available data, it appears to be limited to the eastern sidewalk area. However, much of the CCPW observed within the sidewalk area has been excavated to provide a clean corridor for utility workers, as described in **Section 2.2**. No CCPW has been observed within the roadway.

Cr^{+6} concentrations in soil that exceed the CrSCC, which are present throughout the eastern portion of Garfield Avenue, are delineated to the west in the majority of Garfield Avenue, as documented in the SSRIR (AECOM, 2018c). However, there are some grids in the western portion of Garfield Avenue where the Cr^{+6} sample record is incomplete, or where a soil boring could not be advanced due to access issues or to the presence of utilities (as identified in the bullets below). An overview of the existing CCPW-related impacts in Garfield Avenue is presented in **Figure 2-3** and summarized as follows:

- Cr^{+6} concentrations in soil that exceed the CrSCC within Garfield Avenue have been found only in the eastern portion of the roadway. As shown in **Figure 2-3**, no CCPW-related impacts have been identified on the western portion of the roadway. Note that there are some grids in the western portion of Garfield Avenue where the Cr^{+6} sample record is incomplete (Grids A12B, B12B A'6A, A'14A, and B'4A), or where a soil boring could not be advanced due to access issues or the presence of utilities (Grid C'11A); however, no CCPW-related impacts

have been identified in these grids or adjacent grids within the western portion of Garfield Avenue.

- Elevated concentrations of Cr^{+6} (i.e., greater than 1,000 mg/kg) have been observed in the northern portion of Garfield Avenue in Columns 7B through 12B. Grids south of Column 5B generally have sporadic, low concentrations of Cr^{+6}, with the exception of a sidewall sample collected in Grid A'4A within the clean corridor excavation, which had a Cr^{+6} concentration greater than 1,000 mg/kg.
- CCPW was only observed in three grids (Grids A4B, A8B, and A'3A) in the sidewall/base of the clean corridor excavation below the eastern sidewalk. CCPW was not observed at depths greater than 6 ft bgs (approximately El. 4 ft NAVD88) and was not observed in borings advanced within Garfield Avenue.
- Shallow Cr^{+6} concentrations that exceed the CrSCC (i.e., above El. 7 ft NAVD88, which is approximately 3-4 ft bgs) are located primarily between the clean corridor excavation and the western edge of the 78-inch steel combined sewer within the roadway (**Figure 2-3**).

3.0 Remedial Alternatives Evaluation

RAs were identified and evaluated for the remediation of the Garfield Avenue Roadway based on: (1) protectiveness of human health and the environment; and (2) impact on community residents and businesses. The RAs evaluated are:

- RA 1: Remedial Excavation;
- RA 2: Limited Remedial Excavation and Clean Soil Capping;
- RA 3: In-Situ Chemical or Biological Reduction; and
- RA 4: Asphalt Capping.

NJDEP and the City have concurred with the remedial approach presented in the Garfield Remediation Plan, which include:

- RA 4: Asphalt Capping for the current use of Garfield Avenue; and
- RA 2: Limited Remedial Excavation and Clean Soil Capping for the future CCRD.

Both RAs require institutional controls (NILODN and implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol).

A brief description of the evaluated RAs, including those selected, is provided below.

3.1 RA 1: Remedial Excavation

3.1.1 Description

RA 1 is remedial excavation and disposal of CCPW-impacted soil in accordance with the Chromium Policy and the *Updated Method to Determine Compliance with the Department's Chromium Policy, Garfield Avenue – Sites 114, 132, 133, 135, 137, and 143, Jersey City, NJ* (NJDEP, 2013), and backfilling with DGA. RA 1 includes excavation to 20 ft bgs in the western portion of Garfield Avenue, since Cr^{+6} is present at concentrations greater than the CrSCC up to 20 ft bgs in locations where MM is not present.

3.1.2 Protectiveness

RA 1 is presented in the GA Group RAWP, which was approved by the NJDEP on November 9, 2018 (NJDEP, 2018b). Excavation and disposal of CCPW-impacted soil is a proven remedial approach that prevents direct contact with, ingestion of, and inhalation of Cr^{+6} and CCPW metals.

3.1.3 Community Impact

RA 1 would require full closure of Garfield Avenue. Garfield Avenue is a heavily traveled urban roadway and Jersey City vehicular and pedestrian traffic would be negatively impacted by road closures that would be required for this significant remediation excavation. In addition, utilities within the street service significant portions of Jersey City and cannot be easily taken out of service to remove the soil with Cr^{+6} concentrations greater than the CrSCC. Remediation of these impacts poses a structural risk to the 78-inch combined sewer as well as the other utilities in the street. If remediation of soil occurs in advance of utility replacement, the utilities would need to be temporarily disconnected

or rerouted. Otherwise, the utilities would require structural support, which would significantly increase the difficulty and duration of remediation activities and further disrupt traffic within the City.

3.1.4 Conclusion

RA 1 is not recommended due to the significant community impact.

3.2 RA 2: Limited Remedial Excavation and Clean Soil Capping

3.2.1 Description

RA 2 is limited remedial excavation, including excavation of shallow CCPW-related impacts (above approximately El. 7 ft NAVD88) and CCPW source material (visible CCPW and Cr^{+6} concentrations in soil greater than 1,000 mg/kg) (above and below El. 7 ft NAVD88, where technically feasible), placement of a demarcation geotextile fabric, and backfilling with DGA amended with FerroBlack®-H (ADGA). The backfill and geotextile fabric will be designated as an engineered cap and will comply with the NJDEP *Technical Guidance on the Capping of Sites Undergoing Remediation* (Capping Guidance) (NJDEP, 2014).

RA 2 assumes that the excavation depth will be a minimum of 2 feet below the bottom of the restored asphalt surface presented in the finalized road widening design. As such, RA 2 does not designate the roadway's asphalt surface as a component of the engineered cap. However, if the final excavation design cannot achieve a minimum backfill thickness of 2 feet, the roadway's asphalt surface will be incorporated into the cap.

As RA 2 is a restricted-use remedy, a corresponding institutional control (i.e., a NILODN presenting the CPPW impacts remaining following limited excavation), will be implemented.

RA 2 will include implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol including:

- A procedure for excavation and removal of CCPW-impacted soil by PPG whenever normal operating repairs or replacement of utilities require removal of the CCPW-impacted soil; and
- A procedure for ensuring worker safety, notifying NJDEP, and disposing of excavated CCPW-impacted soil in the event of an emergency repair.

3.2.2 Protectiveness

Engineering capping combined with a corresponding institutional control is a well-accepted and effective remedial approach for preventing direct contact with, ingestion of, and inhalation of soil contamination. As the Site is anticipated to remain a roadway for the foreseeable future, there is minimal risk of direct contact with, ingestion of, or inhalation of CCPW impacts.

The SOPs and worker training requirements developed in accordance with the Sewer Protocol will be protective of utility worker safety.

Excavation and disposal of shallow impacts will remove CCPW-impacted material in the vadose zone (i.e., material located above the 50^{th} percentile groundwater elevation); therefore, RA 2 eliminates the impact to groundwater pathway for CCPW impacts. Amendment of DGA with FerroBlack®-H is a proven method of preventing recontamination of soil by Cr^{+6} in groundwater.

3.2.3 Community Impact

RA 2 would require at least partial closure of Garfield Avenue, negatively affecting vehicular traffic. However, community impacts can be minimized if this limited remedial action is combined with the future street-widening work anticipated under the CCRD Plan (T&M, 2013). PPG can excavate shallow CCPW impacts when the street is closed/partially closed for the street-widening work, which is anticipated to be conducted by the City. Limited remedial excavation minimizes the impact on the community, since the work can be performed concurrently with an already-anticipated road closure.

Excavation of shallow impacts would not affect the majority of utilities located within the roadway. However, it is likely that the 8-inch diameter gas line would require structural support, would need to be temporarily disconnected and rerouted, or would need to be removed and replaced. A determination of technical impracticability for removal of source material will be made in concert with the utility owners during the remedial design.

3.2.4 Conclusion

RA 2 is recommended for implementation in the future when the road widening is planned as part of the future CCRD, as it is protective of human health and the environment and has minimal community impact.

3.3 RA 3: In-Situ Chemical or Biological Reduction

3.3.1 Description

RA 3 is the injection of either chemical (e.g., FerroBlack®-H) or biological (e.g., molasses) reagents into groundwater to facilitate in-situ reduction of Cr^{+6} to Cr^{+3}. The reduction process does not remove the chromium from the system, but converts it to a less mobile form. The Cr^{+3} geochemically precipitates out of solution or binds onto aquifer solids (USEPA, 2000).

RA 3 typically includes the installation of injection (and potentially extraction) infrastructure, including wells and conveyance piping, in the roadway's footprint. Infrastructure to implement RA 3 would be installed primarily in the eastern portion of the roadway and underneath the eastern sidewalk. Aboveground infrastructure, such as pumps, tanks, instrumentation, and controls, could potentially be installed on Site 114. The time to implement the injection program and post-treatment monitoring is design-dependent.

3.3.2 Protectiveness

RA 3 will not treat CCPW-impacted soil in the vadose zone, which is most likely to be encountered by utility workers during normal operating repairs or replacement of utilities or emergency repairs. Additionally, RA 3 may not successfully reduce Cr^{+6} concentrations, particularly where source material is present, to below the CrSCC. If RA 3 is not successful, additional RA would be required.

3.3.3 Community Impact

Partial road closures may be required to install injection (and potentially extraction) infrastructure, to implement injection, and to conduct post-treatment monitoring. Injection of reagents may damage utilities. Daylighting or short-circuiting of reagent to the surface may require emergency closure of the roadway.

3.3.4 Conclusion

RA 3 is not recommended, since it provides limited protection of human health and the environment and has the potential for community impact.

3.4 RA 4: Asphalt Capping

3.4.1 Description

RA 4 is the designation of the roadway's existing paved asphalt surface as an engineered cap.

Since RA 4 is a restricted-use remedy, a corresponding institutional control (i.e., a NILODN presenting the CPPW impacts remaining following limited excavation), will be implemented.

RA 4 will include implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol, including:

- A procedure for excavation and removal of CCPW-impacted soil by PPG whenever normal operating repairs or replacement of utilities require removal of the CCPW-impacted soil; and
- A procedure for ensuring worker safety, notifying NJDEP, and disposing of excavated CCPW-impacted soil in the event of an emergency repair.

3.4.2 Protectiveness

Engineered capping combined with a corresponding institutional control is a well-accepted and effective remedial approach for preventing direct contact with, ingestion of, and inhalation of soil contamination. Since the Site is anticipated to remain a roadway for the foreseeable future, there is minimal risk of direct contact with, ingestion of, or inhalation of CCPW impacts.

The SOPs and worker training requirements developed in accordance with the Sewer Protocol will be protective of utility worker safety. RA 4 relies solely on the procedures required by the Sewer Protocol to protect utilities workers and is, therefore, less protective than RA 2, particularly in the event of emergency repairs; however, utilization of the roadway's paved surface as an engineering control is presented in the Sewer Protocol as the presumptive remedy for CCPW-impacted soil beneath a public street or highway.

3.4.3 Community Impact

RA 4 has no negative impact on the community, since the roadway's existing paved surface remains in place.

3.4.4 Conclusion

RA 4 is recommended for the current use, since it is protective of human health and the environment and has no community impact.

4.0 Selected Remedial Actions

This section presents the selected remedial actions for Garfield Avenue under its current use and under the future CCRD.

4.1 Remedial Action for Current Use

The selected remedial action for the current use of Garfield Avenue includes engineering controls (asphalt cap) and institutional controls (NILODN and implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol).

The current asphalt roadway surface will serve as an engineering control to restrict access to soil with CCPW-related impacts. A diagram of the engineering control is presented in **Exhibit B-1B** of **Appendix D**.

CCPW-related impacts in Garfield Avenue will be documented in a NILODN. A draft NILODN is provided in **Appendix D**.

Although Garfield Avenue is not specifically listed as a sewer site per the September 7, 2011 Consent Judgment (2011 Consent Judgment) (Superior Court of New Jersey, Law Chancery Division – Hudson County, 2011), CCPW-related impacts in Garfield Avenue will be addressed through implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol as defined in the 2011 Consent Judgment. The Sewer Protocol, authored in 2011, is part of the Orphan Chromium Site Agreement between NJDEP, PPG, Honeywell, and Tierra Solutions. The Sewer Protocol addresses the remediation approach to be implemented when impacted soil is rendered inaccessible due to its proximity to infrastructure such as sewer lines. PPG plans to develop the SOPs and worker training manual described in **Section 3.2**; these documents will be submitted to utility owners for concurrence. The SOPs and worker training manual will be primarily based on the *Procedure for Coordinating Utility Work within Chromium Soil Areas, Honeywell Sites, Jersey City, New Jersey* (AMEC, 2017a) (**Appendix E**) and the *Worker Training Manual for Managing Contaminated Soils and Groundwater, Honeywell Sites, Jersey City, New Jersey* (AMEC, 2017b) (**Appendix F**), in substantially the forms prepared by AMEC Environment & Infrastructure, Inc. (now known as Wood) for Honeywell Sites. Utility workers will follow the SOPs when they have to repair or otherwise maintain pipelines and any associated equipment that has been constructed in areas where chromium-contaminated soil or CCPW is located. The SOPs help protect utility workers who may encounter chromium-contaminated soil or fill during the course of their work. The SOPs address sewer repair or replacement performed either as part of planned maintenance work, or required as a result of an emergency situation.

4.2 Remedial Action for Future Canal Crossing Redevelopment

The selected remedial action for the future CCRD includes limited excavation of shallow impacts (above El. 7 ft NAVD88) and CCPW source material (visible CCPW and Cr^{+6} concentrations in soil greater than 1,000 mg/kg) (above and below El. 7 ft NAVD88, where technically feasible), backfilling with amended backfill, applying engineering controls (clean soil cap), and applying institutional controls (NILODN and implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol).

In accordance with the CCRD Plan, Garfield Avenue will be widened and the grades will be changed to match the CCRD Plan grades. During this work, the street will need to be completely or partially closed and shallow impacted material within the limit of the street work can be excavated at that time.

Figure 2-3 presents shallow (above El. 7 ft NAVD88) Cr^{+6} exceedances of the CrSCC and the locations of visible CCPW within Garfield Avenue. The conceptual limit of excavation to remove shallow CCPW-related impacts in soil is shown in **Figure 4-1**, and a conceptual cross section is provided in **Figure 4-2**.

The remedial excavation will also target the removal of CCPW source material (visible CCPW and Cr^{+6} concentrations in soil greater than 1,000 mg/kg) remaining in place primarily within the footprint of the clean corridor beneath the existing sidewalk (approximately El. 0 to 5 ft NAVD88), if it can be excavated without causing damage to the current utilities in the roadway. PPG will determine the feasibility of soil removal deeper than El. 7 ft NAVD88 in coordination with utility owners, including the Jersey City Municipal Utilities Authority (JCMUA) and private service providers. The conceptual limit of excavation to remove CCPW source material is shown in **Figure 4-1**, and a conceptual cross section is provided in **Figure 4-2**.

Following excavation, the excavation footprint will be backfilled with DGA amended with FerroBlack®-H. The percentage of FerroBlack®-H will be determined based on Cr^{+6} concentrations in shallow groundwater at the time of implementation of the remedial action. Backfill material properties will be selected and backfill will be compacted in accordance with applicable regulations and ordinances. Restoration of the roadway's asphalt surface is anticipated to be completed by others as part of the road widening activities. PPG will coordinate with the City so that backfill is completed to the appropriate subgrade elevation for asphalt restoration.

The final excavation design for this limited soil removal will be developed once the Garfield Avenue road widening plans for the future CCRD are finalized and the road widening work is scheduled. At that time, PPG will work with JCMUA and other utility owners to determine appropriate utility offsets and develop excavation design drawings and specifications. A Technical Execution Plan (TEP), presenting the excavation and restoration design, and a perimeter air monitoring and action plan (i.e., an Air Monitoring Plan [AMP] Amendment) will be prepared for concurrence prior to the start of work.

Following completion of this targeted excavation, the NILODN will be revised to reflect the remaining soil impacts and engineering controls. The remaining soil impacts will continue to be handled through implementation of SOPs and worker training requirements developed in accordance with the Sewer Protocol, as discussed in **Section 4.1**.

4.3 Permitting

Prior to starting the field activities for the future CCRD remedial action, applicable permits will be acquired by PPG or its consultants/contractors. No permits are required for the implementation of the current use remedial action. A list of applicable permits for the future CCRD remedial action is shown in **Table 4-1**.

A Remedial Action Permit (RAP) will be required upon implementation of the current use remedial action and the future CCRD remedial action.

Figure 4-1 List of Applicable Permits and Authorizations

Permit Name/ Authorizing Entity	Required for	Status
Traffic engineering permits/Jersey City Traffic Engineering Department	Street or sidewalk closures and/or openings.	Permits for Garfield Avenue will be obtained on an as-needed basis by the contractor performing the work and will be renewed, as needed.
Registration of Excavation/Jersey City Engineering Department	Excavations on public property (roadway).	The registration will be filed by the contractor performing the work.
Building Permit/Jersey City Building Department	The presence of construction and security trailers.	Permits for construction and security trailers will be obtained on an as-needed basis by the contractor performing the work and will be renewed, as needed.
Soil Erosion and Sediment Control Plan (SESCP)/Hudson-Essex-Passaic Soil Conservation District (HEPSCD)	Soil disturbances greater than 5,000 square feet (ft).	An application for a SESCP will be submitted to and certified by HEPSCD prior to the contractor's performance of the work.
Well Abandonment Permits/NJDEP	Having wells within the confines of the area of disturbance in accordance with New Jersey Administrative Code (N.J.A.C.) 7:9D prior to the start of work.	Wells that require decommissioning will be determined and well abandonment permits with be acquired, as needed, prior to performing the work.
Flood Hazard Area (FHA) Individual Permit and Hardship Exception Request (HER)	Regulated (excavating and filling) activities that fall within the 100-year flood elevation as depicted on the 2006 Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map. The HER is for the staging/storing or processing of hazardous substances within the FHA.	A FHA permit will be obtained prior to performing the work.
Discharge to Groundwater Permit-by-Rule (PBR) (only applicable if FerroBlack®-H-amended backfill is used)	For application of FerroBlack®-H (amended backfill) for the GA Group Sites.	A PBR for the application of FerroBlack®-H will be obtained prior to performing the work.

4.4 Capillary Break Evaluation

4.4.1 Current Use Remedial Action

Evaluation of groundwater impacts in the Garfield Avenue Roadway is currently ongoing as reported in the *Draft Groundwater Remedial Investigation Report, PPG Garfield Avenue Group, Hudson County Chromium Sites, Jersey City, New Jersey* (AECOM, 2018e). However, based on the current understanding of site conditions within the Garfield Avenue Roadway, and on the criteria established as part of the *Capillary Break Design Final Report (Revision 2)* (AECOM, 2017b), a capillary break is required along the eastern portion of Garfield Avenue (**Figure 4-3**), due to:

- The presence of soil with Cr+6 concentrations greater than 20 mg/kg; and
- Potential CCPW-related impacts in groundwater.

No chromium blooming or chromium staining has been observed within the Garfield Avenue Roadway. The roadway's asphalt surface and eastern sidewalk will be continue to be monitored for chromium blooming and chromium staining as part of the monitoring of the soil engineering control (asphalt cap). If such blooming or staining is observed during monitoring events, additional remedial measures (to be determined in the future) will be implemented.

4.4.2 Future Canal Crossing Redevelopment Remedial Action

As part of the TEP for the Site's future CCRD remedial action, PPG will present a reassessment of the need for a capillary break, reflecting the conditions at the time of the future work. If a capillary break is required, the capillary break will be incorporated in the future use remedy's design.

5.0 Schedule

5.1 Current Use Remedial Action

The Garfield Avenue Roadway current use remedial action is anticipated to be conducted in accordance with the January 24, 2019 Master Schedule for the NJ PPG Chrome Remediation Sites, Exhibit 2/3 (Riccio, 2019). This remedial action, which consists of designation of the existing asphalt roadway as an engineered cap and issuance of a NILODN, will be presented in a forthcoming Garfield Avenue Roadway RAR. The Master Schedule milestone “RAR Determination by NJDEP” for the Garfield Avenue RAR is June 2020. Following NJDEP approval of the RAR, the NILODN will be filed and a corresponding RAP will be implemented. Upon implementation of the RAP, PPG will request that NJDEP issue a Consent Judgment Compliance Letter for the current use of the Garfield Avenue Roadway.

5.2 Future Canal Crossing Redevelopment Remedial Action

The schedule for the Garfield Avenue Roadway future CCRD remedial action, limited excavation, will be determined pending the development of a schedule for road widening per the CCRD Plan. Following completion of the future CCRD remedial action, PPG will update the Garfield Avenue Roadway RAR, NILODN, and RAP. PPG will then request that NJDEP grant an updated Consent Judgment Compliance Letter for the CCRD of the Garfield Avenue Roadway.

6.0 References

AECOM, 2016. Technical Memorandum: *Garfield Avenue Sidewalk Clean Corridor As-Built (Revision 1).* April 1, 2016.

AECOM, 2017a. Technical Memorandum: *Transmittal of the Garfield Avenue Cross Sections and Request for Remediation Plan Modification.* June 30, 2017.

AECOM, 2017b. *Capillary Break Design Final Report (Revision 2).* December 14, 2018.

AECOM, 2018a. *Final Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group Sites, Jersey City, New Jersey*. September 27, 2018.

AECOM, 2018b. Technical Memorandum: *Garfield Avenue Proposed Remediation Plan Summary – Soil (Revision 2).* April 23, 2018.

AECOM, 2018c. *Supplemental Soil Remedial Investigation Report – Soil, Garfield Avenue Group Non-Residential Chromate Chemical Production Waste Sites – 114, 132, 133, 135, 137, 143, and Adjacent Properties and Roadways, PPG Garfield Avenue Group, Hudson County Chromium Sites, Jersey City, New Jersey.* May 31, 2018.

AECOM, 2018d: Technical Memorandum: *Halladay Street North, Carteret Avenue, and Garfield Avenue – Emanating from Parameters*. Dated September 19, 2018; Issued September 20, 2018.

AECOM, 2018e. *Draft Groundwater Remedial Investigation Report, PPG Garfield Avenue Group, Hudson County Chromium Sites, Jersey City, New Jersey.* October 1, 2018.

AMEC, 2017a. *Procedure for Coordinating Utility Work within Chromium Soil Areas, Honeywell Sites, Jersey City, New Jersey.* December 2014. Updated January 2017.

AMEC, 2017b. *Worker Training Manual for Managing Contaminated Soils and Groundwater, Honeywell Sites, Jersey City, New Jersey*. December 2014. Updated January 2017.

NJDEP, 1990. *Administrative Order on Consent in the Matter of Hudson County Chromate Chemical Production Waste Sites and PPG Industries, Inc*. July 19, 1990.

NJDEP, 2007. Memorandum from NJDEP Commissioner Lisa P. Jackson to NJDEP Assistant Commissioner, Site Remediation and Waste Management: *Chromium Moratorium*. February 8, 2007.

NJDEP, 2013. Letter from Tom Cozzi of NJDEP to W. Michael McCabe, Subject: *Re: Updated Method to Determine Compliance with the Department's Chromium Policy, Garfield Avenue Group – Sites 114, 132, 133, 135, 137, and 143, Jersey City, NJ*. August 13, 2013.

NJDEP, 2014. *Technical Guidance on the Capping of Sites Undergoing Remediation*. July 14, 2014.

NJDEP, 2016. Memorandum from Diane Groth to David Doyle, Subject: *PPG Garfield Avenue Group Sites, Adjacent Streets and Nearby Properties, Jersey City, NJ: Alternative Soil Remediation Standard for Vanadium*. December 28, 2016.

NJDEP, 2018a. Letter from Wayne C. Howitz to Ronald J. Riccio Esq., Subject: *Supplemental Soil Remedial Investigation Report – Soil, Garfield Avenue Group Non-Residential Chromate Chemical Production Waste Sites - 114, 132, 133, 135, 137, 143, and Adjacent Properties and Roadways, Final Revision 1, PPG Garfield Avenue Group, Hudson County Chromium Sites, Jersey City, New Jersey*. October 22, 2018.

NJDEP, 2018b. Letter from Wayne C. Howitz to Ronald J. Riccio Esq., Subject: *Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group Sites, Jersey City, Hudson County, New Jersey*. November 9, 2018.

Riccio, 2019. *Master Schedule for the NJ PPG Chrome Remediation Sites (Exhibit 2/3), Revision Date: January 24, 2019, Garfield Avenue Sites*. January 24, 2019.

Superior Court of New Jersey, Chancery Division – Hudson County, 2011. *Docket No. C-77-05, Consent Judgment.* September 7, 2011.

Superior Court of New Jersey, Law Division – Hudson County, 2009. *Partial Consent Judgment Concerning the PPG Sites*. June 26, 2009.

T&M, 2013. *60% Plans for the Canal Crossing Redevelopment Area, City of Jersey City, Hudson County, New Jersey*. August 28, 2013.

United States Environmental Protection Agency (USEPA), 2000. *In Situ Treatment of Soil and Groundwater Contaminant with Chromium Technical Resource Guide*. October 2000.

Weston, 2018. Email RE: *RE: GAR012: Garfield Avenue Proposed Remediation Plan Summary – Soil (Revision 2)*. May 2, 2018.

Weston, 2019. Email RE: *RE: GAG-147: Roadway Emanating From Evaluation*. February, 14, 2019.

Tables

Table 2-1
Soil Remediation Standards/Criteria
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

Metals	CrSCC (mg/kg)	RDCSRS (mg/kg)	RDCSRS-GAG[1] (mg/kg)	NRDCSRS (mg/kg)	DIGWSSL (mg/kg)	IGWSRS-GAG[2] (mg/kg)
Hexavalent Chromium	20	N/A	N/A	N/A	N/A	N/A
Antimony	N/A	31	N/A	450	N/A	62.7
Chromium (total)[3]	N/A	120,000	N/A	N/A	N/A	N/A
Nickel	N/A	1,600	N/A	23,000	N/A	170
Thallium	N/A	N/A	N/A	N/A	3	N/A
Vanadium	N/A	N/A	390	1,100	N/A	N/A

Notes:

[1] RDCSRS-GAG is an alternative remediation standard approved by the NJDEP on December 28, 2016 (NJDEP, 2016).

[2] IGWSRS-GAG is an alternative remediation standard proposed in the *Supplemental Soil Remedial Investigation Report, Final Revision 1* on August 30, 2018 (AECOM, 2018c) and approved by NJDEP on October 22, 2018 (NJDEP, 2018a).

[3] There is currently no NJDEP SRS and no NJDEP SCC for total chromium. Therefore, total chromium results are compared to the NJDEP Residential SCC for trivalent chromium of 120,000 mg/kg as the cleanup criteria for soil at the Garfield Avenue Group Sites. There is no non-residential SCC for trivalent chromium.

CrSCC - Chromium Soil Cleanup Criteria

DIGWSSL - Default Impact to Groundwater Soil Screening Level

IGWSRS-GAG - Impact to Groundwater Soil Remediation Standard - Garfield Avenue Group

mg/kg - milligrams per kilogram

N/A - not available

NJDEP - New Jersey Department of Environmental Protecton

NRDCSRS - Non-Residential Direct Contact Soil Remediation Standard

RDCSRS - Residential Direct Contact Soil Remediation Standard

RDCSRS-GAG - Residential Direct Contact Soil Remediation Standard - Garfield Avenue Group

SCC - Soil Cleanup Criteria

SRS - Soil Remediation Standard

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A0	114CC-A`0-PB	114-A'0-6.0-6.5-PB	JB10934	JB10934-3	6.0 - 6.5 ft	10.5	4.5	4.0	07/11/2012	Y	0.24	J
A0	114CC-A0-PB	114-A0-6.0-6.5-PB	JB10934	JB10934-6	6.0 - 6.5 ft	10.5	4.5	4.0	07/11/2012	Y	0.41	J
A0	GAR-PDI-A0	GAR-PDI-A0-8.0-8.5	JC32158	JC32158-3	8.0 - 8.5 ft	11.5	3.5	3.0	11/21/2016	Y	0.48	J
A0	GAR-PDI-A0	GAR-PDI-A0-20.0-20.5	JC32158	JC32158-2	20.0 - 20.5 ft	11.5	-8.5	-9.0	11/21/2016	Y	1.0	
A'0	114CC-A`0-SW	114-A'0-0.5-1.0-SW	JB10934	JB10934-4	0.5 - 1.0 ft	10.0	9.5	9.0	07/11/2012	Y	0.26	J
A'0	114CC-A`0-SW	114-A'0-2.5-3.0-SW	JB10934	JB10934-2	2.5 - 3.0 ft	10.0	7.5	7.0	07/11/2012	Y	0.17	J
A'0	114CC-A`0-SW	114-A'0-4.5-5.0-SW	JB10934	JB10934-5	4.5 - 5.0 ft	10.0	5.5	5.0	07/11/2012	Y	0.32	J
A'0	114GAR-2	114GAR2_3.0	JB10934	JA99472-1	3.0 - 3.0 ft	9.9	6.9	6.9	02/15/2012	N	< 0.23	U
A'0	114GAR-2	114GAR2_3.0	JA99472R	JA99472-1R	3.0 - 3.0 ft	9.9	6.9	6.9	02/15/2012	N	< 0.23	U
A'0	P4-GA-A`0	114-GA-A`0-6.0-6.5	JB74564	JB74564-1	6.0 - 6.5 ft	9.9	3.9	3.4	08/20/2014	Y	0.54	J
A'0	P4-GA-A`0	114-GA-A`0-8.0-8.5	JB74564	JB74564-2	8.0 - 8.5 ft	9.9	1.9	1.4	08/20/2014	Y	0.65	J
A'0	P4-GA-A`0	114-GA-A`0-10.0-10.5	JB74564	JB74564-3	10.0 - 10.5 ft	9.9	-0.1	-0.6	08/20/2014	Y	0.83	J
A'0	P4-GA-A`0	114-GA-A`0-10.5-11.0	JB74833	JB74833-14	10.5 - 11.0 ft	9.9	-0.6	-1.1	08/22/2014	Y	0.89	
A'0	P4-GA-A`0	114-GA-A`0-12.0-12.5	JB74564	JB74564-4	12.0 - 12.5 ft	9.9	-2.1	-2.6	08/20/2014	Y	1.2	J
A'0	P4-GA-A`0	114-GA-A`0-14.0-14.5	JB74564	JB74564-5	14.0 - 14.5 ft	9.9	-4.1	-4.6	08/20/2014	Y	0.35	J
A'0	P4-GA-A`0	114-GA-A`0-16.0-16.5	JB74564	JB74564-6	16.0 - 16.5 ft	9.9	-6.1	-6.6	08/20/2014	Y	0.19	J
A'10A	114CC-A`10A-PB	114-A'10A-6.0-6.5-PB	JB9270R	JB9270-4R	6.0 - 6.5 ft	11.2	5.2	4.7	06/19/2012	Y	< 0.23	UJ
A'10A	114CC-A`10A-SW	114-A'10A-0.5-1.0-SW	JB9270	JB9270-1	0.5 - 1.0 ft	10.7	10.2	9.7	06/19/2012	Y	**33.9**	**J**
A'10A	114CC-A`10A-SW	114-A'10A-2.5-3.0-SW	JB9270R	JB9270-2R	2.5 - 3.0 ft	10.7	8.2	7.7	06/19/2012	Y	3.8	J
A'10A	114CC-A`10A-SW	114-A'10A-4.5-5.0-SW	JB9270	JB9270-3	4.5 - 5.0 ft	10.7	6.2	5.7	06/19/2012	Y	0.26	J
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-9.5-10.0	JC31517	JC31517-8	9.5 - 10.0 ft	11.3	1.8	1.3	11/10/2016	Y	0.44	J
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-10.0-10.5	JC31517	JC31517-2	10.0 - 10.5 ft	11.3	1.3	0.8	11/10/2016	Y	0.66	
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-12.0-12.5	JC31517	JC31517-3	12.0 - 12.5 ft	11.3	-0.7	-1.2	11/10/2016	Y	0.84	
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-14.0-14.5	JC31517	JC31517-4	14.0 - 14.5 ft	11.3	-2.7	-3.2	11/10/2016	Y	**40.7**	**J**
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-16.0-16.5	JC31517	JC31517-5	16.0 - 16.5 ft	11.3	-4.7	-5.2	11/10/2016	Y	**22.4**	**J**
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-18.0-18.5	JC31517	JC31517-6	18.0 - 18.5 ft	11.3	-6.7	-7.2	11/10/2016	Y	16.9	J
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-20.0-20.5	JC31517	JC31517-7	20.0 - 20.5 ft	11.3	-8.7	-9.2	11/10/2016	Y	**21.5**	**J**
A10B	GAR-PDI-A10B	GAR-PDI-A10B-0.5-1.0	JC37505	JC37505-15	0.5 - 1.0 ft	11.8	11.3	10.8	02/19/2017	Y	0.72	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-1.0-1.5	JC37505	JC37505-16	1.0 - 1.5 ft	11.8	10.8	10.3	02/19/2017	Y	< 0.35	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-3.0-3.5	JC37505	JC37505-24	3.0 - 3.5 ft	11.8	8.8	8.3	02/19/2017	Y	0.74	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-5.0-5.5	JC37505	JC37505-25	5.0 - 5.5 ft	11.8	6.8	6.3	02/19/2017	Y	< 0.38	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-7.0-7.5	JC37505	JC37505-26	7.0 - 7.5 ft	11.8	4.8	4.3	02/19/2017	Y	< 0.35	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-7.5-8.0	JC37505	JC37505-27	7.5 - 8.0 ft	11.8	4.3	3.8	02/19/2017	Y	< 0.39	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-8.0-8.5	JC37505	JC37505-28	8.0 - 8.5 ft	11.8	3.8	3.3	02/19/2017	Y	< 0.38	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-10.0-10.5	JC37505	JC37505-17	10.0 - 10.5 ft	11.8	1.8	1.3	02/19/2017	Y	< 0.39	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-10.0-10.5X	JC37505	JC37505-18	10.0 - 10.5 ft	11.8	1.8	1.3	02/19/2017	Y	< 0.40	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-12.0-12.5	JC37505	JC37505-19	12.0 - 12.5 ft	11.8	-0.2	-0.7	02/19/2017	Y	< 0.34	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-14.0-14.5	JC37505	JC37505-20	14.0 - 14.5 ft	11.8	-2.2	-2.7	02/19/2017	Y	0.96	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-16.0-16.5	JC37505	JC37505-21	16.0 - 16.5 ft	11.8	-4.2	-4.7	02/19/2017	Y	0.43	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-18.0-18.5	JC37505	JC37505-22	18.0 - 18.5 ft	11.8	-6.2	-6.7	02/19/2017	Y	1.4	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-20.0-20.5	JC37505	JC37505-23	20.0 - 20.5 ft	11.8	-8.2	-8.7	02/19/2017	Y	1.5	J
A'11A	114CC-A`11A-PB	114-A'11A-6.0-6.5-PB	JB9215R	JB9215-4R	6.0 - 6.5 ft	11.3	5.3	4.8	06/18/2012	Y	< 0.23	UJ
A'11A	114CC-A`11A-SW	114-A'11A-0.5-1.0-SW	JB9215	JB9215-1	0.5 - 1.0 ft	10.8	10.3	9.8	06/18/2012	Y	5.7	J
A'11A	114CC-A`11A-SW	114-A'11A-2.5-3.0-SW	JB9215R	JB9215-2R	2.5 - 3.0 ft	10.8	8.3	7.8	06/18/2012	Y	< 0.24	UJ
A'11A	114CC-A`11A-SW	114-A'11A-4.5-5.0-SW	JB9215R	JB9215-3R	4.5 - 5.0 ft	10.8	6.3	5.8	06/18/2012	Y	< 0.24	UJ
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-7.5-8.0	JC31517	JC31517-16	7.5 - 8.0 ft	11.5	4.0	3.5	11/10/2016	Y	< 0.40	UJ
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-8.0-8.5	JC31517	JC31517-17	8.0 - 8.5 ft	11.5	3.5	3.0	11/10/2016	Y	1.1	
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-10.0-10.5	JC31517	JC31517-9	10.0 - 10.5 ft	11.5	1.5	1.0	11/10/2016	Y	< 0.34	U
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-10.0-10.5X	JC31517	JC31517-10	10.0 - 10.5 ft	11.5	1.5	1.0	11/10/2016	Y	< 0.34	U
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-12.0-12.5	JC31517	JC31517-11	12.0 - 12.5 ft	11.5	-0.5	-1.0	11/10/2016	Y	**33.8**	**J**
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-14.0-14.5	JC31517	JC31517-12	14.0 - 14.5 ft	11.5	-2.5	-3.0	11/10/2016	Y	19.4	

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-16.0-16.5	JC31517	JC31517-13	16.0 - 16.5 ft	11.5	-4.5	-5.0	11/10/2016	Y	**28.6**	**J**
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-18.0-18.5	JC31517	JC31517-14	18.0 - 18.5 ft	11.5	-6.5	-7.0	11/10/2016	Y	**30.6**	**J**
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-20.0-20.5	JC31517	JC31517-15	20.0 - 20.5 ft	11.5	-8.5	-9.0	11/10/2016	Y	11.7	
A11B	GAR-PDI-A11B	GAR-PDI-A11B-0.5-1.0	JC37082	JC37082-10	0.5 - 1.0 ft	12.0	11.5	11.0	02/12/2017	Y	3.3	
A11B	GAR-PDI-A11B	GAR-PDI-A11B-2.0-2.5	JC37082R	JC37082-16R	2.0 - 2.5 ft	12.0	10.0	9.5	02/12/2017	Y	0.61	
A11B	GAR-PDI-A11B	GAR-PDI-A11B-4.0-4.5	JC37082	JC37082-18	4.0 - 4.5 ft	12.0	8.0	7.5	02/12/2017	Y	< 0.35	U
A11B	GAR-PDI-A11B	GAR-PDI-A11B-5.5-6.0	JC37082	JC37082-19	5.5 - 6.0 ft	12.0	6.5	6.0	02/12/2017	Y	< 0.34	U
A11B	GAR-PDI-A11B	GAR-PDI-A11B-6.0-6.5	JC37082	JC37082-20	6.0 - 6.5 ft	12.0	6.0	5.5	02/12/2017	Y	0.52	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-6.0-6.5X	JC37082	JC37082-21	6.0 - 6.5 ft	12.0	6.0	5.5	02/12/2017	Y	0.36	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-8.0-8.5	JC37082	JC37082-22	8.0 - 8.5 ft	12.0	4.0	3.5	02/12/2017	Y	0.62	
A11B	GAR-PDI-A11B	GAR-PDI-A11B-10.0-10.5	JC37082R	JC37082-11R	10.0 - 10.5 ft	12.0	2.0	1.5	02/12/2017	Y	0.57	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-12.0-12.5	JC37082	JC37082-12	12.0 - 12.5 ft	12.0	0.0	-0.5	02/12/2017	Y	0.92	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-14.0-14.5	JC37082R	JC37082-13R	14.0 - 14.5 ft	12.0	-2.0	-2.5	02/12/2017	Y	0.93	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-16.0-16.5	JC37082R	JC37082-14R	16.0 - 16.5 ft	12.0	-4.0	-4.5	02/12/2017	Y	1.5	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-18.0-18.5	JC37082R	JC37082-15R	18.0 - 18.5 ft	12.0	-6.0	-6.5	02/12/2017	Y	1.9	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-20.0-20.5	JC37082	JC37082-17	20.0 - 20.5 ft	12.0	-8.0	-8.5	02/12/2017	Y	0.59	J
A'12A	114CC-A`12A-SW	114-A'12A-0.5-1.0-SW	JB9081R	JB9081-1R	0.5 - 1.0 ft	10.9	10.4	9.9	06/15/2012	Y	10.9	J
A'12A	114CC-A`12A-SW	114-A'12A-2.5-3.0-SW	JB9081	JB9081-2	2.5 - 3.0 ft	10.9	8.4	7.9	06/15/2012	Y	0.34	J
A'12A	114CC-A`12A-SW	114-A'12A-4.5-5.0-SW	JB9081	JB9081-3	4.5 - 5.0 ft	10.9	6.4	5.9	06/15/2012	Y	< 0.23	UJ
A'12A	114CC-A`12A-SW	114-A'12A-6.0-6.5-SW	JB9081	JB9081-4	6.0 - 6.5 ft	10.9	4.9	4.4	06/15/2012	Y	< 0.23	UJ
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-5.0-5.5	JC31394R	JC31394-9R	5.0 - 5.5 ft	11.2	6.2	5.7	11/09/2016	Y	1.1	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-6.0-6.5	JC31394	JC31394-10	6.0 - 6.5 ft	11.2	5.2	4.7	11/09/2016	Y	1.4	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-6.5-7.0	JC31394R	JC31394-11R	6.5 - 7.0 ft	11.2	4.7	4.2	11/09/2016	Y	1.0	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-8.0-8.5	JC31394	JC31394-12	8.0 - 8.5 ft	11.2	3.2	2.7	11/09/2016	Y	0.99	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-10.0-10.5	JC31394	JC31394-2	10.0 - 10.5 ft	11.2	1.2	0.7	11/09/2016	Y	10.0	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-12.0-12.5	JC31394R	JC31394-3R	12.0 - 12.5 ft	11.2	-0.8	-1.3	11/09/2016	Y	**61.7**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-12.0-12.5X	JC31394	JC31394-4	12.0 - 12.5 ft	11.2	-0.8	-1.3	11/09/2016	Y	**69.2**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-14.0-14.5	JC31394R	JC31394-5R	14.0 - 14.5 ft	11.2	-2.8	-3.3	11/09/2016	Y	**87.9**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-16.0-16.5	JC31394	JC31394-6	16.0 - 16.5 ft	11.2	-4.8	-5.3	11/09/2016	Y	**39.7**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-18.0-18.5	JC31394R	JC31394-7R	18.0 - 18.5 ft	11.2	-6.8	-7.3	11/09/2016	Y	**31.5**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-20.0-20.5	JC31394	JC31394-8	20.0 - 20.5 ft	11.2	-8.8	-9.3	11/09/2016	Y	**24.9**	**J**
A12B	EF-43	EF-B43-0.5	460258041	460-25804-34	0.5 - 1.0 ft	12.9	12.4	11.9	04/26/2011	Y	< 0.57	U
A12B	EF-43	EF-B43-2.0	460258991	460-25899-4	2.0 - 2.5 ft	12.9	10.9	10.4	04/28/2011	Y	< 0.58	U
A12B	EF-43	EF-B43-4.0	460258991	460-25899-6	4.0 - 4.5 ft	12.9	8.9	8.4	04/28/2011	Y	< 0.60	U
A12B	EF-43	EF-B43-7.0	460259551	460-25955-9	7.0 - 7.5 ft	12.9	5.9	5.4	04/29/2011	Y	< 0.61	UJ
A12B	EF-43	EF-B43-11.0	460259551	460-25955-10	11.0 - 11.5 ft	12.9	1.9	1.4	04/29/2011	Y	< 0.59	UJ
A12B	EF-43	EF-B43-15.0	460259551	460-25955-11	15.0 - 15.5 ft	12.9	-2.1	-2.6	04/29/2011	Y	< 0.55	UJ
A12B	EF-43	EF-B43-21.0	460259551	460-25955-12	21.0 - 21.5 ft	12.9	-8.1	-8.6	04/29/2011	Y	< 0.56	UJ
A'13A	114CC-A`13A-PB	114-A'13A-6.0-6.5-PB	JB8970R	JB8970-6R	6.0 - 6.5 ft	11.4	5.4	4.9	06/14/2012	Y	< 0.24	UJ
A'13A	114CC-A`13A-PB	114-A'13A-6.0-6.5-PBS	JB8858	JB8858-4	6.0 - 6.5 ft	11.4	5.4	4.9	06/13/2012	Y	0.97	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-5.5-6.0	JC31394R	JC31394-21R	5.5 - 6.0 ft	11.0	5.5	5.0	11/09/2016	Y	8.1	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-6.0-6.5	JC31394	JC31394-22	6.0 - 6.5 ft	11.0	5.0	4.5	11/09/2016	Y	1.1	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-12.0-12.5	JC31394	JC31394-13	12.0 - 12.5 ft	11.0	-1.0	-1.5	11/09/2016	Y	0.94	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-14.5-15.0	JC31394	JC31394-14	14.5 - 15.0 ft	11.0	-3.5	-4.0	11/09/2016	Y	**27.6**	**J**
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-16.5-17.0	JC31394	JC31394-15	16.5 - 17.0 ft	11.0	-5.5	-6.0	11/09/2016	Y	**28.5**	**J**
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-17.0-17.5	JC31394	JC31394-16	17.0 - 17.5 ft	11.0	-6.0	-6.5	11/09/2016	Y	**27.8**	**J**
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-17.5-18.0	JC31394	JC31394-17	17.5 - 18.0 ft	11.0	-6.5	-7.0	11/09/2016	Y	16.9	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-18.5-19.0	JC31394	JC31394-18	18.5 - 19.0 ft	11.0	-7.5	-8.0	11/09/2016	Y	6.8	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-19.5-20.0	JC31394R	JC31394-19R	19.5 - 20.0 ft	11.0	-8.5	-9.0	11/09/2016	Y	3.6	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-20.0-20.5	JC31394	JC31394-20	20.0 - 20.5 ft	11.0	-9.0	-9.5	11/09/2016	Y	4.9	J
A1A	114CC-A`1A-PB	114-A'1A-6.0-6.5-PB	JB10728	JB10728-5	6.0 - 6.5 ft	10.1	4.1	3.6	07/09/2012	Y	< 0.23	UJ

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A1A	GAR-PDI-A1A	GAR-PDI-A1A-7.0-7.5	JC31963R	JC31963-12R	7.0 - 7.5 ft	11.9	4.9	4.4	11/17/2016	Y	0.67	J
A1A	GAR-PDI-A1A	GAR-PDI-A1A-7.5-8.0	JC31963R	JC31963-13R	7.5 - 8.0 ft	11.9	4.4	3.9	11/17/2016	Y	1.1	J
A1A	GAR-PDI-A1A	GAR-PDI-A1A-17.0-17.5	JC31963R	JC31963-9R	17.0 - 17.5 ft	11.9	-5.1	-5.6	11/17/2016	Y	0.45	J
A1A	GAR-PDI-A1A	GAR-PDI-A1A-17.5-18.0	JC31963R	JC31963-10R	17.5 - 18.0 ft	11.9	-5.6	-6.1	11/17/2016	Y	1.4	
A1A	GAR-PDI-A1A	GAR-PDI-A1A-20.0-20.5	JC31963	JC31963-11	20.0 - 20.5 ft	11.9	-8.1	-8.6	11/17/2016	Y	< 0.36	U
A'1A	114CC-A`1A-SW	114-A'1A-0.5-1.0-SW	JB10728R	JB10728-2R	0.5 - 1.0 ft	10.1	9.6	9.1	07/09/2012	Y	**51.0**	**J**
A'1A	114CC-A`1A-SW	114-A'1A-2.5-3.0-SW	JB10728R	JB10728-3R	2.5 - 3.0 ft	10.1	7.6	7.1	07/09/2012	Y	0.48	J
A'1A	114CC-A`1A-SW	114-A'1A-4.5-5.0-SW	JB10728R	JB10728-4R	4.5 - 5.0 ft	10.1	5.6	5.1	07/09/2012	Y	8.6	J
A'1A	114CC-A1A-PB	114-A1A-6.0-6.5-PB	JB10728	JB10728-8	6.0 - 6.5 ft	10.2	4.2	3.7	07/09/2012	Y	0.29	J
A'1A	114CC-A1A-PB	114-A1A-6.0-6.5-PBX	JB10728R	JB10728-6R	6.0 - 6.5 ft	10.2	4.2	3.7	07/09/2012	Y	0.20	J
A'1A	P4-GA-A`1A	114-GA-A`1A-6.0-6.5	JB74564	JB74564-7	6.0 - 6.5 ft	9.3	3.3	2.8	08/20/2014	Y	1.8	J
A'1A	P4-GA-A`1A	114-GA-A`1A-6.0-6.5X	JB74564	JB74564-8	6.0 - 6.5 ft	9.3	3.3	2.8	08/20/2014	Y	**355**	**J**
A'1A	P4-GA-A`1A	114-GA-A`1A-8.0-8.5	JB74564	JB74564-9	8.0 - 8.5 ft	9.3	1.3	0.8	08/20/2014	Y	0.45	J
A'1A	P4-GA-A`1A	114-GA-A`1A-10.0-10.5	JB74564	JB74564-10	10.0 - 10.5 ft	9.3	-0.7	-1.2	08/20/2014	Y	2.3	J
A'1A	P4-GA-A`1A	114-GA-A`1A-12.0-12.5	JB74564	JB74564-11	12.0 - 12.5 ft	9.3	-2.7	-3.2	08/20/2014	Y	0.42	J
A'1A	P4-GA-A`1A	114-GA-A`1A-12.5-13.0	JB74833	JB74833-12	12.5 - 13.0 ft	9.3	-3.2	-3.7	08/22/2014	Y	1.1	
A'1A	P4-GA-A`1A	114-GA-A`1A-13.0-13.5	JB74833	JB74833-13	13.0 - 13.3 ft	9.3	-3.7	-4.0	08/22/2014	Y	0.23	J
A'1A	P4-GA-A`1A	114-GA-A`1A-14.0-14.5	JB74564	JB74564-12	14.0 - 14.5 ft	9.3	-4.7	-5.2	08/20/2014	Y	< 0.20	UJ
A'1A	P4-GA-A`1A	114-GA-A`1A-16.0-16.5	JB74564	JB74564-13	16.0 - 16.5 ft	9.3	-6.7	-7.2	08/20/2014	Y	< 0.19	UJ
A'1A	P4-GA-A`1A	114-GA-A`1A-18.0-18.5	JB74564	JB74564-14	18.0 - 18.5 ft	9.3	-8.7	-9.2	08/20/2014	Y	< 0.20	UJ
A'1A	P4-GA-A`1A	114-GA-A`1A-20.0-20.5	JB74564	JB74564-15	20.0 - 20.5 ft	9.3	-10.7	-11.2	08/20/2014	Y	< 0.20	UJ
A1B	114CC-A1B-PB	114-A1B-6.0-6.5-PB	JB11335	JB11335-6	6.0 - 6.5 ft	10.5	4.5	4.0	07/16/2012	Y	8.2	J
A'1B	114CC-A1B-SW	114-A1B-0.5-1.0-SW	JB11335R	JB11335-3R	0.5 - 1.0 ft	9.9	9.4	8.9	07/16/2012	Y	**103**	**J**
A'1B	114CC-A1B-SW	114-A1B-2.5-3.0-SW	JB11335	JB11335-2	2.5 - 3.0 ft	9.9	7.4	6.9	07/16/2012	Y	**22.2**	**J**
A'1B	114CC-A1B-SW	114-A1B-4.5-5.0-SW	JB11335	JB11335-4	4.5 - 5.0 ft	9.9	5.4	4.9	07/16/2012	Y	0.46	J
A'1B	114CC-A1B-SW	114-A1B-4.5-5.0-SWX	JB11335R	JB11335-5R	4.5 - 5.0 ft	9.9	5.4	4.9	07/16/2012	Y	0.53	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-1.5-2.0	JC30780R	JC30780-1R	1.5 - 2.0 ft	10.3	8.8	8.3	10/30/2016	Y	0.75	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-1.5-2.0X	JC30780R	JC30780-2R	1.5 - 2.0 ft	10.3	8.8	8.3	10/30/2016	Y	0.61	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-3.5-4.0	JC30780	JC30780-10	3.5 - 4.0 ft	10.3	6.8	6.3	10/30/2016	Y	0.89	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-5.5-6.0	JC30780	JC30780-11	5.5 - 6.0 ft	10.3	4.8	4.3	10/30/2016	Y	1.1	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-10.0-10.5	JC30780R	JC30780-3R	10.0 - 10.5 ft	10.3	0.3	-0.2	10/30/2016	Y	1.3	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-11.5-12.0	JC30780	JC30780-4	11.5 - 12.0 ft	10.3	-1.2	-1.7	10/30/2016	Y	0.35	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-13.5-14.0	JC30780	JC30780-5	13.5 - 14.0 ft	10.3	-3.2	-3.7	10/30/2016	Y	< 0.32	UJ
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-15.5-16.0	JC30780R	JC30780-6R	15.5 - 16.0 ft	10.3	-5.2	-5.7	10/30/2016	Y	0.58	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-17.5-18.0	JC30780	JC30780-7	17.5 - 18.0 ft	10.3	-7.2	-7.7	10/30/2016	Y	0.42	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-19.5-20.0	JC30780	JC30780-8	19.5 - 20.0 ft	10.3	-9.2	-9.7	10/30/2016	Y	0.61	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-20.0-20.5	JC30780R	JC30780-9R	20.0 - 20.5 ft	10.3	-9.7	-10.2	10/30/2016	Y	0.58	J
A'1B	TPA	TPA(1.5-2)	R2421334	726775	1.5 - 2.0 ft	10.2	8.7	8.2	05/12/2004	Y	< 4.99	U
A'1B	TPA	TPA(3-3.5)	R2421334	726776	3.0 - 3.5 ft	10.2	7.2	6.7	05/12/2004	Y	< 4.72	U
A'1B	TPB	TPB-001	R2421885	738092	1.1 - 1.6 ft	10.0	8.9	8.4	06/23/2004	N	< 4.76	U
A'1B	TPB	TPB-002	R2421885	738093	2.5 - 3.0 ft	10.0	7.5	7.0	06/23/2004	N	< 5.14	U
A2A	GAR-PDI-A2A	GAR-PDI-A2A-7.5-8.0	JC31963	JC31963-17	7.5 - 8.0 ft	12.1	4.6	4.1	11/17/2016	Y	0.43	J
A2A	GAR-PDI-A2A	GAR-PDI-A2A-8.0-8.5	JC31963	JC31963-18	8.0 - 8.5 ft	12.1	4.1	3.6	11/17/2016	Y	< 0.37	U
A2A	GAR-PDI-A2A	GAR-PDI-A2A-16.0-16.5	JC31963	JC31963-14	16.0 - 16.5 ft	12.1	-3.9	-4.4	11/17/2016	Y	1.3	J
A2A	GAR-PDI-A2A	GAR-PDI-A2A-18.0-18.5	JC31963R	JC31963-15R	18.0 - 18.5 ft	12.1	-5.9	-6.4	11/17/2016	Y	0.96	
A2A	GAR-PDI-A2A	GAR-PDI-A2A-20.0-20.5	JC31963	JC31963-16	20.0 - 20.5 ft	12.1	-7.9	-8.4	11/17/2016	Y	5.8	
A'2A	114CC-A`2A-PB	114-A'2A-6.0-6.5-PB	JB10525	JB10525-4	6.0 - 6.5 ft	10.3	4.3	3.8	07/05/2012	Y	< 0.24	UJ
A'2A	114CC-A`2A-PB	114-A'2A-6.0-6.5-PBX	JB10525	JB10525-5	6.0 - 6.5 ft	10.3	4.3	3.8	07/05/2012	Y	< 0.25	UJ
A'2A	114CC-A`2A-SW	114-A'2A-0.5-1.0-SW	JB10525	JB10525-1	0.5 - 1.0 ft	9.7	9.2	8.7	07/05/2012	Y	**42.2**	**J**
A'2A	114CC-A`2A-SW	114-A'2A-2.5-3.0-SW	JB10525	JB10525-2	2.5 - 3.0 ft	9.7	7.2	6.7	07/05/2012	Y	**67.5**	**J**
A'2A	114CC-A`2A-SW	114-A'2A-4.5-5.0-SW	JB10525	JB10525-3	4.5 - 5.0 ft	9.7	5.2	4.7	07/05/2012	Y	0.29	J

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A'2A	P4-GA-A`2A	114-GA-A`2A-6.0-6.5	JB74425R	JB74425-7R	6.0 - 6.5 ft	9.0	3.0	2.5	08/19/2014	Y	1.3	J
A'2A	P4-GA-A`2A	114-GA-A`2A-8.0-8.5	JB74425R	JB74425-1R	8.0 - 8.5 ft	9.0	1.0	0.5	08/19/2014	Y	0.52	J
A'2A	P4-GA-A`2A	114-GA-A`2A-9.0-9.5	JB74425R	JB74425-8R	9.0 - 9.5 ft	9.0	0.0	-0.5	08/19/2014	Y	3.2	J
A'2A	P4-GA-A`2A	114-GA-A`2A-9.5-10.0	JB74425R	JB74425-9R	9.5 - 10.0 ft	9.0	-0.5	-1.0	08/19/2014	Y	2.6	J
A'2A	P4-GA-A`2A	114-GA-A`2A-10.5-11.0	JB74425R	JB74425-2R	10.5 - 11.0 ft	9.0	-1.5	-2.0	08/19/2014	Y	0.85	J
A2B	114CC-A2B-PB	114-A2B-6.0-6.5-PB	JB11561	JB11561-2	6.0 - 6.5 ft	10.8	4.8	4.3	07/18/2012	Y	**504**	**J**
A2B	114CC-A2B-SW	114-A2B-0.5-1.0-SW	JB11561R	JB11561-3R	0.5 - 1.0 ft	10.2	9.7	9.2	07/18/2012	Y	**55.3**	**J**
A2B	114CC-A2B-SW	114-A2B-2.5-3.0-SW	JB11561R	JB11561-4R	2.5 - 3.0 ft	10.2	7.7	7.2	07/18/2012	Y	7.5	J
A2B	114CC-A2B-SW	114-A2B-4.5-5.0-SW	JB11561R	JB11561-5R	4.5 - 5.0 ft	10.2	5.7	5.2	07/18/2012	Y	**41.3**	**J**
A2B	P4-GA-A2B	114-GA-A2B-6.0-6.5	JB74564	JB74564-16	6.0 - 6.5 ft	9.4	3.4	2.9	08/20/2014	Y	1.1	J
A2B	P4-GA-A2B	114-GA-A2B-8.0-8.5	JB74564	JB74564-17	8.0 - 8.5 ft	9.4	1.4	0.9	08/20/2014	Y	8.0	J
A2B	P4-GA-A2B	114-GA-A2B-10.0-10.5	JB74564	JB74564-18	10.0 - 10.5 ft	9.4	-0.6	-1.1	08/20/2014	Y	0.19	J
A2B	P4-GA-A2B	114-GA-A2B-11.5-12.0	JB74833	JB74833-15	11.5 - 12.0 ft	9.4	-2.1	-2.6	08/22/2014	Y	0.93	
A2B	P4-GA-A2B	114-GA-A2B-12.0-12.5	JB74564	JB74564-19	12.0 - 12.5 ft	9.4	-2.6	-3.1	08/20/2014	Y	**23.3**	**J**
A2B	P4-GA-A2B	114-GA-A2B-14.0-14.5	JB74564	JB74564-20	14.0 - 14.5 ft	9.4	-4.6	-5.1	08/20/2014	Y	10.9	J
A2B	P4-GA-A2B	114-GA-A2B-14.0-14.5x	JB74564	JB74564-23	14.0 - 14.5 ft	9.4	-4.6	-5.1	08/20/2014	Y	**21.2**	**J**
A2B	P4-GA-A2B	114-GA-A2B-16.0-16.5	JB74564	JB74564-21	16.0 - 16.5 ft	9.4	-6.6	-7.1	08/20/2014	Y	0.25	J
A2B	P4-GA-A2B	114-GA-A2B-18.0-18.5	JB74564	JB74564-22	18.0 - 18.5 ft	9.4	-8.6	-9.1	08/20/2014	Y	< 0.18	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-1.5-2.0	JC30780	JC30780-13	1.5 - 2.0 ft	10.4	8.9	8.4	10/30/2016	Y	< 0.32	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-3.5-4.0	JC30780U	JC30780-20U	3.5 - 4.0 ft	10.4	6.9	6.4	10/30/2016	Y	0.36	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-5.5-6.0	JC30780	JC30780-21	5.5 - 6.0 ft	10.4	4.9	4.4	10/30/2016	Y	1.6	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-7.5-8.0	JC30780	JC30780-22	7.5 - 8.0 ft	10.4	2.9	2.4	10/30/2016	Y	0.40	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-8.0-8.5	JC30780	JC30780-23	8.0 - 8.5 ft	10.4	2.4	1.9	10/30/2016	Y	2.5	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-9.5-10.0	JC30780	JC30780-24	9.5 - 10.0 ft	10.4	0.9	0.4	10/30/2016	Y	0.98	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-11.5-12.0	JC30780	JC30780-14	11.5 - 12.0 ft	10.4	-1.1	-1.6	10/30/2016	Y	< 0.34	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-13.5-14.0	JC30780	JC30780-15	13.5 - 14.0 ft	10.4	-3.1	-3.6	10/30/2016	Y	0.74	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-15.5-16.0	JC30780	JC30780-16	15.5 - 16.0 ft	10.4	-5.1	-5.6	10/30/2016	Y	1.2	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-17.5-18.0	JC30780	JC30780-17	17.5 - 18.0 ft	10.4	-7.1	-7.6	10/30/2016	Y	0.54	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-19.5-20.0	JC30780	JC30780-18	19.5 - 20.0 ft	10.4	-9.1	-9.6	10/30/2016	Y	0.40	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-20.0-20.5	JC30780	JC30780-19	20.0 - 20.5 ft	10.4	-9.6	-10.1	10/30/2016	Y	0.39	J
A'2B	GD	GD4-4.5	R2420565	712776	4.0 - 4.5 ft	10.1	6.1	5.6	03/16/2004	Y	< 5.6	UJ
A'2B	GD	GD4-4.5D	R2420565	712777	4.0 - 4.5 ft	10.1	6.1	5.6	03/16/2004	Y	< 5.06	UJ
A'2B	GD	GD5.9-6.4	R2420565	712778	5.9 - 6.4 ft	10.1	4.2	3.7	03/16/2004	Y	< 5.47	UJ
A'2B	GD	GD8-8.5	R2420565	712779	8.0 - 8.5 ft	10.1	2.1	1.6	03/16/2004	Y	< 4.66	UJ
A3A	GAR-PDI-A3A	GAR-PDI-A3A-7.5-8.0	JC31963	JC31963-25	7.5 - 8.0 ft	12.0	4.5	4.0	11/17/2016	Y	0.47	J
A3A	GAR-PDI-A3A	GAR-PDI-A3A-8.0-8.5	JC31963	JC31963-26	8.0 - 8.5 ft	12.0	4.0	3.5	11/17/2016	Y	< 0.35	U
A3A	GAR-PDI-A3A	GAR-PDI-A3A-8.0-8.5X	JC31963	JC31963-27	8.0 - 8.5 ft	12.0	4.0	3.5	11/17/2016	Y	0.79	
A3A	GAR-PDI-A3A	GAR-PDI-A3A-10.0-10.5	JC31963	JC31963-19	10.0 - 10.5 ft	12.0	2.0	1.5	11/17/2016	Y	0.38	J
A3A	GAR-PDI-A3A	GAR-PDI-A3A-11.0-11.5	JC31963	JC31963-20	11.0 - 11.5 ft	12.0	1.0	0.5	11/17/2016	Y	1.2	
A3A	GAR-PDI-A3A	GAR-PDI-A3A-15.0-15.5	JC31963	JC31963-21	15.0 - 15.5 ft	12.0	-3.0	-3.5	11/17/2016	Y	0.43	J
A3A	GAR-PDI-A3A	GAR-PDI-A3A-16.0-16.5	JC31963	JC31963-22	16.0 - 16.5 ft	12.0	-4.0	-4.5	11/17/2016	Y	0.87	
A3A	GAR-PDI-A3A	GAR-PDI-A3A-18.0-18.5	JC31963	JC31963-23	18.0 - 18.5 ft	12.0	-6.0	-6.5	11/17/2016	Y	0.56	
A3A	GAR-PDI-A3A	GAR-PDI-A3A-20.0-20.5	JC31963	JC31963-24	20.0 - 20.5 ft	12.0	-8.0	-8.5	11/17/2016	Y	1.0	
A'3A	114CC-A`3A-PB	114-A'3A-6.0-6.5-PB	JB10309	JB10309-3	6.0 - 6.5 ft	10.1	4.1	3.6	07/02/2012	Y	< 0.25	UJ
A'3A	114CC-A`3A-SW	114-A'3A-0.5-1.0-SW	JB10309	JB10309-1	0.5 - 1.0 ft	9.5	9.0	8.5	07/02/2012	Y	13.7	J
A'3A	114CC-A`3A-SW	114-A'3A-2.5-3.0-SW	JB10309	JB10309-5	2.5 - 3.0 ft	9.5	7.0	6.5	07/02/2012	Y	**39.6**	**J**
A'3A	114CC-A`3A-SW	114-A'3A-4.5-5.0-SW	JB10309	JB10309-2	4.5 - 5.0 ft	9.5	5.0	4.5	07/02/2012	Y	8.2	J
A'3A	P4-GA-A`3A	114-GA-A`3A-5.5-6.0	JB74425	JB74425-12	5.5 - 6.0 ft	8.7	3.2	2.7	08/19/2014	Y	1.1	J
A'3A	P4-GA-A`3A	114-GA-A`3A-5.5-6.0X	JB74425R	JB74425-13R	5.5 - 6.0 ft	8.7	3.2	2.7	08/19/2014	Y	0.61	J
A'3A	P4-GA-A`3A	114-GA-A`3A-6.5-7.0	JB74425R	JB74425-14R	6.5 - 7.0 ft	8.7	2.2	1.7	08/19/2014	Y	1.9	J
A'3A	P4-GA-A`3A	114-GA-A`3A-7.0-7.5	JB74425R	JB74425-15R	7.0 - 7.5 ft	8.7	1.7	1.2	08/19/2014	Y	6.6	J

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A'3A	P4-GA-A`3A	114-GA-A`3A-7.5-8.0	JB74425R	JB74425-16R	7.5 - 8.0 ft	8.7	1.2	0.7	08/19/2014	Y	1.2	J
A3B	114CC-A3B-PB	114-A3B-6.0-6.5-PB	JB11620	JB11620-3	6.0 - 6.5 ft	10.8	4.8	4.3	07/19/2012	Y	< 0.15	UJ
A3B	114CC-A3B-SW	114-A3B-1.1-1.6-SW	JB11620R	JB11620-5R	1.1 - 1.6 ft	10.3	9.2	8.7	07/19/2012	Y	16.7	J
A3B	114CC-A3B-SW	114-A3B-2.5-3.0-SW	JB11620	JB11620-1	2.5 - 3.0 ft	10.3	7.8	7.3	07/19/2012	Y	**44.4**	**J**
A3B	114CC-A3B-SW	114-A3B-4.5-5.0-SW	JB11620R	JB11620-2R	4.5 - 5.0 ft	10.3	5.8	5.3	07/19/2012	Y	0.18	J
A3B	P4-GA-A3B	114-GA-A3B-0.0-0.5	JB74714	JB74714-2	0.0 - 0.5 ft	9.4	9.4	8.9	08/21/2014	Y	0.38	J
A3B	P4-GA-A3B	114-GA-A3B-6.0-6.5	JB74714	JB74714-4	6.0 - 6.5 ft	9.4	3.4	2.9	08/21/2014	Y	0.25	J
A3B	P4-GA-A3B	114-GA-A3B-8.0-8.5	JB74714	JB74714-3	8.0 - 8.5 ft	9.4	1.4	0.9	08/21/2014	Y	0.38	J
A3B	P4-GA-A3B	114-GA-A3B-8.0-8.5X	JB74714	JB74714-6	8.0 - 8.5 ft	9.4	1.4	0.9	08/21/2014	Y	0.75	
A3B	P4-GA-A3B	114-GA-A3B-8.5-9.0	JB74714	JB74714-5	8.5 - 9.0 ft	9.4	0.9	0.4	08/21/2014	Y	0.69	
A3B	P4-GA-A3B	114-GA-A3B-10.5-11.0	JB74714	JB74714-7	10.5 - 11.0 ft	9.4	-1.1	-1.6	08/21/2014	Y	0.57	
A3B	P4-GA-A3B	114-GA-A3B-12.5-13.0	JB74714	JB74714-8	12.5 - 13.0 ft	9.4	-3.1	-3.6	08/21/2014	Y	1.2	
A3B	P4-GA-A3B	114-GA-A3B-14.5-15.0	JB74714	JB74714-9	14.5 - 15.0 ft	9.4	-5.1	-5.6	08/21/2014	Y	1.2	
A3B	P4-GA-A3B	114-GA-A3B-16.5-17.0	JB74714	JB74714-10	16.5 - 17.0 ft	9.4	-7.1	-7.6	08/21/2014	Y	0.55	
A3B	P4-GA-A3B	114-GA-A3B-18.5-19.0	JB74714	JB74714-11	18.5 - 19.0 ft	9.4	-9.1	-9.6	08/21/2014	Y	0.69	
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-1.0-1.5	JC30310	JC30310-2	1.0 - 1.5 ft	10.4	9.4	8.9	10/23/2016	Y	3.6	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-3.0-3.5	JC30310	JC30310-9	3.0 - 3.5 ft	10.4	7.4	6.9	10/23/2016	Y	< 0.33	UJ
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-5.0-5.5	JC30310	JC30310-10	5.0 - 5.5 ft	10.4	5.4	4.9	10/23/2016	Y	0.48	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-6.0-6.5	JC30780	JC30780-25	6.0 - 6.5 ft	10.4	4.4	3.9	10/30/2016	Y	2.6	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-6.5-7.0	JC30780	JC30780-26	6.5 - 7.0 ft	10.4	3.9	3.4	10/30/2016	Y	1.7	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-7.0-7.5	JC30310	JC30310-11	7.0 - 7.5 ft	10.4	3.4	2.9	10/23/2016	Y	0.84	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-9.0-9.5	JC30310	JC30310-12	9.0 - 9.5 ft	10.4	1.4	0.9	10/23/2016	Y	0.80	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-11.0-11.5	JC30310	JC30310-3	11.0 - 11.5 ft	10.4	-0.6	-1.1	10/23/2016	Y	0.57	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-13.0-13.5	JC30310	JC30310-4	13.0 - 13.5 ft	10.4	-2.6	-3.1	10/23/2016	Y	< 0.31	UJ
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-15.0-15.5	JC30310	JC30310-5	15.0 - 15.5 ft	10.4	-4.6	-5.1	10/23/2016	Y	0.57	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-17.0-17.5	JC30310	JC30310-6	17.0 - 17.5 ft	10.4	-6.6	-7.1	10/23/2016	Y	0.45	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-19.0-19.5	JC30310	JC30310-7	19.0 - 19.5 ft	10.4	-8.6	-9.1	10/23/2016	Y	0.49	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-20.0-20.5	JC30310	JC30310-8	20.0 - 20.5 ft	10.4	-9.6	-10.1	10/23/2016	Y	0.42	J
A'4A	114CC-A`4A-PB	114-A'4A-6.0-6.5-PB	JB10037R	JB10037-2R	6.0 - 6.5 ft	10.2	4.2	3.7	06/28/2012	Y	< 0.29	UJ
A'4A	114CC-A`4A-SW	114-A'4A-0.5-1.0-SW	JB10037	JB10037-3	0.5 - 1.0 ft	9.5	9.0	8.5	06/28/2012	Y	**1260**	**J**
A'4A	114CC-A`4A-SW	114-A'4A-2.5-3.0-SW	JB10037R	JB10037-4R	2.5 - 3.0 ft	9.5	7.0	6.5	06/28/2012	Y	**21.5**	**J**
A'4A	114CC-A`4A-SW	114-A'4A-4.5-5.0-SW	JB10037R	JB10037-5R	4.5 - 5.0 ft	9.5	5.0	4.5	06/28/2012	Y	13.7	J
A'4A	GAR-PDI-B'4A	GAR-PDI-B'4A-3.0-3.5	JC35045	JC35045-1	3.0 - 3.5 ft	10.1	7.1	6.6	01/08/2017	Y	0.43	
A'4A	GAR-PDI-B'4A	GAR-PDI-B'4A-5.0-5.5	JC35045	JC35045-2	5.0 - 5.5 ft	10.1	5.1	4.6	01/08/2017	Y	2.2	
A'4A	GAR-PDI-B'4A	GAR-PDI-B'4A-7.0-7.5	JC35045	JC35045-3	7.0 - 7.5 ft	10.1	3.1	2.6	01/08/2017	Y	2.2	
A'4A	P4-GA-A`4A	114-GA-A`4A-6.0-6.5	JB74425R	JB74425-23R	6.0 - 6.5 ft	8.5	2.5	2.0	08/19/2014	Y	0.45	J
A'4A	P4-GA-A`4A	114-GA-A`4A-8.0-8.5	JB74425R	JB74425-22R	8.0 - 8.5 ft	8.5	0.5	0.0	08/19/2014	Y	1.8	J
A'4A	P4-GA-A`4A	114-GA-A`4A-10.0-10.5	JB74425	JB74425-24	10.0 - 10.5 ft	8.5	-1.5	-2.0	08/19/2014	Y	0.36	J
A'4A	P4-GA-A`4A	114-GA-A`4A-12.0-12.5	JB74425	JB74425-25	12.0 - 12.5 ft	8.5	-3.5	-4.0	08/19/2014	Y	0.79	J
A'4A	P4-GA-A`4A	114-A`4A-12.5-13.0	JB74714	JB74714-1	12.5 - 13.0 ft	8.5	-4.0	-4.5	08/21/2014	Y	0.84	
A'4A	P4-GA-A`4A	114-GA-A`4A-14.0-14.5	JB74425	JB74425-26	14.0 - 14.5 ft	8.5	-5.5	-6.0	08/19/2014	Y	0.80	J
A'4A	P4-GA-A`4A	114-GA-A`4A-16.0-16.5	JB74425R	JB74425-27R	16.0 - 16.5 ft	8.5	-7.5	-8.0	08/19/2014	Y	8.0	J
A'4A	P4-GA-A`4A	114-GA-A`4A-18.0-18.5	JB74425R	JB74425-28R	18.0 - 18.5 ft	8.5	-9.5	-10.0	08/19/2014	Y	**92.0**	**J**
A'4A	P4-GA-A`4A	114-GA-A`4A-20.0-20.5	JB74425	JB74425-29	20.0 - 20.5 ft	8.5	-11.5	-12.0	08/19/2014	Y	**54.3**	**J**
A4B	114CC-A4B-PB	114-A4B-6.0-6.5-PB	JB11886	JB11886-5	6.0 - 6.5 ft	10.9	4.9	4.4	07/23/2012	Y	**24.0**	**J**
A4B	114CC-A4B-SW	114-A4B-1.2-1.7-SW	JB11886	JB11886-3	1.2 - 1.7 ft	10.5	9.3	8.8	07/23/2012	Y	**188**	**J**
A4B	114CC-A4B-SW	114-A4B-2.5-3.0-SW	JB11886	JB11886-2	2.5 - 3.0 ft	10.5	8.0	7.5	07/23/2012	Y	0.28	J
A4B	114CC-A4B-SW	114-A4B-4.5-5.0-SW	JB11886	JB11886-4	4.5 - 5.0 ft	10.5	6.0	5.5	07/23/2012	Y	0.54	J
A4B	BC8	BC8DS7-7.5	R2318284	669433	7.0 - 7.5 ft	10.9	3.9	3.4	09/03/2003	Y	< 6.13	U
A4B	BC8	BC8S7-7.5	R2318284	669432	7.0 - 7.5 ft	10.9	3.9	3.4	09/03/2003	Y	< 6.02	U
A4B	BC8	BC8DS9-9.5	R2318284	669429	9.0 - 9.5 ft	10.9	1.9	1.4	09/03/2003	Y	< 5.47	U

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A4B	BC8	BC8S9-9.5	R2318284	669423	9.0 - 9.5 ft	10.9	1.9	1.4	09/03/2003	Y	< 5.59	U
A4B	GAR-PDI-A4B	GAR-PDI-A4B-8.0-8.5	JC32403	JC32403-8	8.0 - 8.5 ft	11.1	3.1	2.6	11/28/2016	Y	< 0.31	U
A4B	GAR-PDI-A4B	GAR-PDI-A4B-8.5-9.0	JC32403	JC32403-9	8.5 - 9.0 ft	11.1	2.6	2.1	11/28/2016	Y	0.42	J
A4B	GAR-PDI-A4B	GAR-PDI-A4B-11.0-11.5	JC32403	JC32403-1	11.0 - 11.5 ft	11.1	0.1	-0.4	11/28/2016	Y	0.41	J
A4B	GAR-PDI-A4B	GAR-PDI-A4B-11.0-11.5X	JC32403	JC32403-2	11.0 - 11.5 ft	11.1	0.1	-0.4	11/28/2016	Y	< 0.35	U
A4B	GAR-PDI-A4B	GAR-PDI-A4B-13.0-13.5	JC32403	JC32403-3	13.0 - 13.5 ft	11.1	-1.9	-2.4	11/28/2016	Y	0.44	J
A4B	GAR-PDI-A4B	GAR-PDI-A4B-14.0-14.5	JC32403	JC32403-4	14.0 - 14.5 ft	11.1	-2.9	-3.4	11/28/2016	Y	0.99	
A4B	GAR-PDI-A4B	GAR-PDI-A4B-16.0-16.5	JC32403	JC32403-5	16.0 - 16.5 ft	11.1	-4.9	-5.4	11/28/2016	Y	0.75	
A4B	GAR-PDI-A4B	GAR-PDI-A4B-18.0-18.5	JC32403	JC32403-6	18.0 - 18.5 ft	11.1	-6.9	-7.4	11/28/2016	Y	0.61	
A4B	GAR-PDI-A4B	GAR-PDI-A4B-20.0-20.5	JC32403	JC32403-7	20.0 - 20.5 ft	11.1	-8.9	-9.4	11/28/2016	Y	1.4	
A4B	MW2AV	114-MW2A-VA 12-12.5	J11857	J11857-14	12.0 - 12.5 ft	10.8	-1.2	-1.7	10/06/2005	Y	< 1.2	U
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-1.0-1.5	JC30310	JC30310-13	1.0 - 1.5 ft	10.6	9.6	9.1	10/23/2016	Y	4.4	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-3.0-3.5	JC30310	JC30310-20	3.0 - 3.5 ft	10.6	7.6	7.1	10/23/2016	Y	< 0.31	UJ
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-3.0-3.5X	JC30310	JC30310-21	3.0 - 3.5 ft	10.6	7.6	7.1	10/23/2016	Y	< 0.31	UJ
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-5.0-5.5	JC30310	JC30310-22	5.0 - 5.5 ft	10.6	5.6	5.1	10/23/2016	Y	0.54	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-5.5-6.0	JC30780	JC30780-27	5.5 - 6.0 ft	10.6	5.1	4.6	10/30/2016	Y	1.3	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-6.0-6.5	JC30780	JC30780-28	6.0 - 6.5 ft	10.6	4.6	4.1	10/30/2016	Y	1.7	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-7.0-7.5	JC30310	JC30310-23	7.0 - 7.5 ft	10.6	3.6	3.1	10/23/2016	Y	1.3	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-9.0-9.5	JC30310	JC30310-24	9.0 - 9.5 ft	10.6	1.6	1.1	10/23/2016	Y	0.69	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-11.0-11.5	JC30310	JC30310-14	11.0 - 11.5 ft	10.6	-0.4	-0.9	10/23/2016	Y	0.76	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-13.0-13.5	JC30310	JC30310-15	13.0 - 13.5 ft	10.6	-2.4	-2.9	10/23/2016	Y	0.94	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-15.0-15.5	JC30310	JC30310-16	15.0 - 15.5 ft	10.6	-4.4	-4.9	10/23/2016	Y	0.35	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-17.0-17.5	JC30310	JC30310-17	17.0 - 17.5 ft	10.6	-6.4	-6.9	10/23/2016	Y	< 0.32	UJ
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-19.0-19.5	JC30310	JC30310-18	19.0 - 19.5 ft	10.6	-8.4	-8.9	10/23/2016	Y	7.1	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-20.0-20.5	JC30310	JC30310-19	20.0 - 20.5 ft	10.6	-9.4	-9.9	10/23/2016	Y	7.1	J
A'5A	114CC-A`5A-PB	114-A'5A-6.0-6.5-PB	JB9928	JB9928-3	6.0 - 6.5 ft	10.3	4.3	3.8	06/27/2012	Y	0.27	J
A'5A	114CC-A`5A-SW	114-A'5A-0.5-1.0-SW	JB9928R	JB9928-1R	0.5 - 1.0 ft	9.8	9.3	8.8	06/27/2012	Y	**96.6**	**J**
A'5A	114CC-A`5A-SW	114-A'5A-2.5-3.0-SW	JB9928R	JB9928-2R	2.5 - 3.0 ft	9.8	7.3	6.8	06/27/2012	Y	**42.3**	**J**
A'5A	114CC-A`5A-SW	114-A'5A-4.5-5.0-SW	JB9928	JB9928-5	4.5 - 5.0 ft	9.8	5.3	4.8	06/27/2012	Y	**47.4**	**J**
A'5A	114-GA-A`5A	114-GA-A`5A-6.0-6.5	JB74337	JB74337-4	6.0 - 6.5 ft	8.7	2.7	2.2	08/18/2014	Y	0.92	J
A'5A	114-GA-A`5A	114-GA-A`5A-8.0-8.5	JB74337	JB74337-5	8.0 - 8.5 ft	8.7	0.7	0.2	08/18/2014	Y	0.59	J
A'5A	114-GA-A`5A	114-GA-A`5A-8.0-8.5X	JB74337R	JB74337-12R	8.0 - 8.5 ft	8.7	0.7	0.2	08/18/2014	Y	1.1	J
A'5A	114-GA-A`5A	114-GA-A`5A-8.5-9.0	JB74337	JB74337-13	8.5 - 9.0 ft	8.7	0.2	-0.3	08/18/2014	Y	1.7	J
A'5A	114-GA-A`5A	114-GA-A`5A-9.0-9.5	JB74337R	JB74337-28R	9.0 - 9.5 ft	8.7	-0.3	-0.8	08/18/2014	Y	0.85	J
A'5A	114SWE-A`5A	114-A'5A-6.5-7.0	JB14196R	JB14196-1R	6.5 - 7.0 ft	10.3	3.8	3.3	08/20/2012	Y	0.21	J
A5B	114CC-A5B-PB	114-A5B-6.0-6.5-PB	JB11964R	JB11964-5R	6.0 - 6.5 ft	11.0	5.0	4.5	07/24/2012	Y	**864**	**J**
A5B	114CC-A5B-SW	114-A5B-1.0-1.5-SW	JB11964R	JB11964-3R	1.0 - 1.5 ft	10.7	9.7	9.2	07/24/2012	Y	**169**	**J**
A5B	114CC-A5B-SW	114-A5B-2.5-3.0-SW	JB11964	JB11964-2	2.5 - 3.0 ft	10.7	8.2	7.7	07/24/2012	Y	**91.4**	**J**
A5B	114CC-A5B-SW	114-A5B-4.5-5.0-SW	JB11964	JB11964-4	4.5 - 5.0 ft	10.7	6.2	5.7	07/24/2012	Y	1.2	J
A5B	GAR-PDI-A5B	GAR-PDI-A5B-18.0-18.5	JC32403	JC32403-10	18.0 - 18.5 ft	11.0	-7.0	-7.5	11/28/2016	Y	5.4	
A5B	GAR-PDI-A5B	GAR-PDI-A5B-20.0-20.5	JC32403	JC32403-11	20.0 - 20.5 ft	11.0	-9.0	-9.5	11/28/2016	Y	2.6	
A5B	P4-GA-A5B	114-GA-A5B-0.0-0.5	JB74714	JB74714-12	0.0 - 0.5 ft	9.5	9.5	9.0	08/21/2014	Y	0.43	J
A5B	P4-GA-A5B	114-GA-A5B-5.5-6.0	JB74714	JB74714-13	5.5 - 6.0 ft	9.5	4.0	3.5	08/21/2014	Y	**143**	**J**
A5B	P4-GA-A5B	114-GA-A5B-7.5-8.0	JB74714	JB74714-14	5.5 - 6.0 ft	9.5	4.0	3.5	08/21/2014	Y	**120**	**J**
A5B	P4-GA-A5B	114-GA-A5B-9.5-10.0	JB74714	JB74714-15	9.5 - 10.0 ft	9.5	0.0	-0.5	08/21/2014	Y	**21.4**	**J**
A5B	P4-GA-A5B	114-GA-A5B-10.5-11.0	JB74714	JB74714-16	10.5 - 11.0 ft	9.5	-1.0	-1.5	08/21/2014	Y	**99.8**	**J**
A5B	P4-GA-A5B	114-GA-A5B-11.0-11.5	JB74714	JB74714-17	11.0 - 11.5 ft	9.5	-1.5	-2.0	08/21/2014	Y	**78.9**	**J**
A5B	P4-GA-A5B	114-GA-A5B-13.0-13.5	JB74714	JB74714-18	13.0 - 13.5 ft	9.5	-3.5	-4.0	08/21/2014	Y	**82.4**	**J**
A5B	P4-GA-A5B	114-GA-A5B-15.0-15.5	JB74714	JB74714-19	15.0 - 15.5 ft	9.5	-5.5	-6.0	08/21/2014	Y	**140**	**J**
A5B	P4-GA-A5B	114-GA-A5B-17.0-17.5	JB74714	JB74714-20	17.0 - 17.5 ft	9.5	-7.5	-8.0	08/21/2014	Y	0.69	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-1.5-2.0	JC30310	JC30310-25	1.5 - 2.0 ft	10.7	9.2	8.7	10/23/2016	Y	1.3	J

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-3.5-4.0	JC30310	JC30310-32	3.5 - 4.0 ft	10.7	7.2	6.7	10/23/2016	Y	**50.9**	**J**
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-5.0-5.5	JC30780	JC30780-29	5.0 - 5.5 ft	10.7	5.7	5.2	10/30/2016	Y	12.8	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-5.5-6.0	JC30310	JC30310-33	5.5 - 6.0 ft	10.7	5.2	4.7	10/23/2016	Y	3.3	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-7.5-8.0	JC30310	JC30310-34	7.5 - 8.0 ft	10.7	3.2	2.7	10/23/2016	Y	0.47	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-9.5-10.0	JC30310	JC30310-35	9.5 - 10.0 ft	10.7	1.2	0.7	10/23/2016	Y	0.99	
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-11.5-12.0	JC30310	JC30310-26	11.5 - 12.0 ft	10.7	-0.8	-1.3	10/23/2016	Y	8.4	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-13.5-14.0	JC30310	JC30310-27	13.5 - 14.0 ft	10.7	-2.8	-3.3	10/23/2016	Y	6.9	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-15.5-16.0	JC30310	JC30310-28	15.5 - 16.0 ft	10.7	-4.8	-5.3	10/23/2016	Y	9.4	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-17.5-18.0	JC30310	JC30310-29	17.5 - 18.0 ft	10.7	-6.8	-7.3	10/23/2016	Y	6.3	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-19.5-20.0	JC30310	JC30310-30	19.5 - 20.0 ft	10.7	-8.8	-9.3	10/23/2016	Y	10.3	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-20.0-20.5	JC30310	JC30310-31	20.0 - 20.5 ft	10.7	-9.3	-9.8	10/23/2016	Y	0.51	J
A'6A	114CC-A`6A-PB	114-A'6A-6.0-6.5-PB	JB9718	JB9718-3	6.0 - 6.5 ft	10.4	4.4	3.9	06/25/2012	Y	< 0.25	UJ
A'6A	114CC-A`6A-SW	114-A'6A-0.5-1.0-SW	JB9718	JB9718-5	0.5 - 1.0 ft	9.9	9.4	8.9	06/25/2012	Y	**138**	**J**
A'6A	114CC-A`6A-SW	114-A'6A-2.5-3.0-SW	JB9718	JB9718-2	2.5 - 3.0 ft	9.9	7.4	6.9	06/25/2012	Y	< 0.24	UJ
A'6A	114CC-A`6A-SW	114-A'6A-4.5-5.0-SW	JB9718	JB9718-1	4.5 - 5.0 ft	9.9	5.4	4.9	06/25/2012	Y	< 0.31	UJ
A'6A	114SWE-A`6A	114-A'6A-6.5-7.0	JB12602R	JB12602-1AR	6.5 - 7.0 ft	10.7	4.2	3.7	07/31/2012	Y	7.8	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-6.0-6.5	JC31963	JC31963-6	6.0 - 6.5 ft	10.5	4.5	4.0	11/17/2016	Y	< 0.34	UJ
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-6.5-7.0	JC31963R	JC31963-7R	6.5 - 7.0 ft	10.5	4.0	3.5	11/17/2016	Y	1.1	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-8.0-8.5	JC31963R	JC31963-8R	8.0 - 8.5 ft	10.5	2.5	2.0	11/17/2016	Y	0.98	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-10.0-10.5	JC31963R	JC31963-2R	10.0 - 10.5 ft	10.5	0.5	0.0	11/17/2016	Y	0.77	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-14.0-14.5	JC31963R	JC31963-3R	14.0 - 14.5 ft	10.5	-3.5	-4.0	11/17/2016	Y	18.8	
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-16.0-16.5	JC31963	JC31963-4	16.0 - 16.5 ft	10.5	-5.5	-6.0	11/17/2016	Y	8.7	
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-18.0-18.5	JC31963	JC31963-5	18.0 - 18.5 ft	10.5	-7.5	-8.0	11/17/2016	Y	9.3	
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-20.0-20.5	JC31963	JC31963-28	20.0 - 20.5 ft	10.5	-9.5	-10.0	11/17/2016	Y	12.7	
A6B	114CC-A6B-PB	114-A6B-6.0-6.5-PB	JB12208	JB12208-2	6.0 - 6.5 ft	11.1	5.1	4.6	07/26/2012	Y	**374**	**J**
A6B	114CC-A6B-SW	114-A6B-0.5-1.0-SW	JB12208	JB12208-3	0.5 - 1.0 ft	10.8	10.3	9.8	07/26/2012	Y	**49.3**	**J**
A6B	114CC-A6B-SW	114-A6B-2.5-3.0-SW	JB12208	JB12208-4	2.5 - 3.0 ft	10.8	8.3	7.8	07/26/2012	Y	**75.6**	**J**
A6B	114CC-A6B-SW	114-A6B-2.5-3.0-SWX	JB12208	JB12208-5	2.5 - 3.0 ft	10.8	8.3	7.8	07/26/2012	Y	**59.4**	**J**
A6B	114CC-A6B-SW	114-A6B-4.5-5.0-SW	JB12208	JB12208-6	4.5 - 5.0 ft	10.8	6.3	5.8	07/26/2012	Y	**101**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-7.5-8.0	JC32469	JC32469-8	7.5 - 8.0 ft	11.1	3.6	3.1	11/29/2016	Y	**209**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-7.5-8.0X	JC32469	JC32469-9	7.5 - 8.0 ft	11.1	3.6	3.1	11/29/2016	Y	**168**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-8.0-8.5	JC32469	JC32469-10	8.0 - 8.5 ft	11.1	3.1	2.6	11/29/2016	Y	**154**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-10.0-10.5	JC32469	JC32469-2	10.0 - 10.5 ft	11.1	1.1	0.6	11/29/2016	Y	**131**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-12.0-12.5	JC32469	JC32469-3	12.0 - 12.5 ft	11.1	-0.9	-1.4	11/29/2016	Y	**114**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-14.0-14.5	JC32469	JC32469-4	14.0 - 14.5 ft	11.1	-2.9	-3.4	11/29/2016	Y	**153**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-16.0-16.5	JC32469	JC32469-5	16.0 - 16.5 ft	11.1	-4.9	-5.4	11/29/2016	Y	**101**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-18.0-18.5	JC32469	JC32469-6	18.0 - 18.5 ft	11.1	-6.9	-7.4	11/29/2016	Y	**110**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-20.0-20.5	JC32469R	JC32469-7R	20.0 - 20.5 ft	11.1	-8.9	-9.4	11/29/2016	Y	**36.9**	**J**
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-1.5-2.0	JC30310	JC30310-36	1.5 - 2.0 ft	11.0	9.5	9.0	10/23/2016	Y	9.5	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-3.5-4.0	JC30310	JC30310-44	3.5 - 4.0 ft	11.0	7.5	7.0	10/23/2016	Y	3.8	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-5.0-5.5	JC30780T	JC30780-30T	5.0 - 5.5 ft	11.0	6.0	5.5	10/30/2016	Y	0.81	J
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-5.5-6.0	JC30310	JC30310-45	5.5 - 6.0 ft	11.0	5.5	5.0	10/23/2016	Y	1.0	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-7.5-8.0	JC30310	JC30310-46	7.5 - 8.0 ft	11.0	3.5	3.0	10/23/2016	Y	0.52	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-9.5-10.0	JC30310	JC30310-47	9.5 - 10.0 ft	11.0	1.5	1.0	10/23/2016	Y	**25.3**	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-11.5-12.0	JC30310	JC30310-37	11.5 - 12.0 ft	11.0	-0.5	-1.0	10/23/2016	Y	0.93	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-13.5-14.0	JC30310	JC30310-38	13.5 - 14.0 ft	11.0	-2.5	-3.0	10/23/2016	Y	0.41	J
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-13.5-14.0X	JC30310	JC30310-39	13.5 - 14.0 ft	11.0	-2.5	-3.0	10/23/2016	Y	0.55	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-15.5-16.0	JC30310	JC30310-40	15.5 - 16.0 ft	11.0	-4.5	-5.0	10/23/2016	Y	1.9	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-17.5-18.0	JC30310	JC30310-41	17.5 - 18.0 ft	11.0	-6.5	-7.0	10/23/2016	Y	1.4	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-19.5-20.0	JC30310	JC30310-42	19.5 - 20.0 ft	11.0	-8.5	-9.0	10/23/2016	Y	0.96	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-20.0-20.5	JC30310	JC30310-43	20.0 - 20.5 ft	11.0	-9.0	-9.5	10/23/2016	Y	0.56	

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A'7A	114CC-A`7A-PB	114-A'7A-6.0-6.5-PB	JB9609R	JB9609-5R	6.0 - 6.5 ft	10.6	4.6	4.1	06/22/2012	Y	0.32	J
A'7A	114CC-A`7A-SW	114-A'7A-0.5-1.0-SW	JB9609	JB9609-1	0.5 - 1.0 ft	10.1	9.6	9.1	06/22/2012	Y	0.24	J
A'7A	114CC-A`7A-SW	114-A'7A-2.5-3.0-SW	JB9609	JB9609-2	2.5 - 3.0 ft	10.1	7.6	7.1	06/22/2012	Y	0.27	J
A'7A	114CC-A`7A-SW	114-A'7A-4.5-5.0-SW	JB9609R	JB9609-3R	4.5 - 5.0 ft	10.1	5.6	5.1	06/22/2012	Y	< 0.23	UJ
A'7A	114-GA-A`7A	114-GA-A`7A-6.0-6.5	JB74337	JB74337-17	6.0 - 6.5 ft	8.9	2.9	2.4	08/18/2014	Y	0.31	J
A'7A	114-GA-A`7A	114-GA-A`7A-8.0-8.5	JB74337	JB74337-18	8.0 - 8.5 ft	8.9	0.9	0.4	08/18/2014	Y	0.57	J
A'7A	114-GA-A`7A	114-GA-A`7A-8.5-9.0	JB74337	JB74337-19	8.5 - 9.0 ft	8.9	0.4	-0.1	08/18/2014	Y	3.7	J
A'7A	114-GA-A`7A	114-GA-A`7A-9.0-9.5	JB74337R	JB74337-20R	9.0 - 9.5 ft	8.9	-0.1	-0.6	08/18/2014	Y	0.80	J
A'7A	114SWE-A`7A	114-A'7A-6.5-7.0	JB12661	JB12661-2	6.5 - 7.0 ft	10.6	4.1	3.6	08/01/2012	Y	< 0.19	UJ
A'7A	114SWE-A`7A	114-A'7A/A7A-8.5-9.0	JB12661	JB12661-3	8.5 - 9.0 ft	10.6	2.1	1.6	08/01/2012	Y	< 0.14	UJ
A'7A	114SWE-A`7A	114-A'7A/A7A-10.5-11.0	JB12661	JB12661-4	10.5 - 11.0 ft	10.6	0.1	-0.4	08/01/2012	Y	< 0.15	UJ
A'7A	114SWE-A`7A	114-A'7A/A7A-10.5-11.0X	JB12661	JB12661-5	10.5 - 11.0 ft	10.6	0.1	-0.4	08/01/2012	Y	< 0.14	UJ
A'7A	A6	A6S0-.5	R2318257	668994	0.0 - 0.5 ft	10.5	10.5	10.0	09/02/2003	Y	**36.4**	**J**
A'7A	A6	A6S4-4.5	R2318257	668996	4.0 - 4.5 ft	10.5	6.5	6.0	09/02/2003	Y	< 4.67	UJ
A'7A	A6	A6S6.5-7	R2318257	668997	6.5 - 7.0 ft	10.5	4.0	3.5	09/02/2003	Y	< 4.65	UJ
A'7A	A6	A6S8.5-9	R2318257	668998	8.5 - 9.0 ft	10.5	2.0	1.5	09/02/2003	Y	< 5.2	UJ
A'7A	GB	GB0.4-0.9	R2420545	712573	0.4 - 0.9 ft	10.2	9.8	9.3	03/15/2004	Y	**20.6**	
A'7A	GB	GB1.5-2	R2420545	712574	1.5 - 2.0 ft	10.2	8.7	8.2	03/15/2004	Y	**48.4**	
A'7A	GB	GB4-4.5	R2420545	712575	4.0 - 4.5 ft	10.2	6.2	5.7	03/15/2004	Y	< 5.13	U
A7B	114CC-A7B-PB	114-A7B-6.0-6.5-PB	JB12366R	JB12366-5R	6.0 - 6.5 ft	11.4	5.4	4.9	07/27/2012	Y	**1530**	**J**
A7B	114CC-A7B-SW	114-A7B-0.5-1.0-SW	JB12366R	JB12366-3R	0.5 - 1.0 ft	10.7	10.2	9.7	07/27/2012	Y	2.4	J
A7B	114CC-A7B-SW	114-A7B-2.5-3.0-SW	JB12366	JB12366-4	2.5 - 3.0 ft	10.7	8.2	7.7	07/27/2012	Y	**156**	**J**
A7B	114CC-A7B-SW	114-A7B-4.5-5.0-SW	JB12366	JB12366-2	4.5 - 5.0 ft	10.7	6.2	5.7	07/27/2012	Y	**92.7**	**J**
A7B	C9	C9S7-7.5	R2318284	669418	7.0 - 7.5 ft	11.5	4.5	4.0	09/03/2003	Y	**4840**	**J**
A7B	C9	C9DS21.5-22	R2318284	669443	21.5 - 22.0 ft	11.5	-10.0	-10.5	09/03/2003	Y	**57.9**	**J**
A7B	C9	C9S21.5-22	R2318284	669438	21.5 - 22.0 ft	11.5	-10.0	-10.5	09/03/2003	Y	**56.1**	**J**
A7B	C9	C9DS24-24.5	R2318284	669445	24.0 - 24.5 ft	11.5	-12.5	-13.0	09/03/2003	Y	**21.2**	**J**
A7B	C9	C9S24-24.5	R2318284	669444	24.0 - 24.5 ft	11.5	-12.5	-13.0	09/03/2003	Y	**29.1**	**J**
A7B	C9V	114-C9VA 25-25.5	J11857	J11857-11	25.0 - 25.5 ft	11.4	-13.6	-14.1	10/06/2005	Y	19.2	
A7B	P4-GA-A7B	114-GA-A7B-5.5-6.0	JB74833	JB74833-1	5.5 - 6.0 ft	9.4	3.9	3.4	08/22/2014	Y	**868**	
A7B	P4-GA-A7B	114-GA-A7B-5.5-6.0X	JB74833	JB74833-2	5.5 - 6.0 ft	9.4	3.9	3.4	08/22/2014	Y	**723**	
A7B	P4-GA-A7B	114-GA-A7B-6.0-6.5	JB74833	JB74833-3	6.0 - 6.5 ft	9.4	3.4	2.9	08/22/2014	Y	**668**	
A7B	P4-GA-A7B	114-GA-A7B-8.0-8.5	JB74833	JB74833-4	8.0 - 8.5 ft	9.4	1.4	0.9	08/22/2014	Y	**28.7**	
A7B	P4-GA-A7B	114-GA-A7B-10.0-10.5	JB74833	JB74833-5	10.0 - 10.5 ft	9.4	-0.6	-1.1	08/22/2014	Y	**664**	
A7B	P4-GA-A7B	114-GA-A7B-12.0-12.5	JB74833	JB74833-6	12.0 - 12.5 ft	9.4	-2.6	-3.1	08/22/2014	Y	**199**	
A7B	P4-GA-A7B	114-GA-A7B-14.0-14.5	JB74833	JB74833-7	14.0 - 14.5 ft	9.4	-4.6	-5.1	08/22/2014	Y	**148**	
A7B	P4-GA-A7B	114-GA-A7B-16.0-16.5	JB74833	JB74833-8	16.0 - 16.5 ft	9.4	-6.6	-7.1	08/22/2014	Y	**64.5**	
A7B	P4-GA-A7B	114-GA-A7B-18.0-18.5	JB74833	JB74833-9	18.0 - 18.5 ft	9.4	-8.6	-9.1	08/22/2014	Y	6.1	
A7B	P4-GA-A7B	114-GA-A7B-20.0-20.5	JB74833	JB74833-10	20.0 - 20.5 ft	9.4	-10.6	-11.1	08/22/2014	Y	**25.1**	
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-0.5-1.0	JC36395	JC36395-1	0.5 - 1.0 ft	11.5	11.0	10.5	01/29/2017	Y	1.4	J
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-2.0-2.5	JC36395R	JC36395-5R	2.0 - 2.5 ft	11.5	9.5	9.0	01/29/2017	Y	2.5	J
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-6.0-6.5	JC36395	JC36395-7	6.0 - 6.5 ft	11.5	5.5	5.0	01/29/2017	Y	< 0.38	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-6.5-7.0	JC36395	JC36395-8	6.5 - 7.0 ft	11.5	5.0	4.5	01/29/2017	Y	< 0.36	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-7.0-7.5	JC36395	JC36395-9	7.0 - 7.5 ft	11.5	4.5	4.0	01/29/2017	Y	1.1	J
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-10.0-10.5	JC36395	JC36395-2	10.0 - 10.5 ft	11.5	1.5	1.0	01/29/2017	Y	< 0.33	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-14.0-14.5	JC36395	JC36395-3	14.0 - 14.5 ft	11.5	-2.5	-3.0	01/29/2017	Y	0.34	J
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-18.0-18.5	JC36395	JC36395-4	18.0 - 18.5 ft	11.5	-6.5	-7.0	01/29/2017	Y	0.39	J
A'7B	GE	GE4.1-4.6	R2420565	712769	4.1 - 4.6 ft	10.8	6.7	6.2	03/16/2004	Y	< 5.37	UJ
A'7B	GE	GE 5.6-6.1	R2420565	712770	5.6 - 6.1 ft	10.8	5.2	4.7	03/16/2004	Y	< 5.4	UJ
A'7B	GE	GE 8.1-8.6	R2420565	712771	8.1 - 8.6 ft	10.8	2.7	2.2	03/16/2004	Y	< 4.98	UJ
A'7B	GE	GE12.1-12.6	R2420565	712772	12.1 - 12.6 ft	10.8	-1.3	-1.8	03/16/2004	Y	< 4.8	UJ

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier		
A'7B	GE	GE16.1-16.6	R2420565	712773	16.1 - 16.6 ft	10.8	-5.3	-5.8	03/16/2004	Y	< 4.58	UJ		
A'7B	GE	GE20.5-21.0	R2420565	712774	20.5 - 21.0 ft	10.8	-9.7	-10.2	03/16/2004	Y	< 4.61	UJ		
A'7B	GE	GE24.5-25	R2420565	712775	24.5 - 25.0 ft	10.8	-13.7	-14.2	03/16/2004	Y	< 4.73	UJ		
A'8A	A'-8A	114-A'-8A-0.0	460314021	460-31402-12	0.0 - 0.5 ft	10.8	10.8	10.3	09/21/2011	Y	6.7	J		
A'8A	A'-8A	114-A'-8A-2.0	460314021	460-31402-13	2.0 - 2.5 ft	10.8	8.8	8.3	09/21/2011	Y	< 0.59	UJ		
A'8A	A'-8A	114-A'-8A-5.0	460314021	460-31402-14	5.0 - 5.5 ft	10.8	5.8	5.3	09/21/2011	Y	< 0.64	UJ		
A'8A	A'-8A	114-A'-8A-6.0	460314021	460-31402-15	6.0 - 6.5 ft	10.8	4.8	4.3	09/21/2011	Y	< 0.65	UJ		
A'8A	A'-8A	114-A'-8A-6.0X	460314021	460-31402-17	6.0 - 6.5 ft	10.8	4.8	4.3	09/21/2011	Y	< 0.62	UJ		
A'8A	A'-8A	114-A'-8A-10.0	460314021	460-31402-16	10.0 - 10.5 ft	10.8	0.8	0.3	09/21/2011	Y	< 0.67	UJ		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-6.0-6.5	JC31517	JC31517-24	6.0 - 6.5 ft	10.8	4.8	4.3	11/10/2016	Y	0.38	J		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-7.5-8.0	JC31517R	JC31517-25R	7.5 - 8.0 ft	10.8	3.3	2.8	11/10/2016	Y	1.0	J		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-7.5-8.0X	JC31517R	JC31517-26R	7.5 - 8.0 ft	10.8	3.3	2.8	11/10/2016	Y	0.45	J		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-8.0-8.5	JC31517R	JC31517-27R	8.0 - 8.5 ft	10.8	2.8	2.3	11/10/2016	Y	2.1	J		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-10.0-10.5	JC31517	JC31517-18	10.0 - 10.5 ft	10.8	0.8	0.3	11/10/2016	Y	0.57			
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-12.0-12.5	JC31517R	JC31517-19R	12.0 - 12.5 ft	10.8	-1.2	-1.7	11/10/2016	Y	2.6			
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-14.0-14.5	JC31517	JC31517-20	14.0 - 14.5 ft	10.8	-3.2	-3.7	11/10/2016	Y	**151**	**J**		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-16.0-16.5	JC31517	JC31517-21	16.0 - 16.5 ft	10.8	-5.2	-5.7	11/10/2016	Y	**31.9**	**J**		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-18.0-18.5	JC31517	JC31517-22	18.0 - 18.5 ft	10.8	-7.2	-7.7	11/10/2016	Y	16.5	J		
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-20.0-20.5	JC31517R	JC31517-23R	20.0 - 20.5 ft	10.8	-9.2	-9.7	11/10/2016	Y	7.3	J		
A8B	114CC-A8B-SW	114-A8B-0.5-1.0-SW	JB12458	JB12458-3	0.5 - 1.0 ft	10.8	10.3	9.8	07/30/2012	Y	**102**	**J**		
A8B	114CC-A8B-SW	114-A8B-2.5-3.0-SW	JB12458R	JB12458-4R	2.5 - 3.0 ft	10.8	8.3	7.8	07/30/2012	Y	**213**	**J**		
A8B	114CC-A8B-SW	114-A8B-4.5-5.0-SW	JB12458	JB12458-2	4.5 - 5.0 ft	10.8	6.3	5.8	07/30/2012	Y	**941**	**J**		
A8B	GAR-PDI-A8B	GAR-PDI-A8B-8.0-8.5	JC32158	JC32158-11	8.0 - 8.5 ft	11.3	3.3	2.8	11/21/2016	Y	**1820**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-8.0-8.5X	JC32158	JC32158-12	8.0 - 8.5 ft	11.3	3.3	2.8	11/21/2016	Y	**1640**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-10.0-10.5	JC32158	JC32158-4	10.0 - 10.5 ft	11.3	1.3	0.8	11/21/2016	Y	**861**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-12.0-12.5	JC32158	JC32158-5	12.0 - 12.5 ft	11.3	-0.7	-1.2	11/21/2016	Y	**30.8**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-12.5-13.0	JC32158	JC32158-6	12.5 - 13.0 ft	11.3	-1.2	-1.7	11/21/2016	Y	**115**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-14.0-14.5	JC32158	JC32158-7	14.0 - 14.5 ft	11.3	-2.7	-3.2	11/21/2016	Y	**56.1**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-16.0-16.5	JC32158	JC32158-8	16.0 - 16.5 ft	11.3	-4.7	-5.2	11/21/2016	Y	**40.1**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-18.0-18.5	JC32158	JC32158-9	18.0 - 18.5 ft	11.3	-6.7	-7.2	11/21/2016	Y	**64.6**			
A8B	GAR-PDI-A8B	GAR-PDI-A8B-20.0-20.5	JC32158	JC32158-10	20.0 - 20.5 ft	11.3	-8.7	-9.2	11/21/2016	Y	**125**			
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-0.5-1.0	JC37505R	JC37505-1R	0.5 - 1.0 ft	11.6	11.1	10.6	02/19/2017	Y	1.2	J		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-1.0-1.5	JC37505	JC37505-2	1.0 - 1.5 ft	11.6	10.6	10.1	02/19/2017	Y	< 0.37	UJ		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-3.0-3.5	JC37505	JC37505-9	3.0 - 3.5 ft	11.6	8.6	8.1	02/19/2017	Y	0.49	J		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-5.0-5.5	JC37505	JC37505-10	5.0 - 5.5 ft	11.6	6.6	6.1	02/19/2017	Y	< 0.37	UJ		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-6.5-7.0	JC37505	JC37505-11	6.5 - 7.0 ft	11.6	5.1	4.6	02/19/2017	Y	< 0.36	UJ		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-6.5-7.0X	JC37505	JC37505-12	6.5 - 7.0 ft	11.6	5.1	4.6	02/19/2017	Y	< 0.36	UJ		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-7.0-7.5	JC37505	JC37505-13	7.0 - 7.5 ft	11.6	4.6	4.1	02/19/2017	Y	< 0.36	UJ		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-9.0-9.5	JC37505	JC37505-14	9.0 - 9.5 ft	11.6	2.6	2.1	02/19/2017	Y	0.85			
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-11.0-11.5	JC37505	JC37505-3	11.0 - 11.5 ft	11.6	0.6	0.1	02/19/2017	Y	< 0.32	U		
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-13.0-13.5	JC37505	JC37505-4	13.0 - 13.5 ft	11.6	-1.4	-1.9	02/19/2017	Y	0.58			
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-15.0-15.5	JC37505	JC37505-5	15.0 - 15.5 ft	11.6	-3.4	-3.9	02/19/2017	Y	0.53			
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-17.0-17.5	JC37505	JC37505-6	17.0 - 17.5 ft	11.6	-5.4	-5.9	02/19/2017	Y	0.65			
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-19.0-19.5	JC37505	JC37505-7	19.0 - 19.5 ft	11.6	-7.4	-7.9	02/19/2017	Y	2.5			
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-20.0-20.5	JC37505	JC37505-8	20.0 - 20.5 ft	11.6	-8.4	-8.9	02/19/2017	Y	0.65			
A'9A	114CC-A`9A-PB	114-A'9A-6.0-6.5-PB	JB9375	JB9375-4	6.0 - 6.5 ft	10.9	4.9	4.4	06/20/2012	Y	< 0.23	UJ		
A'9A	114CC-A`9A-SW	114-A'9A-0.5-1.0-SW	JB9375	JB9375-1	0.5 - 1.0 ft	10.4	9.9	9.4	06/20/2012	Y	**26.3**	**J**		
A'9A	114CC-A`9A-SW	114-A'9A-2.5-3.0-SW	JB9375	JB9375-2	2.5 - 3.0 ft	10.4	7.9	7.4	06/20/2012	Y	< 0.24	UJ		
A'9A	114CC-A`9A-SW	114-A'9A-4.5-5.0-SW	JB9375	JB9375-3	4.5 - 5.0 ft	10.4	5.9	5.4	06/20/2012	Y	< 0.26	UJ		
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-8.0-8.5	JC31517R	JC31517-35R	8.0 - 8.5 ft	11.1	3.1	2.6	11/10/2016	Y	2.7	J		
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-10.0-10.5	JC31517	JC31517-28	10.0 - 10.5 ft	11.1	1.1	0.6	11/10/2016	Y	3.3	J		

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

										Analyte	CHROMIUM (HEXAVALENT)	
										CAS RN	18540-29-9	
										Units	mg/kg	
										CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-10.5-11.0	JC31517	JC31517-29	10.5 - 11.0 ft	11.1	0.6	0.1	11/10/2016	Y	1.6	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-12.0-12.5	JC31517R	JC31517-30R	12.0 - 12.5 ft	11.1	-0.9	-1.4	11/10/2016	Y	1.7	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-14.0-14.5	JC31517	JC31517-31	14.0 - 14.5 ft	11.1	-2.9	-3.4	11/10/2016	Y	**62.1**	**J**
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-16.0-16.5	JC31517R	JC31517-32R	16.0 - 16.5 ft	11.1	-4.9	-5.4	11/10/2016	Y	14.0	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-18.0-18.5	JC31517	JC31517-33	18.0 - 18.5 ft	11.1	-6.9	-7.4	11/10/2016	Y	**45.6**	**J**
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-20.0-20.5	JC31517R	JC31517-34R	20.0 - 20.5 ft	11.1	-8.9	-9.4	11/10/2016	Y	15.4	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-0.5-1.0	JC35528	JC35528-1	0.5 - 1.0 ft	10.6	10.1	9.6	01/15/2017	Y	5.7	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-2.5-3.0	JC35528	JC35528-7	2.5 - 3.0 ft	10.6	8.1	7.6	01/15/2017	Y	0.48	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-4.5-5.0X	JC35528R	JC35528-8R	2.5 - 3.0 ft	10.6	8.1	7.6	01/15/2017	Y	0.47	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-4.5-5.0	JC35528	JC35528-10	4.5 - 5.0 ft	10.6	6.1	5.6	01/15/2017	Y	0.63	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-6.5-7.0	JC35528R	JC35528-11R	6.5 - 7.0 ft	10.6	4.1	3.6	01/15/2017	Y	1.1	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-7.5-8.0	JC35528	JC35528-12	7.5 - 8.0 ft	10.6	3.1	2.6	01/15/2017	Y	9.6	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-8.0-8.5	JC35528R	JC35528-13R	8.0 - 8.5 ft	10.6	2.6	2.1	01/15/2017	Y	0.51	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-10.0-10.5	JC35528	JC35528-2	10.0 - 10.5 ft	10.6	0.6	0.1	01/15/2017	Y	0.65	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-12.0-12.5	JC35528R	JC35528-3R	12.0 - 12.5 ft	10.6	-1.4	-1.9	01/15/2017	Y	0.59	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-14.0-14.5	JC35528R	JC35528-4R	14.0 - 14.5 ft	10.6	-3.4	-3.9	01/15/2017	Y	0.65	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-16.0-16.5	JC35528	JC35528-5	16.0 - 16.5 ft	10.6	-5.4	-5.9	01/15/2017	Y	< 0.31	UJ
B'0	GAR-PDI-B'0	GAR-PDI-B'0-18.0-18.5	JC35528	JC35528-6	18.0 - 18.5 ft	10.6	-7.4	-7.9	01/15/2017	Y	0.47	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-20.0-20.5	JC35528	JC35528-9	20.0 - 20.5 ft	10.6	-9.4	-9.9	01/15/2017	Y	0.61	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-0.5-1.0	JC32140	JC32140-2	0.5 - 1.0 ft	11.0	10.5	10.0	11/20/2016	Y	0.56	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-2.0-2.5	JC32140	JC32140-8	2.0 - 2.5 ft	11.0	9.0	8.5	11/20/2016	Y	< 0.33	U
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-4.0-4.5	JC32140	JC32140-10	4.0 - 4.5 ft	11.0	7.0	6.5	11/20/2016	Y	< 0.33	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-6.0-6.5	JC32140	JC32140-11	6.0 - 6.5 ft	11.0	5.0	4.5	11/20/2016	Y	< 0.33	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-8.0-8.5	JC32140	JC32140-12	8.0 - 8.5 ft	11.0	3.0	2.5	11/20/2016	Y	< 0.35	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-8.5-9.0	JC32140	JC32140-13	8.5 - 9.0 ft	11.0	2.5	2.0	11/20/2016	Y	< 0.34	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-9.0-9.5	JC32140	JC32140-14	9.0 - 9.5 ft	11.0	2.0	1.5	11/20/2016	Y	0.43	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-10.0-10.5	JC32140	JC32140-3	10.0 - 10.5 ft	11.0	1.0	0.5	11/20/2016	Y	8.3	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-12.0-12.5	JC32140	JC32140-4	12.0 - 12.5 ft	11.0	-1.0	-1.5	11/20/2016	Y	5.0	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-14.0-14.5	JC32140	JC32140-5	14.0 - 14.5 ft	11.0	-3.0	-3.5	11/20/2016	Y	10.4	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-16.0-16.5	JC32140	JC32140-6	16.0 - 16.5 ft	11.0	-5.0	-5.5	11/20/2016	Y	7.8	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-18.0-18.5	JC32140	JC32140-7	18.0 - 18.5 ft	11.0	-7.0	-7.5	11/20/2016	Y	7.7	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-20.0-20.5	JC32140	JC32140-9	20.0 - 20.5 ft	11.0	-9.0	-9.5	11/20/2016	Y	5.5	J
B10B	114-B10B-CC-PB	114-B10B-PB-6.0-6.5	JB77112	JB77112-2	6.0 - 6.5 ft	11.6	5.6	5.1	09/19/2014	Y	**348**	
B10B	114-B10B-CC-SW	114-B10B-SW-2.0-2.5	JB77112	JB77112-5	2.0 - 2.5 ft	11.6	9.6	9.1	09/19/2014	Y	**284**	
B10B	114-B10B-CC-SW	114-B10B-SW-4.0-4.5	JB77112	JB77112-4	4.0 - 4.5 ft	11.6	7.6	7.1	09/19/2014	Y	**509**	
B10B	114-B10B-CC-SW	114-B10B-SW-5.5-6.0	JB77112	JB77112-3	5.5 - 6.0 ft	11.6	6.1	5.6	09/19/2014	Y	**487**	
B10B	GAR-PDI-B10B	GAR-PDI-B10B-7.5-8.0	JC32774	JC32774-2	7.5 - 8.0 ft	11.6	4.1	3.6	12/02/2016	Y	**3550**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-8.0-8.5	JC32774	JC32774-3	8.0 - 8.5 ft	11.6	3.6	3.1	12/02/2016	Y	**3870**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-10.0-10.5	JC33206	JC33206-2	10.0 - 10.5 ft	11.6	1.6	1.1	12/08/2016	Y	**3490**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-10.0-10.5X	JC33206	JC33206-3	10.0 - 10.5 ft	11.6	1.6	1.1	12/08/2016	Y	**3340**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-12.0-12.5	JC33206	JC33206-4	12.0 - 12.5 ft	11.6	-0.4	-0.9	12/08/2016	Y	**2290**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-14.0-14.5	JC33206	JC33206-5	14.0 - 14.5 ft	11.6	-2.4	-2.9	12/08/2016	Y	1.3	J
B10B	GAR-PDI-B10B	GAR-PDI-B10B-16.0-16.5	JC33206	JC33206-6	16.0 - 16.5 ft	11.6	-4.4	-4.9	12/08/2016	Y	3.2	J
B10B	GAR-PDI-B10B	GAR-PDI-B10B-18.0-18.5	JC33206	JC33206-7	18.0 - 18.5 ft	11.6	-6.4	-6.9	12/08/2016	Y	1.5	J
B10B	GAR-PDI-B10B	GAR-PDI-B10B-20.0-20.5	JC33206	JC33206-8	20.0 - 20.5 ft	11.6	-8.4	-8.9	12/08/2016	Y	0.98	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-0.5-1.0	JC32140	JC32140-15	0.5 - 1.0 ft	11.1	10.6	10.1	11/20/2016	Y	0.35	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-2.0-2.5	JC32140	JC32140-23	2.0 - 2.5 ft	11.1	9.1	8.6	11/20/2016	Y	< 0.33	UJ
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-4.0-4.5	JC32140	JC32140-25	4.0 - 4.5 ft	11.1	7.1	6.6	11/20/2016	Y	0.43	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-6.0-6.5	JC32140	JC32140-26	6.0 - 6.5 ft	11.1	5.1	4.6	11/20/2016	Y	0.39	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-8.0-8.5	JC32140	JC32140-27	8.0 - 8.5 ft	11.1	3.1	2.6	11/20/2016	Y	0.58	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-10.0-10.5	JC32140	JC32140-16	10.0 - 10.5 ft	11.1	1.1	0.6	11/20/2016	Y	**127**	**J**

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

										Analyte	CHROMIUM (HEXAVALENT)	
										CAS RN	18540-29-9	
										Units	mg/kg	
										CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-10.5-11.0	JC32140	JC32140-17	10.5 - 11.0 ft	11.1	0.6	0.1	11/20/2016	Y	**116**	**J**
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-12.0-12.5	JC32140	JC32140-18	12.0 - 12.5 ft	11.1	-0.9	-1.4	11/20/2016	Y	10.4	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-14.0-14.5	JC32140	JC32140-19	14.0 - 14.5 ft	11.1	-2.9	-3.4	11/20/2016	Y	**21.0**	**J**
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-16.0-16.5	JC32140	JC32140-20	16.0 - 16.5 ft	11.1	-4.9	-5.4	11/20/2016	Y	18.2	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-16.0-16.5X	JC32140	JC32140-21	16.0 - 16.5 ft	11.1	-4.9	-5.4	11/20/2016	Y	**23.6**	**J**
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-18.0-18.5	JC32140	JC32140-22	18.0 - 18.5 ft	11.1	-6.9	-7.4	11/20/2016	Y	9.0	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-20.0-20.5	JC32140	JC32140-24	20.0 - 20.5 ft	11.1	-8.9	-9.4	11/20/2016	Y	10.2	J
B11B	114GAR-3	114TP-3GAR-0.5-1.0	JB15500	JB15500-1	0.5 - 1.0 ft	11.5	11.0	10.5	09/05/2012	Y	**692**	
B11B	114GAR-3	114TP-3GAR-1.5-2.0	JB15646	JB15646-3	1.5 - 2.0 ft	11.5	10.0	9.5	09/06/2012	Y	**126**	**J**
B11B	114GAR-3	114TP-3GAR-2.0-2.5	JB15500R	JB15500-2R	2.0 - 2.5 ft	11.5	9.5	9.0	09/05/2012	Y	1.1	J
B11B	114GAR-3	114TP-3GAR-2.0-2.5-09061	JB15646	JB15646-4	2.0 - 2.5 ft	11.5	9.5	9.0	09/06/2012	Y	8.2	J
B11B	114GAR-3	114TP-3GAR-4.0-4.5	JB15646	JB15646-1	4.0 - 4.5 ft	11.5	7.5	7.0	09/06/2012	Y	**293**	**J**
B11B	114GAR-3	114TP-3GAR-5.5-6.0	JB15646	JB15646-2	5.5 - 6.0 ft	11.5	6.0	5.5	09/06/2012	Y	**405**	**J**
B'12A	114GAR-1	114 GAR1_4.0	JA99548	JA99548-1	4.0 - 4.0 ft	11.0	7.0	7.0	02/16/2012	N	< 0.24	U
B'12A	GA	GA0.1-0.5	R2420545	712563	0.1 - 0.5 ft	11.2	11.1	10.7	03/15/2004	Y	< 4.18	U
B'12A	GA	GA0.8-1.8	R2420545	712564	0.8 - 1.8 ft	11.2	10.4	9.4	03/15/2004	Y	10.3	
B'12A	GA	GA4-4.5	R2420545	712565	4.0 - 4.5 ft	11.2	7.2	6.7	03/15/2004	Y	< 4.72	U
B'12A	GA	GA5.2-6.2	R2420545	712566	5.2 - 6.2 ft	11.2	6.0	5.0	03/15/2004	Y	< 4.55	U
B'12A	GA	GA5.2-6.2D	R2420545	712567	5.2 - 6.2 ft	11.2	6.0	5.0	03/15/2004	Y	< 4.54	U
B'12A	GA	GA8-8.5	R2420545	712568	8.0 - 8.5 ft	11.2	3.2	2.7	03/15/2004	Y	13.2	
B'12A	GA	GA8.5-9	R2420545	712569	8.5 - 9.0 ft	11.2	2.7	2.2	03/15/2004	Y	< 4.91	U
B'12A	GA	GA12-12.5	R2420545	712570	12.0 - 12.5 ft	11.2	-0.8	-1.3	03/15/2004	Y	7.7	
B'12A	GA	GA16-16.5	R2420545	712571	16.0 - 16.5 ft	11.2	-4.8	-5.3	03/15/2004	Y	12.7	
B'12A	GA	GA17-17.5	R2420545	712572	17.0 - 17.5 ft	11.2	-5.8	-6.3	03/15/2004	Y	**24.4**	
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-6.5-7.0	JC31680	JC31680-4	6.5 - 7.0 ft	11.3	4.8	4.3	11/13/2016	Y	0.53	J
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-7.0-7.5	JC31680	JC31680-5	7.0 - 7.5 ft	11.3	4.3	3.8	11/13/2016	Y	< 0.33	UJ
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-18.0-18.5	JC31680	JC31680-2	18.0 - 18.5 ft	11.3	-6.7	-7.2	11/13/2016	Y	1.9	J
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-20.0-20.5	JC31680	JC31680-3	20.0 - 20.5 ft	11.3	-8.7	-9.2	11/13/2016	Y	1.2	J
B'12A	GAR-PDI-B'12AR	GAR-PDI-B'12AR-10.0-10.5	JC37505	JC37505-29	10.0 - 10.5 ft	11.4	1.4	0.9	02/19/2017	Y	3.6	J
B'12A	GAR-PDI-B'12AR	GAR-PDI-B'12AR-14.0-14.5	JC37505	JC37505-30	14.0 - 14.5 ft	11.4	-2.6	-3.1	02/19/2017	Y	2.3	J
B12B	GG	GG 4.4-4.9	R2420565	712764	4.4 - 4.9 ft	12.8	8.4	7.9	03/16/2004	Y	< 4.89	UJ
B12B	GG	GG 5.5-6.0	R2420565	712765	5.5 - 6.0 ft	12.8	7.3	6.8	03/16/2004	Y	< 4.76	UJ
B12B	GG	GG 8.4-8.9	R2420565	712766	8.4 - 8.9 ft	12.8	4.4	3.9	03/16/2004	Y	< 4.78	UJ
B12B	GG	GG 12.4-12.9	R2420565	712767	12.4 - 12.9 ft	12.8	0.4	-0.1	03/16/2004	Y	< 5.69	UJ
B12B	GG	GG 13-13.5	R2420565	712768	13.0 - 13.5 ft	12.8	-0.2	-0.7	03/16/2004	Y	< 5.57	UJ
B'13A	114CC-A`13A-SW	114-A'13A-0.5-1.0-SW	JB8970R	JB8970-2R	0.5 - 1.0 ft	11.0	10.5	10.0	06/14/2012	Y	1.4	J
B'13A	114CC-A`13A-SW	114-A'13A-0.5-1.0-SWS	JB8858	JB8858-1	0.5 - 1.0 ft	11.0	10.5	10.0	06/13/2012	Y	1.3	J
B'13A	114CC-A`13A-SW	114-A'13A-2.5-3.0-SW	JB8970R	JB8970-3R	2.5 - 3.0 ft	11.0	8.5	8.0	06/14/2012	Y	1.5	J
B'13A	114CC-A`13A-SW	114-A'13A-2.5-3.0-SWS	JB8858R	JB8858-2R	2.5 - 3.0 ft	11.0	8.5	8.0	06/13/2012	Y	0.89	J
B'13A	114CC-A`13A-SW	114-A'13A-4.5-5.0-SW	JB8970	JB8970-5	4.5 - 5.0 ft	11.0	6.5	6.0	06/14/2012	Y	0.63	J
B'13A	114CC-A`13A-SW	114-A'13A-4.5-5.0-SWS	JB8858R	JB8858-3R	4.5 - 5.0 ft	11.0	6.5	6.0	06/13/2012	Y	1.9	J
B'13A	114CC-A`13A-SW	114-A'13A-4.5-5.0-SWX	JB8970	JB8970-4	4.5 - 5.0 ft	11.0	6.5	6.0	06/14/2012	Y	1.2	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-6.0-6.5	JC31680	JC31680-13	6.0 - 6.5 ft	11.6	5.6	5.1	11/13/2016	Y	< 0.35	UJ
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-6.5-7.0	JC31680	JC31680-14	6.5 - 7.0 ft	11.6	5.1	4.6	11/13/2016	Y	0.38	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-8.0-8.5	JC31680	JC31680-15	8.0 - 8.5 ft	11.6	3.6	3.1	11/13/2016	Y	4.3	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-10.0-10.5	JC31680	JC31680-6	10.0 - 10.5 ft	11.6	1.6	1.1	11/13/2016	Y	0.49	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-12.0-12.5	JC31680	JC31680-7	12.0 - 12.5 ft	11.6	-0.4	-0.9	11/13/2016	Y	8.6	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-12.0-12.5X	JC31680	JC31680-8	12.0 - 12.5 ft	11.6	-0.4	-0.9	11/13/2016	Y	1.3	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-14.0-14.5	JC31680	JC31680-9	14.0 - 14.5 ft	11.6	-2.4	-2.9	11/13/2016	Y	2.8	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-16.0-16.5	JC31680	JC31680-10	16.0 - 16.5 ft	11.6	-4.4	-4.9	11/13/2016	Y	1.4	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-18.0-18.5	JC31680	JC31680-11	18.0 - 18.5 ft	11.6	-6.4	-6.9	11/13/2016	Y	4.3	J

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-20.0-20.5	JC31680	JC31680-12	20.0 - 20.5 ft	11.6	-8.4	-8.9	11/13/2016	Y	1.2	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-1.0-1.5	JC31680	JC31680-16	1.0 - 1.5 ft	11.4	10.4	9.9	11/13/2016	Y	1.3	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-2.0-2.5	JC31680R	JC31680-22R	2.0 - 2.5 ft	11.4	9.4	8.9	11/13/2016	Y	2.0	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-4.0-4.5	JC31680R	JC31680-24R	4.0 - 4.5 ft	11.4	7.4	6.9	11/13/2016	Y	0.94	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-4.0-4.5X	JC31680R	JC31680-25R	4.0 - 4.5 ft	11.4	7.4	6.9	11/13/2016	Y	1.5	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-6.0-6.5	JC31680	JC31680-26	6.0 - 6.5 ft	11.4	5.4	4.9	11/13/2016	Y	0.76	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-8.0-8.5	JC31680R	JC31680-27R	8.0 - 8.5 ft	11.4	3.4	2.9	11/13/2016	Y	**82.7**	**J**
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-9.5-10.0	JC31680R	JC31680-28R	9.5 - 10.0 ft	11.4	1.9	1.4	11/13/2016	Y	**92.0**	**J**
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-10.0-10.5	JC31680	JC31680-17	10.0 - 10.5 ft	11.4	1.4	0.9	11/13/2016	Y	**25.9**	**J**
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-12.0-12.5	JC31680	JC31680-18	12.0 - 12.5 ft	11.4	-0.6	-1.1	11/13/2016	Y	3.9	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-14.0-14.5	JC31680	JC31680-19	14.0 - 14.5 ft	11.4	-2.6	-3.1	11/13/2016	Y	4.3	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-16.0-16.5	JC31680	JC31680-20	16.0 - 16.5 ft	11.4	-4.6	-5.1	11/13/2016	Y	8.8	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-18.0-18.5	JC31680	JC31680-21	18.0 - 18.5 ft	11.4	-6.6	-7.1	11/13/2016	Y	3.1	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-20.0-20.5	JC31680R	JC31680-23R	20.0 - 20.5 ft	11.4	-8.6	-9.1	11/13/2016	Y	4.5	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-0.5-1.0	JC35528R	JC35528-14R	0.5 - 1.0 ft	10.4	9.9	9.4	01/15/2017	Y	1.8	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-2.5-3.0	JC35528T	JC35528-21T	2.5 - 3.0 ft	10.4	7.9	7.4	01/15/2017	Y	1.3	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-4.5-5.0	JC35528	JC35528-23	4.5 - 5.0 ft	10.4	5.9	5.4	01/15/2017	Y	0.55	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-6.5-7.0	JC35528	JC35528-24	6.5 - 7.0 ft	10.4	3.9	3.4	01/15/2017	Y	0.49	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-7.5-8.0	JC35528T	JC35528-25T	7.5 - 8.0 ft	10.4	2.9	2.4	01/15/2017	Y	1.2	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-8.0-8.5	JC35528	JC35528-26	8.0 - 8.5 ft	10.4	2.4	1.9	01/15/2017	Y	< 0.33	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-10.0-10.5	JC35528	JC35528-15	10.0 - 10.5 ft	10.4	0.4	-0.1	01/15/2017	Y	< 0.36	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-10.0-10.5X	JC35528	JC35528-16	10.0 - 10.5 ft	10.4	0.4	-0.1	01/15/2017	Y	0.98	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-12.0-12.5	JC35528R	JC35528-17R	12.0 - 12.5 ft	10.4	-1.6	-2.1	01/15/2017	Y	0.97	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-14.0-14.5	JC35528R	JC35528-18R	14.0 - 14.5 ft	10.4	-3.6	-4.1	01/15/2017	Y	0.71	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-16.0-16.5	JC35528	JC35528-19	16.0 - 16.5 ft	10.4	-5.6	-6.1	01/15/2017	Y	< 0.33	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-18.0-18.5	JC35528	JC35528-20	18.0 - 18.5 ft	10.4	-7.6	-8.1	01/15/2017	Y	< 0.31	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-20.0-20.5	JC35528	JC35528-22	20.0 - 20.5 ft	10.4	-9.6	-10.1	01/15/2017	Y	< 0.31	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-5.0-5.5	JC35528	JC35528-33	5.0 - 5.5 ft	10.5	5.5	5.0	01/15/2017	Y	0.83	J
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-5.5-6.0	JC35528	JC35528-34	5.5 - 6.0 ft	10.5	5.0	4.5	01/15/2017	Y	0.58	J
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-8.0-8.5	JC35528	JC35528-35	8.0 - 8.5 ft	10.5	2.5	2.0	01/15/2017	Y	< 0.33	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-10.0-10.5	JC35528	JC35528-27	10.0 - 10.5 ft	10.5	0.5	0.0	01/15/2017	Y	0.53	J
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-12.0-12.5	JC35528	JC35528-28	12.0 - 12.5 ft	10.5	-1.5	-2.0	01/15/2017	Y	< 0.34	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-14.0-14.5	JC35528	JC35528-29	14.0 - 14.5 ft	10.5	-3.5	-4.0	01/15/2017	Y	< 0.32	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-16.0-16.5	JC35528	JC35528-30	16.0 - 16.5 ft	10.5	-5.5	-6.0	01/15/2017	Y	< 0.33	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-18.0-18.5	JC35528	JC35528-31	18.0 - 18.5 ft	10.5	-7.5	-8.0	01/15/2017	Y	< 0.31	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-20.0-20.5	JC35528	JC35528-32	20.0 - 20.5 ft	10.5	-9.5	-10.0	01/15/2017	Y	0.61	J
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-6.0-6.5	JC33472	JC33472-6	6.0 - 6.5 ft	10.3	4.3	3.8	12/11/2016	Y	0.48	J
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-6.0-6.5X	JC33472	JC33472-7	6.0 - 6.5 ft	10.3	4.3	3.8	12/11/2016	Y	< 0.35	U
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-6.5-7.0	JC33472	JC33472-8	6.5 - 7.0 ft	10.3	3.8	3.3	12/11/2016	Y	1.3	
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-7.0-7.5	JC33472	JC33472-9	7.0 - 7.5 ft	10.3	3.3	2.8	12/11/2016	Y	1.0	
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-8.0-8.5	JC33472	JC33472-10	8.0 - 8.5 ft	10.3	2.3	1.8	12/11/2016	Y	1.1	
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-10.0-10.5	JC33472	JC33472-2	10.0 - 10.5 ft	10.3	0.3	-0.2	12/11/2016	Y	0.47	J
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-13.0-13.5	JC33472	JC33472-3	13.0 - 13.5 ft	10.3	-2.7	-3.2	12/11/2016	Y	0.36	J
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-15.0-15.5	JC33472	JC33472-4	15.0 - 15.5 ft	10.3	-4.7	-5.2	12/11/2016	Y	0.72	
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-18.0-18.5	JC33472	JC33472-5	18.0 - 18.5 ft	10.3	-7.7	-8.2	12/11/2016	Y	< 0.33	U
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-0.5-1.0	JC35951	JC35951-2	0.5 - 1.0 ft	10.9	10.4	9.9	01/22/2017	Y	6.9	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-2.5-3.0	JC35951	JC35951-8	2.5 - 3.0 ft	10.9	8.4	7.9	01/22/2017	Y	1.5	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-4.0-4.5	JC35951	JC35951-10	4.0 - 4.5 ft	10.9	6.9	6.4	01/22/2017	Y	0.53	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-4.5-5.0	JC35951	JC35951-11	4.5 - 5.0 ft	10.9	6.4	5.9	01/22/2017	Y	< 0.35	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-6.5-7.0	JC35951	JC35951-12	6.5 - 7.0 ft	10.9	4.4	3.9	01/22/2017	Y	0.60	
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-8.5-9.0	JC35951R	JC35951-13R	8.5 - 9.0 ft	10.9	2.4	1.9	01/22/2017	Y	1.7	J

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-10.5-11.0	JC35951	JC35951-3	10.5 - 11.0 ft	10.9	0.4	-0.1	01/22/2017	Y	< 0.34	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-12.5-13.0	JC35951	JC35951-36	12.5 - 13.0 ft	10.9	-1.6	-2.1	01/22/2017	Y	11.7	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-12.5-13.0X	JC35951	JC35951-4	12.5 - 13.0 ft	10.9	-1.6	-2.1	01/22/2017	Y	< 0.32	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-14.5-15.0	JC35951	JC35951-5	14.5 - 15.0 ft	10.9	-3.6	-4.1	01/22/2017	Y	< 0.31	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-16.5-17.0	JC35951R	JC35951-6R	16.5 - 17.0 ft	10.9	-5.6	-6.1	01/22/2017	Y	0.40	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-18.5-19.0	JC35951	JC35951-7	18.5 - 19.0 ft	10.9	-7.6	-8.1	01/22/2017	Y	< 0.31	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-20.0-20.5	JC35951	JC35951-9	20.0 - 20.5 ft	10.9	-9.1	-9.6	01/22/2017	Y	< 0.31	UJ
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-0.5-1.0	JC33472	JC33472-11	0.5 - 1.0 ft	10.4	9.9	9.4	12/11/2016	Y	3.7	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-2.0-2.5	JC33472	JC33472-17	2.0 - 2.5 ft	10.4	8.4	7.9	12/11/2016	Y	0.38	J
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-6.5-7.0	JC33472	JC33472-19	6.5 - 7.0 ft	10.4	3.9	3.4	12/11/2016	Y	< 0.36	U
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-7.0-7.5	JC33472	JC33472-20	7.0 - 7.5 ft	10.4	3.4	2.9	12/11/2016	Y	0.48	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-10.0-10.5	JC33472	JC33472-12	10.0 - 10.5 ft	10.4	0.4	-0.1	12/11/2016	Y	0.73	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-12.0-12.5	JC33472	JC33472-13	12.0 - 12.5 ft	10.4	-1.6	-2.1	12/11/2016	Y	0.67	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-14.0-14.5	JC33472	JC33472-14	14.0 - 14.5 ft	10.4	-3.6	-4.1	12/11/2016	Y	0.48	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-16.0-16.5	JC33472	JC33472-15	16.0 - 16.5 ft	10.4	-5.6	-6.1	12/11/2016	Y	0.37	J
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-18.0-18.5	JC33472	JC33472-16	18.0 - 18.5 ft	10.4	-7.6	-8.1	12/11/2016	Y	< 0.32	U
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-20.0-20.5	JC33472	JC33472-18	20.0 - 20.5 ft	10.4	-9.6	-10.1	12/11/2016	Y	0.82	
B'3A	GC	GC4-4.5	R2420565	712780	4.0 - 4.5 ft	10.9	6.9	6.4	03/16/2004	Y	< 5.22	UJ
B'3A	GC	GC6-6.3	R2420565	712781	6.0 - 6.3 ft	10.9	4.9	4.6	03/16/2004	Y	< 5	UJ
B'3A	GC	GC8-8.5	R2420565	712782	8.0 - 8.5 ft	10.9	2.9	2.4	03/16/2004	Y	< 4.96	UJ
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-0.5-1.0	JC35951	JC35951-14	0.5 - 1.0 ft	10.5	10.0	9.5	01/22/2017	Y	1.9	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-2.0-2.5	JC35951	JC35951-20	2.0 - 2.5 ft	10.5	8.5	8.0	01/22/2017	Y	0.64	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-4.0-4.5	JC35951	JC35951-22	4.0 - 4.5 ft	10.5	6.5	6.0	01/22/2017	Y	< 0.36	UJ
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-5.0-5.5	JC35951	JC35951-23	5.0 - 5.5 ft	10.5	5.5	5.0	01/22/2017	Y	6.5	
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-5.5-6.0	JC35951	JC35951-24	5.5 - 6.0 ft	10.5	5.0	4.5	01/22/2017	Y	3.5	
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-6.0-6.5	JC35951	JC35951-25	6.0 - 6.5 ft	10.5	4.5	4.0	01/22/2017	Y	0.50	
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-8.0-8.5	JC35951	JC35951-26	8.0 - 8.5 ft	10.5	2.5	2.0	01/22/2017	Y	0.36	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-10.0-10.5	JC35951	JC35951-15	10.0 - 10.5 ft	10.5	0.5	0.0	01/22/2017	Y	< 0.36	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-12.0-12.5	JC35951	JC35951-16	12.0 - 12.5 ft	10.5	-1.5	-2.0	01/22/2017	Y	< 0.32	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-14.0-14.5	JC35951	JC35951-17	14.0 - 14.5 ft	10.5	-3.5	-4.0	01/22/2017	Y	< 0.31	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-16.0-16.5	JC35951	JC35951-18	16.0 - 16.5 ft	10.5	-5.5	-6.0	01/22/2017	Y	< 0.34	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-18.0-18.5	JC35951	JC35951-19	18.0 - 18.5 ft	10.5	-7.5	-8.0	01/22/2017	Y	0.42	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-20.0-20.5	JC35951	JC35951-21	20.0 - 20.5 ft	10.5	-9.5	-10.0	01/22/2017	Y	< 0.31	UJ
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-8.0-8.5	JC36740	JC36740-8	8.0 - 8.5 ft	10.3	2.3	1.8	02/05/2017	Y	0.37	J
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-8.5-9.0	JC36740	JC36740-9	8.5 - 9.0 ft	10.3	1.8	1.3	02/05/2017	Y	1.2	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-9.0-9.5	JC36740	JC36740-10	9.0 - 9.5 ft	10.3	1.3	0.8	02/05/2017	Y	1.0	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-11.0-11.5	JC36740	JC36740-1	11.0 - 11.5 ft	10.3	-0.7	-1.2	02/05/2017	Y	0.51	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-11.0-11.5X	JC36740	JC36740-2	11.0 - 11.5 ft	10.3	-0.7	-1.2	02/05/2017	Y	< 0.33	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-13.0-13.5	JC36740	JC36740-3	13.0 - 13.5 ft	10.3	-2.7	-3.2	02/05/2017	Y	< 0.34	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-15.0-15.5	JC36740	JC36740-4	15.0 - 15.5 ft	10.3	-4.7	-5.2	02/05/2017	Y	< 0.31	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-17.0-17.5	JC36740	JC36740-5	17.0 - 17.5 ft	10.3	-6.7	-7.2	02/05/2017	Y	< 0.32	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-19.0-19.5	JC36740	JC36740-6	19.0 - 19.5 ft	10.3	-8.7	-9.2	02/05/2017	Y	1.9	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-20.0-20.5	JC36740	JC36740-7	20.0 - 20.5 ft	10.3	-9.7	-10.2	02/05/2017	Y	0.44	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-1.0-1.5	JC36395	JC36395-10	1.0 - 1.5 ft	10.8	9.8	9.3	01/22/2017	Y	2.2	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-3.0-3.5	JC36395	JC36395-17	3.0 - 3.5 ft	10.8	7.8	7.3	01/22/2017	Y	< 0.36	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-3.0-3.5X	JC36395	JC36395-18	3.0 - 3.5 ft	10.8	7.8	7.3	01/22/2017	Y	0.89	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-5.0-5.5	JC36395	JC36395-19	5.0 - 5.5 ft	10.8	5.8	5.3	01/22/2017	Y	0.76	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-5.5-6.0	JC36395R	JC36395-20R	5.5 - 6.0 ft	10.8	5.3	4.8	01/22/2017	Y	0.43	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-7.0-7.5	JC36395	JC36395-21	7.0 - 7.5 ft	10.8	3.8	3.3	01/22/2017	Y	< 0.33	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-9.0-9.5	JC36395	JC36395-22	9.0 - 9.5 ft	10.8	1.8	1.3	01/22/2017	Y	< 0.32	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-11.0-11.5	JC36395	JC36395-11	11.0 - 11.5 ft	10.8	-0.2	-0.7	01/22/2017	Y	0.54	J

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier		
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-13.0-13.5	JC36395	JC36395-12	13.0 - 13.5 ft	10.8	-2.2	-2.7	01/22/2017	Y	< 0.32	UJ		
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-15.0-15.5	JC36395	JC36395-13	15.0 - 15.5 ft	10.8	-4.2	-4.7	01/22/2017	Y	1.7	J		
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-17.0-17.5	JC36395	JC36395-14	17.0 - 17.5 ft	10.8	-6.2	-6.7	01/22/2017	Y	0.32	J		
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-19.0-19.5	JC36395	JC36395-15	19.0 - 19.5 ft	10.8	-8.2	-8.7	01/22/2017	Y	< 0.32	UJ		
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-20.0-20.5	JC36395	JC36395-16	20.0 - 20.5 ft	10.8	-9.2	-9.7	01/22/2017	Y	< 0.31	UJ		
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-1.5-2.0	JC31222R	JC31222-1R	1.5 - 2.0 ft	10.0	8.5	8.0	11/06/2016	Y	0.68	J		
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-3.5-4.0	JC31222	JC31222-2	3.5 - 4.0 ft	10.0	6.5	6.0	11/06/2016	Y	0.45	J		
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-5.0-5.5	JC31222	JC31222-3	5.0 - 5.5 ft	10.0	5.0	4.5	11/06/2016	Y	< 0.33	UJ		
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-6.5-7.0	JC31222	JC31222-4	6.5 - 7.0 ft	10.0	3.5	3.0	11/06/2016	Y	0.83	J		
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-8.0-8.5	JC36740	JC36740-17	8.0 - 8.5 ft	10.5	2.5	2.0	02/05/2017	Y	< 0.34	U		
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-8.5-9.0	JC36740	JC36740-18	8.5 - 9.0 ft	10.5	2.0	1.5	02/05/2017	Y	0.97			
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-10.0-10.5	JC36740	JC36740-11	10.0 - 10.5 ft	10.5	0.5	0.0	02/05/2017	Y	< 0.34	U		
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-12.0-12.5	JC36740	JC36740-12	12.0 - 12.5 ft	10.5	-1.5	-2.0	02/05/2017	Y	0.42	J		
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-14.0-14.5	JC36740	JC36740-13	14.0 - 14.5 ft	10.5	-3.5	-4.0	02/05/2017	Y	< 0.32	U		
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-16.0-16.5	JC36740	JC36740-14	16.0 - 16.5 ft	10.5	-5.5	-6.0	02/05/2017	Y	< 0.33	U		
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-18.0-18.5	JC36740	JC36740-15	18.0 - 18.5 ft	10.5	-7.5	-8.0	02/05/2017	Y	< 0.31	U		
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-20.0-20.5	JC36740	JC36740-16	20.0 - 20.5 ft	10.5	-9.5	-10.0	02/05/2017	Y	< 0.31	U		
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-6.0-6.5	JC35951	JC35951-32	6.0 - 6.5 ft	10.8	4.8	4.3	01/22/2017	Y	< 0.38	U		
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-6.5-7.0	JC35951	JC35951-33	6.5 - 7.0 ft	10.8	4.3	3.8	01/22/2017	Y	< 0.34	U		
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-8.0-8.5	JC35951	JC35951-34	8.0 - 8.5 ft	10.8	2.8	2.3	01/22/2017	Y	0.74			
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-8.0-8.5X	JC35951	JC35951-35	8.0 - 8.5 ft	10.8	2.8	2.3	01/22/2017	Y	< 0.33	U		
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-10.0-10.5	JC35951	JC35951-27	10.0 - 10.5 ft	10.8	0.8	0.3	01/22/2017	Y	0.58			
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-14.0-14.5	JC35951	JC35951-28	14.0 - 14.5 ft	10.8	-3.2	-3.7	01/22/2017	Y	4.6			
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-16.0-16.5	JC35951	JC35951-29	16.0 - 16.5 ft	10.8	-5.2	-5.7	01/22/2017	Y	0.61			
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-18.0-18.5	JC35951	JC35951-30	18.0 - 18.5 ft	10.8	-7.2	-7.7	01/22/2017	Y	< 0.31	UJ		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-1.5-2.0	JC31222	JC31222-19	1.5 - 2.0 ft	10.3	8.8	8.3	11/06/2016	Y	4.1	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-3.5-4.0	JC31222	JC31222-27	3.5 - 4.0 ft	10.3	6.8	6.3	11/06/2016	Y	< 0.36	UJ		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-5.5-6.0	JC31222	JC31222-28	5.5 - 6.0 ft	10.3	4.8	4.3	11/06/2016	Y	6.6	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-7.5-8.0	JC31222	JC31222-29	7.5 - 8.0 ft	10.3	2.8	2.3	11/06/2016	Y	< 0.34	UJ		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-9.5-10.0	JC31222	JC31222-30	9.5 - 10.0 ft	10.3	0.8	0.3	11/06/2016	Y	< 0.36	UJ		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-9.5-10.0X	JC31222	JC31222-31	9.5 - 10.0 ft	10.3	0.8	0.3	11/06/2016	Y	0.37	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-11.5-12.0	JC31222	JC31222-20	11.5 - 12.0 ft	10.3	-1.2	-1.7	11/06/2016	Y	0.70	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-13.0-13.5	JC31222	JC31222-21	13.0 - 13.5 ft	10.3	-2.7	-3.2	11/06/2016	Y	1.6	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-13.5-14.0	JC31222	JC31222-22	13.5 - 14.0 ft	10.3	-3.2	-3.7	11/06/2016	Y	3.8	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-15.0-15.5	JC31222R	JC31222-23R	15.0 - 15.5 ft	10.3	-4.7	-5.2	11/06/2016	Y	2.7	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-17.0-17.5	JC31222	JC31222-24	17.0 - 17.5 ft	10.3	-6.7	-7.2	11/06/2016	Y	0.62	J		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-19.0-19.5	JC31222	JC31222-25	19.0 - 19.5 ft	10.3	-8.7	-9.2	11/06/2016	Y	< 0.32	UJ		
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-20.0-20.5	JC31222	JC31222-26	20.0 - 20.5 ft	10.3	-9.7	-10.2	11/06/2016	Y	< 0.32	UJ		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-1.0-1.5	JC36395	JC36395-23	1.0 - 1.5 ft	11.3	10.3	9.8	01/29/2017	Y	2.3	J		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-3.0-3.5	JC36395	JC36395-31	3.0 - 3.5 ft	11.3	8.3	7.8	01/29/2017	Y	< 0.36	UJ		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-5.0-5.5	JC36395	JC36395-32	5.0 - 5.5 ft	11.3	6.3	5.8	01/29/2017	Y	2.8	J		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-7.0-7.5	JC36395	JC36395-33	7.0 - 7.5 ft	11.3	4.3	3.8	01/29/2017	Y	0.93	J		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-9.0-9.5	JC36395	JC36395-34	9.0 - 9.5 ft	11.3	2.3	1.8	01/29/2017	Y	1.2	J		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-9.5-10.0	JC36395	JC36395-35	9.5 - 10.0 ft	11.3	1.8	1.3	01/29/2017	Y	0.92	J		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-10.0-10.5	JC36395	JC36395-24	10.0 - 10.5 ft	11.3	1.3	0.8	01/29/2017	Y	< 0.36	UJ		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-11.0-11.5	JC36395	JC36395-25	11.0 - 11.5 ft	11.3	0.3	-0.2	01/29/2017	Y	0.40	J		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-13.0-13.5	JC36395	JC36395-26	13.0 - 13.5 ft	11.3	-1.7	-2.2	01/29/2017	Y	0.39	J		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-15.0-15.5	JC36395	JC36395-27	15.0 - 15.5 ft	11.3	-3.7	-4.2	01/29/2017	Y	< 0.34	UJ		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-17.0-17.5	JC36395	JC36395-28	17.0 - 17.5 ft	11.3	-5.7	-6.2	01/29/2017	Y	< 0.32	UJ		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-19.0-19.5	JC36395	JC36395-29	19.0 - 19.5 ft	11.3	-7.7	-8.2	01/29/2017	Y	< 0.33	UJ		
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-20.0-20.5	JC36395	JC36395-30	20.0 - 20.5 ft	11.3	-8.7	-9.2	01/29/2017	Y	< 0.31	UJ		

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

										Analyte	CHROMIUM (HEXAVALENT)	
										CAS RN	18540-29-9	
										Units	mg/kg	
										CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-1.5-2.0	JC31222	JC31222-32	1.5 - 2.0 ft	10.5	9.0	8.5	11/06/2016	Y	< 0.31	UJ
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-3.5-4.0	JC31222	JC31222-41	3.5 - 4.0 ft	10.5	7.0	6.5	11/06/2016	Y	< 0.38	UJ
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-5.5-6.0	JC31222	JC31222-42	5.5 - 6.0 ft	10.5	5.0	4.5	11/06/2016	Y	0.66	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-7.5-8.0	JC31222	JC31222-43	7.5 - 8.0 ft	10.5	3.0	2.5	11/06/2016	Y	0.50	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-9.5-10.0	JC31222	JC31222-44	9.5 - 10.0 ft	10.5	1.0	0.5	11/06/2016	Y	< 0.34	UJ
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-11.5-12.0	JC31222R	JC31222-33R	11.5 - 12.0 ft	10.5	-1.0	-1.5	11/06/2016	Y	1.9	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-12.0-12.5	JC31222R	JC31222-34R	12.0 - 12.5 ft	10.5	-1.5	-2.0	11/06/2016	Y	1.2	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-12.5-13.0	JC31222R	JC31222-35R	12.5 - 13.0 ft	10.5	-2.0	-2.5	11/06/2016	Y	0.84	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-13.5-14.0	JC31222R	JC31222-36R	13.5 - 14.0 ft	10.5	-3.0	-3.5	11/06/2016	Y	0.71	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-15.5-16.0	JC31222R	JC31222-37R	15.5 - 16.0 ft	10.5	-5.0	-5.5	11/06/2016	Y	0.88	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-17.5-18.0	JC31222	JC31222-38	17.5 - 18.0 ft	10.5	-7.0	-7.5	11/06/2016	Y	**48.5**	**J**
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-19.5-20.0	JC31222	JC31222-39	19.5 - 20.0 ft	10.5	-9.0	-9.5	11/06/2016	Y	0.57	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-20.0-20.5	JC31222	JC31222-40	20.0 - 20.5 ft	10.5	-9.5	-10.0	11/06/2016	Y	**64.3**	**J**
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-1.5-2.0	JC31222R	JC31222-5R	1.5 - 2.0 ft	10.6	9.1	8.6	11/06/2016	Y	0.46	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-3.5-4.0	JC31222	JC31222-13	3.5 - 4.0 ft	10.6	7.1	6.6	11/06/2016	Y	< 0.34	UJ
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-3.5-4.0X	JC31222R	JC31222-14R	3.5 - 4.0 ft	10.6	7.1	6.6	11/06/2016	Y	0.62	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-4.5-5.0	JC31222	JC31222-15	4.5 - 5.0 ft	10.6	6.1	5.6	11/06/2016	Y	< 0.33	UJ
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-6.5-7.0	JC31222R	JC31222-16R	6.5 - 7.0 ft	10.6	4.1	3.6	11/06/2016	Y	0.35	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-8.5-9.0	JC31222R	JC31222-17R	8.5 - 9.0 ft	10.6	2.1	1.6	11/06/2016	Y	1.1	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-10.5-11.0	JC31222	JC31222-6	10.5 - 11.0 ft	10.6	0.1	-0.4	11/06/2016	Y	0.94	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-12.0-12.5	JC31222	JC31222-7	12.0 - 12.5 ft	10.6	-1.4	-1.9	11/06/2016	Y	0.38	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-12.5-13.0	JC31222R	JC31222-8R	12.5 - 13.0 ft	10.6	-1.9	-2.4	11/06/2016	Y	0.45	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-14.5-15.0	JC31222	JC31222-9	14.5 - 15.0 ft	10.6	-3.9	-4.4	11/06/2016	Y	0.94	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-16.5-17.0	JC31222R	JC31222-10R	16.5 - 17.0 ft	10.6	-5.9	-6.4	11/06/2016	Y	0.48	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-18.5-19.0	JC31222R	JC31222-11R	18.5 - 19.0 ft	10.6	-7.9	-8.4	11/06/2016	Y	0.43	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-20.0-20.5	JC31222R	JC31222-12R	20.0 - 20.5 ft	10.6	-9.4	-9.9	11/06/2016	Y	0.71	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-1.0-1.5	JC32140	JC32140-28	1.0 - 1.5 ft	10.8	9.8	9.3	11/20/2016	Y	0.84	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-3.0-3.5	JC32140	JC32140-35	3.0 - 3.5 ft	10.8	7.8	7.3	11/20/2016	Y	1.1	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-3.0-3.5X	JC32140	JC32140-36	3.0 - 3.5 ft	10.8	7.8	7.3	11/20/2016	Y	< 0.34	UJ
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-5.0-5.5	JC32140	JC32140-37	5.0 - 5.5 ft	10.8	5.8	5.3	11/20/2016	Y	0.57	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-7.0-7.5	JC32140	JC32140-38	7.0 - 7.5 ft	10.8	3.8	3.3	11/20/2016	Y	0.59	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-7.5-8.0	JC32140R	JC32140-39R	7.5 - 8.0 ft	10.8	3.3	2.8	11/20/2016	Y	1.2	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-8.0-8.5	JC32140	JC32140-40	8.0 - 8.5 ft	10.8	2.8	2.3	11/20/2016	Y	2.6	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-10.0-10.5	JC32140	JC32140-29	10.0 - 10.5 ft	10.8	0.8	0.3	11/20/2016	Y	6.1	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-12.0-12.5	JC32140	JC32140-30	12.0 - 12.5 ft	10.8	-1.2	-1.7	11/20/2016	Y	2.4	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-14.0-14.5	JC32140	JC32140-31	14.0 - 14.5 ft	10.8	-3.2	-3.7	11/20/2016	Y	2.2	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-16.0-16.5	JC32140	JC32140-32	16.0 - 16.5 ft	10.8	-5.2	-5.7	11/20/2016	Y	1.1	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-18.0-18.5	JC32140	JC32140-33	18.0 - 18.5 ft	10.8	-7.2	-7.7	11/20/2016	Y	3.5	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-20.0-20.5	JC32140	JC32140-34	20.0 - 20.5 ft	10.8	-9.2	-9.7	11/20/2016	Y	2.0	J
B9B	114-B9B-CC-PB	114-B9B-SW-6.0-6.5	JB77012R	JB77012-2R	6.0 - 6.5 ft	11.5	5.5	5.0	09/18/2014	Y	**484**	
B9B	114-B9B-CC-SW	114-B9B-SW-2.0-2.5	JB77012	JB77012-6	2.0 - 2.5 ft	11.5	9.5	9.0	09/18/2014	Y	**305**	
B9B	114-B9B-CC-SW	114-B9B-SW-4.0-4.5	JB77012R	JB77012-4R	4.0 - 4.5 ft	11.5	7.5	7.0	09/18/2014	Y	**921**	
B9B	114-B9B-CC-SW	114-B9B-SW-4.0-4.5X	JB77012	JB77012-5	4.0 - 4.5 ft	11.5	7.5	7.0	09/18/2014	Y	**1020**	
B9B	114-B9B-CC-SW	114-B9B-SW-5.5-6.0	JB77012R	JB77012-3R	5.5 - 6.0 ft	11.5	6.0	5.5	09/18/2014	Y	**379**	
B9B	114CC-A9B-PB	114-A9B-6.0-6.5-PB	JB12598	JB12598-2	6.0 - 6.5 ft	11.5	5.5	5.0	07/31/2012	Y	**2220**	**J**
B9B	114CC-A9B-SW	114-A9B-0.5-1.0-SW	JB12598	JB12598-1	0.5 - 1.0 ft	10.9	10.4	9.9	07/31/2012	Y	**242**	**J**
B9B	114CC-A9B-SW	114-A9B-2.5-3.0-SW	JB12598	JB12598-3	2.5 - 3.0 ft	10.9	8.4	7.9	07/31/2012	Y	**95.5**	**J**
B9B	114CC-A9B-SW	114-A9B-4.5-5.0-SW	JB12598R	JB12598-4R	4.5 - 5.0 ft	10.9	6.4	5.9	07/31/2012	Y	0.27	J
B9B	GAR-PDI-B9B	GAR-PDI-B9B-6.0-6.5	JC32158	JC32158-13	6.0 - 6.5 ft	11.6	5.6	5.1	11/21/2016	Y	**601**	
B9B	GAR-PDI-B9B	GAR-PDI-B9B-8.0-8.5	JC32158	JC32158-14	8.0 - 8.5 ft	11.6	3.6	3.1	11/21/2016	Y	**1240**	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-0.5-1.0	JC32870	JC32870-2	0.5 - 1.0 ft	11.1	10.6	10.1	12/04/2016	Y	6.2	

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-2.0-2.5	JC32870	JC32870-8	2.0 - 2.5 ft	11.1	9.1	8.6	12/04/2016	Y	3.5	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-3.0-3.5	JC32870	JC32870-10	3.0 - 3.5 ft	11.1	8.1	7.6	12/04/2016	Y	1.2	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-3.5-4.0	JC32870	JC32870-11	3.5 - 4.0 ft	11.1	7.6	7.1	12/04/2016	Y	1.3	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-4.0-4.5	JC32870	JC32870-12	4.0 - 4.5 ft	11.1	7.1	6.6	12/04/2016	Y	1.8	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-6.0-6.5	JC32870	JC32870-13	6.0 - 6.5 ft	11.1	5.1	4.6	12/04/2016	Y	0.39	J
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-8.0-8.5	JC32870	JC32870-14	8.0 - 8.5 ft	11.1	3.1	2.6	12/04/2016	Y	< 0.34	U
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-10.0-10.5	JC32870	JC32870-3	10.0 - 10.5 ft	11.1	1.1	0.6	12/04/2016	Y	0.38	J
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-12.0-12.5	JC32870	JC32870-4	12.0 - 12.5 ft	11.1	-0.9	-1.4	12/04/2016	Y	< 0.34	U
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-14.0-14.5	JC32870	JC32870-5	14.0 - 14.5 ft	11.1	-2.9	-3.4	12/04/2016	Y	0.56	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-16.0-16.5	JC32870	JC32870-6	16.0 - 16.5 ft	11.1	-4.9	-5.4	12/04/2016	Y	0.44	J
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-18.0-18.5	JC32870	JC32870-7	18.0 - 18.5 ft	11.1	-6.9	-7.4	12/04/2016	Y	< 0.32	U
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-20.0-20.5	JC32870	JC32870-9	20.0 - 20.5 ft	11.1	-8.9	-9.4	12/04/2016	Y	< 0.32	U
C11B	114-C11B-CC-PB	114-C11B-PB-6.0-6.5	JB77397	JB77397-2	6.0 - 6.5 ft	11.3	5.3	4.8	09/23/2014	Y	**194**	
C11B	114-C11B-CC-SW	114-C11B-SW-2.0-2.5	JB77397	JB77397-5	2.0 - 2.5 ft	11.3	9.3	8.8	09/23/2014	Y	**248**	
C11B	114-C11B-CC-SW	114-C11B-SW-4.0-4.5	JB77397	JB77397-4	4.0 - 4.5 ft	11.3	7.3	6.8	09/23/2014	Y	**81.1**	
C11B	114-C11B-CC-SW	114-C11B-SW-5.5-6.0	JB77397	JB77397-3	5.5 - 6.0 ft	11.3	5.8	5.3	09/23/2014	Y	**109**	
C11B	GAR-PDI-B11B	GAR-PDI-B11B-8.0-8.5	JC32549R	JC32549-9R	8.0 - 8.5 ft	11.9	3.9	3.4	11/30/2016	Y	**1790**	**J**
C11B	GAR-PDI-B11B	GAR-PDI-B11B-10.0-10.5	JC32549	JC32549-2	10.0 - 10.5 ft	11.9	1.9	1.4	11/30/2016	Y	14.6	J
C11B	GAR-PDI-B11B	GAR-PDI-B11B-12.0-12.5	JC32549R	JC32549-3R	12.0 - 12.5 ft	11.9	-0.1	-0.6	11/30/2016	Y	14.3	J
C11B	GAR-PDI-B11B	GAR-PDI-B11B-13.0-13.5	JC32549R	JC32549-4R	13.0 - 13.5 ft	11.9	-1.1	-1.6	11/30/2016	Y	0.33	J
C11B	GAR-PDI-B11B	GAR-PDI-B11B-13.5-14.0	JC32549	JC32549-5	13.5 - 14.0 ft	11.9	-1.6	-2.1	11/30/2016	Y	**1450**	**J**
C11B	GAR-PDI-B11B	GAR-PDI-B11B-14.5-15.0	JC32549R	JC32549-6R	14.5 - 15.0 ft	11.9	-2.6	-3.1	11/30/2016	Y	2.6	J
C11B	GAR-PDI-C11B	GAR-PDI-C11B-9.0-9.5	JC32774	JC32774-4	9.0 - 9.5 ft	12.0	3.0	2.5	12/02/2016	Y	**4470**	**J**
C11B	GAR-PDI-C11B	GAR-PDI-C11B-9.0-9.5X	JC32774	JC32774-5	9.0 - 9.5 ft	12.0	3.0	2.5	12/02/2016	Y	**3360**	**J**
C11B	GAR-PDI-C11B	GAR-PDI-C11B-16.0-16.5	JC33206	JC33206-9	16.0 - 16.5 ft	12.0	-4.0	-4.5	12/08/2016	Y	15.0	J
C11B	GAR-PDI-C11B	GAR-PDI-C11B-18.0-18.5	JC33206	JC33206-10	18.0 - 18.5 ft	12.0	-6.0	-6.5	12/08/2016	Y	1.8	J
C11B	GAR-PDI-C11B	GAR-PDI-C11B-20.0-20.5	JC33206	JC33206-11	20.0 - 20.5 ft	12.0	-8.0	-8.5	12/08/2016	Y	1.5	J
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-0.3-0.8	JC32870	JC32870-15	0.3 - 0.8 ft	11.6	11.3	10.8	12/04/2016	Y	7.2	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-2.0-2.5	JC32870	JC32870-21	2.0 - 2.5 ft	11.6	9.6	9.1	12/04/2016	Y	1.3	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-2.0-2.5X	JC32870	JC32870-22	2.0 - 2.5 ft	11.6	9.6	9.1	12/04/2016	Y	1.2	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-2.5-3.0	JC32870	JC32870-23	2.5 - 3.0 ft	11.6	9.1	8.6	12/04/2016	Y	0.64	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-4.0-4.5	JC32870	JC32870-25	4.0 - 4.5 ft	11.6	7.6	7.1	12/04/2016	Y	0.57	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-6.0-6.5	JC32870	JC32870-26	6.0 - 6.5 ft	11.6	5.6	5.1	12/04/2016	Y	5.1	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-8.0-8.5	JC32870	JC32870-27	8.0 - 8.5 ft	11.6	3.6	3.1	12/04/2016	Y	0.54	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-10.0-10.5	JC32870	JC32870-16	10.0 - 10.5 ft	11.6	1.6	1.1	12/04/2016	Y	0.58	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-12.0-12.5	JC32870	JC32870-17	12.0 - 12.5 ft	11.6	-0.4	-0.9	12/04/2016	Y	0.48	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-14.0-14.5	JC32870	JC32870-18	14.0 - 14.5 ft	11.6	-2.4	-2.9	12/04/2016	Y	< 0.32	U
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-16.0-16.5	JC32870	JC32870-19	16.0 - 16.5 ft	11.6	-4.4	-4.9	12/04/2016	Y	0.70	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-18.0-18.5	JC32870	JC32870-20	18.0 - 18.5 ft	11.6	-6.4	-6.9	12/04/2016	Y	0.61	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-20.0-20.5	JC32870	JC32870-24	20.0 - 20.5 ft	11.6	-8.4	-8.9	12/04/2016	Y	0.56	
C12B	114-C12B-CC-PB	114-C12B-PB-6.0-6.5	JB77550R	JB77550-2R	6.0 - 6.5 ft	11.3	5.3	4.8	09/24/2014	Y	**195**	**J**
C12B	114-C12B-CC-SW	114-C12B-SW-2.0-2.5	JB77550R	JB77550-5R	2.0 - 2.5 ft	11.3	9.3	8.8	09/24/2014	Y	**85.0**	**J**
C12B	114-C12B-CC-SW	114-C12B-SW-4.0-4.5	JB77550R	JB77550-4R	4.0 - 4.5 ft	11.3	7.3	6.8	09/24/2014	Y	**110**	**J**
C12B	114-C12B-CC-SW	114-C12B-SW-5.5-6.0	JB77550R	JB77550-3R	5.5 - 6.0 ft	11.3	5.8	5.3	09/24/2014	Y	**206**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-8.5-9.0	JC37244R	JC37244-8R	8.5 - 9.0 ft	12.3	3.8	3.3	02/15/2017	Y	**1870**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-9.0-9.5	JC37244	JC37244-9	9.0 - 9.5 ft	12.3	3.3	2.8	02/15/2017	Y	**1450**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-10.5-11.0	JC37244	JC37244-2	10.5 - 11.0 ft	12.3	1.8	1.3	02/15/2017	Y	**1500**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-14.0-14.5	JC37244R	JC37244-3R	14.0 - 14.5 ft	12.3	-1.7	-2.2	02/15/2017	Y	1.5	J
C12B	GAR-PDI-C12B	GAR-PDI-C12B-16.0-16.5	JC37244	JC37244-4	16.0 - 16.5 ft	12.3	-3.7	-4.2	02/15/2017	Y	**59.0**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-18.0-18.5	JC37244R	JC37244-5R	18.0 - 18.5 ft	12.3	-5.7	-6.2	02/15/2017	Y	**25.7**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-20.0-20.5	JC37244R	JC37244-6R	20.0 - 20.5 ft	12.3	-7.7	-8.2	02/15/2017	Y	**21.1**	**J**

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	CHROMIUM (HEXAVALENT)		
											CAS RN	18540-29-9		
											Units	mg/kg		
											CrSCC	20		
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-0.3-0.8	JC32140	JC32140-41	0.3 - 0.8 ft	11.7	11.4	10.9	11/20/2016	Y	3.6	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-2.0-2.5	JC32140R	JC32140-47R	2.0 - 2.5 ft	11.7	9.7	9.2	11/20/2016	Y	0.94	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-4.0-4.5	JC32140	JC32140-49	4.0 - 4.5 ft	11.7	7.7	7.2	11/20/2016	Y	1.3	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-6.0-6.5	JC32140	JC32140-50	6.0 - 6.5 ft	11.7	5.7	5.2	11/20/2016	Y	1.2	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-6.5-7.0	JC32140	JC32140-51	6.5 - 7.0 ft	11.7	5.2	4.7	11/20/2016	Y	0.69	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-7.0-7.5	JC32140R	JC32140-52R	7.0 - 7.5 ft	11.7	4.7	4.2	11/20/2016	Y	0.51	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-8.0-8.5	JC32140	JC32140-53	8.0 - 8.5 ft	11.7	3.7	3.2	11/20/2016	Y	0.37	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-10.0-10.5	JC32140R	JC32140-42R	10.0 - 10.5 ft	11.7	1.7	1.2	11/20/2016	Y	0.91	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-12.0-12.5	JC32140	JC32140-43	12.0 - 12.5 ft	11.7	-0.3	-0.8	11/20/2016	Y	0.77	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-14.0-14.5	JC32140R	JC32140-44R	14.0 - 14.5 ft	11.7	-2.3	-2.8	11/20/2016	Y	0.52	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-16.0-16.5	JC32140	JC32140-45	16.0 - 16.5 ft	11.7	-4.3	-4.8	11/20/2016	Y	1.2	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-18.0-18.5	JC32140	JC32140-46	18.0 - 18.5 ft	11.7	-6.3	-6.8	11/20/2016	Y	1.2	J		
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-20.0-20.5	JC32140	JC32140-48	20.0 - 20.5 ft	11.7	-8.3	-8.8	11/20/2016	Y	2.9	J		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-0.5-1.0	JC35045	JC35045-4	0.5 - 1.0 ft	10.7	10.2	9.7	01/08/2017	Y	7.2			
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-2.5-3.0	JC35045	JC35045-10	2.5 - 3.0 ft	10.7	8.2	7.7	01/08/2017	Y	5.7			
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-4.5-5.0	JC35045	JC35045-12	4.5 - 5.0 ft	10.7	6.2	5.7	01/08/2017	Y	< 0.34	U		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-6.0-6.5	JC35045	JC35045-13	6.0 - 6.5 ft	10.7	4.7	4.2	01/08/2017	Y	0.58			
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-6.5-7.0	JC35045	JC35045-14	6.5 - 7.0 ft	10.7	4.2	3.7	01/08/2017	Y	< 0.35	UJ		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-8.5-9.0X	JC35045	JC35045-16	6.5 - 7.0 ft	10.7	4.2	3.7	01/08/2017	Y	< 0.32	UJ		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-8.5-9.0	JC35045	JC35045-15	8.5 - 9.0 ft	10.7	2.2	1.7	01/08/2017	Y	0.50	J		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-10.5-11.0	JC35045	JC35045-5	10.5 - 11.0 ft	10.7	0.2	-0.3	01/08/2017	Y	< 0.32	U		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-12.5-13.0	JC35045	JC35045-6	12.5 - 13.0 ft	10.7	-1.8	-2.3	01/08/2017	Y	< 0.32	U		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-14.5-15.0	JC35045	JC35045-7	14.5 - 15.0 ft	10.7	-3.8	-4.3	01/08/2017	Y	0.37	J		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-16.5-17.0	JC35045	JC35045-8	16.5 - 17.0 ft	10.7	-5.8	-6.3	01/08/2017	Y	< 0.32	U		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-18.5-19.0	JC35045	JC35045-9	18.5 - 19.0 ft	10.7	-7.8	-8.3	01/08/2017	Y	< 0.31	U		
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-20.0-20.5	JC35045	JC35045-11	20.0 - 20.5 ft	10.7	-9.3	-9.8	01/08/2017	Y	< 0.32	U		
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-0.5-1.0	JC35045R	JC35045-17R	0.5 - 1.0 ft	10.9	10.4	9.9	01/08/2017	Y	2.9			
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-1.5-2.0	JC35045R	JC35045-18R	1.5 - 2.0 ft	10.9	9.4	8.9	01/08/2017	Y	2.5			
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-2.0-2.5	JC35045R	JC35045-24R	2.0 - 2.5 ft	10.9	8.9	8.4	01/08/2017	Y	1.5			
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-4.0-4.5	JC35045R	JC35045-26R	4.0 - 4.5 ft	10.9	6.9	6.4	01/08/2017	Y	3.8			
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-6.0-6.5	JC35045R	JC35045-27R	6.0 - 6.5 ft	10.9	4.9	4.4	01/08/2017	Y	0.74			
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-8.0-8.5	JC35045	JC35045-28	8.0 - 8.5 ft	10.9	2.9	2.4	01/08/2017	Y	< 0.32	U		
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-10.0-10.5	JC35045R	JC35045-19R	10.0 - 10.5 ft	10.9	0.9	0.4	01/08/2017	Y	2.3			
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-12.0-12.5	JC35045R	JC35045-20R	12.0 - 12.5 ft	10.9	-1.1	-1.6	01/08/2017	Y	0.70	J		
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-14.0-14.5	JC35045R	JC35045-21R	14.0 - 14.5 ft	10.9	-3.1	-3.6	01/08/2017	Y	0.45			
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-16.0-16.5	JC35045	JC35045-22	16.0 - 16.5 ft	10.9	-5.1	-5.6	01/08/2017	Y	< 0.32	UJ		
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-18.0-18.5	JC35045	JC35045-23	18.0 - 18.5 ft	10.9	-7.1	-7.6	01/08/2017	Y	< 0.32	U		
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-20.0-20.5	JC35045R	JC35045-25R	20.0 - 20.5 ft	10.9	-9.1	-9.6	01/08/2017	Y	1.1			

Table 2-2
Hexavalent Chromium Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-1.0-1.5	JC32870	JC32870-28	1.0 - 1.5 ft	10.7	9.7	9.2	12/04/2016	Y	3.0	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-2.0-2.5	JC32870	JC32870-35	2.0 - 2.5 ft	10.7	8.7	8.2	12/04/2016	Y	0.41	J
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-2.5-3.0	JC32870	JC32870-36	2.5 - 3.0 ft	10.7	8.2	7.7	12/04/2016	Y	< 0.36	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-4.0-4.5	JC32870	JC32870-38	4.0 - 4.5 ft	10.7	6.7	6.2	12/04/2016	Y	1.2	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-6.0-6.5	JC32870	JC32870-39	6.0 - 6.5 ft	10.7	4.7	4.2	12/04/2016	Y	0.81	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-8.0-8.5	JC32870	JC32870-40	8.0 - 8.5 ft	10.7	2.7	2.2	12/04/2016	Y	1.0	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-10.0-10.5	JC32870	JC32870-29	10.0 - 10.5 ft	10.7	0.7	0.2	12/04/2016	Y	< 0.34	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-12.0-12.5	JC32870	JC32870-30	12.0 - 12.5 ft	10.7	-1.3	-1.8	12/04/2016	Y	< 0.35	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-12.0-12.5X	JC32870	JC32870-31	12.0 - 12.5 ft	10.7	-1.3	-1.8	12/04/2016	Y	< 0.35	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-14.0-14.5	JC32870	JC32870-32	14.0 - 14.5 ft	10.7	-3.3	-3.8	12/04/2016	Y	0.36	J
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-16.0-16.5	JC32870	JC32870-33	16.0 - 16.5 ft	10.7	-5.3	-5.8	12/04/2016	Y	< 0.33	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-18.0-18.5	JC32870	JC32870-34	18.0 - 18.5 ft	10.7	-7.3	-7.8	12/04/2016	Y	< 0.34	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-20.0-20.5	JC32870	JC32870-37	20.0 - 20.5 ft	10.7	-9.3	-9.8	12/04/2016	Y	< 0.34	U

Notes:
J - Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.
U - Indicates that the analyte was not detected at the reported Method Detection Limit.
UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.
Bolded value - Indicates exceedance of NJDEP CrSCC
bgs - below ground surface
CAS RN - Chemical Abstracts Service Registry Number
CrSCC - NJDEP Interim Chromium Soil Cleanup Criteria
ft - feet or foot
mg/kg - milligrams per kilogram
NAVD88 - North American Vertical Datum of 1988
NJDEP - New Jersey Department of Environmental Protection
SDG - Sample Delivery Group
X - field duplicate samples are typically denoted with a Sample ID ending in 'X'.

Table 2-3
CCPW Metals Analytical Results for In-Place Soil Compared to Soil Remediation Standards
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

										Analyte	ANTIMONY		CHROMIUM		NICKEL		THALLIUM		VANADIUM	
										CAS RN	7440-36-0		7440-47-3		7440-02-0		7440-28-0		7440-62-2	
										Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
										RDCSRS	31		120000		1600		N/A		N/A	
										RDCSRS-GAG	N/A		N/A		N/A		N/A		N/A	
										NRDCSRS	450		N/A		23000		N/A		1100	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
A'0	114GAR-2	114GAR2_3.0	JA99472	JA99472-1	3.0 - 3.0 ft	9.9	6.9	6.9	02/15/2012	N			462							
A10B	GAR-PDI-A10B	GAR-PDI-A10B-0.5-1.0	JC37505A	JC37505-15A	0.5 - 1.0 ft	11.8	11.3	10.8	02/19/2017	Y	< 0.32	U	23.1		11.9		< 0.43	U	21.1	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-1.0-1.5	JC37505A	JC37505-16A	1.0 - 1.5 ft	11.8	10.8	10.3	02/19/2017	Y	< 0.35	U	180		12.3		< 0.48	U	26.6	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-3.0-3.5	JC37505A	JC37505-24A	3.0 - 3.5 ft	11.8	8.8	8.3	02/19/2017	Y	< 0.36	U	20.4		10.6		< 0.49	U	19.8	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-5.0-5.5	JC37505A	JC37505-25A	5.0 - 5.5 ft	11.8	6.8	6.3	02/19/2017	Y	0.53	J	40.0		15.5		< 0.52	U	27.7	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-7.0-7.5	JC37505A	JC37505-26A	7.0 - 7.5 ft	11.8	4.8	4.3	02/19/2017	Y	< 0.37	U	13.1		10		< 0.50	U	21.7	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-7.5-8.0	JC37505A	JC37505-27A	7.5 - 8.0 ft	11.8	4.3	3.8	02/19/2017	Y	0.49	J	15.0		12.3		< 0.54	U	23.6	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-8.0-8.5	JC37505A	JC37505-28A	8.0 - 8.5 ft	11.8	3.8	3.3	02/19/2017	Y	< 0.39	U	14.2		10.9		< 0.54	U	22.3	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-10.0-10.5	JC37505A	JC37505-17A	10.0 - 10.5 ft	11.8	1.8	1.3	02/19/2017	Y	< 0.40	U	96.9	J	22.6	J	< 0.55	U	27.0	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-10.0-10.5)	JC37505A	JC37505-18A	10.0 - 10.5 ft	11.8	1.8	1.3	02/19/2017	Y	< 0.43	U	18.3	J	12.6	J	< 0.59	U	27.4	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-12.0-12.5	JC37505A	JC37505-19A	12.0 - 12.5 ft	11.8	-0.2	-0.7	02/19/2017	Y	< 0.37	U	21.6		11.7		< 0.51	U	29.1	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-14.0-14.5	JC37505A	JC37505-20A	14.0 - 14.5 ft	11.8	-2.2	-2.7	02/19/2017	Y	< 0.34	U	16.6		10.9		< 0.47	U	21.0	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-16.0-16.5	JC37505A	JC37505-21A	16.0 - 16.5 ft	11.8	-4.2	-4.7	02/19/2017	Y	< 0.36	U	7.7		5.4		< 0.49	U	11.1	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-18.0-18.5	JC37505A	JC37505-22A	18.0 - 18.5 ft	11.8	-6.2	-6.7	02/19/2017	Y	0.39	J	28.1		20.3		< 0.87	U	44.3	
A10B	GAR-PDI-A10B	GAR-PDI-A10B-20.0-20.5	JC37505A	JC37505-23A	20.0 - 20.5 ft	11.8	-8.2	-8.7	02/19/2017	Y	0.39	J	32.7	J	28.0	J	< 4.7	U	37.3	
A'12A	114CC-A`12A-SW	114-A'12A-0.5-1.0-SW	JB9081	JB9081-1	0.5 - 1.0 ft	10.9	10.4	9.9	06/15/2012	Y	< 0.17	UJ	222		15.8		< 0.25	U	29.3	
A'12A	114CC-A`12A-SW	114-A'12A-2.5-3.0-SW	JB9081	JB9081-2	2.5 - 3.0 ft	10.9	8.4	7.9	06/15/2012	Y	< 0.18	UJ	20.3		13.6		< 0.27	U	22.4	
A'12A	114CC-A`12A-SW	114-A'12A-4.5-5.0-SW	JB9081	JB9081-3	4.5 - 5.0 ft	10.9	6.4	5.9	06/15/2012	Y	< 0.18	UJ	13.2		9.1		< 0.26	U	18.6	
A'12A	114CC-A`12A-SW	114-A'12A-6.0-6.5-SW	JB9081	JB9081-4	6.0 - 6.5 ft	10.9	4.9	4.4	06/15/2012	Y	< 0.18	UJ	16.6		7.8		< 0.25	U	19.8	
A1A	114CC-A`1A-PB	114-A'1A-6.0-6.5-PB	JB10728	JB10728-5	6.0 - 6.5 ft	10.1	4.1	3.6	07/09/2012	N	< 0.18		12.5		7.2		< 0.26		28.4	
A'1A	114CC-A`1A-SW	114-A'1A-0.5-1.0-SW	JB10728	JB10728-2	0.5 - 1.0 ft	10.1	9.6	9.1	07/09/2012	N	< 0.18		2360		14.3		0.70		46.2	
A'1A	114CC-A`1A-SW	114-A'1A-2.5-3.0-SW	JB10728	JB10728-3	2.5 - 3.0 ft	10.1	7.6	7.1	07/09/2012	N	< 0.18		1320		12.3		0.35		38.8	
A'1A	114CC-A`1A-SW	114-A'1A-4.5-5.0-SW	JB10728	JB10728-4	4.5 - 5.0 ft	10.1	5.6	5.1	07/09/2012	N	< 0.21		515		16.8		< 0.30		23.8	
A'2B	GD	GD4.0-4.5_1-727919	R2421371	727919	4.0 - 4.5 ft	10.1	6.1	5.6	03/16/2004	Y	< 0.44	UJ								
A'2B	GD	GD4.0-4.5D-727920	R2421371	727920	4.0 - 4.5 ft	10.1	6.1	5.6	03/16/2004	Y	< 0.43	UJ								
A'2B	GD	GD8.0-8.5-727921	R2421371	727921	8.0 - 8.5 ft	10.1	2.1	1.6	03/16/2004	Y	< 0.36	UJ								
A'2B	GD	GD9.0-9.5-727922	R2421371	727922	9.0 - 9.5 ft	10.1	1.1	0.6	03/16/2004	Y	< 0.38	UJ								
A4B	BC8	BC8DS7-7.5	R2318284	669433	7.0 - 7.5 ft	10.9	3.9	3.4	09/03/2003	Y	18.5		2770		25.6	J			25.4	J
A4B	BC8	BC8S7-7.5	R2318284	669432	7.0 - 7.5 ft	10.9	3.9	3.4	09/03/2003	Y	20.5		3280		27	J			19	J
A4B	BC8	BC8S7-7.5)	R2420215	707965	7.0 - 7.5 ft	10.9	3.9	3.4	09/03/2003	Y							0.32	J		
A4B	BC8	BC8-S7-7.5)D	R2420239	708424	7.0 - 7.5 ft	10.9	3.9	3.4	09/03/2003	Y							< 0.25	U		
A4B	BC8	BC8DS9-9.5	R2318284	669429	9.0 - 9.5 ft	10.9	1.9	1.4	09/03/2003	Y	< 0.51	U	29.1		14.4	J	< 0.47	U	37.3	J
A4B	BC8	BC8S9-9.5	R2318284	669423	9.0 - 9.5 ft	10.9	1.9	1.4	09/03/2003	Y	< 0.51	U	34.7		16.9	J	< 0.47	U	39.1	J
A4B	MW2AV	114-MW2A-VA 12-12.5	J11857	J11857-14	12.0 - 12.5 ft	10.8	-1.2	-1.7	10/06/2005	Y	< 1.1	UJ								
A5B	P4-GA-A5B	114-GA-A5B-0.0-0.5	JB74714A	JB74714-12A	0.0 - 0.5 ft	9.5	9.5	9.0	08/21/2014	Y	< 0.29	U	3.5		2.1	J	< 0.44	UJ	6.9	
A5B	P4-GA-A5B	114-GA-A5B-5.5-6.0	JB74714A	JB74714-13A	5.5 - 6.0 ft	9.5	4.0	3.5	08/21/2014	Y	2.1	J	7690		14.5		< 4.6	UJ	34.0	
A5B	P4-GA-A5B	114-GA-A5B-7.5-8.0	JB74714A	JB74714-14A	5.5 - 6.0 ft	9.5	4.0	3.5	08/21/2014	Y	< 0.31	U	6090		12.5		< 0.48	UJ	27.7	
A5B	P4-GA-A5B	114-GA-A5B-9.5-10.0	JB74714A	JB74714-15A	9.5 - 10.0 ft	9.5	0.0	-0.5	08/21/2014	Y	< 0.32	U	1430		11.1		< 0.49	UJ	31.7	
A5B	P4-GA-A5B	114-GA-A5B-10.5-11.0	JB74714A	JB74714-16A	10.5 - 11.0 ft	9.5	-1.0	-1.5	08/21/2014	Y	< 0.31	U	1060		12.1		< 0.48	UJ	26.1	
A5B	P4-GA-A5B	114-GA-A5B-11.0-11.5	JB74714A	JB74714-17A	11.0 - 11.5 ft	9.5	-1.5	-2.0	08/21/2014	Y	< 0.34	U	467		10.3		< 0.52	UJ	24.1	
A5B	P4-GA-A5B	114-GA-A5B-13.0-13.5	JB74714A	JB74714-18A	13.0 - 13.5 ft	9.5	-3.5	-4.0	08/21/2014	Y	< 0.31	U	266		4.5	J	< 0.47	UJ	13.3	
A5B	P4-GA-A5B	114-GA-A5B-15.0-15.5	JB74714A	JB74714-19A	15.0 - 15.5 ft	9.5	-5.5	-6.0	08/21/2014	Y	< 0.30	U	357		16.1		< 0.46	UJ	27.1	
A5B	P4-GA-A5B	114-GA-A5B-17.0-17.5	JB74714A	JB74714-20A	17.0 - 17.5 ft	9.5	-7.5	-8.0	08/21/2014	Y	< 0.31	U	17.7		12.2		< 0.47	UJ	23.8	
A'6A	114SWE-A`6A	114-A'6A-6.5-7.0	JB12602	JB12602-1	6.5 - 7.0 ft	10.7	4.2	3.7	07/31/2012	Y	**69.7**		6350		6.4		0.93	J	36.7	
A'7A	A6	A6S0-.5	R2318257	668994	0.0 - 0.5 ft	10.5	10.5	10.0	09/02/2003	Y	14.7	J	1260	J	66.6	J	< 1.3	U	115	J
A'7A	A6	A6S1.5-2	R2318257	668995	1.5 - 2.0 ft	10.5	9.0	8.5	09/02/2003	Y	< 0.45	UJ	95	J	8.1	J	< 1.2	U	24.4	J
A'7A	A6	A6S4-4.5	R2318257	668996	4.0 - 4.5 ft	10.5	6.5	6.0	09/02/2003	Y	< 0.44	UJ	76.2	J	12.6	J	< 1.2	U	25.4	J
A'7A	A6	A6S6.5-7	R2318257	668997	6.5 - 7.0 ft	10.5	4.0	3.5	09/02/2003	Y	**43.2**	**J**	5350	J	9.4	J			< 8.1	UJ
A'7A	A6	A6S6.5-7)	R2420214	707954	6.5 - 7.0 ft	10.5	4.0	3.5	09/02/2003	Y							< 0.19	U		
A'7A	A6	A6S8.5-9	R2318257	668998	8.5 - 9.0 ft	10.5	2.0	1.5	09/02/2003	Y	**37.2**	**J**	4430	J	10.6	J			9	J
A'7A	A6	A6S8.5-9)	R2420214	707955	8.5 - 9.0 ft	10.5	2.0	1.5	09/02/2003	Y							< 0.21	U		
A'7A	A6	A6S10.5-11	R2318257	668999	10.5 - 11.0 ft	10.5	0.0	-0.5	09/02/2003	Y	< 0.57	UJ	27.4	J	16.3	J	< 0.52	U	32.5	J
A'7A	GB	GB0.4-0.9-727913	R2421371	727913	0.4 - 0.9 ft	10.2	9.8	9.3	03/15/2004	Y	2.3	J					< 0.2	U		
A'7A	GB	GB1.5-2.0-727914	R2421371	727914	1.5 - 2.0 ft	10.2	8.7	8.2	03/15/2004	Y	0.41	J					0.27			

Table 2-3
CCPW Metals Analytical Results for In-Place Soil Compared to Soil Remediation Standards
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											ANTIMONY		CHROMIUM		NICKEL		THALLIUM		VANADIUM	
										Analyte	ANTIMONY		CHROMIUM		NICKEL		THALLIUM		VANADIUM	
										CAS RN	7440-36-0		7440-47-3		7440-02-0		7440-28-0		7440-62-2	
										Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
										RDCSRS	31		120000		1600		N/A		N/A	
										RDCSRS-GAG	N/A		N/A		N/A		N/A		N/A	
										NRDCSRS	450		N/A		23000		N/A		1100	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
A'7A	GB	GB4.0-4.5-727915	R2421371	727915	4.0 - 4.5 ft	10.2	6.2	5.7	03/15/2004	Y	< 0.41	UJ								
A'7A	GB	GB6.0-6.5-727916	R2421371	727916	6.0 - 6.5 ft	10.2	4.2	3.7	03/15/2004	Y	< 0.36	UJ								
A'7A	GB	GB8.0-8.5-727917	R2421371	727917	8.0 - 8.5 ft	10.2	2.2	1.7	03/15/2004	Y	< 0.37	UJ								
A'7A	GB	GB10.0-10.5-727918	R2421371	727918	10.0 - 10.5 ft	10.2	0.2	-0.3	03/15/2004	Y	< 0.41	UJ								
A7B	C9	C9S7-7.5	R2318284	669418	7.0 - 7.5 ft	11.5	4.5	4.0	09/03/2003	Y	**198**		34700		14.9	J	7.4		14.7	J
A7B	C9	C9DS21.5-22	R2318284	669443	21.5 - 22.0 ft	11.5	-10.0	-10.5	09/03/2003	Y	1.4		358		14.9	J	< 2	U	36.5	J
A7B	C9	C9S21.5-22	R2318284	669438	21.5 - 22.0 ft	11.5	-10.0	-10.5	09/03/2003	Y	0.8	B	275		18.3	J	< 1.9	U	29.4	J
A7B	C9	C9DS24-24.5	R2318284	669445	24.0 - 24.5 ft	11.5	-12.5	-13.0	09/03/2003	Y	< 0.42	U	88.4		14.9	J	< 1.9	U	29.5	J
A7B	C9	C9S24-24.5	R2318284	669444	24.0 - 24.5 ft	11.5	-12.5	-13.0	09/03/2003	Y	< 0.42	U	137		12.8	J	< 1.9	U	29.1	J
A'7B	GE	GE4.1-4.6-727923	R2421371	727923	4.1 - 4.6 ft	10.8	6.7	6.2	03/16/2004	Y	< 0.42	UJ								
A'7B	GE	GE4.1-4.6D-727924	R2421371	727924	4.1 - 4.6 ft	10.8	6.7	6.2	03/16/2004	Y	< 0.43	UJ								
A'7B	GE	GE 8.1-8.6-727925	R2421371	727925	8.1 - 8.6 ft	10.8	2.7	2.2	03/16/2004	Y	< 0.4	UJ					0.26			
A'7B	GE	GE12.1-12.6-727926	R2421371	727926	12.1 - 12.6 ft	10.8	-1.3	-1.8	03/16/2004	N							< 0.21	U		
A'7B	GE	GE12.1-12.6-727926	R2421371	727926	12.1 - 12.6 ft	10.8	-1.3	-1.8	03/16/2004	Y	< 0.38	UJ								
A'8A	A'-8A	114-A'-8A-0.0	460314021	460-31402-12	0.0 - 0.5 ft	10.8	10.8	10.3	09/21/2011	N			324							
A'8A	A'-8A	114-A'-8A-2.0	460314021	460-31402-13	2.0 - 2.5 ft	10.8	8.8	8.3	09/21/2011	N			47.9							
A'8A	A'-8A	114-A'-8A-5.0	460314021	460-31402-14	5.0 - 5.5 ft	10.8	5.8	5.3	09/21/2011	N			75.8							
A'8A	A'-8A	114-A'-8A-6.0	460314021	460-31402-15	6.0 - 6.5 ft	10.8	4.8	4.3	09/21/2011	N			21.7							
A'8A	A'-8A	114-A'-8A-6.0X	460314021	460-31402-17	6.0 - 6.5 ft	10.8	4.8	4.3	09/21/2011	N			23.2							
A'8A	A'-8A	114-A'-8A-10.0	460314021	460-31402-16	10.0 - 10.5 ft	10.8	0.8	0.3	09/21/2011	N			21.5							
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-6.0-6.5	JC31517A	JC31517-24A	6.0 - 6.5 ft	10.8	4.8	4.3	11/10/2016	Y	< 0.33	U	19.2		14.6		< 9.0	U	29.4	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-7.5-8.0	JC31517A	JC31517-25A	7.5 - 8.0 ft	10.8	3.3	2.8	11/10/2016	Y	< 0.34	U	15.6		8.9		< 1.4	U	31.9	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-7.5-8.0X	JC31517A	JC31517-26A	7.5 - 8.0 ft	10.8	3.3	2.8	11/10/2016	Y	< 0.36	U	21.8		8.9		< 1.5	U	39.5	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-8.0-8.5	JC31517A	JC31517-27A	8.0 - 8.5 ft	10.8	2.8	2.3	11/10/2016	Y	< 0.37	U	26.2		12.7		< 0.50	U	27.2	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-10.0-10.5	JC31517A	JC31517-18A	10.0 - 10.5 ft	10.8	0.8	0.3	11/10/2016	Y	< 0.35	U	19.5		13.1		< 0.48	U	19.1	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-12.0-12.5	JC31517A	JC31517-19A	12.0 - 12.5 ft	10.8	-1.2	-1.7	11/10/2016	Y	< 0.29	U	19.5		14.4		< 0.39	U	21.0	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-14.0-14.5	JC31517A	JC31517-20A	14.0 - 14.5 ft	10.8	-3.2	-3.7	11/10/2016	Y	< 0.33	UJ	286		11.4		< 0.46	U	23.9	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-16.0-16.5	JC31517A	JC31517-21A	16.0 - 16.5 ft	10.8	-5.2	-5.7	11/10/2016	Y	< 0.33	U	136		14.6		< 0.45	U	21.8	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-18.0-18.5	JC31517A	JC31517-22A	18.0 - 18.5 ft	10.8	-7.2	-7.7	11/10/2016	Y	< 0.32	U	58.2		13.9		< 0.44	U	25.2	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-20.0-20.5	JC31517A	JC31517-23A	20.0 - 20.5 ft	10.8	-9.2	-9.7	11/10/2016	Y	< 0.33	U	27.7		11.1		< 0.45	U	20.4	
B'10A	EF-117	EF-B117-2.0-2.5	JB15502	JB15502-8	2.0 - 2.5 ft	10.9	8.9	8.4	09/05/2012	Y	0.57	J			11.1					
B'10A	EF-117	EF-B117-4.0-4.5	JB15502	JB15502-7	4.0 - 4.5 ft	10.9	6.9	6.4	09/05/2012	Y	0.38	J			15.2					
B10B	114-B10B-CC-PB	114-B10B-PB-6.0-6.5	JB77112A	JB77112-2A	6.0 - 6.5 ft	11.6	5.6	5.1	09/19/2014	Y	19.3		20700		18.9		< 2.6	U	69.6	
B10B	114-B10B-CC-SW	114-B10B-SW-2.0-2.5	JB77112A	JB77112-5A	2.0 - 2.5 ft	11.6	9.6	9.1	09/19/2014	Y	9.9		7570		17.7		< 0.94	U	36.6	
B10B	114-B10B-CC-SW	114-B10B-SW-4.0-4.5	JB77112A	JB77112-4A	4.0 - 4.5 ft	11.6	7.6	7.1	09/19/2014	Y	26.5		24000		14.6		< 3.0	U	113	
B10B	114-B10B-CC-SW	114-B10B-SW-5.5-6.0	JB77112A	JB77112-3A	5.5 - 6.0 ft	11.6	6.1	5.6	09/19/2014	Y	**35.9**		23800		12.5		< 2.6	U	62.6	
B'12A	114GAR-1	114 GAR1_4.0	JA99548	JA99548-1	4.0 - 4.0 ft	11.0	7.0	7.0	02/16/2012	N			13.2							
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-1.0-1.5	JC31680A	JC31680-16A	1.0 - 1.5 ft	11.4	10.4	9.9	11/13/2016	Y	< 0.31	U	47.7		10.0		< 0.43	U	26.3	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-2.0-2.5	JC31680A	JC31680-22A	2.0 - 2.5 ft	11.4	9.4	8.9	11/13/2016	Y	< 0.30	U	24.2		4.1	J	< 0.42	U	23.7	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-4.0-4.5	JC31680A	JC31680-24A	4.0 - 4.5 ft	11.4	7.4	6.9	11/13/2016	Y	0.93	J	44.0		16.1		< 0.47	U	31.8	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-4.0-4.5X	JC31680A	JC31680-25A	4.0 - 4.5 ft	11.4	7.4	6.9	11/13/2016	Y	0.37	J	34.1		12.7		< 0.44	U	26.9	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-6.0-6.5	JC31680A	JC31680-26A	6.0 - 6.5 ft	11.4	5.4	4.9	11/13/2016	Y	< 0.34	U	17.7		11.9		< 0.46	U	27.3	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-8.0-8.5	JC31680A	JC31680-27A	8.0 - 8.5 ft	11.4	3.4	2.9	11/13/2016	Y	< 0.70	U	1310		9.3		< 0.48	U	18.3	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-9.5-10.0	JC31680A	JC31680-28A	9.5 - 10.0 ft	11.4	1.9	1.4	11/13/2016	Y	< 1.0	U	2650		13.0		< 0.48	U	52.9	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-10.0-10.5	JC31680A	JC31680-17A	10.0 - 10.5 ft	11.4	1.4	0.9	11/13/2016	Y	0.29	J	281		9.0		< 0.36	U	27.0	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-12.0-12.5	JC31680A	JC31680-18A	12.0 - 12.5 ft	11.4	-0.6	-1.1	11/13/2016	Y	< 0.32	U	30.5		11.9		< 0.43	U	26.8	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-14.0-14.5	JC31680A	JC31680-19A	14.0 - 14.5 ft	11.4	-2.6	-3.1	11/13/2016	Y	0.91	J	25.8		12.1		< 0.45	U	26.8	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-16.0-16.5	JC31680A	JC31680-20A	16.0 - 16.5 ft	11.4	-4.6	-5.1	11/13/2016	Y	< 0.33	U	404		12.8		< 0.45	U	28.4	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-18.0-18.5	JC31680A	JC31680-21A	18.0 - 18.5 ft	11.4	-6.6	-7.1	11/13/2016	Y	< 0.32	U	30.6		13.0		< 0.44	U	31.0	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-20.0-20.5	JC31680A	JC31680-23A	20.0 - 20.5 ft	11.4	-8.6	-9.1	11/13/2016	Y	< 0.32	U	26.1		12.6		< 0.44	U	29.6	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-1.0-1.5	JC36395A	JC36395-10A	1.0 - 1.5 ft	10.8	9.8	9.3	01/22/2017	Y	0.39	J	64.1		14.9		< 0.44	U	36.1	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-3.0-3.5	JC36395A	JC36395-17A	3.0 - 3.5 ft	10.8	7.8	7.3	01/22/2017	Y	0.49	J	13.9		13.1		< 0.52	U	19.4	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-3.0-3.5X	JC36395A	JC36395-18A	3.0 - 3.5 ft	10.8	7.8	7.3	01/22/2017	Y	0.69	J	14.8		13.6		< 0.52	U	21.0	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-5.0-5.5	JC36395A	JC36395-19A	5.0 - 5.5 ft	10.8	5.8	5.3	01/22/2017	Y	< 0.34	U	17.0		15.0		< 0.46	U	34.7	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-5.5-6.0	JC36395A	JC36395-20A	5.5 - 6.0 ft	10.8	5.3	4.8	01/22/2017	Y	0.38	J	18.2		15.2		< 0.50	U	35.7	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-7.0-7.5	JC36395A	JC36395-21A	7.0 - 7.5 ft	10.8	3.8	3.3	01/22/2017	Y	< 0.35	U	22.2		13.7		< 0.47	U	26.3	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-9.0-9.5	JC36395A	JC36395-22A	9.0 - 9.5 ft	10.8	1.8	1.3	01/22/2017	Y	< 0.34	UJ	13.0		9.4		< 0.46	U	23.8	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-11.0-11.5	JC36395A	JC36395-11A	11.0 - 11.5 ft	10.8	-0.2	-0.7	01/22/2017	Y	< 0.35	U	11.0		8.7		< 0.47	U	19.8	

Table 2-3
CCPW Metals Analytical Results for In-Place Soil Compared to Soil Remediation Standards
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

										Analyte	ANTIMONY		CHROMIUM		NICKEL		THALLIUM		VANADIUM	
										CAS RN	7440-36-0		7440-47-3		7440-02-0		7440-28-0		7440-62-2	
										Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
										RDCSRS	31		120000		1600		N/A		N/A	
										RDCSRS-GAG	N/A		N/A		N/A		N/A		N/A	
										NRDCSRS	450		N/A		23000		N/A		1100	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-13.0-13.5	JC36395A	JC36395-12A	13.0 - 13.5 ft	10.8	-2.2	-2.7	01/22/2017	Y	0.38	J	16.0		11.8		< 0.44	U	25.5	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-15.0-15.5	JC36395A	JC36395-13A	15.0 - 15.5 ft	10.8	-4.2	-4.7	01/22/2017	Y	< 0.35	U	16.9		11.9		< 0.48	U	25.5	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-17.0-17.5	JC36395A	JC36395-14A	17.0 - 17.5 ft	10.8	-6.2	-6.7	01/22/2017	Y	< 0.32	U	16.4		12.2		< 0.43	U	26.2	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-19.0-19.5	JC36395A	JC36395-15A	19.0 - 19.5 ft	10.8	-8.2	-8.7	01/22/2017	Y	0.34	J	16.4		12.2		< 0.44	U	25.5	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-20.0-20.5	JC36395A	JC36395-16A	20.0 - 20.5 ft	10.8	-9.2	-9.7	01/22/2017	Y	< 0.33	U	12.5		9.5		< 0.45	U	21.7	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-1.0-1.5	JC32140A	JC32140-28A	1.0 - 1.5 ft	10.8	9.8	9.3	11/20/2016	Y	0.73	J	28.8		12.6		< 0.44	U	28.2	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-3.0-3.5	JC32140A	JC32140-35A	3.0 - 3.5 ft	10.8	7.8	7.3	11/20/2016	Y	2.6		13.5		16.0		< 0.40	U	26.2	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-3.0-3.5X	JC32140A	JC32140-36A	3.0 - 3.5 ft	10.8	7.8	7.3	11/20/2016	Y	0.67	J	13.4		14.8		< 1.2	U	22.9	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-5.0-5.5	JC32140A	JC32140-37A	5.0 - 5.5 ft	10.8	5.8	5.3	11/20/2016	Y	< 0.33	U	14.2		12.0		< 0.45	U	23.2	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-7.0-7.5	JC32140A	JC32140-38A	7.0 - 7.5 ft	10.8	3.8	3.3	11/20/2016	Y	0.32	J	14.7		12.7		< 0.40	U	21.1	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-7.5-8.0	JC32140A	JC32140-39A	7.5 - 8.0 ft	10.8	3.3	2.8	11/20/2016	Y	< 0.29	U	30.3		16.9		< 0.40	U	25.2	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-8.0-8.5	JC32140A	JC32140-40A	8.0 - 8.5 ft	10.8	2.8	2.3	11/20/2016	Y	< 0.29	U	16.0		14.9		< 0.40	U	21.7	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-10.0-10.5	JC32140A	JC32140-29A	10.0 - 10.5 ft	10.8	0.8	0.3	11/20/2016	Y	< 0.29	U	59.4		14.5		< 0.39	U	19.3	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-12.0-12.5	JC32140A	JC32140-30A	12.0 - 12.5 ft	10.8	-1.2	-1.7	11/20/2016	Y	< 0.29	UJ	14.7		6.4		< 0.40	U	13.9	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-14.0-14.5	JC32140A	JC32140-31A	14.0 - 14.5 ft	10.8	-3.2	-3.7	11/20/2016	Y	< 0.29	U	16.0		6.4		< 0.40	U	18.1	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-16.0-16.5	JC32140A	JC32140-32A	16.0 - 16.5 ft	10.8	-5.2	-5.7	11/20/2016	Y	< 0.31	U	22.2		15.0		< 0.42	U	25.7	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-18.0-18.5	JC32140A	JC32140-33A	18.0 - 18.5 ft	10.8	-7.2	-7.7	11/20/2016	Y	< 0.32	U	22.0		10.6		< 0.44	U	25.4	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-20.0-20.5	JC32140A	JC32140-34A	20.0 - 20.5 ft	10.8	-9.2	-9.7	11/20/2016	Y	< 0.31	U	26.5		13.6		< 0.43	U	26.8	
B9B	114-B9B-CC-PB	114-B9B-SW-6.0-6.5	JB77012A	JB77012-2A	6.0 - 6.5 ft	11.5	5.5	5.0	09/18/2014	Y	17.0	J	30900		16.6		< 3.0	U	125	
B9B	114-B9B-CC-SW	114-B9B-SW-2.0-2.5	JB77012A	JB77012-6A	2.0 - 2.5 ft	11.5	9.5	9.0	09/18/2014	Y	7.1	J	23600		18.0		< 2.9	U	42.0	
B9B	114-B9B-CC-SW	114-B9B-SW-4.0-4.5	JB77012A	JB77012-4A	4.0 - 4.5 ft	11.5	7.5	7.0	09/18/2014	Y	5.0	J	43900		15.9		< 6.7	U	219	
B9B	114-B9B-CC-SW	114-B9B-SW-4.0-4.5X	JB77012A	JB77012-5A	4.0 - 4.5 ft	11.5	7.5	7.0	09/18/2014	Y	**38.0**	**J**	45800		17.2		< 6.6	U	229	
B9B	114-B9B-CC-SW	114-B9B-SW-5.5-6.0	JB77012A	JB77012-3A	5.5 - 6.0 ft	11.5	6.0	5.5	09/18/2014	Y	**52.5**	**J**	32500		20.9		< 3.1	U	121	
C11B	114-C11B-CC-PB	114-C11B-PB-6.0-6.5	JB77397A	JB77397-2A	6.0 - 6.5 ft	11.3	5.3	4.8	09/23/2014	Y	3.7		4110		24.9		0.82	J	43.9	
C11B	114-C11B-CC-SW	114-C11B-SW-2.0-2.5	JB77397A	JB77397-5A	2.0 - 2.5 ft	11.3	9.3	8.8	09/23/2014	Y	10.3	J	21100		26.9		< 2.8	U	29.8	J
C11B	114-C11B-CC-SW	114-C11B-SW-4.0-4.5	JB77397A	JB77397-4A	4.0 - 4.5 ft	11.3	7.3	6.8	09/23/2014	Y	1.8	J	3220		31.3		0.68	J	50.7	
C11B	114-C11B-CC-SW	114-C11B-SW-5.5-6.0	JB77397A	JB77397-3A	5.5 - 6.0 ft	11.3	5.8	5.3	09/23/2014	Y	3.4		4370		22.8		0.69	J	49.2	
C12B	114-C12B-CC-PB	114-C12B-PB-6.0-6.5	JB77550A	JB77550-2A	6.0 - 6.5 ft	11.3	5.3	4.8	09/24/2014	Y	2.3	J	3510		14.6		< 0.52	U	21.7	
C12B	114-C12B-CC-SW	114-C12B-SW-2.0-2.5	JB77550A	JB77550-5A	2.0 - 2.5 ft	11.3	9.3	8.8	09/24/2014	Y	< 0.31	U	1740		10.2		< 0.46	U	21.9	
C12B	114-C12B-CC-SW	114-C12B-SW-4.0-4.5	JB77550A	JB77550-4A	4.0 - 4.5 ft	11.3	7.3	6.8	09/24/2014	Y	< 1.8	U	6900		10.9		< 2.7	U	20.6	J
C12B	114-C12B-CC-SW	114-C12B-SW-5.5-6.0	JB77550A	JB77550-3A	5.5 - 6.0 ft	11.3	5.8	5.3	09/24/2014	Y	3.5		3930		17.6		< 0.51	U	24.4	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-0.5-1.0	JC35045A	JC35045-4A	0.5 - 1.0 ft	10.7	10.2	9.7	01/08/2017	Y	3.7		94.5		19.3		< 0.44	U	23.0	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-2.5-3.0	JC35045A	JC35045-10A	2.5 - 3.0 ft	10.7	8.2	7.7	01/08/2017	Y	0.93	J	60.2		12.5		0.89	J	20.9	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-4.5-5.0	JC35045A	JC35045-12A	4.5 - 5.0 ft	10.7	6.2	5.7	01/08/2017	Y	0.69	J	32.4		13.2		0.77	J	24.9	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-6.0-6.5	JC35045A	JC35045-13A	6.0 - 6.5 ft	10.7	4.7	4.2	01/08/2017	Y	< 0.37	U	19.1		24.4		0.81	J	33.9	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-6.5-7.0	JC35045A	JC35045-14A	6.5 - 7.0 ft	10.7	4.2	3.7	01/08/2017	Y	< 0.35	U	15.0		14.4		0.84	J	24.4	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-8.5-9.0X	JC35045A	JC35045-16A	6.5 - 7.0 ft	10.7	4.2	3.7	01/08/2017	Y	< 0.33	U	15.3		12.2		< 0.45	U	26.7	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-8.5-9.0	JC35045A	JC35045-15A	8.5 - 9.0 ft	10.7	2.2	1.7	01/08/2017	Y	< 0.34	U	21.0		13.4		< 0.46	U	31.1	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-10.5-11.0	JC35045A	JC35045-5A	10.5 - 11.0 ft	10.7	0.2	-0.3	01/08/2017	Y	< 0.34	U	15.7		11.1		< 0.46	U	25.5	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-12.5-13.0	JC35045A	JC35045-6A	12.5 - 13.0 ft	10.7	-1.8	-2.3	01/08/2017	Y	< 0.32	U	14.8		8.9		0.90	J	17.0	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-14.5-15.0	JC35045A	JC35045-7A	14.5 - 15.0 ft	10.7	-3.8	-4.3	01/08/2017	Y	< 0.34	U	15.3		10.7		< 0.47	U	27.7	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-16.5-17.0	JC35045A	JC35045-8A	16.5 - 17.0 ft	10.7	-5.8	-6.3	01/08/2017	Y	< 0.35	U	20.3		13.2		< 0.48	U	31.7	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-18.5-19.0	JC35045A	JC35045-9A	18.5 - 19.0 ft	10.7	-7.8	-8.3	01/08/2017	Y	< 0.33	U	18.5		15.0		< 0.46	U	25.2	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-20.0-20.5	JC35045A	JC35045-11A	20.0 - 20.5 ft	10.7	-9.3	-9.8	01/08/2017	Y	< 0.32	U	22.6		14.6		< 0.44	U	35.8	

Notes:
B - The result is qualified due to potential laboratory blank contamination.
BJ - The analyte concentration is greater than three times, but less than or equal to ten times the concentration in the associated method/prep blank. The presence of that analyte in the sample is considered "real." The concentration is quantitatively qualified (BJ) due to method blank contamination.
J - Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.
U - Indicates that the analyte was not detected at the reported Method Detection Limit.
UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.
Bolded value - Indicates exceedance of NJDEP RDCSRS
bgs - below ground surface
CAS RN - Chemical Abstracts Service Registry Number
ft - feet or foot
mg/kg - milligrams per kilogram
N/A - not applicable
NAVD88 - North American Vertical Datum of 1988
NJDEP - New Jersey Department of Environmental Protection
NRDCSRS - NJDEP Non-Residential Direct Contact Soil Remediation Standard
RDCSRS - NJDEP Residential Direct Contact Soil Remediation Standard
RDCSRS-GAG Residential Direct Contact Soil Remediation Standard - Garfield Avenue Group
SDG - Sample Delivery Group
X - field duplicate samples are typically denoted with a Sample ID ending in 'X'.

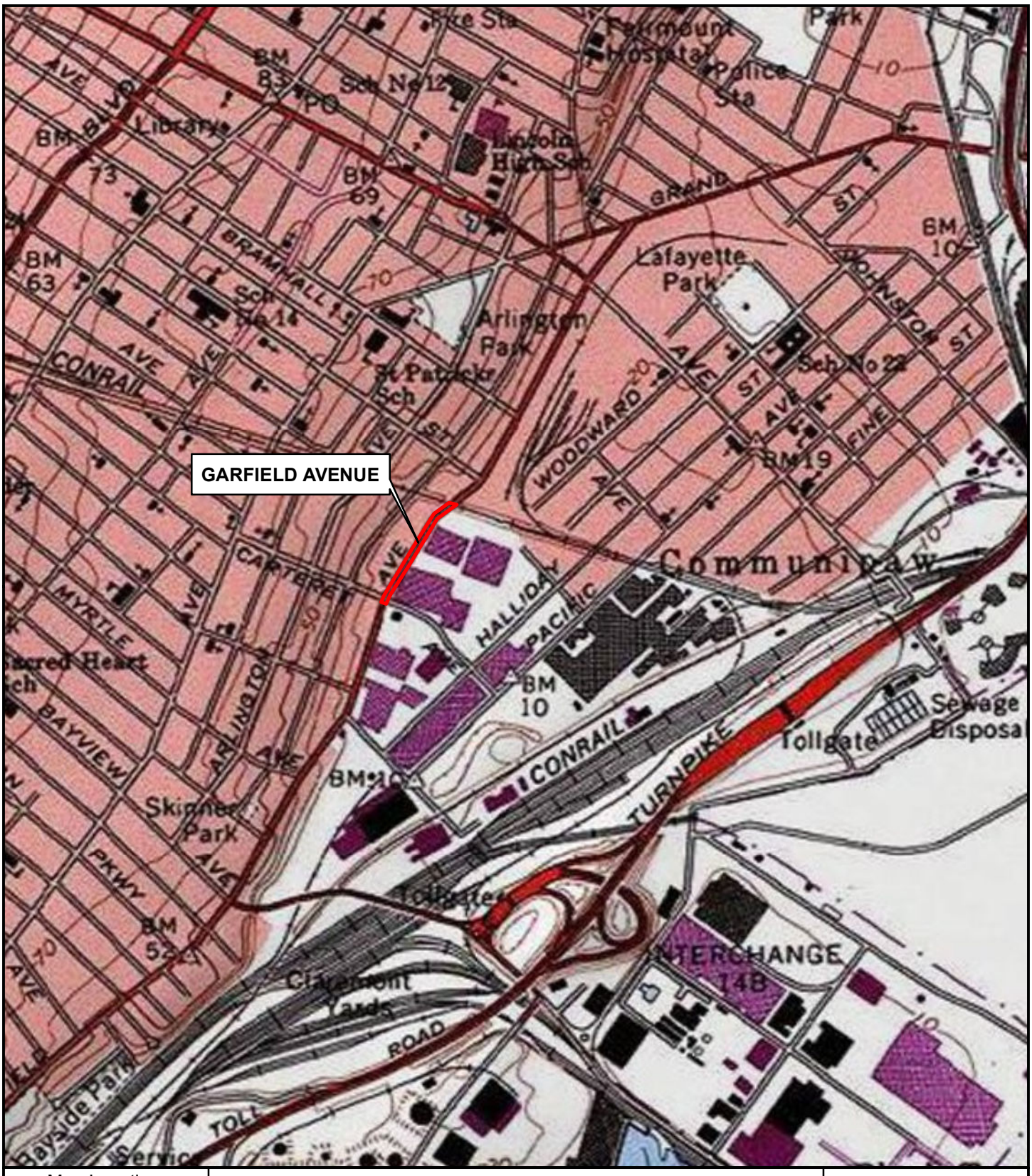
Table 2-4
CCPW Metals Analytical Results in the Unstaturated Soil Zone Compared to IGW Soil Screening Level and Soil Remediation Standards
Remedial Action Work Plan (Soil)
Garfield Avenue Roadway
PPG, Jersey City, New Jersey

											Analyte	ANTIMONY		CHROMIUM		NICKEL		THALLIUM		VANADIUM	
											CAS RN	7440-36-0		7440-47-3		7440-02-0		7440-28-0		7440-62-2	
											Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
											DIGWSSL	N/A		N/A		N/A		3		N/A	
											IGWSRS-GAG	62.7		N/A		170		N/A		N/A	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Location Elevation (ft NAVD88)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Collection Date	Validated	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
A'12A	114CC-A`12A-SW	114-A'12A-0.5-1.0-SW	JB9081	JB9081-1	0.5 - 1.0 ft	10.9	10.4	9.9	06/15/2012	Y	< 0.17	UJ	222		15.8		< 0.25	U	29.3	
A'1A	114CC-A`1A-SW	114-A'1A-0.5-1.0-SW	JB10728	JB10728-2	0.5 - 1.0 ft	10.1	9.6	9.1	07/09/2012	N	< 0.18		2360		14.3		0.70		46.2	
A5B	P4-GA-A5B	114-GA-A5B-0.0-0.5	JB74714A	JB74714-12A	0.0 - 0.5 ft	9.5	9.5	9.0	08/21/2014	Y	< 0.29	U	3.5		2.1	J	< 0.44	UJ	6.9	
A'7A	A6	A6S0-.5	R2318257	668994	0.0 - 0.5 ft	10.5	10.5	10.0	09/02/2003	Y	14.7	J	1260	J	66.6	J	< 1.3	U	115	J
A'7A	A6	A6S1.5-2	R2318257	668995	1.5 - 2.0 ft	10.5	9.0	8.5	09/02/2003	Y	< 0.45	UJ	95	J	8.1	J	< 1.2	U	24.4	J
A'7A	GB	GB0.4-0.9-727913	R2421371	727913	0.4 - 0.9 ft	10.2	9.8	9.3	03/15/2004	Y	2.3	J					< 0.2	U		
A'8A	A'-8A	114-A'-8A-0.0	460314021	460-31402-12	0.0 - 0.5 ft	10.8	10.8	10.3	09/21/2011	N			324							
B'10A	EF-117	EF-B117-2.0-2.5	JB15502	JB15502-8	2.0 - 2.5 ft	10.9	8.9	8.4	09/05/2012	Y	0.57	J			11.1					
B10B	114-B10B-CC-SW	114-B10B-SW-2.0-2.5	JB77112A	JB77112-5A	2.0 - 2.5 ft	11.6	9.6	9.1	09/19/2014	Y	9.9		7570		17.7		< 0.94	U	36.6	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-1.0-1.5	JC31680A	JC31680-16A	1.0 - 1.5 ft	11.4	10.4	9.9	11/13/2016	Y	< 0.31	U	47.7		10.0		< 0.43	U	26.3	
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-2.0-2.5	JC31680A	JC31680-22A	2.0 - 2.5 ft	11.4	9.4	8.9	11/13/2016	Y	< 0.30	U	24.2		4.1	J	< 0.42	U	23.7	
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-1.0-1.5	JC36395A	JC36395-10A	1.0 - 1.5 ft	10.8	9.8	9.3	01/22/2017	Y	0.39	J	64.1		14.9		< 0.44	U	36.1	
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-1.0-1.5	JC32140A	JC32140-28A	1.0 - 1.5 ft	10.8	9.8	9.3	11/20/2016	Y	0.73	J	28.8		12.6		< 0.44	U	28.2	
B9B	114-B9B-CC-SW	114-B9B-SW-2.0-2.5	JB77012A	JB77012-6A	2.0 - 2.5 ft	11.5	9.5	9.0	09/18/2014	Y	7.1	J	23600		18.0		< 2.9	U	42.0	
C11B	114-C11B-CC-SW	114-C11B-SW-2.0-2.5	JB77397A	JB77397-5A	2.0 - 2.5 ft	11.3	9.3	8.8	09/23/2014	Y	10.3	J	21100		26.9		< 2.8	U	29.8	J
C12B	114-C12B-CC-SW	114-C12B-SW-2.0-2.5	JB77550A	JB77550-5A	2.0 - 2.5 ft	11.3	9.3	8.8	09/24/2014	Y	< 0.31	U	1740		10.2		< 0.46	U	21.9	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-0.5-1.0	JC35045A	JC35045-4A	0.5 - 1.0 ft	10.7	10.2	9.7	01/08/2017	Y	3.7		94.5		19.3		< 0.44	U	23.0	

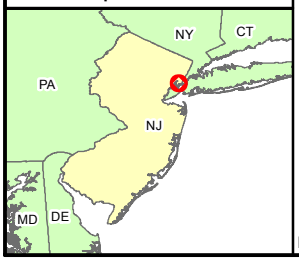
Notes:
J - Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.
U - Indicates that the analyte was not detected at the reported Method Detection Limit.
UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.
bgs - below ground surface
CAS RN - Chemical Abstracts Service Registry Number
DIGWSSL - Default Impact to Ground Water Soil Screening Level
El. - elevation
ft - feet or foot
IGW - Impact to Groundwater
IGWSRS-GAG - Impact to Groundwater Soil Remediation Standard - Garfield Avenue Group
mg/kg - milligrams per kilogram
N/A - not applicable
NAVD88 - North American Vertical Datum of 1988
NJDEP - New Jersey Department of Environmental Protection
SDG - Sample Delivery Group

This table shows sample results from the unsaturdated zone in comparision to the DIGWSSLs and IGWSRS-GAG.
The groundwater elevation at this Site was estimated as the 50th percentile groundwater elevation from four monitoring wells located within the Site's extents (See Appendix A). The estimated groundwater elevation for this Site is El. 8.3 ft NAVD88.

Figures



Map Location



VICINITY MAP

GARFIELD AVENUE ROADWAY
JERSEY CITY, HUDSON COUNTY, NEW JERSEY
REMEDIAL ACTION WORK PLAN (SOIL)

0 250 500 1,000 1,500 2,000 2,500 3,000 Feet

0 50 100 200 300 400 500 600 700 800 Meters

Image Source: USGS Topographic Quadrangle: Jersey City, NJ.

Scale: 1:12,000

AECOM

Figure 1-1

Date: 06/28/2018

Project #: 60504380

FORMER FISHBEIN PROPERTY

GARFIELD AVE.

SITE 143
F. TALARICO AUTO (FORMER)

SITE 132
TOWN & COUNTRY LINEN (FORMER NAME)

TEN WEST APPAREL PROPERTY

FORMER CHROMATE CHEMICAL PRODUCTION FACILITY

SITE 133
ROSS WAX (FORMER NAME)

SITE 137
TSI CITY CARRIERS (NOW KNOWN AS 25 HALLADAY ST., LLC)

SITE 137
RUDOLF BASS, INC. (FORMER)

CARTERET AVE.

SITE 114

HALLADAY ST. SOUTH

AL SMITH MOVING PROPERTY

SITE 133
ROSS WAX (FORMER NAME)

SITE 135
VITARROZ (FORMER NAME)

FORMER MANUFACTURED GAS PLANT FACILITY AND CHROMITE ORE PRODUCTION WASTE STOCKPILE AREA

HALLADAY ST. NORTH

FORMER HALSTED PROPERTY

FORREST ST.

FORREST ST. PROPERTIES

SITE 199

SLUDGE LINE #2

LEGEND

- PROPERTY BOUNDARY
- SITE BOUNDARY
- GARFIELD AVENUE SITE BOUNDARY
- EDGE OF PAVEMENT
- EDGE OF CURB
- HUDSON-BERGEN LIGHT RAIL
- BUILDING

NOTE:

THE GARFIELD AVENUE GROUP SITES ARE IDENTIFIED BY SITE NUMBER, WITH THE SITE'S NAME PROVIDED BELOW. WHEN A SITE DOES NOT HAVE A SITE NUMBER, THE SITE IS IDENTIFIED BY THE SITE NAME.

AECOM

N

75 0 150

GRAPHIC SCALE IN FEET

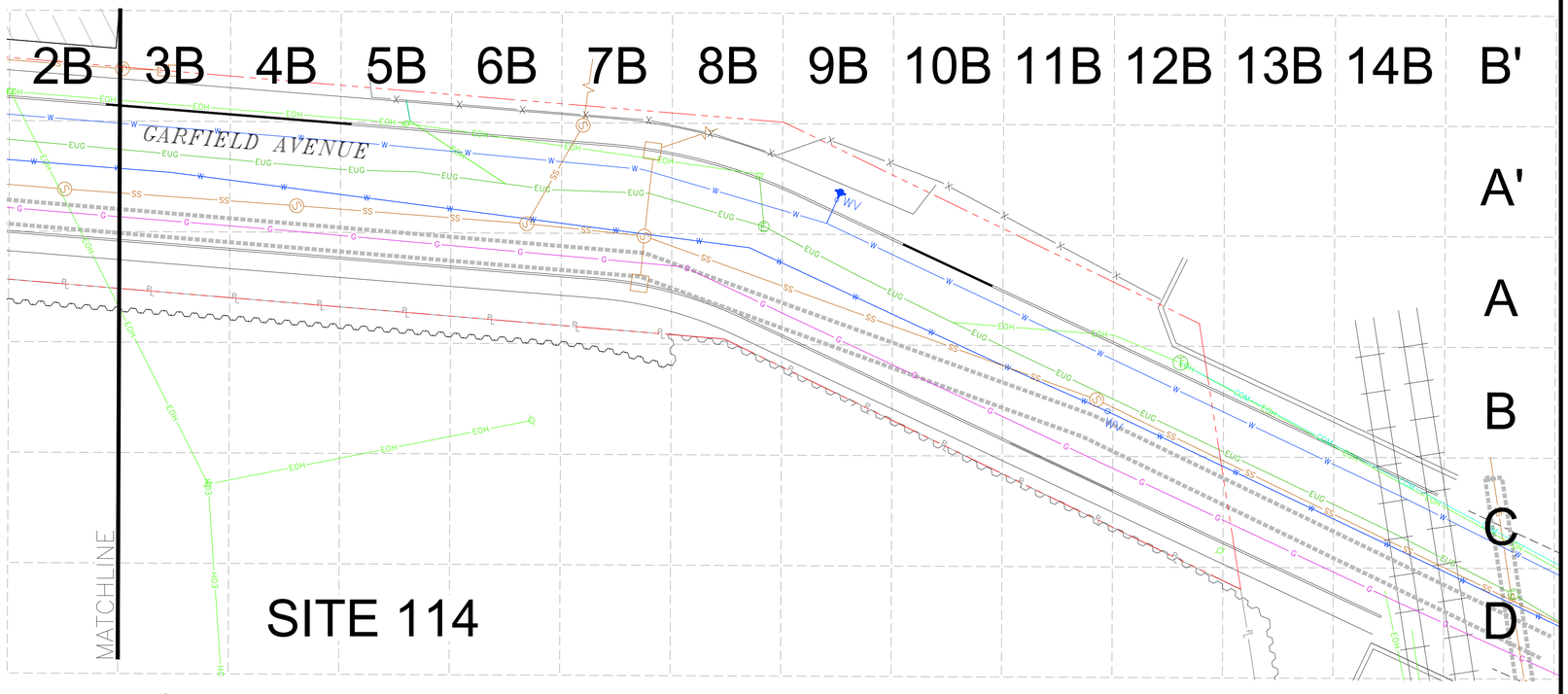
PPG
GARFIELD AVENUE GROUP SITES
JERSEY CITY, NEW JERSEY

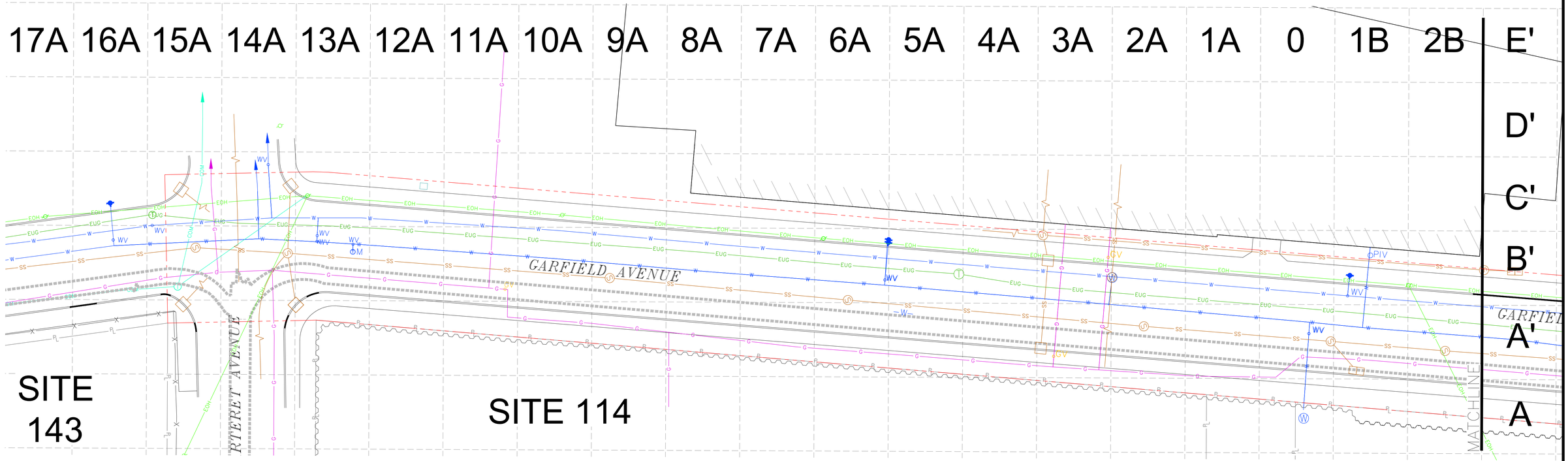
REMEDIAL ACTION WORK PLAN (SOIL)
GARFIELD AVENUE ROADWAY
GARFIELD AVENUE GROUP SITE MAP

DATE: 03/28/2019 | DRWN: ALC | **FIGURE 1-2**

LEGEND

- PROPERTY LINE
- FENCE
- EXISTING SHEET PILE
- CURB
- EXISTING BUILDING
- NEW JERSEY TRANSIT LIGHT RAIL
- COMBINED SEWER UTILITY LINE
- GAS UTILITY LINE
- WATER UTILITY LINE
- OVERHEAD ELECTRIC UTILITY LINE
- UNDERGROUND ELECTRIC UTILITY LINE
- COMMUNICATION LINE–NOT SURVEYED
- UTILITY POLE
- MANHOLE (WATER, COMBINED SEWER, AND COMMUNICATIONS)
- FIRE HYDRANT
- POST INDICATOR VALVE
- WATER VALVE
- GAS VALVE
- CATCH BASIN INLET
- 78" STEEL COMBINED SEWER (APPROXIMATE)
- PHASE 4 GARFIELD AVENUE BOUNDARY





AECOM

10 0 20
GRAPHIC SCALE IN FEET

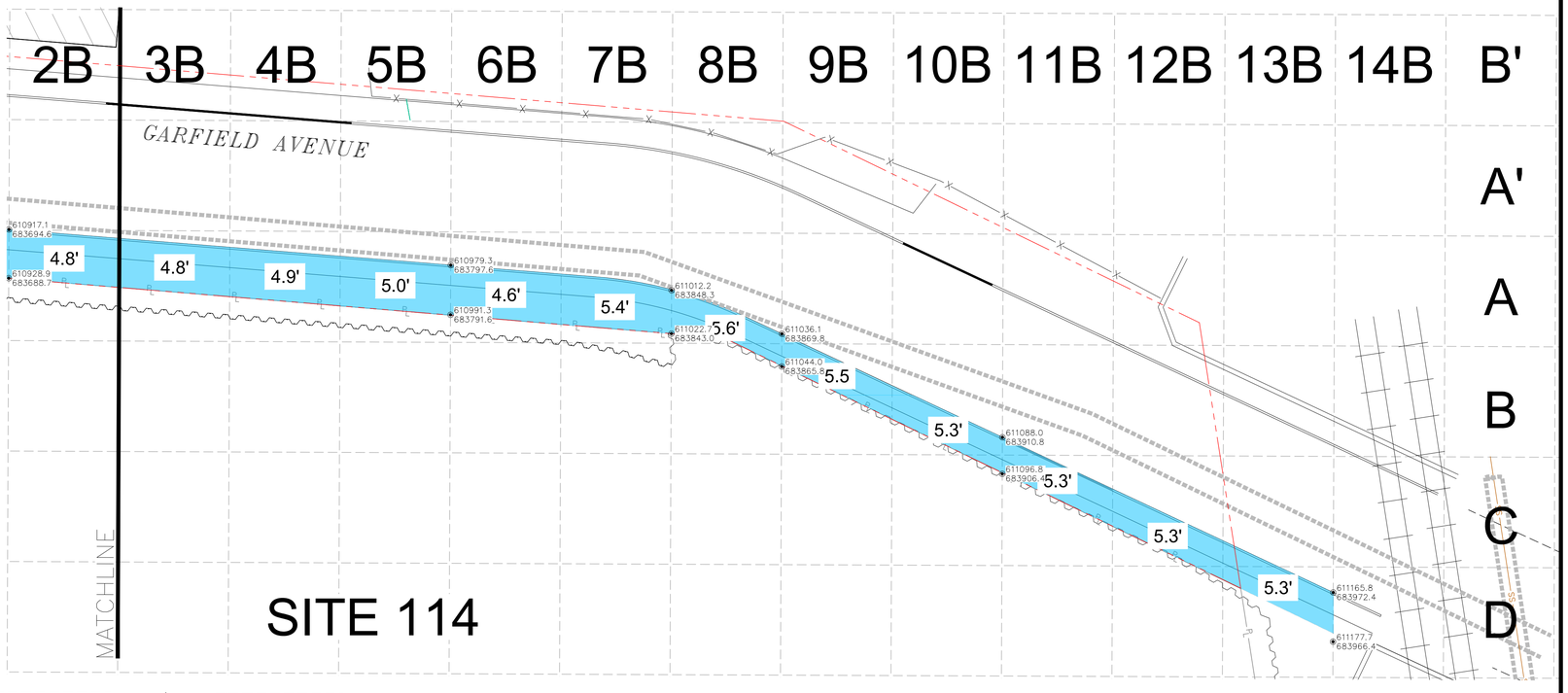
PPG GARFIELD AVE GROUP OF SITES JERSEY CITY, NEW JERSEY	**REMEDIAL ACTION WORK PLAN (SOIL)** **GARFIELD AVENUE ROADWAY** **SITE MAP**
DATE: 06/21/2018 DRWN: CCD/ALC	**FIGURE 2-1**

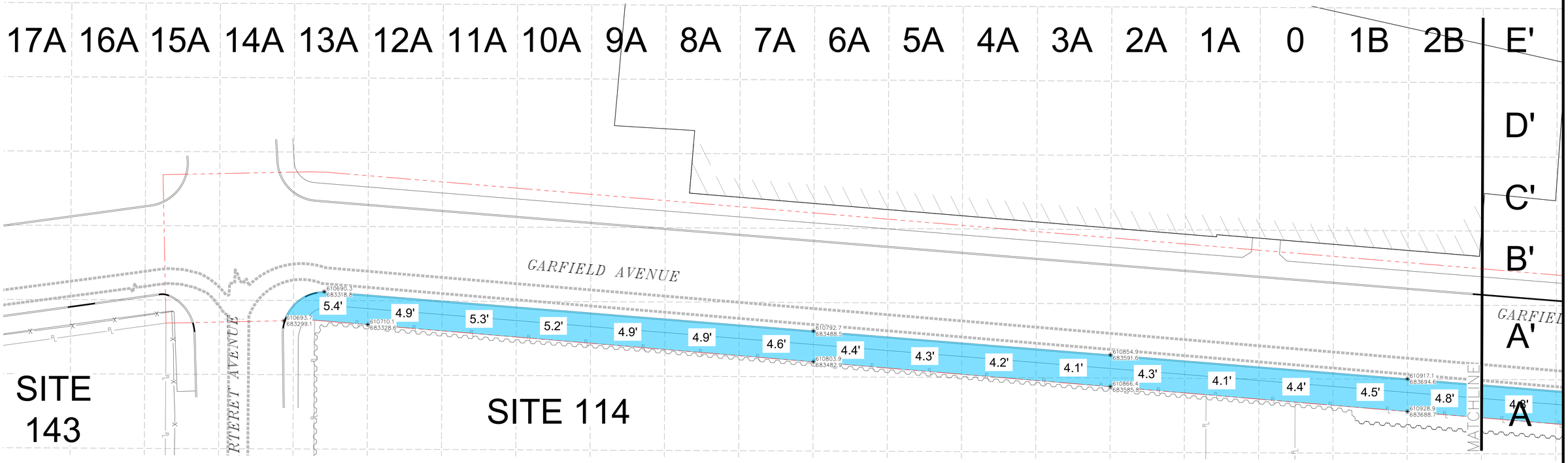
LEGEND

- PROPERTY LINE
- FENCE
- EXISTING SHEET PILE
- CURB
- EXISTING BUILDING
- NEW JERSEY TRANSIT LIGHT RAIL
- EXTENTS OF CLEAN CORRIDOR EXCAVATION
- 5.4' — EXCAVATION BOTTOM ELEVATION (PER GRID)
- 611000.1 / 683000.1 — EXCAVATION LATERAL EXTENTS COORDINATES (INFERRED FROM SHEET PILE AND CURB SURVEYS)
- 78" STEEL COMBINED SEWER (APPROXIMATE)
- PHASE 4 GARFIELD AVENUE BOUNDARY

NOTES:

1. COORDINATES ARE PRESENTED IN THE NORTH AMERICAN DATUM OF 1983. ELEVATIONS ARE PRESENTED IN THE NORTH AMERICAN VERTICAL DATUM OF 1988.
2. EXCAVATION BOTTOM ELEVATIONS PRESENTED ARE BASED ON PIT BOTTOM SAMPLE ELEVATIONS.
3. COORDINATES OF EXCAVATION LATERAL EXTENTS WERE BASED ON THE SURVEYED LOCATIONS OF THE SHEET PILE WALL AND THE CURB. THE SHEET PILE WAS PRESENTED ON "SHEET PILE WALL AS-BUILT", PREPARED BY MASER CONSULTING, LAST UPDATED JANUARY 7, 2015. THE CURB WAS SURVEYED BY MASER CONSULTING ON JANUARY 14, 2015 AND THE SURVEY'S RESULTS WERE PRESENTED IN THE APRIL 1, 2016 TECHNICAL MEMORANDUM TITLED "GARFIELD AVENUE SIDEWALK CLEAN CORRIDOR AS-BUILT (REVISION 1)".





AECOM

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GRAPHIC SCALE IN FEET

PPG GARFIELD AVE GROUP OF SITES JERSEY CITY, NEW JERSEY	REMEDIAL ACTION WORK PLAN (SOIL) GARFIELD AVENUE ROADWAY CLEAN CORRIDOR AS-BUILT EXTENTS AND ELEVATIONS
DATE: 03/28/2019 | DRWN: CCD/ALC	FIGURE 2-2

LEGEND

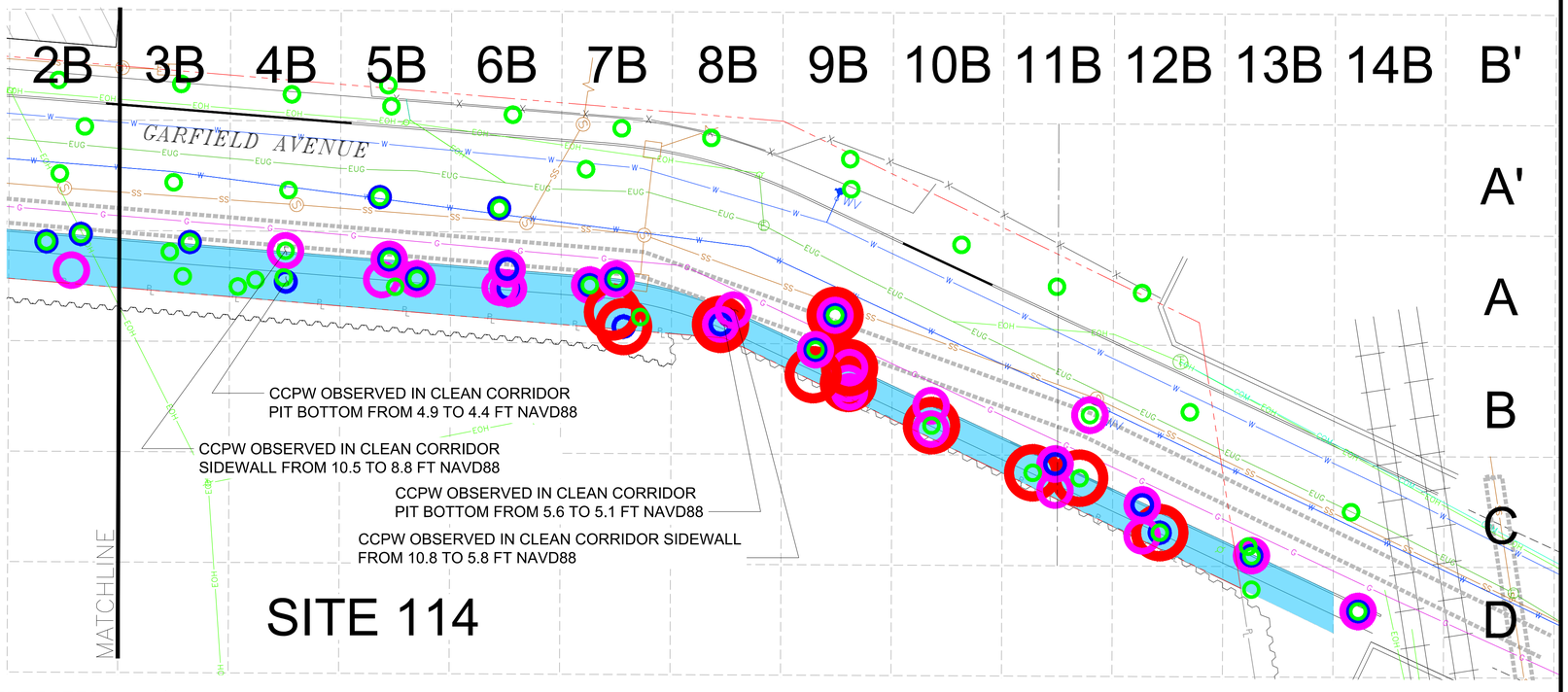
- PROPERTY LINE
- FENCE
- EXISTING SHEET PILE
- CURB
- EXISTING BUILDING
- NEW JERSEY TRANSIT LIGHT RAIL
- EXTENTS OF CLEAN CORRIDOR EXCAVATION
- COMBINED SEWER UTILITY LINE
- GAS UTILITY LINE
- WATER UTILITY LINE
- OVERHEAD ELECTRIC UTILITY LINE
- UNDERGROUND ELECTRIC UTILITY LINE
- COMMUNICATION LINE–NOT SURVEYED
- UTILITY POLE
- MANHOLE (WATER, COMBINED SEWER, AND COMMUNICATIONS)
- FIRE HYDRANT
- POST INDICATOR VALVE
- WATER VALVE
- GAS VALVE
- CATCH BASIN INLET
- 78" STEEL COMBINED SEWER (APPROXIMATE)
- PHASE 4 GARFIELD AVENUE BOUNDARY

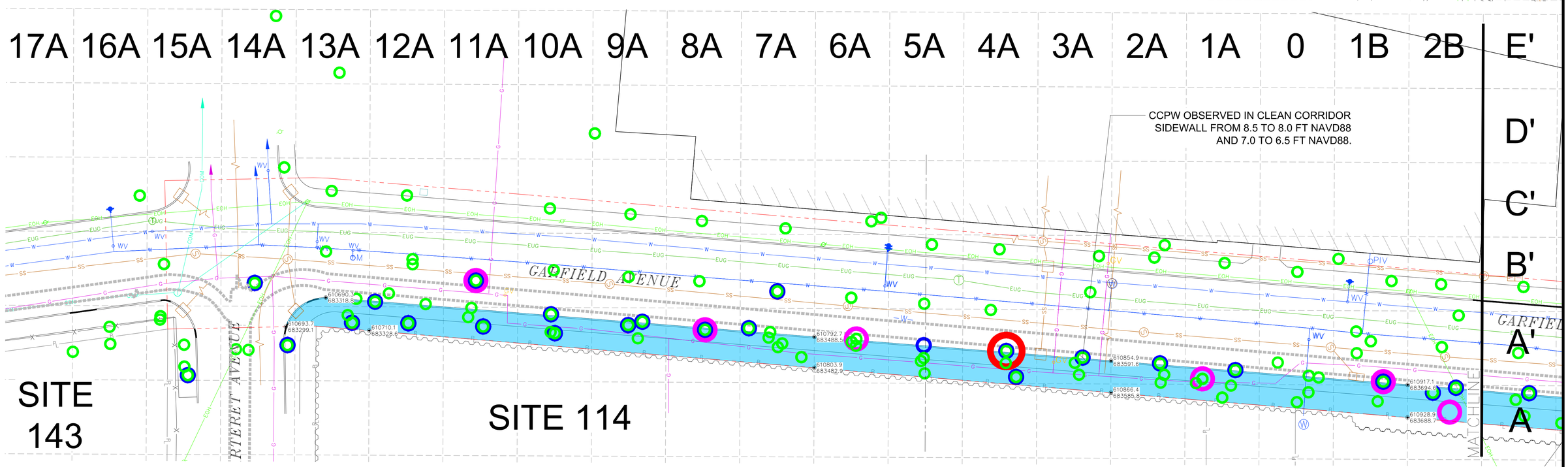
HEXAVALENT CHROMIUM CONCENTRATIONS IN SOIL (CrSCC = 20 PPM)

- <20 PPM
- 20 TO 100 PPM
- 100 TO 1,000 PPM
- 1,000 TO 4,840 PPM

DEFINITIONS:

CCPW	CHROMATE CHEMICAL PRODUCTION WASTE
CrSCC	NJDEP INTERIM CHROMIUM SOIL CLEANUP CRITERIA
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NJDEP	NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PPM	PARTS PER MILLION





AECOM

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GRAPHIC SCALE IN FEET

PPG GARFIELD AVE GROUP OF SITES JERSEY CITY, NEW JERSEY		**REMEDIAL ACTION WORK PLAN (SOIL) GARFIELD AVENUE ROADWAY HEXAVALENT CHROMIUM IMPACTS AND OBSERVED CCPW**
DATE: 06/21/2018	DRWN: CCD/ALC	**FIGURE 2-3**

LEGEND

- PROPERTY LINE
- FENCE
- EXISTING SHEET PILE
- CURB
- EXISTING BUILDING
- NEW JERSEY TRANSIT LIGHT RAIL
- COMBINED SEWER UTILITY LINE
- GAS UTILITY LINE
- WATER UTILITY LINE
- OVERHEAD ELECTRIC UTILITY LINE
- UNDERGROUND ELECTRIC UTILITY LINE
- COMMUNICATION LINE–NOT SURVEYED
- UTILITY POLE
- MANHOLE (WATER, COMBINED SEWER, AND COMMUNICATIONS)
- FIRE HYDRANT
- POST INDICATOR VALVE
- WATER VALVE
- GAS VALVE
- CATCH BASIN INLET
- 78" STEEL COMBINED SEWER (APPROXIMATE)
- PHASE 4 GARFIELD AVENUE BOUNDARY

HEXAVALENT CHROMIUM CONCENTRATIONS IN SOIL (CrSCC = 20 PPM)

- <20 PPM
- 20 TO 100 PPM
- 100 TO 1,000 PPM
- 1,000 TO 4,840 PPM

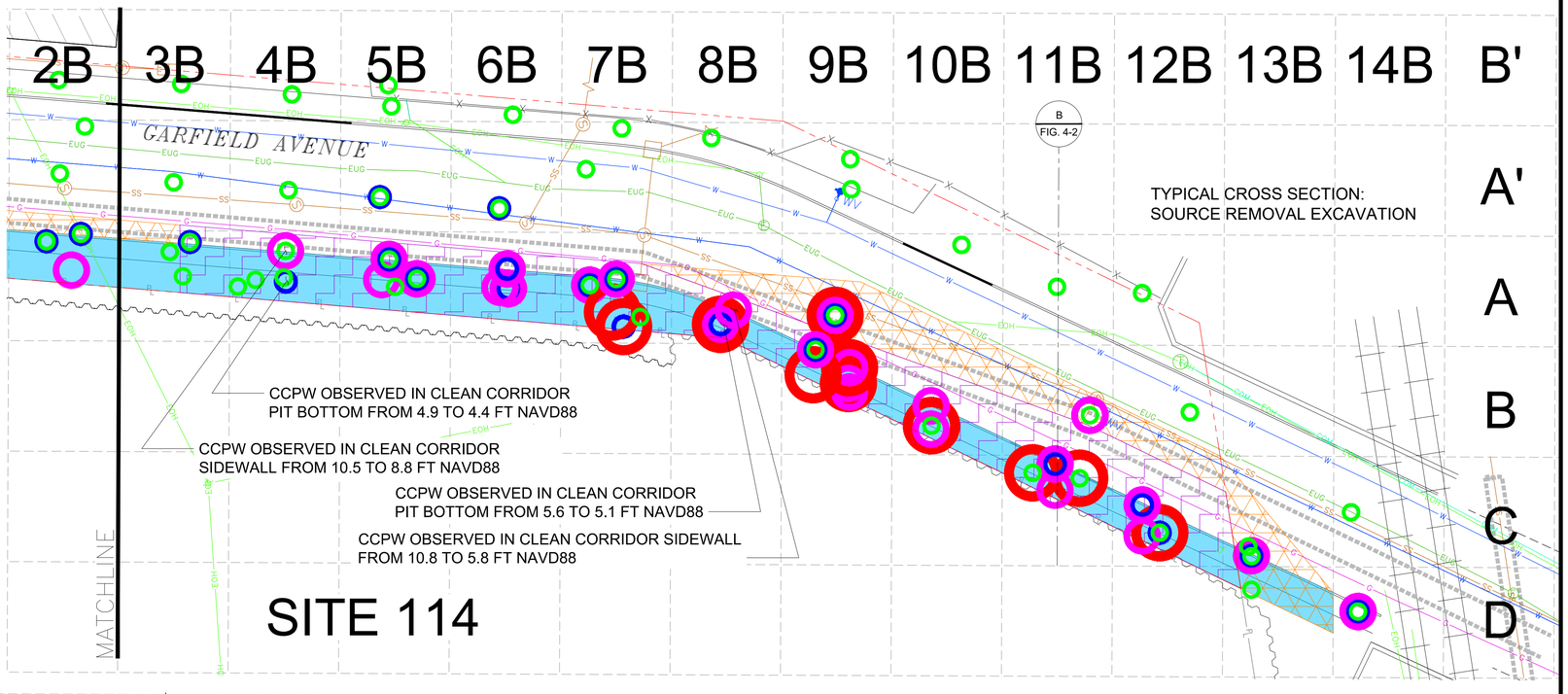
- PREVIOUS CLEAN CORRIDOR EXCAVATION
- CONCEPTUAL LIMIT OF EXCAVATION TO REMOVE SHALLOW SOIL IMPACTS
- CONCEPTUAL LIMIT OF EXCAVATION TO REMOVE SOURCE MATERIAL

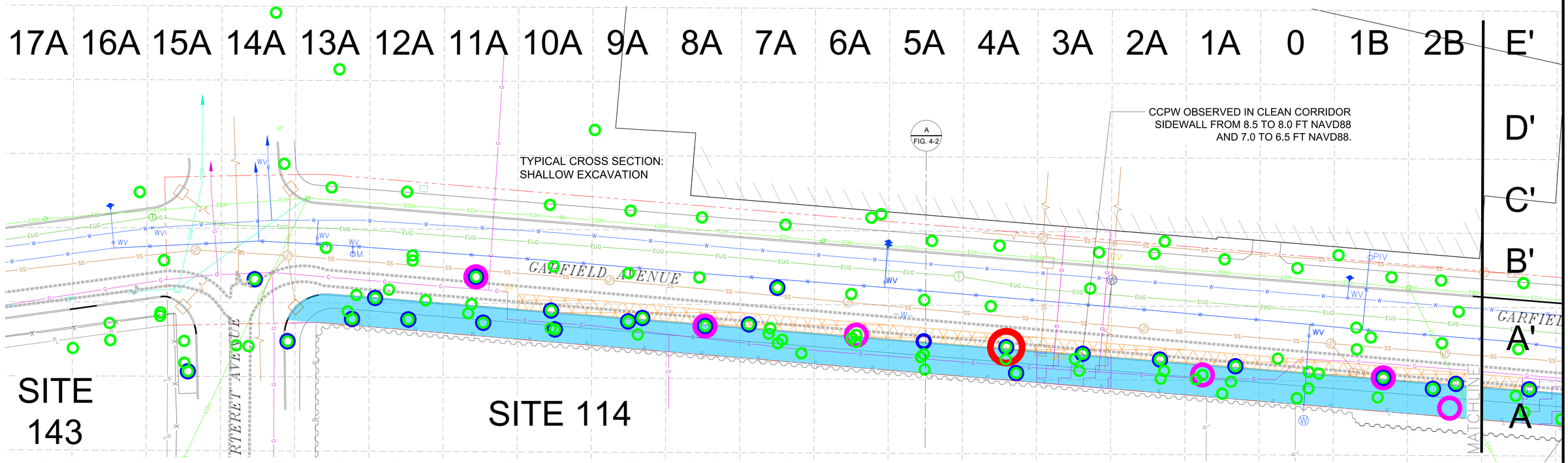
DEFINITIONS:

CCPW	CHROMATE CHEMICAL PRODUCTION WASTE
CrSCC	NJDEP INTERIM CHROMIUM SOIL CLEANUP CRITERIA
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NJDEP	NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
PPM	PARTS PER MILLION

NOTES:

1. SOURCE MATERIAL IS VISUALLY OBSERVED CCPW OR ANALYTICAL SAMPLES WHERE THE HEXAVALENT CHROMIUM CONCENTRATION EXCEEDS 1000 PPM.
2. WHERE SOURCE MATERIAL IS PRESENT BENEATH THE BOTTOM OF THE CLEAN CORRIDOR, CLEAN BACKFILL PLACED IN THE CLEAN CORRIDOR WILL BE EXCAVATED TO ACCESS AND REMOVE THE UNDERLYING SOURCE MATERIAL, TO THE EXTENT FEASIBLE.
3. WHERE SOURCE MATERIAL IS PRESENT IN THE CLEAN CORRIDOR EXCAVATION'S SIDEWALL THE PROPOSED EXCAVATION WILL SLOPE BACK INTO THE CLEAN CORRIDOR'S FOOTPRINT TO REMOVE SOURCE MATERIAL, TO THE EXTENT FEASIBLE.



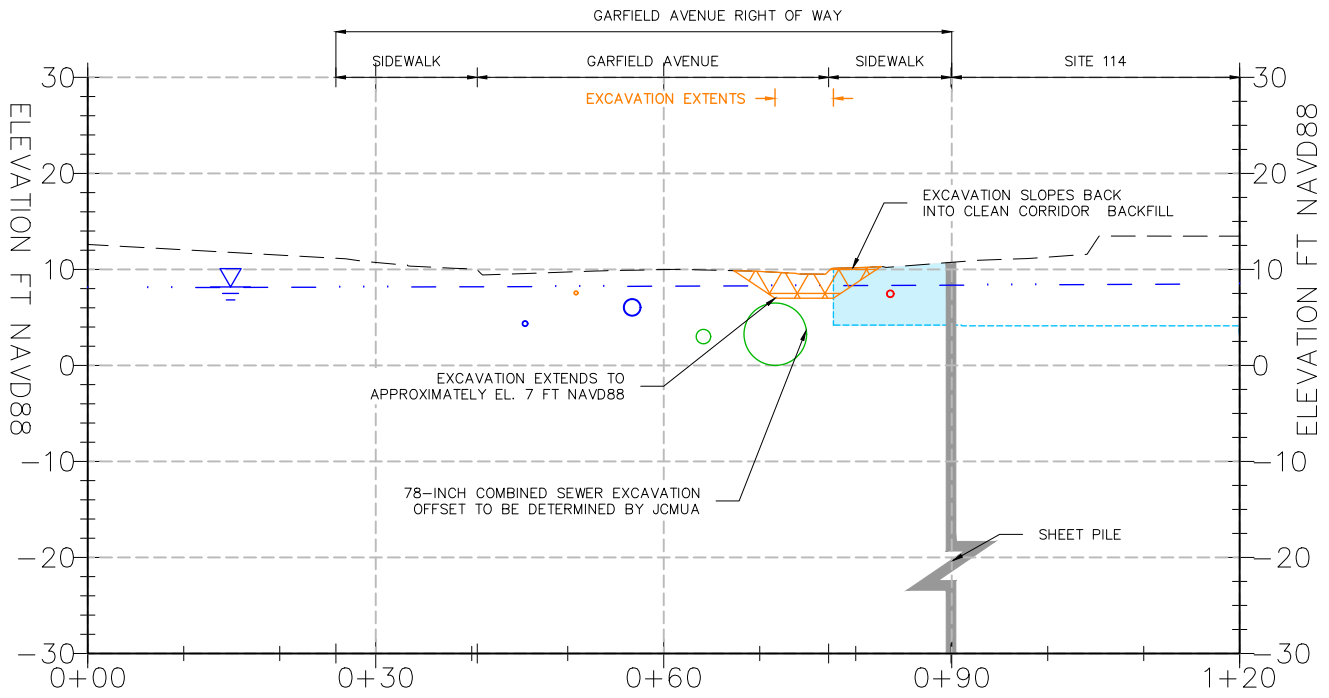


*FINAL PROPOSED EXCAVATION SURFACE TO BE PREPARED PRIOR TO ROAD WIDENING AS PART OF FUTURE CANAL CROSSING REDEVELOPMENT REMEDIAL ACTION.

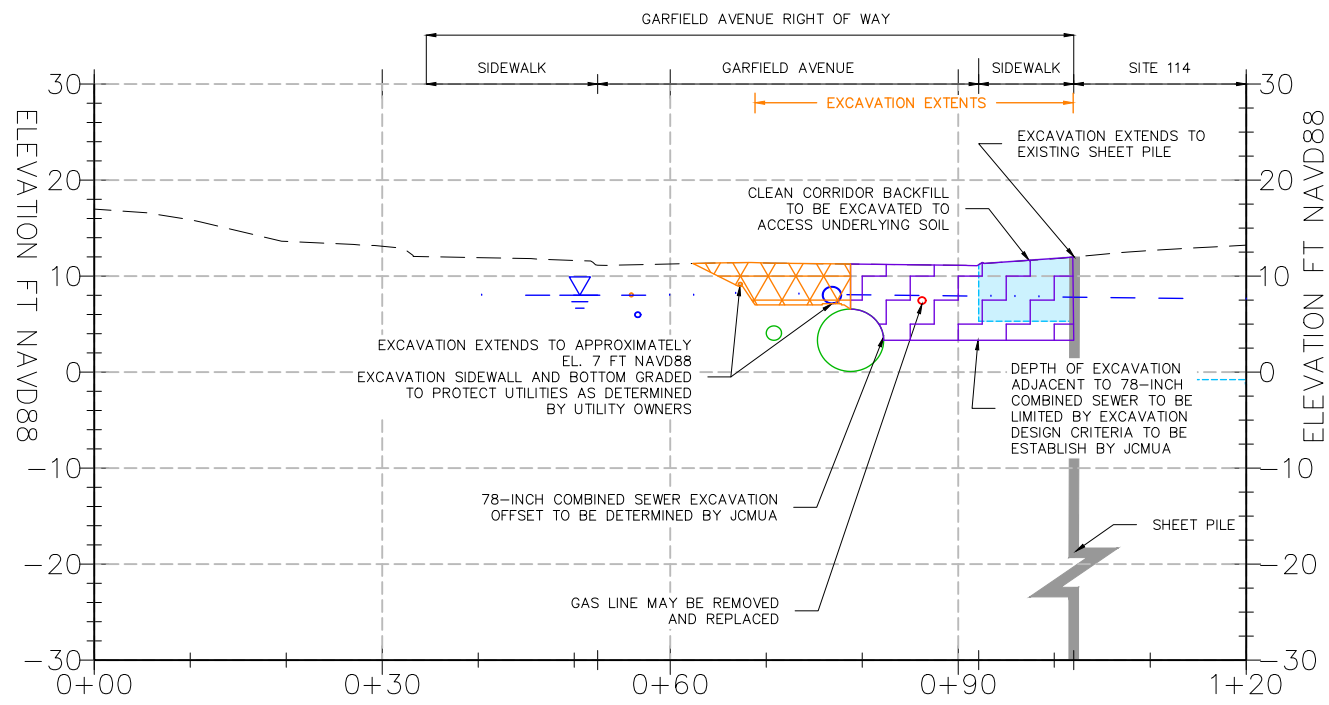
AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG GARFIELD AVE GROUP OF SITES JERSEY CITY, NEW JERSEY	**REMEDIAL ACTION WORK PLAN (SOIL)** **GARFIELD AVENUE ROADWAY** **LIMITED REMEDIAL EXCAVATION** **CONCEPTUAL PLAN VIEW**
DATE: 06/21/2018 DRWN: CCD/ALC	**FIGURE 4-1**



A 4-1 TYPICAL CROSS SECTION SHALLOW EXCAVATION



B 4-1 TYPICAL CROSS SECTION SOURCE REMOVAL EXCAVATION

LEGEND

- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- WATER LINE (6" AND 20")
- COMMUNICATION LINE (SIZE UNKNOWN)
- GAS LINE (8")
- COMBINED SEWER 18" VITRIFIED CLAY PIPE 78" CARBON STEEL PIPE
- CONCEPTUAL LIMIT OF EXCAVATION TO REMOVE SHALLOW SOIL IMPACTS
- CONCEPTUAL LIMIT OF EXCAVATION TO REMOVE SOURCE MATERIAL
- PREVIOUS CLEAN CORRIDOR EXCAVATION

NOTES:
1. ALL UTILITY LOCATIONS AND ELEVATIONS ARE APPROXIMATE.
2. PREVIOUS EXCAVATION GRADES SHOWN ARE CONCEPTUAL.
3. DEEP EXCAVATION WILL BE DESIGNED TO REMOVE SOURCE MATERIAL (VISUAL CHROMATE CHEMICAL PRODUCTION WASTE AND HEXAVALENT CHROMIUM CONCENTRATIONS EXCEEDING 1000 MILLIGRAMS PER KILOGRAM).
4. CONCEPTUAL EXCAVATION DESIGN ASSUMES THAT 8" GAS LINE CAN BE REMOVED AND REPLACED DURING ROAD WIDENING. NO OTHER UTILITIES WILL BE REMOVED AND REPLACED.

EL.	ELEVATION
FT	FEET
JCMUA	JERSEY CITY MUNICPAL UTILITIES AUTHORITY
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988

*FINAL PROPOSED EXCAVATION SURFACE TO BE PREPARED PRIOR TO ROAD WIDENING AS PART OF FUTURE CANAL CROSSING REDEVELOPMENT REMEDIAL ACTION.

AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

DATE: 06/22/2018 | DRWN: TDL/ALC

REMEDIAL ACTION WORK PLAN (SOIL)
GARFIELD AVENUE ROADWAY
LIMITED REMEDIAL EXCAVATION
CONCEPTUAL CROSS SECTIONS

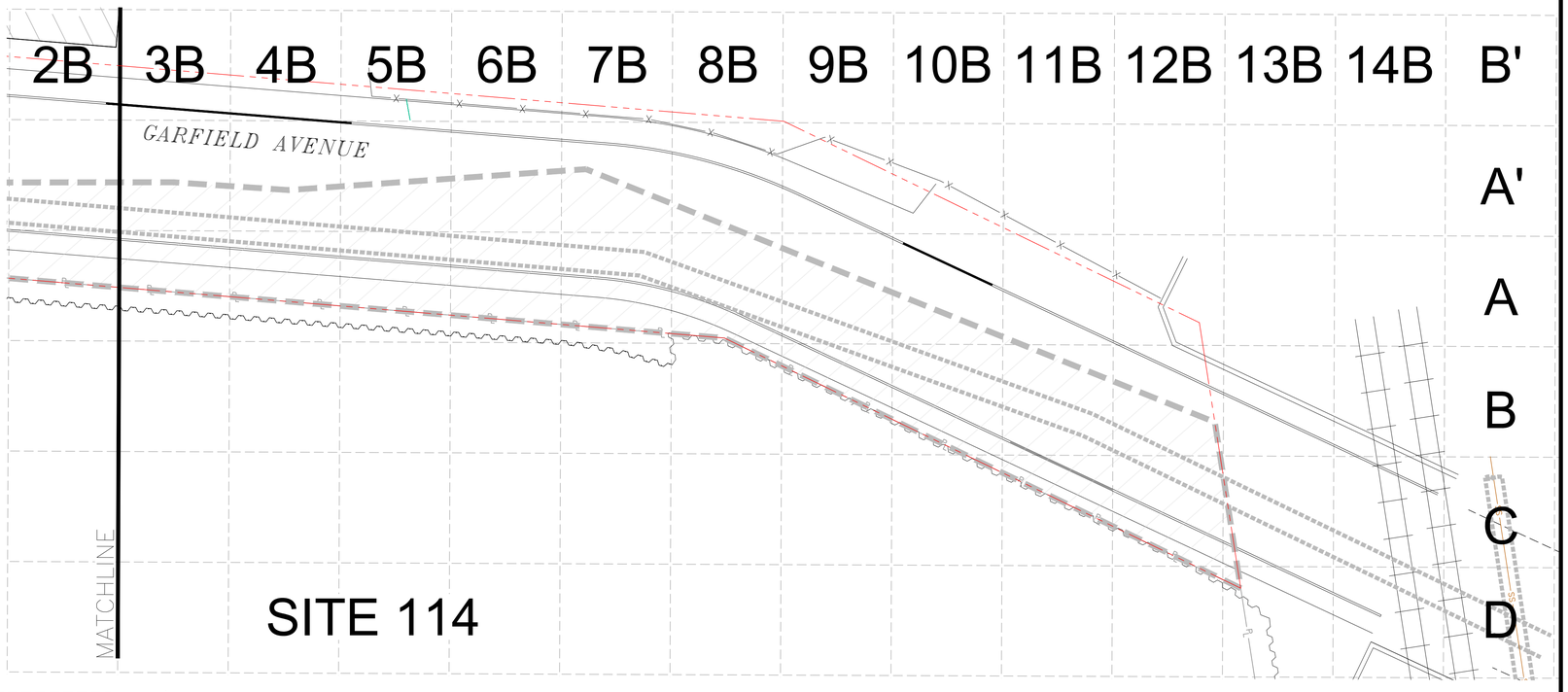
FIGURE 4-2

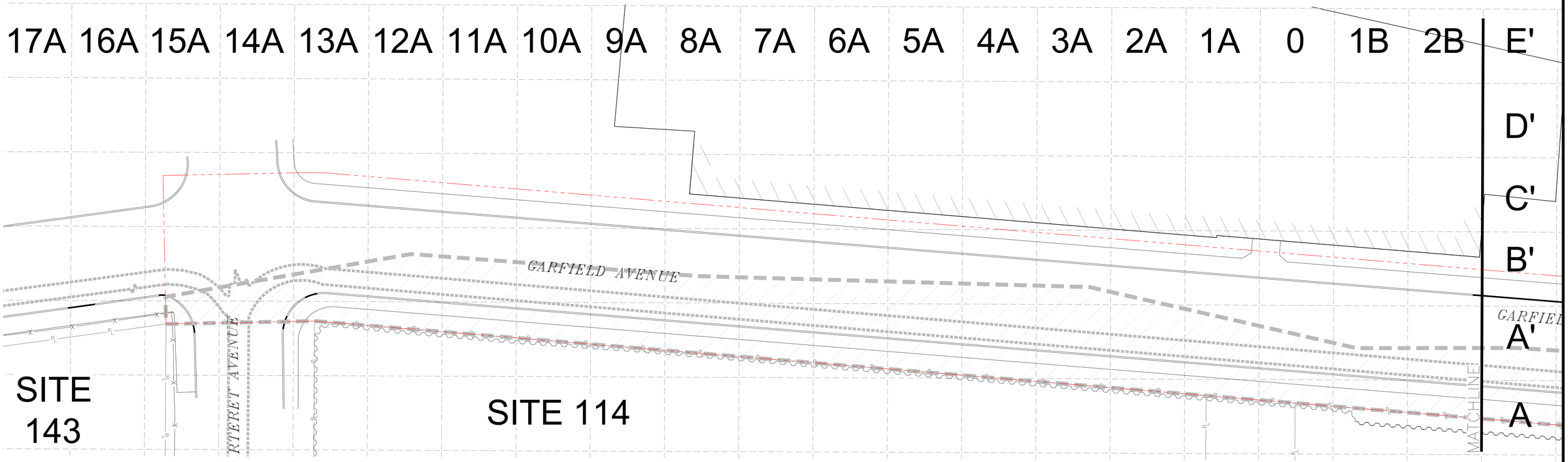
LEGEND

- PROPERTY LINE
- FENCE
- EXISTING SHEET PILE
- CURB
- EXISTING BUILDING
- NEW JERSEY TRANSIT LIGHT RAIL
- EXTENTS OF CAPILLARY BREAK
- 78" STEEL COMBINED SEWER (APPROXIMATE)
- PHASE 4 GARFIELD AVENUE BOUNDARY

NOTES:

1. CCPW – CHROMATE CHEMICAL PRODUCTION WASTE.
2. THE EXTENTS OF THE CAPILLARY BREAK ARE BASED ON THE EXTENTS OF VISUALLY OBSERVED CCPW AND HEXAVALENT CHROMIUM EXCEEDING APPLICABLE CRITERIA.





AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG GARFIELD AVE GROUP OF SITES JERSEY CITY, NEW JERSEY	**REMEDIAL ACTION WORK PLAN (SOIL)** **GARFIELD AVENUE ROADWAY** **CAPILLARY BREAK EXTENTS**
DATE: 03/28/2019 DRWN: CCD/ALC	**FIGURE 4-3**

Appendix A

Historical Water Table Elevation

Wells in Group A

114-MW43A 114-MW42A
MW-32 MW-33

Add Brushed Well(s) To Group A

Remove Brushed Well(s) from Group A

Brushed Wells

☐ Annotate ECDF plot

Marginal Histogram Options

Histogram shows:

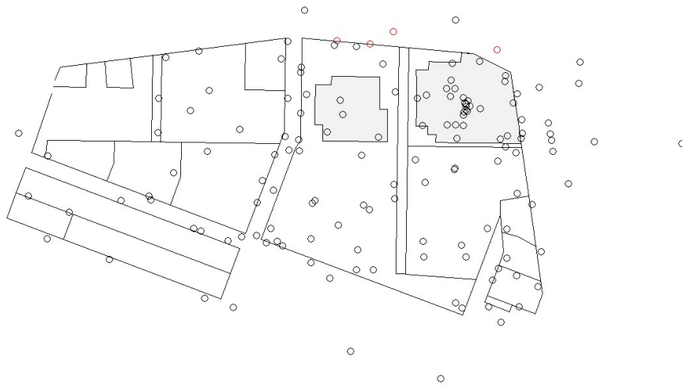
◉ Brush ○ Group ○ All

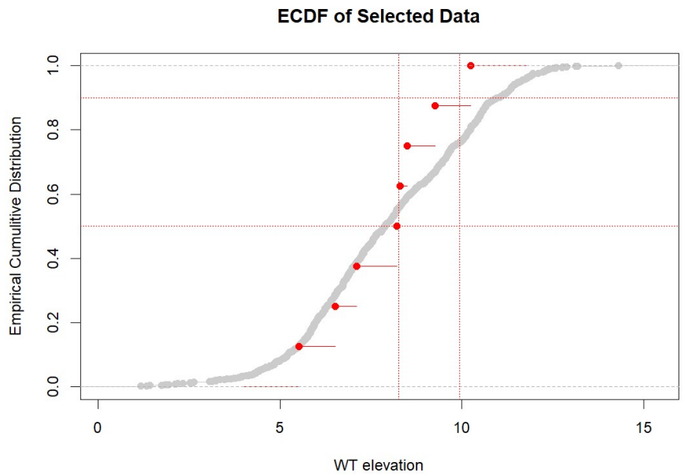
Regression Spline Degrees of Freedom

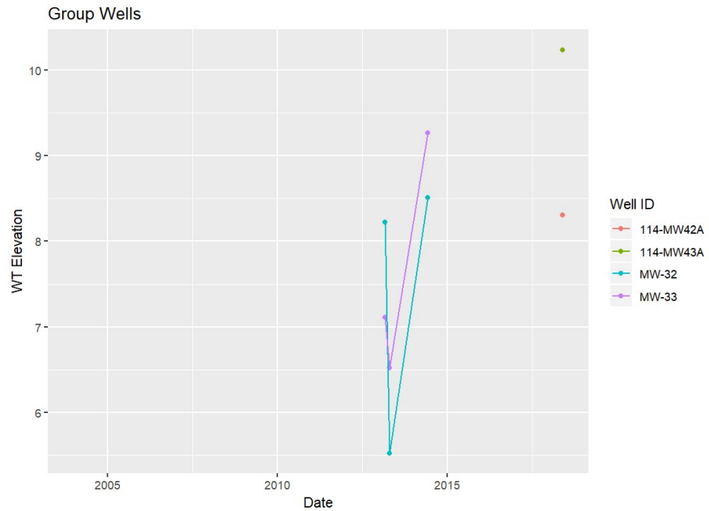
3 10

3 4 5 6 7 8 9 10

The 0.9 quantile regression is performed on a beta-spline, of the form 'rq(wt_elev ~ bs(date))'







Group Water Table Elevation Percentiles

Percentile	Elevation (ft)
50%	8.3
60%	8.4
70%	8.6
80%	9.2
90%	9.9
100%	10.2

Group Size: 8 gaugings in 4 wells.

Appendix B

Transmittal of the Garfield Avenue Cross Sections and Request for Remediation Plan Modification

AECOM
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Chelmsford, MA 01824

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To	Tom Cozzi, NJDEP
CC	Ronald Riccio, Site Administrator James Ray, Site Administrator PM Nancy Colson, Site Administrator Assistant David Doyle, NJDEP Prabal Amin, WESTON Solutions Laura Amend-Babcock, WESTON Solutions David Spader, ERFS Bhavini Doshi, City of Jersey City Joe Cunha, City of Jersey City Mark Terril, PPG Jody Overmyer, PPG Rich Feinberg, PPG Scott Mikaelian, AECOM
Subject	Transmittal of the Garfield Avenue Cross Sections and Request for Remediation Plan Modification
From	Sandy Paulsen Aimee Ruiter
Date	June 30, 2017

This memorandum presents the Garfield Avenue Cross Sections, which have been prepared to support discussions between PPG and the Stakeholders regarding the proposed remediation plan modification. Garfield Avenue, between Carteret Avenue and the New Jersey Transit Light Rail (**Figure 1**), is part of Phase 4 of the Garfield Avenue (GA) Group of Sites (Sites 114, 132, 133, 135, 137, and 143, Phase 4 Roadways, and Phase 5 Off Site Properties) in Jersey City, New Jersey. The proposed remediation plan modification (also presented herein) addresses remediation of soils with Chromate Chemical Production Waste (CCPW)-related impacts in Garfield Avenue. CCPW-related impacts include hexavalent chromium (Cr^{+6}) concentrations greater than the New Jersey Department of Environmental Protection's (NJDEP) Interim Chromium Soil Cleanup Criteria (CrSCC) of 20 milligrams per kilogram (mg/kg) and the visual presence of CCPW (i.e., Chromite Ore Processing Residue [COPR], Green-Gray Mud [GGM]).

A Pre-Design Investigation (PDI) has been conducted, where feasible, to delineate hexavalent chromium (Cr^{+6}) and visual CCPW impacts observed in soil within Garfield Avenue. **Figure 1** presents boring and sample locations. **Figures 2** through **12** present the Cr^{+6} analytical results and CCPW observations generated to date within Garfield Avenue, including those from PDI and Remedial Investigation (RI) field activities. The figures herein are presented in a cross-sectional format to facilitate the review of conditions within Garfield Avenue. Note that boring and test pit locations are not included on the figures if no Cr^{+6} data is available and if no Undisturbed Native Deposits (UND), Meadow Mat (MM), or CCPW was observed.

Note that the cross sections present newly acquired data from the Western Sliver (located between the Garfield Avenue Right of Way/Site 114 property line and the IRM #1 sheet pile. These results will be further evaluated in a separate submittal.

Cr^{+6} concentrations in soil that exceed the CrSCC, which are present throughout the eastern portion of Garfield Avenue, are delineated to the west in the majority of Garfield Avenue. However, there are some grids in the western portion of Garfield Avenue where the Cr^{+6} sample record is incomplete, or where a soil boring could not be advanced due to access issues or to the presence of utilities. Cr^{+6} concentrations in soil within Garfield Avenue (the roadway) are generally low, with the exception of some areas to the north (adjacent to the New Jersey Transit Light Rail where Cr^{+6} concentrations exceed 1,000 mg/kg). **Table 1A** and **Table 1B** provide the validated and unvalidated analytical results for Cr^{+6}, respectively, associated with the samples collected from and adjacent to Garfield Avenue. CCPW is present sporadically within the Garfield Avenue right-of-way and based on the available data, it appears to be limited to the sidewalk area. However, much of the CCPW observed within the sidewalk area has been excavated to provide a clean corridor for utility workers, as discussed herein. No CCPW has been observed within the roadway.

PPG maintains responsibility for the remediation of CCPW-related impacts within Garfield Avenue. However, due to the presence of extensive utilities within Garfield Avenue, PPG/AECOM propose that soil remediation be conducted in conjunction with the replacement of the 78-inch sewer main that runs beneath Garfield Avenue, which is planned as part of the Canal Crossing Redevelopment Plan (CCRD) (T&M, 2013). Currently, there is no schedule for replacement of the 78-inch sewer main as part of the CCRD.

Garfield Avenue is a heavily traveled urban roadway and Jersey City traffic would be negatively impacted by road closures required for remediation efforts. As shown in **Figures 1** through **12**, CCPW-related impacts in soil are present directly adjacent to the subsurface utilities, including the 78-inch sewer main; remediation of these impacts poses a structural risk to the sewer main. If remediation of soil occurs in advance of utility replacement, the utilities would need to be temporarily disconnected or rerouted. Otherwise, the utilities will require structural support, which would significantly increase the difficulty and duration of remediation activities and further disrupt traffic within the city.

A shallow excavation (down to 6 feet below ground surface) has already been performed between the western property line of Site 114 (specifically, Phase 1B, IRM #1, and Phase 1C) and the western extent of the Garfield Avenue sidewalk to provide utility workers with a clean corridor within which to conduct subsurface work. A clean corridor was also established in a portion of the Garfield Avenue right-of-way directly adjacent to Phase 3A (Sites 132 and 143). As-built conditions of the clean corridor have been documented in the technical memorandum entitled, *Garfield Avenue Sidewalk Clean Corridor As-Built (Revision 1)* (AECOM, 2016).

As a result of the establishment of the clean corridor, the risk of human exposure to CCPW-related impacts within Garfield Avenue has been reduced. If remediation of soil within Garfield Avenue is deferred until the 78-inch sewer main is replaced, additional risks to human exposure beyond those that currently exist, are not anticipated.

In accordance with the current Master Schedule (Riccio, 2016), the current “Ready for Excavation” milestone for Garfield Avenue is November 2017 and the “Restoration Complete” milestone is January 2019. We request concurrence with the recommendation to defer remediation of soil within Garfield Avenue to accommodate the issues identified above. Such a deferral would result in a revision to the Master Schedule, which would be determined by the CCRD schedule for replacement of the 78-inch sewer main, once established.

Attachment A provides the boring logs for borings within and adjacent to Garfield Avenue. **Attachment B** provides the laboratory analytical reports. **Attachment C** provides the data validation reports.

References

AECOM, 2016. Technical Memorandum: *Garfield Avenue Sidewalk Clean Corridor As-Built (Revision 1)*. April 1, 2016.

Riccio, Ronald J., 2016. *Progress Report: New Jersey Department of Environmental Protection, et al. v. Honeywell International, Inc. et al. v. City of Jersey City et al., Superior Court of New Jersey*, Chancery Division, Hudson County, Civil Action No. HUD-C-77-05; Partial Consent Judgment Concerning the PPG Sites. July 29, 2016.

T&M, 2013. *60% Plans for the Canal Crossing Redevelopment Area, City of Jersey City, Hudson County, New Jersey*. August 28, 2013.

Attachments

Tables
Figures
Attachment A – Boring Logs
Attachment B – Laboratory Analytical Reports *(Provided Separately)*
Attachment C – Data Validation Reports *(Provided Separately)*

Tables

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
A0	114-A0	114-A0-6.5-7.0	JB2790	JB2790-6R	6.5 - 7.0	03/28/2012	Yes	2.8	J
A0	114CC-A`0-PB	114-A'0-6.0-6.5-PB	JB10934	JB10934-3	6.0 - 6.5	07/11/2012	Yes	0.24	J
A0	114CC-A0-PB	114-A0-6.0-6.5-PB	JB10934	JB10934-6	6.0 - 6.5	07/11/2012	Yes	0.41	J
A0	GAR-PDI-A0	GAR-PDI-A0-8.0-8.5	JC32158	JC32158-3	8.0 - 8.5	11/21/2016	Yes	0.48	J
A0	114-A0	114-A0-8.5-9.0	JB2790	JB2790-7	8.5 - 9.0	03/28/2012	Yes	< 0.23	UJ
A0	114-A0	114-A0-10.5-11.0	JB2790	JB2790-8	10.5 - 11.0	03/28/2012	Yes	1.3	J
A0	114-A0	114-A0-12.5-13.0	JB2790	JB2790-9	12.5 - 13.0	03/28/2012	Yes	< 0.23	UJ
A0	114-A0	114-A0-14.5-15.0	JB2790	JB2790-10	14.5 - 15.0	03/28/2012	Yes	0.55	J
A0	114-A0	114-A0-16.5-17.0	JB2790	JB2790-11R	16.5 - 17.0	03/28/2012	Yes	0.45	J
A0	114-A0	114-A0-18.5-19.0	JB2790	JB2790-12	18.5 - 19.0	03/28/2012	Yes	0.54	J
A0	GAR-PDI-A0	GAR-PDI-A0-20.0-20.5	JC32158	JC32158-2	20.0 - 20.5	11/21/2016	Yes	1.0	
A'0	114CC-A`0-SW	114-A'0-0.5-1.0-SW	JB10934	JB10934-4	0.5 - 1.0	07/11/2012	Yes	0.26	J
A'0	114CC-A`0-SW	114-A'0-2.5-3.0-SW	JB10934	JB10934-2	2.5 - 3.0	07/11/2012	Yes	0.17	J
A'0	114CC-A`0-SW	114-A'0-4.5-5.0-SW	JB10934	JB10934-5	4.5 - 5.0	07/11/2012	Yes	0.32	J
A'0	P4-GA-A`0	114-GA-A`0-6.0-6.5	JB74564	JB74564-1	6.0 - 6.5	08/20/2014	Yes	0.54	J
A'0	P4-GA-A`0	114-GA-A`0-8.0-8.5	JB74564	JB74564-2	8.0 - 8.5	08/20/2014	Yes	0.65	J
A'0	P4-GA-A`0	114-GA-A`0-10.0-10.5	JB74564	JB74564-3	10.0 - 10.5	08/20/2014	Yes	0.83	J
A'0	P4-GA-A`0	114-GA-A`0-10.5-11.0	JB74833	JB74833-14	10.5 - 11.0	08/22/2014	Yes	0.89	
A'0	P4-GA-A`0	114-GA-A`0-12.0-12.5	JB74564	JB74564-4	12.0 - 12.5	08/20/2014	Yes	1.2	J
A'0	P4-GA-A`0	114-GA-A`0-14.0-14.5	JB74564	JB74564-5	14.0 - 14.5	08/20/2014	Yes	0.35	J
A'0	P4-GA-A`0	114-GA-A`0-16.0-16.5	JB74564	JB74564-6	16.0 - 16.5	08/20/2014	Yes	0.19	J
A'10A	114CC-A`10A-SW	114-A'10A-0.5-1.0-SW	JB9270	JB9270-1	0.5 - 1.0	06/19/2012	Yes	**33.9**	**J**
A'10A	114CC-A`10A-SW	114-A'10A-2.5-3.0-SW	JB9270R	JB9270-2R	2.5 - 3.0	06/19/2012	Yes	3.8	J
A'10A	114-A`10A	114-A'10A-4.0-4.5	JB2204	JB2204-4	4.0 - 4.5	03/21/2012	Yes	**303**	**J**
A'10A	114CC-A`10A-SW	114-A'10A-4.5-5.0-SW	JB9270	JB9270-3	4.5 - 5.0	06/19/2012	Yes	0.26	J
A'10A	114CC-A`10A-PB	114-A'10A-6.0-6.5-PB	JB9270R	JB9270-4R	6.0 - 6.5	06/19/2012	Yes	< 0.23	UJ
A'10A	114SWE-A`10A	114-A'10A-8.0-8.5	JB12869R	JB12869-1R	8.0 - 8.5	08/03/2012	Yes	0.25	J
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-9.5-10.0	JC31517	JC31517-8	9.5 - 10.0	11/10/2016	Yes	0.44	J
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-10.0-10.5	JC31517	JC31517-2	10.0 - 10.5	11/10/2016	Yes	0.66	
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-12.0-12.5	JC31517	JC31517-3	12.0 - 12.5	11/10/2016	Yes	0.84	
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-14.0-14.5	JC31517	JC31517-4	14.0 - 14.5	11/10/2016	Yes	**40.7**	**J**
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-16.0-16.5	JC31517	JC31517-5	16.0 - 16.5	11/10/2016	Yes	**22.4**	**J**
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-18.0-18.5	JC31517	JC31517-6	18.0 - 18.5	11/10/2016	Yes	16.9	J
A'10A	GAR-PDI-A'10A	GAR-PDI-A'10A-20.0-20.5	JC31517	JC31517-7	20.0 - 20.5	11/10/2016	Yes	**21.5**	**J**
A10B	GAR-PDI-A10B	GAR-PDI-A10B-0.5-1.0	JC37505	JC37505-15	0.5 - 1.0	02/19/2017	Yes	0.72	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-1.0-1.5	JC37505	JC37505-16	1.0 - 1.5	02/19/2017	Yes	< 0.35	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-3.0-3.5	JC37505	JC37505-24	3.0 - 3.5	02/19/2017	Yes	0.74	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-5.0-5.5	JC37505	JC37505-25	5.0 - 5.5	02/19/2017	Yes	< 0.38	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-7.0-7.5	JC37505	JC37505-26	7.0 - 7.5	02/19/2017	Yes	< 0.35	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-7.5-8.0	JC37505	JC37505-27	7.5 - 8.0	02/19/2017	Yes	< 0.39	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-8.0-8.5	JC37505	JC37505-28	8.0 - 8.5	02/19/2017	Yes	< 0.38	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-10.0-10.5	JC37505	JC37505-17	10.0 - 10.5	02/19/2017	Yes	< 0.39	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-10.0-10.5X	JC37505	JC37505-18	10.0 - 10.5	02/19/2017	Yes	< 0.40	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-12.0-12.5	JC37505	JC37505-19	12.0 - 12.5	02/19/2017	Yes	< 0.34	UJ
A10B	GAR-PDI-A10B	GAR-PDI-A10B-14.0-14.5	JC37505	JC37505-20	14.0 - 14.5	02/19/2017	Yes	0.96	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-16.0-16.5	JC37505	JC37505-21	16.0 - 16.5	02/19/2017	Yes	0.43	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-18.0-18.5	JC37505	JC37505-22	18.0 - 18.5	02/19/2017	Yes	1.4	J
A10B	GAR-PDI-A10B	GAR-PDI-A10B-20.0-20.5	JC37505	JC37505-23	20.0 - 20.5	02/19/2017	Yes	1.5	J
A'11A	114CC-A`11A-SW	114-A'11A-0.5-1.0-SW	JB9215	JB9215-1	0.5 - 1.0	06/18/2012	Yes	5.7	J
A'11A	114SWE-A`11A	114-A'11A-1.2-1.7	JB17318	JB17318-3	1.2 - 1.7	09/25/2012	Yes	16.0	J
A'11A	114CC-A`11A-SW	114-A'11A-2.5-3.0-SW	JB9215R	JB9215-2R	2.5 - 3.0	06/18/2012	Yes	< 0.24	UJ
A'11A	114-A`11A	114-A'11A-4.0-4.5	JB2204	JB2204-3	4.0 - 4.5	03/21/2012	Yes	5.6	J
A'11A	114CC-A`11A-SW	114-A'11A-4.5-5.0-SW	JB9215R	JB9215-3R	4.5 - 5.0	06/18/2012	Yes	< 0.24	UJ
A'11A	114CC-A`11A-PB	114-A'11A-6.0-6.5-PB	JB9215R	JB9215-4R	6.0 - 6.5	06/18/2012	Yes	< 0.23	UJ
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-7.5-8.0	JC31517	JC31517-16	7.5 - 8.0	11/10/2016	Yes	< 0.40	UJ
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-8.0-8.5	JC31517	JC31517-17	8.0 - 8.5	11/10/2016	Yes	1.1	
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-10.0-10.5	JC31517	JC31517-9	10.0 - 10.5	11/10/2016	Yes	< 0.34	U
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-10.0-10.5X	JC31517	JC31517-10	10.0 - 10.5	11/10/2016	Yes	< 0.34	U
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-12.0-12.5	JC31517	JC31517-11	12.0 - 12.5	11/10/2016	Yes	**33.8**	**J**
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-14.0-14.5	JC31517	JC31517-12	14.0 - 14.5	11/10/2016	Yes	19.4	
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-16.0-16.5	JC31517	JC31517-13	16.0 - 16.5	11/10/2016	Yes	**28.6**	**J**
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-18.0-18.5	JC31517	JC31517-14	18.0 - 18.5	11/10/2016	Yes	**30.6**	**J**
A'11A	GAR-PDI-A'11A	GAR-PDI-A'11A-20.0-20.5	JC31517	JC31517-15	20.0 - 20.5	11/10/2016	Yes	11.7	

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A11B	GAR-PDI-A11B	GAR-PDI-A11B-0.5-1.0	JC37082	JC37082-10	0.5 - 1.0	02/12/2017	Yes	3.3	
A11B	GAR-PDI-A11B	GAR-PDI-A11B-2.0-2.5	JC37082R	JC37082-16R	2.0 - 2.5	02/12/2017	Yes	0.61	
A11B	GAR-PDI-A11B	GAR-PDI-A11B-4.0-4.5	JC37082	JC37082-18	4.0 - 4.5	02/12/2017	Yes	< 0.35	U
A11B	GAR-PDI-A11B	GAR-PDI-A11B-5.5-6.0	JC37082	JC37082-19	5.5 - 6.0	02/12/2017	Yes	< 0.34	U
A11B	GAR-PDI-A11B	GAR-PDI-A11B-6.0-6.5	JC37082	JC37082-20	6.0 - 6.5	02/12/2017	Yes	0.52	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-6.0-6.5X	JC37082	JC37082-21	6.0 - 6.5	02/12/2017	Yes	0.36	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-8.0-8.5	JC37082	JC37082-22	8.0 - 8.5	02/12/2017	Yes	0.62	
A11B	GAR-PDI-A11B	GAR-PDI-A11B-10.0-10.5	JC37082R	JC37082-11R	10.0 - 10.5	02/12/2017	Yes	0.57	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-12.0-12.5	JC37082	JC37082-12	12.0 - 12.5	02/12/2017	Yes	0.92	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-14.0-14.5	JC37082R	JC37082-13R	14.0 - 14.5	02/12/2017	Yes	0.93	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-16.0-16.5	JC37082R	JC37082-14R	16.0 - 16.5	02/12/2017	Yes	1.5	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-18.0-18.5	JC37082R	JC37082-15R	18.0 - 18.5	02/12/2017	Yes	1.9	J
A11B	GAR-PDI-A11B	GAR-PDI-A11B-20.0-20.5	JC37082	JC37082-17	20.0 - 20.5	02/12/2017	Yes	0.59	J
A'12A	114CC-A`12A-SW	114-A'12A-0.5-1.0-SW	JB9081R	JB9081-1R	0.5 - 1.0	06/15/2012	Yes	10.9	J
A'12A	114CC-A`12A-SW	114-A'12A-2.5-3.0-SW	JB9081	JB9081-2	2.5 - 3.0	06/15/2012	Yes	0.34	J
A'12A	114-A`12A	114-A'12A-4.0-4.5	JB2204	JB2204-2	4.0 - 4.5	03/21/2012	Yes	1.5	J
A'12A	114CC-A`12A-SW	114-A'12A-4.5-5.0-SW	JB9081	JB9081-3	4.5 - 5.0	06/15/2012	Yes	< 0.23	UJ
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-5.0-5.5	JC31394R	JC31394-9R	5.0 - 5.5	11/09/2016	Yes	1.1	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-6.0-6.5	JC31394	JC31394-10	6.0 - 6.5	11/09/2016	Yes	1.4	J
A'12A	114CC-A`12A-SW	114-A'12A-6.0-6.5-SW	JB9081	JB9081-4	6.0 - 6.5	06/15/2012	Yes	< 0.23	UJ
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-6.5-7.0	JC31394R	JC31394-11R	6.5 - 7.0	11/09/2016	Yes	1.0	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-8.0-8.5	JC31394	JC31394-12	8.0 - 8.5	11/09/2016	Yes	0.99	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-10.0-10.5	JC31394	JC31394-2	10.0 - 10.5	11/09/2016	Yes	10.0	J
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-12.0-12.5	JC31394R	JC31394-3R	12.0 - 12.5	11/09/2016	Yes	**61.7**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-12.0-12.5X	JC31394	JC31394-4	12.0 - 12.5	11/09/2016	Yes	**69.2**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-14.0-14.5	JC31394R	JC31394-5R	14.0 - 14.5	11/09/2016	Yes	**87.9**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-16.0-16.5	JC31394	JC31394-6	16.0 - 16.5	11/09/2016	Yes	**39.7**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-18.0-18.5	JC31394R	JC31394-7R	18.0 - 18.5	11/09/2016	Yes	**31.5**	**J**
A'12A	GAR-PDI-A'12A	GAR-PDI-A'12A-20.0-20.5	JC31394	JC31394-8	20.0 - 20.5	11/09/2016	Yes	**24.9**	**J**
A12B	EF-43	EF-B43-0.5	460258041	460-25804-34	0.5 - 1.0	04/26/2011	Yes	< 0.57	U
A12B	EF-43	EF-B43-2.0	460258991	460-25899-4	2.0 - 2.5	04/28/2011	Yes	< 0.58	U
A12B	EF-43	EF-B43-4.0	460258991	460-25899-6	4.0 - 4.5	04/28/2011	Yes	< 0.60	U
A12B	EF-43	EF-B43-7.0	460259551	460-25955-9	7.0 - 7.5	04/29/2011	Yes	< 0.61	UJ
A12B	EF-43	EF-B43-11.0	460259551	460-25955-10	11.0 - 11.5	04/29/2011	Yes	< 0.59	UJ
A12B	EF-43	EF-B43-15.0	460259551	460-25955-11	15.0 - 15.5	04/29/2011	Yes	< 0.55	UJ
A12B	EF-43	EF-B43-21.0	460259551	460-25955-12	21.0 - 21.5	04/29/2011	Yes	< 0.56	UJ

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Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A'13A	AA5	AA5S0-.5	R2318257	669000	0.0 - 0.5	09/02/2003	Yes	7.6	J
A'13A	AA5	AA5S0.5-1	R2318257	669001	0.5 - 1.0	09/02/2003	Yes	**37.3**	**J**
A'13A	114-A`13A	114-A'13A-4.0-4.5	JB2204R	JB2204-1R	4.0 - 4.5	03/21/2012	Yes	3.4	J
A'13A	AA5	AA5S4.5-5	R2318257	669003	4.5 - 5.0	09/02/2003	Yes	< 4.8	UJ
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-5.5-6.0	JC31394R	JC31394-21R	5.5 - 6.0	11/09/2016	Yes	8.1	J
A'13A	AA5	AA5S6-6.5	R2318257	669005	6.0 - 6.5	09/02/2003	Yes	9.39	J
A'13A	114CC-A`13A-PB	114-A'13A-6.0-6.5-PB	JB8970R	JB8970-6R	6.0 - 6.5	06/14/2012	Yes	< 0.24	UJ
A'13A	114CC-A`13A-PB	114-A'13A-6.0-6.5-PBS	JB8858	JB8858-4	6.0 - 6.5	06/13/2012	Yes	0.97	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-6.0-6.5	JC31394	JC31394-22	6.0 - 6.5	11/09/2016	Yes	1.1	J
A'13A	114-A`13A-PT	114-A`13A-PT-7.5-8.0	460525091	460-52509-20	7.5 - 8.0	03/19/2013	Yes	< 0.67	U
A'13A	114-A`13A-PT	114-A`13A-PT-7.5-8.0X	460525091	460-52509-19	7.5 - 8.0	03/19/2013	Yes	< 0.62	U
A'13A	114-A`13A-PT	114-A`13A-PT-9.5-10.0	460525091	460-52509-18	9.5 - 10.0	03/19/2013	Yes	< 0.61	U
A'13A	114-A`13A-PT	114-A`13A-PT-9.5-10.0X	460525091	460-52509-17	9.5 - 10.0	03/19/2013	Yes	< 0.64	U
A'13A	114-A`13A-PT	114-A`13A-PT-11.5-12.0	460525091	460-52509-3	11.5 - 12.0	03/18/2013	Yes	< 0.58	U
A'13A	114-A`13A-PT	114-A`13A-PT-11.5-12.0RM	460525091	460-52509-4	11.5 - 12.0	03/18/2013	Yes	< 0.49	U
A'13A	114SWE-A`13A	114-A'13A-11.6-12.1	JB12869R	JB12869-2R	11.6 - 12.1	08/03/2012	Yes	0.84	J
A'13A	MW5AV	114-MW5AVA-12-12.5	J11594A	J11594-26A	12.0 - 12.5	10/04/2005	Yes	**21.9**	**J**
A'13A	114-RD2-A`13A	114-RD2-A`13A-12.5-13.0	JB21023R	JB21023-1R	12.5 - 13.0	11/12/2012	Yes	6.4	RA
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-12.0-12.5	JC31394	JC31394-13	12.0 - 12.5	11/09/2016	Yes	0.94	J
A'13A	114-A`13A-PT	114-A`13A-PT-13.5-14.0	460525091	460-52509-1	13.5 - 14.0	03/18/2013	Yes	< 0.62	U
A'13A	114-A`13A-PT	114-A`13A-PT-13.5-14.0RM	460525091	460-52509-2	13.5 - 14.0	03/18/2013	Yes	< 0.50	U
A'13A	114-RD2-A`13A	114-RD2-A`13A-14.5-15.0	JB21023R	JB21023-2R	14.5 - 15.0	11/12/2012	Yes	**45.5**	**RA**
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-14.5-15.0	JC31394	JC31394-14	14.5 - 15.0	11/09/2016	Yes	**27.6**	**J**
A'13A	114-A`13A-PT	114-A`13A-PT-15.5-16.0	460525091	460-52509-5	15.5 - 16.0	03/18/2013	Yes	1.7	J
A'13A	114-A`13A-PT	114-A`13A-PT-15.5-16.0RM	460525091	460-52509-7	15.5 - 16.0	03/18/2013	Yes	19.7	
A'13A	114-A`13A-PT	114-A`13A-PT-15.5-16.0RMX	460525091	460-52509-8	15.5 - 16.0	03/18/2013	Yes	17.9	
A'13A	114-A`13A-PT	114-A`13A-PT-15.5-16.0X	460525091	460-52509-6	15.5 - 16.0	03/18/2013	Yes	< 0.62	U
A'13A	114-RD2-A`13A	114-RD2-A`13A-16.5-17.0	JB21023	JB21023-3	16.5 - 17.0	11/12/2012	Yes	**66.4**	**RA**
A'13A	AA5V	114-AA5-VA17-17.5	J11476	J11476-10A	17.0 - 17.5	10/03/2005	Yes	**37.4**	**J**
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-16.5-17.0	JC31394	JC31394-15	16.5 - 17.0	11/09/2016	Yes	**28.5**	**J**
A'13A	MW5AV	114-MW5AVB-17.2-17.7	J11594B	J11594-27B	17.2 - 17.7	10/04/2005	Yes	< 3.5	U
A'13A	114-A`13A-PT	114-A`13A-PT-17.5-18.0	460525091	460-52509-10	17.5 - 18.0	03/18/2013	Yes	14.9	
A'13A	114-A`13A-PT	114-A`13A-PT-17.5-18.0RM	460525091	460-52509-9	17.5 - 18.0	03/18/2013	Yes	**32.0**	
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-17.0-17.5	JC31394	JC31394-16	17.0 - 17.5	11/09/2016	Yes	**27.8**	**J**
A'13A	114-A`13A-PTR4	114-A`13A-PTR4-17.5-18.0X	JB83321	JB83321-3	17.5 - 18.0	12/04/2014	Yes	9.7	J
A'13A	114-A`13A-PTR4	114-A'13A-PTR4-17.5-18.0	JB83321R	JB83321-2R	17.5 - 18.0	12/04/2014	Yes	8.0	J
A'13A	114-A`13A-PTR5	114-A'13A-PTR5-17.5-18.0	JB93165	JB93165-2	17.5 - 18.0	04/23/2015	Yes	12.9	J
A'13A	114-A`13A-PTR5	114-A'13A-PTR5-17.5-18.0RM	JB93165R	JB93165-4BR	17.5 - 18.0	04/23/2015	Yes	15.6	J
A'13A	114-A`13A-PTR5	114-A'13A-PTR5-17.5-18.0RMX	JB93165R	JB93165-5BR	17.5 - 18.0	04/23/2015	Yes	11.7	J
A'13A	114-A`13A-PTR5	114-A'13A-PTR5-17.5-18.0X	JB93165	JB93165-3	17.5 - 18.0	04/23/2015	Yes	14.9	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-17.5-18.0	JC31394	JC31394-17	17.5 - 18.0	11/09/2016	Yes	16.9	J
A'13A	114-A`13A-PTR3	114-A`13A-PTR3-17.5-18.0	460770441	460-77044-2	17.5 - 18.0	06/02/2014	Yes	8.1	J
A'13A	114-A`13A-PTR3	114-A`13A-PTR3-17.5-18.0RM	460770441	460-77044-4	17.5 - 18.0	06/02/2014	Yes	**23.7**	**J**
A'13A	114-A`13A-PTR3	114-A`13A-PTR3-17.5-18.0RMX	460770441	460-77044-5	17.5 - 18.0	06/02/2014	Yes	17.7	J
A'13A	114-A`13A-PTR3	114-A`13A-PTR3-17.5-18.0X	460770441	460-77044-3	17.5 - 18.0	06/02/2014	Yes	8.6	
A'13A	114-RD2-A`13A	114-RD2-A`13A-18.5-19.0	JB21023	JB21023-4	18.5 - 19.0	11/12/2012	Yes	**43.8**	**RA**
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-18.5-19.0	JC31394	JC31394-18	18.5 - 19.0	11/09/2016	Yes	6.8	J
A'13A	114-A`13A-PT	114-A`13A-PT-19.5-20.0	460525091	460-52509-14	19.5 - 20.0	03/18/2013	Yes	**54.4**	
A'13A	114-A`13A-PT	114-A`13A-PT-19.5-20.0RM	460525091	460-52509-11	19.5 - 20.0	03/18/2013	Yes	**160**	
A'13A	114-A`13A-PT	114-A`13A-PT-19.5-20.0RMX	460525091	460-52509-12	19.5 - 20.0	03/18/2013	Yes	**168**	
A'13A	114-A`13A-PT	114-A`13A-PT-19.5-20.0X	460525091	460-52509-13	19.5 - 20.0	03/18/2013	Yes	**51.6**	
A'13A	114-RD2-A`13A	114-RD2-A`13A-20.0-20.5	JB21023	JB21023-5	20.0 - 20.5	11/12/2012	Yes	**24.7**	**RA**
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-19.5-20.0	JC31394R	JC31394-19R	19.5 - 20.0	11/09/2016	Yes	3.6	J
A'13A	GAR-PDI-A'13A	GAR-PDI-A'13A-20.0-20.5	JC31394	JC31394-20	20.0 - 20.5	11/09/2016	Yes	4.9	J
A'13A	AA5V	114-AA5-VB21-21.5	J11476B	J11476-11B	21.0 - 21.5	10/03/2005	Yes	10.9	J
A'14A	P4-A`14A	P4-A`14A-9.5-10.0	JB62216	JB62216-2	9.5 - 10.0	03/18/2014	Yes	0.15	J
A'14A	P4-A`14A	P4-A`14A-10.0-10.5	JB62216	JB62216-3	10.0 - 10.5	03/18/2014	Yes	0.37	J
A'14A	P4-A`14A	P4-A`14A-12.0-12.5	JB61451	JB61451-1	12.0 - 12.5	03/10/2014	Yes	5.1	J
A'14A	P4-A`14A	P4-A`14A-14.0-14.5	JB61451	JB61451-2	14.0 - 14.5	03/10/2014	Yes	**31.4**	**J**
A'14A	P4-A`14A	P4-A`14A-16.0-16.5	JB61451R	JB61451-3R	16.0 - 16.5	03/10/2014	Yes	**39.6**	**J**
A'14A	P4-A`14A	P4-A`14A-18.0-18.5	JB61451R	JB61451-4R	18.0 - 18.5	03/10/2014	Yes	**27.9**	**J**
A'14A	P4-A`14A	P4-A`14A-20.0-20.5	JB61451R	JB61451-5R	20.0 - 20.5	03/10/2014	Yes	**25.9**	**J**

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A'15A	143-A'15A-SW	143-A'15A-SW-0.4-0.9	JB73945	JB73945-3	0.4 - 0.9	08/13/2014	Yes	2.9	
A'15A	EF-35	EF-B35-0.5	460256571	460-25657-33	0.5 - 1.0	04/21/2011	Yes	< 0.53	U
A'15A	EF-35	EF-B35-2.0	460256571	460-25657-34	2.0 - 2.5	04/21/2011	Yes	1.8	J
A'15A	143-A'15A-SW	143-A'15A-SW-2.4-2.9	JB73945	JB73945-4	2.4 - 2.9	08/13/2014	Yes	5.9	
A'15A	EF-35	EF-B35-4.0	460256571	460-25657-36	4.0 - 4.5	04/21/2011	Yes	< 0.57	U
A'15A	114-MW22B	PPG-114-MW22BA(5.0-5.5)J46994-1	J46994	J46994-1	5.0 - 5.5	11/20/2006	Yes	< 1.2	UJ
A'15A	143-P3A-A`15AR2	143-P3A-A`15A-R2-7.0-7.5	JB63516	JB63516-12	7.0 - 7.5	04/01/2014	Yes	0.29	J
A'15A	114-MW22B	PPG-114-MW22BB(9.5-10.0)J46994-2	J46994	J46994-2	9.5 - 10.0	11/20/2006	Yes	< 1.3	UJ
A'15A	EF-35	EF-B35-10.0	460257051	460-25705-13	10.0 - 10.5	04/22/2011	Yes	< 0.64	UJ
A'15A	EF-35	EF-B35-12.0	460257051	460-25705-14	12.0 - 12.5	04/22/2011	Yes	< 0.59	U
A'15A	114-MW22B	PPG-114-MW22BC(13.0-14.0)J46994-3	J46994	J46994-3	13.0 - 14.0	11/20/2006	Yes	< 1.3	UJ
A'15A	114-MW22B	PPG-114-MW22BCD(13.0-14.0)J46994-4	J46994	J46994-4	13.0 - 14.0	11/20/2006	Yes	< 1.3	UJ
A'15A	EF-35	EF-B35-16.0	460257051	460-25705-17	16.0 - 16.5	04/22/2011	Yes	< 0.58	UJ
A'15A	143-P3A-A`15AR2	143-P3A-A`15A-R2-16.5-17.0	JB63516	JB63516-15	16.5 - 17.0	04/01/2014	Yes	0.90	
A'15A	114-MW22B	PPG-114-MW22BD(17.5-18.0)J46994-5	J46994	J46994-5	17.5 - 18.0	11/20/2006	Yes	**26.0**	**J**
A'15A	143-P3A-A`15AR2	143-P3A-A`15A-R2-17.5-18.0	JB63516	JB63516-17	17.5 - 18.0	04/01/2014	Yes	14.6	
A'15A	143-P3A-A`15A	143-P3A-A`15A-17.5-18.0	JB33649	JB33649-6	17.5 - 18.0	04/08/2013	Yes	0.38	J
A'15A	143-P3A-A`15A	143-P3A-A`15A-18.0-18.5	JB33649	JB33649-5	18.0 - 18.5	04/08/2013	Yes	0.67	
A'15A	143-P3A-A`15A	143-P3A-A`15A-18.0-18.5X	JB33649	JB33649-4	18.0 - 18.5	04/08/2013	Yes	0.80	
A'15A	143-P3A-A`15AR2	143-P3A-A`15A-R2-18.5-19.0	JB63516	JB63516-19	18.5 - 19.0	04/01/2014	Yes	2.2	
A'15A	EF-35	EF-B35-20.0	460257051	460-25705-18	20.0 - 20.5	04/22/2011	Yes	0.63	J
A'15A	114-MW22B	PPG-114-MW22BE(22.5-23.0)J46994-6	J46994	J46994-6	22.5 - 23.0	11/20/2006	Yes	15.6	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-0.5-1.0	JB34655	JB34655-1	0.5 - 1.0	04/18/2013	Yes	8.5	J
A'16A	143-A'16A-SW	143-A'16A-SW-0.6-1.1	JB73945	JB73945-1	0.6 - 1.1	08/13/2014	Yes	7.7	
A'16A	143-P3A-A`16A	143-P3A-A`16A-2.5-3.0	JB34655	JB34655-2	2.5 - 3.0	04/18/2013	Yes	0.64	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-2.5-3.0X	JB34655	JB34655-3	2.5 - 3.0	04/18/2013	Yes	0.48	J
A'16A	143-A'16A-SW	143-A'16A-SW-3.1-3.6	JB73945	JB73945-2	3.1 - 3.6	08/13/2014	Yes	5.6	
A'16A	143-P3A-A`16A	143-P3A-A`16A-4.5-5.0	JB34655	JB34655-4	4.5 - 5.0	04/18/2013	Yes	1.1	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-6.5-7.0	JB34655	JB34655-5	6.5 - 7.0	04/18/2013	Yes	0.81	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-8.5-9.0	JB34655	JB34655-6	8.5 - 9.0	04/18/2013	Yes	0.47	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-10.5-11.0	JB34655	JB34655-7	10.5 - 11.0	04/18/2013	Yes	0.43	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-12.5-13.0	JB34655	JB34655-8	12.5 - 13.0	04/18/2013	Yes	0.28	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-14.5-15.0	JB34655	JB34655-9	14.5 - 15.0	04/18/2013	Yes	0.22	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-16.3-16.8	JB34655	JB34655-10	16.3 - 16.8	04/18/2013	Yes	0.26	J
A'16A	143-P3A-A`16A	143-P3A-A`16A-16.8-17.3	JB34655	JB34655-11	16.8 - 17.3	04/18/2013	Yes	0.30	J
A1A	114-A1A	114-A1A-6.5-7.0	JB2684	JB2684-12	6.5 - 7.0	03/27/2012	Yes	1.2	
A1A	GAR-PDI-A1A	GAR-PDI-A1A-7.0-7.5	JC31963R	JC31963-12R	7.0 - 7.5	11/17/2016	Yes	0.67	J
A1A	GAR-PDI-A1A	GAR-PDI-A1A-7.5-8.0	JC31963R	JC31963-13R	7.5 - 8.0	11/17/2016	Yes	1.1	J
A1A	114CC-A`1A-PB	114-A'1A-6.0-6.5-PB	JB10728	JB10728-5	6.0 - 6.5	07/09/2012	Yes	< 0.23	UJ
A1A	114-A1A	114-A1A-8.5-9.0	JB2684	JB2684-13	8.5 - 9.0	03/27/2012	Yes	< 0.25	U
A1A	114-A1A	114-A1A-10.5-11.0	JB2684R	JB2684-14R	10.5 - 11.0	03/27/2012	Yes	0.49	J
A1A	114-A1A	114-A1A-12.5-13.0	JB2684	JB2684-15	12.5 - 13.0	03/27/2012	Yes	0.43	J
A1A	114-A1A	114-A1A-14.5-15.0	JB2684R	JB2684-16R	14.5 - 15.0	03/27/2012	Yes	0.43	J
A1A	114-A1A	114-A1A-16.5-17.0	JB2684	JB2684-17	16.5 - 17.0	03/27/2012	Yes	< 0.24	U
A1A	GAR-PDI-A1A	GAR-PDI-A1A-17.0-17.5	JC31963R	JC31963-9R	17.0 - 17.5	11/17/2016	Yes	0.45	J
A1A	GAR-PDI-A1A	GAR-PDI-A1A-17.5-18.0	JC31963R	JC31963-10R	17.5 - 18.0	11/17/2016	Yes	1.4	
A1A	114-A1A	114-A1A-18.5-19.0	JB2684	JB2684-18	18.5 - 19.0	03/27/2012	Yes	< 0.24	U
A1A	GAR-PDI-A1A	GAR-PDI-A1A-20.0-20.5	JC31963	JC31963-11	20.0 - 20.5	11/17/2016	Yes	< 0.36	U
A'1A	114CC-A`1A-SW	114-A'1A-0.5-1.0-SW	JB10728R	JB10728-2R	0.5 - 1.0	07/09/2012	Yes	**51.0**	**J**
A'1A	114CC-A`1A-SW	114-A'1A-2.5-3.0-SW	JB10728R	JB10728-3R	2.5 - 3.0	07/09/2012	Yes	0.48	J
A'1A	114CC-A`1A-SW	114-A'1A-4.5-5.0-SW	JB10728R	JB10728-4R	4.5 - 5.0	07/09/2012	Yes	8.6	J
A'1A	114CC-A1A-PB	114-A1A-6.0-6.5-PB	JB10728	JB10728-8	6.0 - 6.5	07/09/2012	Yes	0.29	J
A'1A	114CC-A1A-PB	114-A1A-6.0-6.5-PBX	JB10728R	JB10728-6R	6.0 - 6.5	07/09/2012	Yes	0.20	J
A'1A	P4-GA-A`1A	114-GA-A`1A-6.0-6.5	JB74564	JB74564-7	6.0 - 6.5	08/20/2014	Yes	1.8	J
A'1A	P4-GA-A`1A	114-GA-A`1A-6.0-6.5X	JB74564	JB74564-8	6.0 - 6.5	08/20/2014	Yes	**355**	**J**
A'1A	P4-GA-A`1A	114-GA-A`1A-8.0-8.5	JB74564	JB74564-9	8.0 - 8.5	08/20/2014	Yes	0.45	J
A'1A	P4-GA-A`1A	114-GA-A`1A-10.0-10.5	JB74564	JB74564-10	10.0 - 10.5	08/20/2014	Yes	2.3	J
A'1A	P4-GA-A`1A	114-GA-A`1A-12.0-12.5	JB74564	JB74564-11	12.0 - 12.5	08/20/2014	Yes	0.42	J
A'1A	P4-GA-A`1A	114-GA-A`1A-12.5-13.0	JB74833	JB74833-12	12.5 - 13.0	08/22/2014	Yes	1.1	
A'1A	P4-GA-A`1A	114-GA-A`1A-13.0-13.5	JB74833	JB74833-13	13.0 - 13.3	08/22/2014	Yes	0.23	J
A'1A	P4-GA-A`1A	114-GA-A`1A-14.0-14.5	JB74564	JB74564-12	14.0 - 14.5	08/20/2014	Yes	< 0.20	UJ
A'1A	P4-GA-A`1A	114-GA-A`1A-16.0-16.5	JB74564	JB74564-13	16.0 - 16.5	08/20/2014	Yes	< 0.19	UJ
A'1A	P4-GA-A`1A	114-GA-A`1A-18.0-18.5	JB74564	JB74564-14	18.0 - 18.5	08/20/2014	Yes	< 0.20	UJ
A'1A	P4-GA-A`1A	114-GA-A`1A-20.0-20.5	JB74564	JB74564-15	20.0 - 20.5	08/20/2014	Yes	< 0.20	UJ

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
A1B	114CC-A1B-PB	114-A1B-6.0-6.5-PB	JB11335	JB11335-6	6.0 - 6.5	07/16/2012	Yes	8.2	J
A1B	GAR-PDI-A1B	GAR-PDI-A1B-7.5-8.0	JC32218	JC32218-8	7.5 - 8.0	11/22/2016	Yes		R
A1B	GAR-PDI-A1B	GAR-PDI-A1B-8.0-8.5	JC32218	JC32218-9	8.0 - 8.5	11/22/2016	Yes		R
A1B	114-A1B	114-A1B-13.5B	JA64837	JA64837-1	9.4 - 9.9	12/21/2010	Yes	< 0.31	UJ
A1B	GAR-PDI-A1B	GAR-PDI-A1B-12.0-12.5	JC32218R	JC32218-2R	12.0 - 12.5	11/22/2016	Yes		R
A1B	GAR-PDI-A1B	GAR-PDI-A1B-14.0-14.5	JC32218R	JC32218-3R	14.0 - 14.5	11/22/2016	Yes		R
A1B	114-A1B-WS	114-A1B-WS-15.0-15.5	JC42624R	JC42624-1R	15.0 - 15.5	5/4/2017	Yes	0.63	
A1B	GAR-PDI-A1B	GAR-PDI-A1B-16.0-16.5	JC32218R	JC32218-4R	16.0 - 16.5	11/22/2016	Yes		R
A1B	114-A1B-WS	114-A1B-WS-16.8-17.3	JC42624R	JC42624-2R	16.8 - 17.3	5/4/2017	Yes	1.1	
A1B	GAR-PDI-A1B	GAR-PDI-A1B-18.0-18.5	JC32218R	JC32218-5R	18.0 - 18.5	11/22/2016	Yes		R
A1B	114-A1B-WS	114-A1B-WS-18.8-19.3	JC42624R	JC42624-3R	18.8 - 19.3	5/4/2017	Yes	0.67	
A1B	GAR-PDI-A1B	GAR-PDI-A1B-20.0-20.5	JC32218R	JC32218-6R	20.0 - 20.5	11/22/2016	Yes		R
A1B	GAR-PDI-A1B	GAR-PDI-A1B-20.0-20.5X	JC32218R	JC32218-7R	20.0 - 20.5	11/22/2016	Yes		R
A1B	114-A1B-WS	114-A1B-WS-20.8-21.3	JC42624R	JC42624-4R	20.8 - 21.3	5/4/2017	Yes	0.68	
A1B	114-A1B-WS	114-A1B-WS-22.8-23.3	JC42624R	JC42624-5R	22.8 - 23.3	5/4/2017	Yes	0.73	
A'1B	114CC-A1B-SW	114-A1B-0.5-1.0-SW	JB11335R	JB11335-3R	0.5 - 1.0	07/16/2012	Yes	**103**	**J**
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-1.5-2.0	JC30780R	JC30780-1R	1.5 - 2.0	10/30/2016	Yes	0.75	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-1.5-2.0X	JC30780R	JC30780-2R	1.5 - 2.0	10/30/2016	Yes	0.61	J
A'1B	TPA	TPA(1.5-2)	R2421334	726775	1.5 - 2.0	05/12/2004	Yes	< 4.99	U
A'1B	114CC-A1B-SW	114-A1B-2.5-3.0-SW	JB11335	JB11335-2	2.5 - 3.0	07/16/2012	Yes	**22.2**	**J**
A'1B	TPA	TPA(3-3.5)	R2421334	726776	3.0 - 3.5	05/12/2004	Yes	< 4.72	U
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-3.5-4.0	JC30780	JC30780-10	3.5 - 4.0	10/30/2016	Yes	0.89	J
A'1B	114CC-A1B-SW	114-A1B-4.5-5.0-SW	JB11335	JB11335-4	4.5 - 5.0	07/16/2012	Yes	0.46	J
A'1B	114CC-A1B-SW	114-A1B-4.5-5.0-SWX	JB11335R	JB11335-5R	4.5 - 5.0	07/16/2012	Yes	0.53	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-5.5-6.0	JC30780	JC30780-11	5.5 - 6.0	10/30/2016	Yes	1.1	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-10.0-10.5	JC30780R	JC30780-3R	10.0 - 10.5	10/30/2016	Yes	1.3	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-11.5-12.0	JC30780	JC30780-4	11.5 - 12.0	10/30/2016	Yes	0.35	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-13.5-14.0	JC30780	JC30780-5	13.5 - 14.0	10/30/2016	Yes	< 0.32	UJ
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-15.5-16.0	JC30780R	JC30780-6R	15.5 - 16.0	10/30/2016	Yes	0.58	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-17.5-18.0	JC30780	JC30780-7	17.5 - 18.0	10/30/2016	Yes	0.42	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-19.5-20.0	JC30780	JC30780-8	19.5 - 20.0	10/30/2016	Yes	0.61	J
A'1B	GAR-PDI-A'1B	GAR-PDI-A'1B-20.0-20.5	JC30780R	JC30780-9R	20.0 - 20.5	10/30/2016	Yes	0.58	J
A2A	B7	B7S0-0.5	R2318120	666222	0.0 - 0.5	08/21/2003	Yes	< 5.24	U
A2A	B7	B7S3.5-4.0	R2318120	666233	3.5 - 4.0	08/21/2003	Yes	**72.7**	
A2A	114-A2A	114-A2A-6.5-7.0	JB2790	JB2790-1	6.5 - 7.0	03/28/2012	Yes	< 0.26	UJ
A2A	GAR-PDI-A2A	GAR-PDI-A2A-7.5-8.0	JC31963	JC31963-17	7.5 - 8.0	11/17/2016	Yes	0.43	J
A2A	GAR-PDI-A2A	GAR-PDI-A2A-8.0-8.5	JC31963	JC31963-18	8.0 - 8.5	11/17/2016	Yes	< 0.37	U
A2A	114SWE-A2A	114-A2A-8.3-8.8	JB12461RT	JB12461-1RT	8.3 - 8.8	07/30/2012	Yes	< 0.25	UJ
A2A	114-A2A	114-A2A-8.5-9.0	JB2790	JB2790-2	8.5 - 9.0	03/28/2012	Yes	0.26	J
A2A	114-A2A	114-A2A-10.5-11.0	JB2790	JB2790-3	10.5 - 11.0	03/28/2012	Yes	< 0.26	UJ
A2A	114-A2A	114-A2A-12.5-13.0	JB2790	JB2790-4	12.5 - 13.0	03/28/2012	Yes	2.0	J
A2A	114-A2A	114-A2A-14.5-15.0	JB2790	JB2790-5	14.5 - 15.0	03/28/2012	Yes	0.48	J
A2A	GAR-PDI-A2A	GAR-PDI-A2A-16.0-16.5	JC31963	JC31963-14	16.0 - 16.5	11/17/2016	Yes	1.3	J
A2A	GAR-PDI-A2A	GAR-PDI-A2A-18.0-18.5	JC31963R	JC31963-15R	18.0 - 18.5	11/17/2016	Yes	0.96	
A2A	GAR-PDI-A2A	GAR-PDI-A2A-20.0-20.5	JC31963	JC31963-16	20.0 - 20.5	11/17/2016	Yes	5.8	
A'2A	114CC-A`2A-SW	114-A'2A-0.5-1.0-SW	JB10525	JB10525-1	0.5 - 1.0	07/05/2012	Yes	**42.2**	**J**
A'2A	114CC-A`2A-SW	114-A'2A-2.5-3.0-SW	JB10525	JB10525-2	2.5 - 3.0	07/05/2012	Yes	**67.5**	**J**
A'2A	114CC-A`2A-SW	114-A'2A-4.5-5.0-SW	JB10525	JB10525-3	4.5 - 5.0	07/05/2012	Yes	0.29	J
A'2A	114CC-A`2A-PB	114-A'2A-6.0-6.5-PB	JB10525	JB10525-4	6.0 - 6.5	07/05/2012	Yes	< 0.24	UJ
A'2A	114CC-A`2A-PB	114-A'2A-6.0-6.5-PBX	JB10525	JB10525-5	6.0 - 6.5	07/05/2012	Yes	< 0.25	UJ
A'2A	P4-GA-A`2A	114-GA-A`2A-6.0-6.5	JB74425R	JB74425-7R	6.0 - 6.5	08/19/2014	Yes	1.3	J
A'2A	P4-GA-A`2A	114-GA-A`2A-8.0-8.5	JB74425R	JB74425-1R	8.0 - 8.5	08/19/2014	Yes	0.52	J
A'2A	P4-GA-A`2A	114-GA-A`2A-9.0-9.5	JB74425R	JB74425-8R	9.0 - 9.5	08/19/2014	Yes	3.2	J
A'2A	P4-GA-A`2A	114-GA-A`2A-9.5-10.0	JB74425R	JB74425-9R	9.5 - 10.0	08/19/2014	Yes	2.6	J
A'2A	P4-GA-A`2A	114-GA-A`2A-10.5-11.0	JB74425R	JB74425-2R	10.5 - 11.0	08/19/2014	Yes	0.85	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A2B	114CC-A2B-SW	114-A2B-0.5-1.0-SW	JB11561R	JB11561-3R	0.5 - 1.0	07/18/2012	Yes	**55.3**	**J**
A2B	114CC-A2B-SW	114-A2B-2.5-3.0-SW	JB11561R	JB11561-4R	2.5 - 3.0	07/18/2012	Yes	7.5	J
A2B	114CC-A2B-SW	114-A2B-4.5-5.0-SW	JB11561R	JB11561-5R	4.5 - 5.0	07/18/2012	Yes	**41.3**	**J**
A2B	114CC-A2B-PB	114-A2B-6.0-6.5-PB	JB11561	JB11561-2	6.0 - 6.5	07/18/2012	Yes	**504**	**J**
A2B	P4-GA-A2B	114-GA-A2B-6.0-6.5	JB74564	JB74564-16	6.0 - 6.5	08/20/2014	Yes	1.1	J
A2B	P4-GA-A2B	114-GA-A2B-8.0-8.5	JB74564	JB74564-17	8.0 - 8.5	08/20/2014	Yes	8.0	J
A2B	114-A2B	114-A2B-15B	JA64837	JA64837-2	10.2 - 10.7	12/21/2010	Yes	< 0.32	UJ
A2B	P4-GA-A2B	114-GA-A2B-10.0-10.5	JB74564	JB74564-18	10.0 - 10.5	08/20/2014	Yes	0.19	J
A2B	P4-GA-A2B	114-GA-A2B-11.5-12.0	JB74833	JB74833-15	11.5 - 12.0	08/22/2014	Yes	0.93	
A2B	P4-GA-A2B	114-GA-A2B-12.0-12.5	JB74564	JB74564-19	12.0 - 12.5	08/20/2014	Yes	**23.3**	**J**
A2B	P4-GA-A2B	114-GA-A2B-14.0-14.5	JB74564	JB74564-20	14.0 - 14.5	08/20/2014	Yes	10.9	J
A2B	P4-GA-A2B	114-GA-A2B-14.0-14.5x	JB74564	JB74564-23	14.0 - 14.5	08/20/2014	Yes	**21.2**	**J**
A2B	114-A2B-WS	114-A2B-WS-15.3-15.8	JC42624R	JC42624-6R	15.3 - 15.8	5/4/2017	Yes	1.3	
A2B	P4-GA-A2B	114-GA-A2B-16.0-16.5	JB74564	JB74564-21	16.0 - 16.5	08/20/2014	Yes	0.25	J
A2B	114-A2B-WS	114-A2B-WS-17.3-17.8	JC42624	JC42624-7	17.3 - 17.8	5/4/2017	Yes	2.9	J
A2B	P4-GA-A2B	114-GA-A2B-18.0-18.5	JB74564	JB74564-22	18.0 - 18.5	08/20/2014	Yes	< 0.18	UJ
A2B	114-A2B-WS	114-A2B-WS-19.3-19.8	JC42624R	JC42624-8R	19.3 - 19.8	5/4/2017	Yes	**95.3**	
A2B	114-A2B-WS	114-A2B-WS-19.3-19.8X	JC42624R	JC42624-9R	19.3 - 19.8	5/4/2017	Yes	**82.8**	
A2B	GAR-PDI-A2B	GAR-PDI-A2B-20.0-20.5	JC32218R	JC32218-10R	20.0 - 20.5	11/22/2016	Yes		R
A2B	114-A2B-WS	114-A2B-WS-21.3-21.8	JC42624R	JC42624-10R	21.3 - 21.8	5/4/2017	Yes	16.7	
A2B	114-A2B-WS	114-A2B-WS-23.3-23.8	JC42624R	JC42624-11R	23.3 - 23.8	5/4/2017	Yes	2.4	
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-1.5-2.0	JC30780	JC30780-13	1.5 - 2.0	10/30/2016	Yes	< 0.32	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-3.5-4.0	JC30780U	JC30780-20U	3.5 - 4.0	10/30/2016	Yes	0.36	J
A'2B	GD	GD4-4.5	R2420565	712776	4.0 - 4.5	03/16/2004	Yes	< 5.6	UJ
A'2B	GD	GD4-4.5D	R2420565	712777	4.0 - 4.5	03/16/2004	Yes	< 5.06	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-5.5-6.0	JC30780	JC30780-21	5.5 - 6.0	10/30/2016	Yes	1.6	J
A'2B	GD	GD5.9-6.4	R2420565	712778	5.9 - 6.4	03/16/2004	Yes	< 5.47	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-7.5-8.0	JC30780	JC30780-22	7.5 - 8.0	10/30/2016	Yes	0.40	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-8.0-8.5	JC30780	JC30780-23	8.0 - 8.5	10/30/2016	Yes	2.5	J
A'2B	GD	GD8-8.5	R2420565	712779	8.0 - 8.5	03/16/2004	Yes	< 4.66	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-9.5-10.0	JC30780	JC30780-24	9.5 - 10.0	10/30/2016	Yes	0.98	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-11.5-12.0	JC30780	JC30780-14	11.5 - 12.0	10/30/2016	Yes	< 0.34	UJ
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-13.5-14.0	JC30780	JC30780-15	13.5 - 14.0	10/30/2016	Yes	0.74	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-15.5-16.0	JC30780	JC30780-16	15.5 - 16.0	10/30/2016	Yes	1.2	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-17.5-18.0	JC30780	JC30780-17	17.5 - 18.0	10/30/2016	Yes	0.54	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-19.5-20.0	JC30780	JC30780-18	19.5 - 20.0	10/30/2016	Yes	0.40	J
A'2B	GAR-PDI-A'2B	GAR-PDI-A'2B-20.0-20.5	JC30780	JC30780-19	20.0 - 20.5	10/30/2016	Yes	0.39	J
A3A	X2	114-X2A-0-0.5	J11594A	J11594-7A	0.0 - 0.5	10/04/2005	Yes	4.3	J
A3A	X2	114-X2B-2-2.7	J11594A	J11594-8A	2.0 - 2.7	10/04/2005	Yes	11.8	J
A3A	X2	114-X2BD-2-2.7	J11594A	J11594-9A	2.0 - 2.7	10/04/2005	Yes	13.0	J
A3A	X2	114-X2C-4-4.5	J11594A	J11594-10A	4.0 - 4.5	10/04/2005	Yes	6.9	J
A3A	114-A3A	114-A3A-6.5-7.0	JB2573	JB2573-18	6.5 - 7.0	03/26/2012	Yes	19.0	J
A3A	114-A3A	114-A3A-8.5-9.0	JB2573	JB2573-19	8.5 - 9.0	03/26/2012	Yes	0.85	J
A3A	GAR-PDI-A3A	GAR-PDI-A3A-7.5-8.0	JC31963	JC31963-25	7.5 - 8.0	11/17/2016	Yes	0.47	J
A3A	GAR-PDI-A3A	GAR-PDI-A3A-8.0-8.5	JC31963	JC31963-26	8.0 - 8.5	11/17/2016	Yes	< 0.35	U
A3A	GAR-PDI-A3A	GAR-PDI-A3A-8.0-8.5X	JC31963	JC31963-27	8.0 - 8.5	11/17/2016	Yes	0.79	
A3A	X2	114-X2D-8-8.4	J11594A	J11594-11A	8.0 - 8.5	10/04/2005	Yes	< 1.3	UJ
A3A	GAR-PDI-A3A	GAR-PDI-A3A-10.0-10.5	JC31963	JC31963-19	10.0 - 10.5	11/17/2016	Yes	0.38	J
A3A	GAR-PDI-A3A	GAR-PDI-A3A-11.0-11.5	JC31963	JC31963-20	11.0 - 11.5	11/17/2016	Yes	1.2	
A3A	114-A3A	114-A3A-12.5-13.0	JB2573TU	JB2573-16TU	12.5 - 13.0	03/26/2012	Yes	1.0	J
A3A	X2	114-X2E-13.6-14.1	J11594A	J11594-12A	13.6 - 14.1	10/04/2005	Yes	< 1.2	UJ
A3A	GAR-PDI-A3A	GAR-PDI-A3A-15.0-15.5	JC31963	JC31963-21	15.0 - 15.5	11/17/2016	Yes	0.43	J
A3A	GAR-PDI-A3A	GAR-PDI-A3A-16.0-16.5	JC31963	JC31963-22	16.0 - 16.5	11/17/2016	Yes	0.87	
A3A	GAR-PDI-A3A	GAR-PDI-A3A-18.0-18.5	JC31963	JC31963-23	18.0 - 18.5	11/17/2016	Yes	0.56	
A3A	GAR-PDI-A3A	GAR-PDI-A3A-20.0-20.5	JC31963	JC31963-24	20.0 - 20.5	11/17/2016	Yes	1.0	

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
A'3A	114CC-A`3A-SW	114-A'3A-0.5-1.0-SW	JB10309	JB10309-1	0.5 - 1.0	07/02/2012	Yes	13.7	J
A'3A	114CC-A`3A-SW	114-A'3A-2.5-3.0-SW	JB10309	JB10309-5	2.5 - 3.0	07/02/2012	Yes	**39.6**	**J**
A'3A	114CC-A`3A-SW	114-A'3A-4.5-5.0-SW	JB10309	JB10309-2	4.5 - 5.0	07/02/2012	Yes	8.2	J
A'3A	114CC-A`3A-PB	114-A'3A-6.0-6.5-PB	JB10309	JB10309-3	6.0 - 6.5	07/02/2012	Yes	< 0.25	UJ
A'3A	P4-GA-A`3A	114-GA-A`3A-5.5-6.0	JB74425	JB74425-12	5.5 - 6.0	08/19/2014	Yes	1.1	J
A'3A	P4-GA-A`3A	114-GA-A`3A-5.5-6.0X	JB74425R	JB74425-13R	5.5 - 6.0	08/19/2014	Yes	0.61	J
A'3A	P4-GA-A`3A	114-GA-A`3A-6.5-7.0	JB74425R	JB74425-14R	6.5 - 7.0	08/19/2014	Yes	1.9	J
A'3A	P4-GA-A`3A	114-GA-A`3A-7.0-7.5	JB74425R	JB74425-15R	7.0 - 7.5	08/19/2014	Yes	6.6	J
A'3A	P4-GA-A`3A	114-GA-A`3A-7.5-8.0	JB74425R	JB74425-16R	7.5 - 8.0	08/19/2014	Yes	1.2	J
A3B	MW2A	MW2A1-3	R2319155	689073	1.0 - 3.0	11/14/2003	Yes	< 5.01	UJ
A3B	P4-GA-A3B	114-GA-A3B-0.0-0.5	JB74714	JB74714-2	0.0 - 0.5	08/21/2014	Yes	0.38	J
A3B	114CC-A3B-SW	114-A3B-1.1-1.6-SW	JB11620R	JB11620-5R	1.1 - 1.6	07/19/2012	Yes	16.7	J
A3B	114CC-A3B-SW	114-A3B-2.5-3.0-SW	JB11620	JB11620-1	2.5 - 3.0	07/19/2012	Yes	**44.4**	**J**
A3B	114CC-A3B-SW	114-A3B-4.5-5.0-SW	JB11620R	JB11620-2R	4.5 - 5.0	07/19/2012	Yes	0.18	J
A3B	114CC-A3B-PB	114-A3B-6.0-6.5-PB	JB11620	JB11620-3	6.0 - 6.5	07/19/2012	Yes	< 0.15	UJ
A3B	MW2A	MW2A7-9	R2319155	689074	7.0 - 9.0	11/14/2003	Yes	**292**	**J**
A3B	GAR-PDI-A3B	GAR-PDI-A3B-7.0-7.5	JC32218R	JC32218-12R	7.0 - 7.5	11/22/2016	Yes		R
A3B	P4-GA-A3B	114-GA-A3B-6.0-6.5	JB74714	JB74714-4	6.0 - 6.5	08/21/2014	Yes	0.25	J
A3B	GAR-PDI-A3B	GAR-PDI-A3B-7.5-8.0	JC32218	JC32218-13	7.5 - 8.0	11/22/2016	Yes		R
A3B	GAR-PDI-A3B	GAR-PDI-A3B-8.0-8.5	JC32218R	JC32218-14R	8.0 - 8.5	11/22/2016	Yes		R
A3B	GAR-PDI-A3B	GAR-PDI-A3B-8.5-9.0	JC32218R	JC32218-15R	8.5 - 9.0	11/22/2016	Yes		R
A3B	P4-GA-A3B	114-GA-A3B-8.0-8.5	JB74714	JB74714-3	8.0 - 8.5	08/21/2014	Yes	0.38	J
A3B	P4-GA-A3B	114-GA-A3B-8.0-8.5X	JB74714	JB74714-6	8.0 - 8.5	08/21/2014	Yes	0.75	
A3B	114-A3B	114-A3B-15.5B	JA64272	JA64272-1	10.2 - 10.7	12/15/2010	Yes	< 0.35	UJ
A3B	P4-GA-A3B	114-GA-A3B-8.5-9.0	JB74714	JB74714-5	8.5 - 9.0	08/21/2014	Yes	0.69	
A3B	P4-GA-A3B	114-GA-A3B-10.5-11.0	JB74714	JB74714-7	10.5 - 11.0	08/21/2014	Yes	0.57	
A3B	P4-GA-A3B	114-GA-A3B-12.5-13.0	JB74714	JB74714-8	12.5 - 13.0	08/21/2014	Yes	1.2	
A3B	P4-GA-A3B	114-GA-A3B-14.5-15.0	JB74714	JB74714-9	14.5 - 15.0	08/21/2014	Yes	1.2	
A3B	114-A3B-WS	114-A3B-WS-15.5-16.0	JC42498	JC42498-1	15.5 - 16.0	5/3/2017	Yes	1.6	
A3B	P4-GA-A3B	114-GA-A3B-16.5-17.0	JB74714	JB74714-10	16.5 - 17.0	08/21/2014	Yes	0.55	
A3B	114-A3B-WS	114-A3B-WS-17.5-18.0	JC42498	JC42498-2	17.5 - 18.0	5/3/2017	Yes	1.1	
A3B	P4-GA-A3B	114-GA-A3B-18.5-19.0	JB74714	JB74714-11	18.5 - 19.0	08/21/2014	Yes	0.69	
A3B	114-A3B-WS	114-A3B-WS-19.5-20.0	JC42498	JC42498-3	19.5 - 20.0	5/3/2017	Yes	0.50	
A3B	GAR-PDI-A3B	GAR-PDI-A3B-20.0-20.5	JC32218R	JC32218-11R	20.0 - 20.5	11/22/2016	Yes		R
A3B	114-A3B-WS	114-A3B-WS-21.5-22.0	JC42498	JC42498-4	21.5 - 22.0	5/3/2017	Yes	< 0.41	U
A3B	114-A3B-WS	114-A3B-WS-23.5-24.0	JC42498	JC42498-5	23.5 - 24.0	5/3/2017	Yes	0.75	
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-1.0-1.5	JC30310	JC30310-2	1.0 - 1.5	10/23/2016	Yes	3.6	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-3.0-3.5	JC30310	JC30310-9	3.0 - 3.5	10/23/2016	Yes	< 0.33	UJ
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-5.0-5.5	JC30310	JC30310-10	5.0 - 5.5	10/23/2016	Yes	0.48	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-6.0-6.5	JC30780	JC30780-25	6.0 - 6.5	10/30/2016	Yes	2.6	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-6.5-7.0	JC30780	JC30780-26	6.5 - 7.0	10/30/2016	Yes	1.7	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-7.0-7.5	JC30310	JC30310-11	7.0 - 7.5	10/23/2016	Yes	0.84	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-9.0-9.5	JC30310	JC30310-12	9.0 - 9.5	10/23/2016	Yes	0.80	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-11.0-11.5	JC30310	JC30310-3	11.0 - 11.5	10/23/2016	Yes	0.57	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-13.0-13.5	JC30310	JC30310-4	13.0 - 13.5	10/23/2016	Yes	< 0.31	UJ
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-15.0-15.5	JC30310	JC30310-5	15.0 - 15.5	10/23/2016	Yes	0.57	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-17.0-17.5	JC30310	JC30310-6	17.0 - 17.5	10/23/2016	Yes	0.45	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-19.0-19.5	JC30310	JC30310-7	19.0 - 19.5	10/23/2016	Yes	0.49	J
A'3B	GAR-PDI-A'3B	GAR-PDI-A'3B-20.0-20.5	JC30310	JC30310-8	20.0 - 20.5	10/23/2016	Yes	0.42	J
A4A	114-A4A	114-A4A-6.5-7.0	JB2573R	JB2573-1R	6.5 - 7.0	03/26/2012	Yes	< 0.30	UJ
A4A	114-SW-A4A	114-A4A-9.6-10.1	JB23239	JB23239-2	9.6 - 10.1	12/07/2012	Yes	5.8	J
A4A	114-A4A	114-A4A-10.5-11.0	JB2573R	JB2573-2R	10.5 - 11.0	03/26/2012	Yes	< 0.24	UJ
A4A	114-SW-A4A	114-A4A-13.0-13.5	JB24085R	JB24085-1R	13.0 - 13.5	12/17/2012	Yes	1.7	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A'4A	114CC-A`4A-SW	114-A'4A-0.5-1.0-SW	JB10037	JB10037-3	0.5 - 1.0	06/28/2012	Yes	**1260**	**J**
A'4A	GAR-PDI-B'4A	GAR-PDI-B'4A-3.0-3.5	JC35045	JC35045-1	3.0 - 3.5	01/08/2017	Yes	0.43	
A'4A	114CC-A`4A-SW	114-A'4A-2.5-3.0-SW	JB10037R	JB10037-4R	2.5 - 3.0	06/28/2012	Yes	**21.5**	**J**
A'4A	GAR-PDI-B'4A	GAR-PDI-B'4A-5.0-5.5	JC35045	JC35045-2	5.0 - 5.5	01/08/2017	Yes	2.2	
A'4A	114CC-A`4A-SW	114-A'4A-4.5-5.0-SW	JB10037R	JB10037-5R	4.5 - 5.0	06/28/2012	Yes	13.7	J
A'4A	114CC-A`4A-PB	114-A'4A-6.0-6.5-PB	JB10037R	JB10037-2R	6.0 - 6.5	06/28/2012	Yes	< 0.29	UJ
A'4A	GAR-PDI-B'4A	GAR-PDI-B'4A-7.0-7.5	JC35045	JC35045-3	7.0 - 7.5	01/08/2017	Yes	2.2	
A'4A	P4-GA-A`4A	114-GA-A`4A-6.0-6.5	JB74425R	JB74425-23R	6.0 - 6.5	08/19/2014	Yes	0.45	J
A'4A	P4-GA-A`4A	114-GA-A`4A-8.0-8.5	JB74425R	JB74425-22R	8.0 - 8.5	08/19/2014	Yes	1.8	J
A'4A	P4-GA-A`4A	114-GA-A`4A-10.0-10.5	JB74425	JB74425-24	10.0 - 10.5	08/19/2014	Yes	0.36	J
A'4A	P4-GA-A`4A	114-GA-A`4A-12.0-12.5	JB74425	JB74425-25	12.0 - 12.5	08/19/2014	Yes	0.79	J
A'4A	P4-GA-A`4A	114-A`4A-12.5-13.0	JB74714	JB74714-1	12.5 - 13.0	08/21/2014	Yes	0.84	
A'4A	P4-GA-A`4A	114-GA-A`4A-14.0-14.5	JB74425	JB74425-26	14.0 - 14.5	08/19/2014	Yes	0.80	J
A'4A	P4-GA-A`4A	114-GA-A`4A-16.0-16.5	JB74425R	JB74425-27R	16.0 - 16.5	08/19/2014	Yes	8.0	J
A'4A	P4-GA-A`4A	114-GA-A`4A-18.0-18.5	JB74425R	JB74425-28R	18.0 - 18.5	08/19/2014	Yes	**92.0**	**J**
A'4A	P4-GA-A`4A	114-GA-A`4A-20.0-20.5	JB74425	JB74425-29	20.0 - 20.5	08/19/2014	Yes	**54.3**	**J**
A4B	BC8	BC8S0.5-1	R2318284	669416	0.5 - 1.0	09/03/2003	Yes	**27**	**J**
A4B	BC8	BC8S1-1.5	R2318284	669421	1.0 - 1.5	09/03/2003	Yes	**78.5**	**J**
A4B	BC8	BC8S1.5-2	R2318284	669419	1.5 - 2.0	09/03/2003	Yes	**144**	**J**
A4B	114CC-A4B-SW	114-A4B-1.2-1.7-SW	JB11886	JB11886-3	1.2 - 1.7	07/23/2012	Yes	**188**	**J**
A4B	114CC-A4B-SW	114-A4B-2.5-3.0-SW	JB11886	JB11886-2	2.5 - 3.0	07/23/2012	Yes	0.28	J
A4B	114CC-A4B-SW	114-A4B-4.5-5.0-SW	JB11886	JB11886-4	4.5 - 5.0	07/23/2012	Yes	0.54	J
A4B	114CC-A4B-PB	114-A4B-6.0-6.5-PB	JB11886	JB11886-5	6.0 - 6.5	07/23/2012	Yes	**24.0**	**J**
A4B	BC8	BC8DS7-7.5	R2318284	669433	7.0 - 7.5	09/03/2003	Yes	< 6.13	U
A4B	BC8	BC8S7-7.5	R2318284	669432	7.0 - 7.5	09/03/2003	Yes	< 6.02	U
A4B	GAR-PDI-A4B	GAR-PDI-A4B-8.0-8.5	JC32403	JC32403-8	8.0 - 8.5	11/28/2016	Yes	< 0.31	U
A4B	GAR-PDI-A4B	GAR-PDI-A4B-8.5-9.0	JC32403	JC32403-9	8.5 - 9.0	11/28/2016	Yes	0.42	J
A4B	BC8	BC8DS9-9.5	R2318284	669429	9.0 - 9.5	09/03/2003	Yes	< 5.47	U
A4B	BC8	BC8S9-9.5	R2318284	669423	9.0 - 9.5	09/03/2003	Yes	< 5.59	U
A4B	114-A4B	114-A4B-16	JA55935	JA55935-2R	11.2 - 11.7	09/09/2010	Yes	1.5	J
A4B	GAR-PDI-A4B	GAR-PDI-A4B-11.0-11.5	JC32403	JC32403-1	11.0 - 11.5	11/28/2016	Yes	0.41	J
A4B	GAR-PDI-A4B	GAR-PDI-A4B-11.0-11.5X	JC32403	JC32403-2	11.0 - 11.5	11/28/2016	Yes	< 0.35	U
A4B	MW2AV	114-MW2A-VA 12-12.5	J11857	J11857-14	12.0 - 12.5	10/06/2005	Yes	< 1.2	U
A4B	GAR-PDI-A4B	GAR-PDI-A4B-13.0-13.5	JC32403	JC32403-3	13.0 - 13.5	11/28/2016	Yes	0.44	J
A4B	GAR-PDI-A4B	GAR-PDI-A4B-14.0-14.5	JC32403	JC32403-4	14.0 - 14.5	11/28/2016	Yes	0.99	
A4B	GAR-PDI-A4B	GAR-PDI-A4B-16.0-16.5	JC32403	JC32403-5	16.0 - 16.5	11/28/2016	Yes	0.75	
A4B	114-A4B-WS	114-A4B-WS-16.5-17.0	JC42498	JC42498-6	16.5 - 17.0	5/3/2017	Yes	0.64	
A4B	GAR-PDI-A4B	GAR-PDI-A4B-18.0-18.5	JC32403	JC32403-6	18.0 - 18.5	11/28/2016	Yes	0.61	
A4B	114-A4B-WS	114-A4B-WS-18.5-19.0	JC42498	JC42498-7	18.5 - 19.0	5/3/2017	Yes	0.95	
A4B	114-A4B-WS	114-A4B-WS-18.5-19.0X	JC42498	JC42498-8	18.5 - 19.0	5/3/2017	Yes	1.1	
A4B	GAR-PDI-A4B	GAR-PDI-A4B-20.0-20.5	JC32403	JC32403-7	20.0 - 20.5	11/28/2016	Yes	1.4	
A4B	114-A4B-WS	114-A4B-WS-20.5-21.0	JC42498	JC42498-9	20.5 - 21.0	5/3/2017	Yes	2.3	
A4B	114-A4B-WS	114-A4B-WS-22.5-23.0	JC42498	JC42498-10	22.5 - 23.0	5/3/2017	Yes	< 0.42	U
A4B	MW2B	MW2B(25-27)	R2319208	691946	25.0 - 27.0	11/25/2003	Yes	< 4.58	UJ
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-1.0-1.5	JC30310	JC30310-13	1.0 - 1.5	10/23/2016	Yes	4.4	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-3.0-3.5	JC30310	JC30310-20	3.0 - 3.5	10/23/2016	Yes	< 0.31	UJ
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-3.0-3.5X	JC30310	JC30310-21	3.0 - 3.5	10/23/2016	Yes	< 0.31	UJ
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-5.0-5.5	JC30310	JC30310-22	5.0 - 5.5	10/23/2016	Yes	0.54	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-5.5-6.0	JC30780	JC30780-27	5.5 - 6.0	10/30/2016	Yes	1.3	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-6.0-6.5	JC30780	JC30780-28	6.0 - 6.5	10/30/2016	Yes	1.7	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-7.0-7.5	JC30310	JC30310-23	7.0 - 7.5	10/23/2016	Yes	1.3	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-9.0-9.5	JC30310	JC30310-24	9.0 - 9.5	10/23/2016	Yes	0.69	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-11.0-11.5	JC30310	JC30310-14	11.0 - 11.5	10/23/2016	Yes	0.76	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-13.0-13.5	JC30310	JC30310-15	13.0 - 13.5	10/23/2016	Yes	0.94	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-15.0-15.5	JC30310	JC30310-16	15.0 - 15.5	10/23/2016	Yes	0.35	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-17.0-17.5	JC30310	JC30310-17	17.0 - 17.5	10/23/2016	Yes	< 0.32	UJ
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-19.0-19.5	JC30310	JC30310-18	19.0 - 19.5	10/23/2016	Yes	7.1	J
A'4B	GAR-PDI-A'4B	GAR-PDI-A'4B-20.0-20.5	JC30310	JC30310-19	20.0 - 20.5	10/23/2016	Yes	7.1	J
A5A	114-RD2-A5A	114-RD2-A5A-8.5-9.0	JB21023	JB21023-6	8.5 - 9.0	11/12/2012	Yes	0.43	RA
A5A	114-RD2-A5A	114-RD2-A5A-10.5-11.0	JB21023R	JB21023-7R	10.5 - 11.0	11/12/2012	Yes	1.9	RA
A5A	114-RD2-A5A	114-RD2-A5A-10.5-11.0X	JB21023	JB21023-8	10.5 - 11.0	11/12/2012	Yes	1.7	RA
A5A	114-A5A	114-A5A-12.5-13.0	JB2482R	JB2482-1R	12.5 - 13.0	03/23/2012	Yes	0.45	RA
A5A	114-A5A	114-A5A-14.5-15.0	JB2482R	JB2482-2R	14.5 - 15.0	03/23/2012	Yes	< 0.26	RA

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A'5A	114CC-A`5A-SW	114-A'5A-0.5-1.0-SW	JB9928R	JB9928-1R	0.5 - 1.0	06/27/2012	Yes	**96.6**	**J**
A'5A	114CC-A`5A-SW	114-A'5A-2.5-3.0-SW	JB9928R	JB9928-2R	2.5 - 3.0	06/27/2012	Yes	**42.3**	**J**
A'5A	114CC-A`5A-SW	114-A'5A-4.5-5.0-SW	JB9928	JB9928-5	4.5 - 5.0	06/27/2012	Yes	**47.4**	**J**
A'5A	114CC-A`5A-PB	114-A'5A-6.0-6.5-PB	JB9928	JB9928-3	6.0 - 6.5	06/27/2012	Yes	0.27	J
A'5A	114SWE-A`5A	114-A'5A-6.5-7.0	JB14196R	JB14196-1R	6.5 - 7.0	08/20/2012	Yes	0.21	J
A'5A	114-GA-A`5A	114-GA-A`5A-6.0-6.5	JB74337	JB74337-4	6.0 - 6.5	08/18/2014	Yes	0.92	J
A'5A	114-GA-A`5A	114-GA-A`5A-8.0-8.5	JB74337	JB74337-5	8.0 - 8.5	08/18/2014	Yes	0.59	J
A'5A	114-GA-A`5A	114-GA-A`5A-8.0-8.5X	JB74337R	JB74337-12R	8.0 - 8.5	08/18/2014	Yes	1.1	J
A'5A	114-GA-A`5A	114-GA-A`5A-8.5-9.0	JB74337	JB74337-13	8.5 - 9.0	08/18/2014	Yes	1.7	J
A'5A	114-GA-A`5A	114-GA-A`5A-9.0-9.5	JB74337R	JB74337-28R	9.0 - 9.5	08/18/2014	Yes	0.85	J
A5B	114CC-A5B-SW	114-A5B-1.0-1.5-SW	JB11964R	JB11964-3R	1.0 - 1.5	07/24/2012	Yes	**169**	**J**
A5B	P4-GA-A5B	114-GA-A5B-0.0-0.5	JB74714	JB74714-12	0.0 - 0.5	08/21/2014	Yes	0.43	J
A5B	114CC-A5B-SW	114-A5B-2.5-3.0-SW	JB11964	JB11964-2	2.5 - 3.0	07/24/2012	Yes	**91.4**	**J**
A5B	114CC-A5B-SW	114-A5B-4.5-5.0-SW	JB11964	JB11964-4	4.5 - 5.0	07/24/2012	Yes	1.2	J
A5B	114CC-A5B-PB	114-A5B-6.0-6.5-PB	JB11964R	JB11964-5R	6.0 - 6.5	07/24/2012	Yes	**864**	**J**
A5B	P4-GA-A5B	114-GA-A5B-5.5-6.0	JB74714	JB74714-13	5.5 - 6.0	08/21/2014	Yes	**143**	**J**
A5B	P4-GA-A5B	114-GA-A5B-7.5-8.0	JB74714	JB74714-14	5.5 - 6.0	08/21/2014	Yes	**120**	**J**
A5B	P4-GA-A5B	114-GA-A5B-9.5-10.0	JB74714	JB74714-15	9.5 - 10.0	08/21/2014	Yes	**21.4**	**J**
A5B	P4-GA-A5B	114-GA-A5B-10.5-11.0	JB74714	JB74714-16	10.5 - 11.0	08/21/2014	Yes	**99.8**	**J**
A5B	P4-GA-A5B	114-GA-A5B-11.0-11.5	JB74714	JB74714-17	11.0 - 11.5	08/21/2014	Yes	**78.9**	**J**
A5B	P4-GA-A5B	114-GA-A5B-13.0-13.5	JB74714	JB74714-18	13.0 - 13.5	08/21/2014	Yes	**82.4**	**J**
A5B	P4-GA-A5B	114-GA-A5B-15.0-15.5	JB74714	JB74714-19	15.0 - 15.5	08/21/2014	Yes	**140**	**J**
A5B	114-A5B-WS	114-A5B-WS-15.0-15.5	JC42498	JC42498-11	15.0 - 15.5	5/3/2017	Yes	< 0.44	U
A5B	GAR-PDI-A5B	GAR-PDI-A5B-18.0-18.5	JC32403	JC32403-10	18.0 - 18.5	11/28/2016	Yes	5.4	
A5B	P4-GA-A5B	114-GA-A5B-17.0-17.5	JB74714	JB74714-20	17.0 - 17.5	08/21/2014	Yes	0.69	J
A5B	114-A5B-WS	114-A5B-WS-17.0-17.5	JC42498	JC42498-12	17.0 - 17.5	5/3/2017	Yes	**76.7**	
A5B	GAR-PDI-A5B	GAR-PDI-A5B-20.0-20.5	JC32403	JC32403-11	20.0 - 20.5	11/28/2016	Yes	2.6	
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-1.5-2.0	JC30310	JC30310-25	1.5 - 2.0	10/23/2016	Yes	1.3	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-3.5-4.0	JC30310	JC30310-32	3.5 - 4.0	10/23/2016	Yes	**50.9**	**J**
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-5.0-5.5	JC30780	JC30780-29	5.0 - 5.5	10/30/2016	Yes	12.8	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-5.5-6.0	JC30310	JC30310-33	5.5 - 6.0	10/23/2016	Yes	3.3	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-7.5-8.0	JC30310	JC30310-34	7.5 - 8.0	10/23/2016	Yes	0.47	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-9.5-10.0	JC30310	JC30310-35	9.5 - 10.0	10/23/2016	Yes	0.99	
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-11.5-12.0	JC30310	JC30310-26	11.5 - 12.0	10/23/2016	Yes	8.4	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-13.5-14.0	JC30310	JC30310-27	13.5 - 14.0	10/23/2016	Yes	6.9	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-15.5-16.0	JC30310	JC30310-28	15.5 - 16.0	10/23/2016	Yes	9.4	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-17.5-18.0	JC30310	JC30310-29	17.5 - 18.0	10/23/2016	Yes	6.3	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-19.5-20.0	JC30310	JC30310-30	19.5 - 20.0	10/23/2016	Yes	10.3	J
A'5B	GAR-PDI-A'5B	GAR-PDI-A'5B-20.0-20.5	JC30310	JC30310-31	20.0 - 20.5	10/23/2016	Yes	0.51	J
A'6A	114CC-A`6A-SW	114-A'6A-0.5-1.0-SW	JB9718	JB9718-5	0.5 - 1.0	06/25/2012	Yes	**138**	**J**
A'6A	EF-45	EF-B45-1.5	460259551	460-25955-13	1.5 - 2.0	04/29/2011	Yes	0.85	J
A'6A	114CC-A`6A-SW	114-A'6A-2.5-3.0-SW	JB9718	JB9718-2	2.5 - 3.0	06/25/2012	Yes	< 0.24	UJ
A'6A	114CC-A`6A-SW	114-A'6A-4.5-5.0-SW	JB9718	JB9718-1	4.5 - 5.0	06/25/2012	Yes	< 0.31	UJ
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-6.0-6.5	JC31963	JC31963-6	6.0 - 6.5	11/17/2016	Yes	< 0.34	UJ
A'6A	114CC-A`6A-PB	114-A'6A-6.0-6.5-PB	JB9718	JB9718-3	6.0 - 6.5	06/25/2012	Yes	< 0.25	UJ
A'6A	114SWE-A`6A	114-A'6A-6.5-7.0	JB12602R	JB12602-1AR	6.5 - 7.0	07/31/2012	Yes	7.8	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-6.5-7.0	JC31963R	JC31963-7R	6.5 - 7.0	11/17/2016	Yes	1.1	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-8.0-8.5	JC31963R	JC31963-8R	8.0 - 8.5	11/17/2016	Yes	0.98	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-10.0-10.5	JC31963R	JC31963-2R	10.0 - 10.5	11/17/2016	Yes	0.77	J
A'6A	114-SW-A`6A	114-A'6A-12.0-12.5	JB24205	JB24205-1	12.0 - 12.5	12/18/2012	Yes	2.8	J
A'6A	114-SW-A`6A	114-A'6A-12.0-12.5X	JB24205	JB24205-2	12.0 - 12.5	12/18/2012	Yes	5.2	J
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-14.0-14.5	JC31963R	JC31963-3R	14.0 - 14.5	11/17/2016	Yes	18.8	
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-16.0-16.5	JC31963	JC31963-4	16.0 - 16.5	11/17/2016	Yes	8.7	
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-18.0-18.5	JC31963	JC31963-5	18.0 - 18.5	11/17/2016	Yes	9.3	
A'6A	GAR-PDI-A'6A	GAR-PDI-A'6A-20.0-20.5	JC31963	JC31963-28	20.0 - 20.5	11/17/2016	Yes	12.7	

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A6B	114CC-A6B-SW	114-A6B-0.5-1.0-SW	JB12208	JB12208-3	0.5 - 1.0	07/26/2012	Yes	**49.3**	**J**
A6B	114CC-A6B-SW	114-A6B-2.5-3.0-SW	JB12208	JB12208-4	2.5 - 3.0	07/26/2012	Yes	**75.6**	**J**
A6B	114CC-A6B-SW	114-A6B-2.5-3.0-SWX	JB12208	JB12208-5	2.5 - 3.0	07/26/2012	Yes	**59.4**	**J**
A6B	114CC-A6B-SW	114-A6B-4.5-5.0-SW	JB12208	JB12208-6	4.5 - 5.0	07/26/2012	Yes	**101**	**J**
A6B	114CC-A6B-PB	114-A6B-6.0-6.5-PB	JB12208	JB12208-2	6.0 - 6.5	07/26/2012	Yes	**374**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-7.5-8.0	JC32469	JC32469-8	7.5 - 8.0	11/29/2016	Yes	**209**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-7.5-8.0X	JC32469	JC32469-9	7.5 - 8.0	11/29/2016	Yes	**168**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-8.0-8.5	JC32469	JC32469-10	8.0 - 8.5	11/29/2016	Yes	**154**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-10.0-10.5	JC32469	JC32469-2	10.0 - 10.5	11/29/2016	Yes	**131**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-12.0-12.5	JC32469	JC32469-3	12.0 - 12.5	11/29/2016	Yes	**114**	**J**
A6B	114-A6B-WS	114-A6B-WS-13.0-13.5	JC42387	JC42387-1	13.0 - 13.5	5/2/2017	Yes	**446**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-14.0-14.5	JC32469	JC32469-4	14.0 - 14.5	11/29/2016	Yes	**153**	**J**
A6B	114-A6B-WS	114-A6B-WS-15.0-15.5	JC42387	JC42387-2	15.0 - 15.5	5/2/2017	Yes	**159**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-16.0-16.5	JC32469	JC32469-5	16.0 - 16.5	11/29/2016	Yes	**101**	**J**
A6B	114-A6B-WS	114-A6B-WS-17.0-17.5	JC42387	JC42387-3	17.0 - 17.5	5/2/2017	Yes	**268**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-18.0-18.5	JC32469	JC32469-6	18.0 - 18.5	11/29/2016	Yes	**110**	**J**
A6B	114-A6B-WS	114-A6B-WS-19.0-19.5	JC42387	JC42387-4	19.0 - 19.5	5/2/2017	Yes	**248**	**J**
A6B	GAR-PDI-A6B	GAR-PDI-A6B-20.0-20.5	JC32469R	JC32469-7R	20.0 - 20.5	11/29/2016	Yes	**36.9**	**J**
A6B	114-A6B-WS	114-A6B-WS-21.0-21.5	JC42387	JC42387-5	21.0 - 21.5	5/2/2017	Yes	**199**	**J**
A6B	114-A6B-WS	114-A6B-WS-23.0-23.5	JC42387	JC42387-6	23.0 - 23.5	5/2/2017	Yes	**57.2**	**J**
A6B	114-A6B-WS	114-A6B-WS-25.0-25.5	JC42387	JC42387-7	25.0 - 25.5	5/2/2017	Yes	**113**	**J**
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-1.5-2.0	JC30310	JC30310-36	1.5 - 2.0	10/23/2016	Yes	9.5	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-3.5-4.0	JC30310	JC30310-44	3.5 - 4.0	10/23/2016	Yes	3.8	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-5.0-5.5	JC30780T	JC30780-30T	5.0 - 5.5	10/30/2016	Yes	0.81	J
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-5.5-6.0	JC30310	JC30310-45	5.5 - 6.0	10/23/2016	Yes	1.0	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-7.5-8.0	JC30310	JC30310-46	7.5 - 8.0	10/23/2016	Yes	0.52	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-9.5-10.0	JC30310	JC30310-47	9.5 - 10.0	10/23/2016	Yes	**25.3**	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-11.5-12.0	JC30310	JC30310-37	11.5 - 12.0	10/23/2016	Yes	0.93	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-13.5-14.0	JC30310	JC30310-38	13.5 - 14.0	10/23/2016	Yes	0.41	J
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-13.5-14.0X	JC30310	JC30310-39	13.5 - 14.0	10/23/2016	Yes	0.55	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-15.5-16.0	JC30310	JC30310-40	15.5 - 16.0	10/23/2016	Yes	1.9	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-17.5-18.0	JC30310	JC30310-41	17.5 - 18.0	10/23/2016	Yes	1.4	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-19.5-20.0	JC30310	JC30310-42	19.5 - 20.0	10/23/2016	Yes	0.96	
A'6B	GAR-PDI-A'6B	GAR-PDI-A'6B-20.0-20.5	JC30310	JC30310-43	20.0 - 20.5	10/23/2016	Yes	0.56	
A'7A	A6	A6S0-.5	R2318257	668994	0.0 - 0.5	09/02/2003	Yes	**36.4**	**J**
A'7A	GB	GB0.4-0.9	R2420545	712573	0.4 - 0.9	03/15/2004	Yes	**20.6**	
A'7A	114CC-A`7A-SW	114-A'7A-0.5-1.0-SW	JB9609	JB9609-1	0.5 - 1.0	06/22/2012	Yes	0.24	J
A'7A	GB	GB1.5-2	R2420545	712574	1.5 - 2.0	03/15/2004	Yes	**48.4**	
A'7A	114CC-A`7A-SW	114-A'7A-2.5-3.0-SW	JB9609	JB9609-2	2.5 - 3.0	06/22/2012	Yes	0.27	J
A'7A	A6	A6S4-4.5	R2318257	668996	4.0 - 4.5	09/02/2003	Yes	< 4.67	UJ
A'7A	GB	GB4-4.5	R2420545	712575	4.0 - 4.5	03/15/2004	Yes	< 5.13	U
A'7A	114CC-A`7A-SW	114-A'7A-4.5-5.0-SW	JB9609R	JB9609-3R	4.5 - 5.0	06/22/2012	Yes	< 0.23	UJ
A'7A	114CC-A`7A-PB	114-A'7A-6.0-6.5-PB	JB9609R	JB9609-5R	6.0 - 6.5	06/22/2012	Yes	0.32	J
A'7A	114SWE-A`7A	114-A'7A-6.5-7.0	JB12661	JB12661-2	6.5 - 7.0	08/01/2012	Yes	< 0.19	UJ
A'7A	A6	A6S6.5-7	R2318257	668997	6.5 - 7.0	09/02/2003	Yes	< 4.65	UJ
A'7A	114-GA-A`7A	114-GA-A`7A-6.0-6.5	JB74337	JB74337-17	6.0 - 6.5	08/18/2014	Yes	0.31	J
A'7A	114SWE-A`7A	114-A'7A/A7A-8.5-9.0	JB12661	JB12661-3	8.5 - 9.0	08/01/2012	Yes	< 0.14	UJ
A'7A	A6	A6S8.5-9	R2318257	668998	8.5 - 9.0	09/02/2003	Yes	< 5.2	UJ
A'7A	114-GA-A`7A	114-GA-A`7A-8.0-8.5	JB74337	JB74337-18	8.0 - 8.5	08/18/2014	Yes	0.57	J
A'7A	114-GA-A`7A	114-GA-A`7A-8.5-9.0	JB74337	JB74337-19	8.5 - 9.0	08/18/2014	Yes	3.7	J
A'7A	114SWE-A`7A	114-A'7A/A7A-10.5-11.0	JB12661	JB12661-4	10.5 - 11.0	08/01/2012	Yes	< 0.15	UJ
A'7A	114SWE-A`7A	114-A'7A/A7A-10.5-11.0X	JB12661	JB12661-5	10.5 - 11.0	08/01/2012	Yes	< 0.14	UJ
A'7A	114-GA-A`7A	114-GA-A`7A-9.0-9.5	JB74337R	JB74337-20R	9.0 - 9.5	08/18/2014	Yes	0.80	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A7B	C9	C9S0.5-1	R2318284	669414	0.5 - 1.0	09/03/2003	Yes	**222**	**J**
A7B	114CC-A7B-SW	114-A7B-0.5-1.0-SW	JB12366R	JB12366-3R	0.5 - 1.0	07/27/2012	Yes	2.4	J
A7B	C9	C9S1.5-2	R2318284	669417	1.5 - 2.0	09/03/2003	Yes	**198**	**J**
A7B	C9	C9S2.5-3	R2318284	669415	2.5 - 3.0	09/03/2003	Yes	**367**	**J**
A7B	114CC-A7B-SW	114-A7B-2.5-3.0-SW	JB12366	JB12366-4	2.5 - 3.0	07/27/2012	Yes	**156**	**J**
A7B	114CC-A7B-SW	114-A7B-4.5-5.0-SW	JB12366	JB12366-2	4.5 - 5.0	07/27/2012	Yes	**92.7**	**J**
A7B	114CC-A7B-PB	114-A7B-6.0-6.5-PB	JB12366R	JB12366-5R	6.0 - 6.5	07/27/2012	Yes	**1530**	**J**
A7B	C9	C9S7-7.5	R2318284	669418	7.0 - 7.5	09/03/2003	Yes	**4840**	**J**
A7B	P4-GA-A7B	114-GA-A7B-5.5-6.0	JB74833	JB74833-1	5.5 - 6.0	08/22/2014	Yes	**868**	
A7B	P4-GA-A7B	114-GA-A7B-5.5-6.0X	JB74833	JB74833-2	5.5 - 6.0	08/22/2014	Yes	**723**	
A7B	P4-GA-A7B	114-GA-A7B-6.0-6.5	JB74833	JB74833-3	6.0 - 6.5	08/22/2014	Yes	**668**	
A7B	P4-GA-A7B	114-GA-A7B-8.0-8.5	JB74833	JB74833-4	8.0 - 8.5	08/22/2014	Yes	**28.7**	
A7B	P4-GA-A7B	114-GA-A7B-10.0-10.5	JB74833	JB74833-5	10.0 - 10.5	08/22/2014	Yes	**664**	
A7B	P4-GA-A7B	114-GA-A7B-12.0-12.5	JB74833	JB74833-6	12.0 - 12.5	08/22/2014	Yes	**199**	
A7B	P4-GA-A7B	114-GA-A7B-14.0-14.5	JB74833	JB74833-7	14.0 - 14.5	08/22/2014	Yes	**148**	
A7B	114-AB7B-WS	114-AB7B-WS-15.5-16.0	JC42387	JC42387-8	15.4 - 15.9	5/2/2017	Yes	**30.5**	**J**
A7B	P4-GA-A7B	114-GA-A7B-16.0-16.5	JB74833	JB74833-8	16.0 - 16.5	08/22/2014	Yes	**64.5**	
A7B	114-AB7B-WS	114-AB7B-WS-17.4-17.9	JC42387	JC42387-9	17.4 - 17.9	5/2/2017	Yes	**195**	**J**
A7B	P4-GA-A7B	114-GA-A7B-18.0-18.5	JB74833	JB74833-9	18.0 - 18.5	08/22/2014	Yes	6.1	
A7B	114-AB7B-WS	114-AB7B-WS-19.4-19.9	JC42387	JC42387-10	19.4 - 19.9	5/2/2017	Yes	**218**	**J**
A7B	114-AB7B-WS	114-AB7B-WS-19.4-19.9X	JC42387	JC42387-11	19.4 - 19.9	5/2/2017	Yes	**154**	**J**
A7B	P4-GA-A7B	114-GA-A7B-20.0-20.5	JB74833	JB74833-10	20.0 - 20.5	08/22/2014	Yes	**25.1**	
A7B	114-AB7B-WS	114-AB7B-WS-21.4-21.9	JC42387	JC42387-12	21.4 - 21.9	5/2/2017	Yes	**114**	**J**
A7B	C9	C9DS21.5-22	R2318284	669443	21.5 - 22.0	09/03/2003	Yes	**57.9**	**J**
A7B	C9	C9S21.5-22	R2318284	669438	21.5 - 22.0	09/03/2003	Yes	**56.1**	**J**
A7B	C9	C9DS24-24.5	R2318284	669445	24.0 - 24.5	09/03/2003	Yes	**21.2**	**J**
A7B	C9	C9S24-24.5	R2318284	669444	24.0 - 24.5	09/03/2003	Yes	**29.1**	**J**
A7B	C9V	114-C9VA 25-25.5	J11857	J11857-11	25.0 - 25.5	10/06/2005	Yes	19.2	
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-0.5-1.0	JC36395	JC36395-1	0.5 - 1.0	01/29/2017	Yes	1.4	J
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-2.0-2.5	JC36395R	JC36395-5R	2.0 - 2.5	01/29/2017	Yes	2.5	J
A'7B	GE	GE4.1-4.6	R2420565	712769	4.1 - 4.6	03/16/2004	Yes	< 5.37	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-6.0-6.5	JC36395	JC36395-7	6.0 - 6.5	01/29/2017	Yes	< 0.38	UJ
A'7B	GE	GE 5.6-6.1	R2420565	712770	5.6 - 6.1	03/16/2004	Yes	< 5.4	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-6.5-7.0	JC36395	JC36395-8	6.5 - 7.0	01/29/2017	Yes	< 0.36	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-7.0-7.5	JC36395	JC36395-9	7.0 - 7.5	01/29/2017	Yes	1.1	J
A'7B	GE	GE 8.1-8.6	R2420565	712771	8.1 - 8.6	03/16/2004	Yes	< 4.98	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-10.0-10.5	JC36395	JC36395-2	10.0 - 10.5	01/29/2017	Yes	< 0.33	UJ
A'7B	GE	GE12.1-12.6	R2420565	712772	12.1 - 12.6	03/16/2004	Yes	< 4.8	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-14.0-14.5	JC36395	JC36395-3	14.0 - 14.5	01/29/2017	Yes	0.34	J
A'7B	GE	GE16.1-16.6	R2420565	712773	16.1 - 16.6	03/16/2004	Yes	< 4.58	UJ
A'7B	GAR-PDI-A'7B	GAR-PDI-A'7B-18.0-18.5	JC36395	JC36395-4	18.0 - 18.5	01/29/2017	Yes	0.39	J
A'7B	GE	GE20.5-21.0	R2420565	712774	20.5 - 21.0	03/16/2004	Yes	< 4.61	UJ
A'7B	GE	GE24.5-25	R2420565	712775	24.5 - 25.0	03/16/2004	Yes	< 4.73	UJ
A'8A	114CC-A`8A-SW	114-A'8A-0.5-1.0-SW	JB9493	JB9493-1	0.5 - 1.0	06/21/2012	Yes		R
A'8A	114-A`8A	114-A'8A-4.0-4.5	JB2204	JB2204-12	4.0 - 4.5	03/21/2012	Yes	10.8	J
A'8A	114-A`8A	114-A'8A-4.0-4.5X	JB2204	JB2204-6	4.0 - 4.5	03/21/2012	Yes	2.7	J
A'8A	114CC-A`8A-SW	114-A'8A-2.5-3.0-SW	JB9493R	JB9493-2R	2.5 - 3.0	06/21/2012	Yes		R
A'8A	114CC-A`8A-SW	114-A'8A-4.5-5.0-SW	JB9493R	JB9493-3R	4.5 - 5.0	06/21/2012	Yes		R
A'8A	114CC-A`8A-PB	114-A'8A-6.0-6.5-PB	JB9493R	JB9493-5R	6.0 - 6.5	06/21/2012	Yes		R
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-6.0-6.5	JC31517	JC31517-24	6.0 - 6.5	11/10/2016	Yes	0.38	J
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-7.5-8.0	JC31517R	JC31517-25R	7.5 - 8.0	11/10/2016	Yes	1.0	J
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-7.5-8.0X	JC31517R	JC31517-26R	7.5 - 8.0	11/10/2016	Yes	0.45	J
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-8.0-8.5	JC31517R	JC31517-27R	8.0 - 8.5	11/10/2016	Yes	2.1	J
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-10.0-10.5	JC31517	JC31517-18	10.0 - 10.5	11/10/2016	Yes	0.57	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-12.0-12.5	JC31517R	JC31517-19R	12.0 - 12.5	11/10/2016	Yes	2.6	
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-14.0-14.5	JC31517	JC31517-20	14.0 - 14.5	11/10/2016	Yes	**151**	**J**
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-16.0-16.5	JC31517	JC31517-21	16.0 - 16.5	11/10/2016	Yes	**31.9**	**J**
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-18.0-18.5	JC31517	JC31517-22	18.0 - 18.5	11/10/2016	Yes	16.5	J
A'8A	GAR-PDI-A'8A	GAR-PDI-A'8A-20.0-20.5	JC31517R	JC31517-23R	20.0 - 20.5	11/10/2016	Yes	7.3	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
A8B	114CC-A8B-SW	114-A8B-0.5-1.0-SW	JB12458	JB12458-3	0.5 - 1.0	07/30/2012	Yes	**102**	**J**
A8B	114CC-A8B-SW	114-A8B-2.5-3.0-SW	JB12458R	JB12458-4R	2.5 - 3.0	07/30/2012	Yes	**213**	**J**
A8B	114CC-A8B-SW	114-A8B-4.5-5.0-SW	JB12458	JB12458-2	4.5 - 5.0	07/30/2012	Yes	**941**	**J**
A8B	GAR-PDI-A8B	GAR-PDI-A8B-8.0-8.5	JC32158	JC32158-11	8.0 - 8.5	11/21/2016	Yes	**1820**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-8.0-8.5X	JC32158	JC32158-12	8.0 - 8.5	11/21/2016	Yes	**1640**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-10.0-10.5	JC32158	JC32158-4	10.0 - 10.5	11/21/2016	Yes	**861**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-12.0-12.5	JC32158	JC32158-5	12.0 - 12.5	11/21/2016	Yes	**30.8**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-12.5-13.0	JC32158	JC32158-6	12.5 - 13.0	11/21/2016	Yes	**115**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-14.0-14.5	JC32158	JC32158-7	14.0 - 14.5	11/21/2016	Yes	**56.1**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-16.0-16.5	JC32158	JC32158-8	16.0 - 16.5	11/21/2016	Yes	**40.1**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-18.0-18.5	JC32158	JC32158-9	18.0 - 18.5	11/21/2016	Yes	**64.6**	
A8B	GAR-PDI-A8B	GAR-PDI-A8B-20.0-20.5	JC32158	JC32158-10	20.0 - 20.5	11/21/2016	Yes	**125**	
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-0.5-1.0	JC37505R	JC37505-1R	0.5 - 1.0	02/19/2017	Yes	1.2	J
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-1.0-1.5	JC37505	JC37505-2	1.0 - 1.5	02/19/2017	Yes	< 0.37	UJ
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-3.0-3.5	JC37505	JC37505-9	3.0 - 3.5	02/19/2017	Yes	0.49	J
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-5.0-5.5	JC37505	JC37505-10	5.0 - 5.5	02/19/2017	Yes	< 0.37	UJ
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-6.5-7.0	JC37505	JC37505-11	6.5 - 7.0	02/19/2017	Yes	< 0.36	UJ
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-6.5-7.0X	JC37505	JC37505-12	6.5 - 7.0	02/19/2017	Yes	< 0.36	UJ
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-7.0-7.5	JC37505	JC37505-13	7.0 - 7.5	02/19/2017	Yes	< 0.36	UJ
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-9.0-9.5	JC37505	JC37505-14	9.0 - 9.5	02/19/2017	Yes	0.85	
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-11.0-11.5	JC37505	JC37505-3	11.0 - 11.5	02/19/2017	Yes	< 0.32	U
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-13.0-13.5	JC37505	JC37505-4	13.0 - 13.5	02/19/2017	Yes	0.58	
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-15.0-15.5	JC37505	JC37505-5	15.0 - 15.5	02/19/2017	Yes	0.53	
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-17.0-17.5	JC37505	JC37505-6	17.0 - 17.5	02/19/2017	Yes	0.65	
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-19.0-19.5	JC37505	JC37505-7	19.0 - 19.5	02/19/2017	Yes	2.5	
A'8B	GAR-PDI-A'8B	GAR-PDI-A'8B-20.0-20.5	JC37505	JC37505-8	20.0 - 20.5	02/19/2017	Yes	0.65	
A'9A	114CC-A`9A-SW	114-A'9A-0.5-1.0-SW	JB9375	JB9375-1	0.5 - 1.0	06/20/2012	Yes	**26.3**	**J**
A'9A	114-A`9A	114-A'9A-4.0-4.5	JB2204	JB2204-5	4.0 - 4.5	03/21/2012	Yes	16.2	J
A'9A	114CC-A`9A-SW	114-A'9A-2.5-3.0-SW	JB9375	JB9375-2	2.5 - 3.0	06/20/2012	Yes	< 0.24	UJ
A'9A	114CC-A`9A-SW	114-A'9A-4.5-5.0-SW	JB9375	JB9375-3	4.5 - 5.0	06/20/2012	Yes	< 0.26	UJ
A'9A	114CC-A`9A-PB	114-A'9A-6.0-6.5-PB	JB9375	JB9375-4	6.0 - 6.5	06/20/2012	Yes	< 0.23	UJ
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-8.0-8.5	JC31517R	JC31517-35R	8.0 - 8.5	11/10/2016	Yes	2.7	J
A'9A	114SWE-A`9A-0912	114-A'9A-8.6-9.1	JB17318R	JB17318-4R	8.6 - 9.1	09/25/2012	Yes	0.26	J
A'9A	114SWE-A`9A	114-A'9A-8.8-9.3	JB12760	JB12760-2	8.8 - 9.3	08/02/2012	Yes	0.74	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-10.0-10.5	JC31517	JC31517-28	10.0 - 10.5	11/10/2016	Yes	3.3	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-10.5-11.0	JC31517	JC31517-29	10.5 - 11.0	11/10/2016	Yes	1.6	J
A'9A	114SWE-A`9A-0912	114-A'9A-10.8-11.3	JB17318R	JB17318-2R	10.8 - 11.3	09/25/2012	Yes	0.29	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-12.0-12.5	JC31517R	JC31517-30R	12.0 - 12.5	11/10/2016	Yes	1.7	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-14.0-14.5	JC31517	JC31517-31	14.0 - 14.5	11/10/2016	Yes	**62.1**	**J**
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-16.0-16.5	JC31517R	JC31517-32R	16.0 - 16.5	11/10/2016	Yes	14.0	J
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-18.0-18.5	JC31517	JC31517-33	18.0 - 18.5	11/10/2016	Yes	**45.6**	**J**
A'9A	GAR-PDI-A'9A	GAR-PDI-A'9A-20.0-20.5	JC31517R	JC31517-34R	20.0 - 20.5	11/10/2016	Yes	15.4	J
A9B	GAR-PDI-A9B	GAR-PDI-A9B-0.5-1.0	JC37082	JC37082-23	0.5 - 1.0	02/12/2017	Yes	5.2	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-1.5-2.0	JC37082	JC37082-24	1.5 - 2.0	02/12/2017	Yes	**22.4**	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-3.5-4.0	JC37082	JC37082-32	3.5 - 4.0	02/12/2017	Yes	**22.7**	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-5.5-6.0	JC37082	JC37082-33	5.5 - 6.0	02/12/2017	Yes	**395**	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-7.5-8.0	JC37082	JC37082-34	7.5 - 8.0	02/12/2017	Yes	**1110**	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-9.5-10.0	JC37082	JC37082-35	9.5 - 10.0	02/12/2017	Yes	**80.4**	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-11.0-11.5	JC37082	JC37082-25	11.0 - 11.5	02/12/2017	Yes	3.1	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-11.5-12.0	JC37082	JC37082-26	11.5 - 12.0	02/12/2017	Yes	0.60	J
A9B	GAR-PDI-A9B	GAR-PDI-A9B-13.5-14.0	JC37082	JC37082-27	13.5 - 14.0	02/12/2017	Yes	< 0.33	UJ
A9B	GAR-PDI-A9B	GAR-PDI-A9B-15.5-16.0	JC37082	JC37082-28	15.5 - 16.0	02/12/2017	Yes	4.2	
A9B	GAR-PDI-A9B	GAR-PDI-A9B-17.5-18.0	JC37082	JC37082-29	17.5 - 18.0	02/12/2017	Yes	**29.9**	**J**
A9B	GAR-PDI-A9B	GAR-PDI-A9B-19.5-20.0	JC37082	JC37082-30	19.5 - 20.0	02/12/2017	Yes	3.1	J
A9B	GAR-PDI-A9B	GAR-PDI-A9B-20.0-20.5	JC37082	JC37082-31	20.0 - 20.5	02/12/2017	Yes	15.1	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
A'9B	EF-42	EF-B42-0.5	460258041	460-25804-30	0.5 - 1.0	04/26/2011	Yes	< 0.57	U
A'9B	EF-42	EF-B42-2.0	460258041	460-25804-31	2.0 - 2.5	04/26/2011	Yes	< 0.62	U
A'9B	EF-42	EF-B42-4.0	460258041	460-25804-33	4.0 - 4.5	04/26/2011	Yes	< 0.64	U
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-6.0-6.5	JC37082	JC37082-7	6.0 - 6.5	02/12/2017	Yes	< 0.36	UJ
A'9B	EF-42	EF-B42-6.0	460259551	460-25955-5	6.0 - 6.5	04/29/2011	Yes	< 0.60	UJ
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-6.5-7.0	JC37082	JC37082-8	6.5 - 7.0	02/12/2017	Yes	< 0.35	UJ
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-8.0-8.5	JC37082R	JC37082-9R	8.0 - 8.5	02/12/2017	Yes	0.50	J
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-10.0-10.5	JC37082	JC37082-1	10.0 - 10.5	02/12/2017	Yes	1.1	J
A'9B	EF-42	EF-B42-10.5	460259551	460-25955-6	10.5 - 11.0	04/29/2011	Yes	< 0.58	UJ
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-12.0-12.5	JC37082R	JC37082-2R	12.0 - 12.5	02/12/2017	Yes	0.90	J
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-14.0-14.5	JC37082	JC37082-3	14.0 - 14.5	02/12/2017	Yes	0.42	J
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-16.0-16.5	JC37082R	JC37082-4R	16.0 - 16.5	02/12/2017	Yes	0.40	J
A'9B	EF-42	EF-B42-16.0	460259551	460-25955-7	16.0 - 16.5	04/29/2011	Yes	< 0.54	UJ
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-18.0-18.5	JC37082R	JC37082-5R	18.0 - 18.5	02/12/2017	Yes	0.56	J
A'9B	GAR-PDI-A'9B	GAR-PDI-A'9B-20.0-20.5	JC37082	JC37082-6	20.0 - 20.5	02/12/2017	Yes	0.34	J
A'9B	EF-42	EF-B42-21.0	460259551	460-25955-8	21.0 - 21.5	04/29/2011	Yes	< 0.55	UJ
B'0	GAR-PDI-B'0	GAR-PDI-B'0-0.5-1.0	JC35528	JC35528-1	0.5 - 1.0	01/15/2017	Yes	5.7	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-2.5-3.0	JC35528	JC35528-7	2.5 - 3.0	01/15/2017	Yes	0.48	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-4.5-5.0X	JC35528R	JC35528-8R	2.5 - 3.0	01/15/2017	Yes	0.47	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-4.5-5.0	JC35528	JC35528-10	4.5 - 5.0	01/15/2017	Yes	0.63	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-6.5-7.0	JC35528R	JC35528-11R	6.5 - 7.0	01/15/2017	Yes	1.1	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-7.5-8.0	JC35528	JC35528-12	7.5 - 8.0	01/15/2017	Yes	9.6	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-8.0-8.5	JC35528R	JC35528-13R	8.0 - 8.5	01/15/2017	Yes	0.51	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-10.0-10.5	JC35528	JC35528-2	10.0 - 10.5	01/15/2017	Yes	0.65	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-12.0-12.5	JC35528R	JC35528-3R	12.0 - 12.5	01/15/2017	Yes	0.59	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-14.0-14.5	JC35528R	JC35528-4R	14.0 - 14.5	01/15/2017	Yes	0.65	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-16.0-16.5	JC35528	JC35528-5	16.0 - 16.5	01/15/2017	Yes	< 0.31	UJ
B'0	GAR-PDI-B'0	GAR-PDI-B'0-18.0-18.5	JC35528	JC35528-6	18.0 - 18.5	01/15/2017	Yes	0.47	J
B'0	GAR-PDI-B'0	GAR-PDI-B'0-20.0-20.5	JC35528	JC35528-9	20.0 - 20.5	01/15/2017	Yes	0.61	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-0.5-1.0	JC32140	JC32140-2	0.5 - 1.0	11/20/2016	Yes	0.56	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-2.0-2.5	JC32140	JC32140-8	2.0 - 2.5	11/20/2016	Yes	< 0.33	U
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-4.0-4.5	JC32140	JC32140-10	4.0 - 4.5	11/20/2016	Yes	< 0.33	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-6.0-6.5	JC32140	JC32140-11	6.0 - 6.5	11/20/2016	Yes	< 0.33	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-8.0-8.5	JC32140	JC32140-12	8.0 - 8.5	11/20/2016	Yes	< 0.35	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-8.5-9.0	JC32140	JC32140-13	8.5 - 9.0	11/20/2016	Yes	< 0.34	UJ
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-9.0-9.5	JC32140	JC32140-14	9.0 - 9.5	11/20/2016	Yes	0.43	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-10.0-10.5	JC32140	JC32140-3	10.0 - 10.5	11/20/2016	Yes	8.3	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-12.0-12.5	JC32140	JC32140-4	12.0 - 12.5	11/20/2016	Yes	5.0	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-14.0-14.5	JC32140	JC32140-5	14.0 - 14.5	11/20/2016	Yes	10.4	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-16.0-16.5	JC32140	JC32140-6	16.0 - 16.5	11/20/2016	Yes	7.8	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-18.0-18.5	JC32140	JC32140-7	18.0 - 18.5	11/20/2016	Yes	7.7	J
B'10A	GAR-PDI-B'10A	GAR-PDI-B'10A-20.0-20.5	JC32140	JC32140-9	20.0 - 20.5	11/20/2016	Yes	5.5	J
B10B	114-B10B-CC-SW	114-B10B-SW-2.0-2.5	JB77112	JB77112-5	2.0 - 2.5	09/19/2014	Yes	**284**	
B10B	114-B10B-CC-SW	114-B10B-SW-4.0-4.5	JB77112	JB77112-4	4.0 - 4.5	09/19/2014	Yes	**509**	
B10B	114-B10B-CC-SW	114-B10B-SW-5.5-6.0	JB77112	JB77112-3	5.5 - 6.0	09/19/2014	Yes	**487**	
B10B	114-B10B-CC-PB	114-B10B-PB-6.0-6.5	JB77112	JB77112-2	6.0 - 6.5	09/19/2014	Yes	**348**	
B10B	GAR-PDI-B10B	GAR-PDI-B10B-7.5-8.0	JC32774	JC32774-2	7.5 - 8.0	12/02/2016	Yes	**3550**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-8.0-8.5	JC32774	JC32774-3	8.0 - 8.5	12/02/2016	Yes	**3870**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-10.0-10.5	JC33206	JC33206-2	10.0 - 10.5	12/08/2016	Yes	**3490**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-10.0-10.5X	JC33206	JC33206-3	10.0 - 10.5	12/08/2016	Yes	**3340**	**J**
B10B	GAR-PDI-B10B	GAR-PDI-B10B-12.0-12.5	JC33206	JC33206-4	12.0 - 12.5	12/08/2016	Yes	**2290**	**J**
B10B	114-B10B-PB	114-B10B-PB-13.0-13.5	JB50372	JB50372-3	13.0 - 13.5	10/16/2013	Yes	2.7	J
B10B	GAR-PDI-B10B	GAR-PDI-B10B-14.0-14.5	JC33206	JC33206-5	14.0 - 14.5	12/08/2016	Yes	1.3	J
B10B	GAR-PDI-B10B	GAR-PDI-B10B-16.0-16.5	JC33206	JC33206-6	16.0 - 16.5	12/08/2016	Yes	3.2	J
B10B	GAR-PDI-B10B	GAR-PDI-B10B-18.0-18.5	JC33206	JC33206-7	18.0 - 18.5	12/08/2016	Yes	1.5	J
B10B	GAR-PDI-B10B	GAR-PDI-B10B-20.0-20.5	JC33206	JC33206-8	20.0 - 20.5	12/08/2016	Yes	0.98	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-0.5-1.0	JC32140	JC32140-15	0.5 - 1.0	11/20/2016	Yes	0.35	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-2.0-2.5	JC32140	JC32140-23	2.0 - 2.5	11/20/2016	Yes	< 0.33	UJ
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-4.0-4.5	JC32140	JC32140-25	4.0 - 4.5	11/20/2016	Yes	0.43	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-6.0-6.5	JC32140	JC32140-26	6.0 - 6.5	11/20/2016	Yes	0.39	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-8.0-8.5	JC32140	JC32140-27	8.0 - 8.5	11/20/2016	Yes	0.58	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-10.0-10.5	JC32140	JC32140-16	10.0 - 10.5	11/20/2016	Yes	**127**	**J**
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-10.5-11.0	JC32140	JC32140-17	10.5 - 11.0	11/20/2016	Yes	**116**	**J**
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-12.0-12.5	JC32140	JC32140-18	12.0 - 12.5	11/20/2016	Yes	10.4	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-14.0-14.5	JC32140	JC32140-19	14.0 - 14.5	11/20/2016	Yes	**21.0**	**J**
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-16.0-16.5	JC32140	JC32140-20	16.0 - 16.5	11/20/2016	Yes	18.2	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-16.0-16.5X	JC32140	JC32140-21	16.0 - 16.5	11/20/2016	Yes	**23.6**	**J**
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-18.0-18.5	JC32140	JC32140-22	18.0 - 18.5	11/20/2016	Yes	9.0	J
B'11A	GAR-PDI-B'11A	GAR-PDI-B'11A-20.0-20.5	JC32140	JC32140-24	20.0 - 20.5	11/20/2016	Yes	10.2	J
B11B	114GAR-3	114TP-3GAR-0.5-1.0	JB15500	JB15500-1	0.5 - 1.0	09/05/2012	Yes	**692**	
B11B	114GAR-3	114TP-3GAR-1.5-2.0	JB15646	JB15646-3	1.5 - 2.0	09/06/2012	Yes	**126**	**J**
B11B	114GAR-3	114TP-3GAR-2.0-2.5	JB15500R	JB15500-2R	2.0 - 2.5	09/05/2012	Yes	1.1	J
B11B	114GAR-3	114TP-3GAR-2.0-2.5-090612	JB15646	JB15646-4	2.0 - 2.5	09/06/2012	Yes	8.2	J
B11B	114GAR-3	114TP-3GAR-4.0-4.5	JB15646	JB15646-1	4.0 - 4.5	09/06/2012	Yes	**293**	**J**
B11B	114GAR-3	114TP-3GAR-5.5-6.0	JB15646	JB15646-2	5.5 - 6.0	09/06/2012	Yes	**405**	**J**
B'12A	GA	GA0.1-0.5	R2420545	712563	0.1 - 0.5	03/15/2004	Yes	< 4.18	U
B'12A	GA	GA0.8-1.8	R2420545	712564	0.8 - 1.8	03/15/2004	Yes	10.3	
B'12A	GA	GA4-4.5	R2420545	712565	4.0 - 4.5	03/15/2004	Yes	< 4.72	U
B'12A	GA	GA5.2-6.2	R2420545	712566	5.2 - 6.2	03/15/2004	Yes	< 4.55	U
B'12A	GA	GA5.2-6.2D	R2420545	712567	5.2 - 6.2	03/15/2004	Yes	< 4.54	U
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-6.5-7.0	JC31680	JC31680-4	6.5 - 7.0	11/13/2016	Yes	0.53	J
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-7.0-7.5	JC31680	JC31680-5	7.0 - 7.5	11/13/2016	Yes	< 0.33	UJ
B'12A	GA	GA8-8.5	R2420545	712568	8.0 - 8.5	03/15/2004	Yes	13.2	
B'12A	GA	GA8.5-9	R2420545	712569	8.5 - 9.0	03/15/2004	Yes	< 4.91	U
B'12A	GAR-PDI-B'12AR	GAR-PDI-B'12AR-10.0-10.5	JC37505	JC37505-29	10.0 - 10.5	02/19/2017	Yes	3.6	J
B'12A	GA	GA12-12.5	R2420545	712570	12.0 - 12.5	03/15/2004	Yes	7.7	
B'12A	GAR-PDI-B'12AR	GAR-PDI-B'12AR-14.0-14.5	JC37505	JC37505-30	14.0 - 14.5	02/19/2017	Yes	2.3	J
B'12A	GA	GA16-16.5	R2420545	712571	16.0 - 16.5	03/15/2004	Yes	12.7	
B'12A	GA	GA17-17.5	R2420545	712572	17.0 - 17.5	03/15/2004	Yes	**24.4**	
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-18.0-18.5	JC31680	JC31680-2	18.0 - 18.5	11/13/2016	Yes	1.9	J
B'12A	GAR-PDI-B'12A	GAR-PDI-B'12A-20.0-20.5	JC31680	JC31680-3	20.0 - 20.5	11/13/2016	Yes	1.2	J
B12B	GG	GG 4.4-4.9	R2420565	712764	4.4 - 4.9	03/16/2004	Yes	< 4.89	UJ
B12B	GG	GG 5.5-6.0	R2420565	712765	5.5 - 6.0	03/16/2004	Yes	< 4.76	UJ
B12B	GG	GG 8.4-8.9	R2420565	712766	8.4 - 8.9	03/16/2004	Yes	< 4.78	UJ
B12B	GG	GG 12.4-12.9	R2420565	712767	12.4 - 12.9	03/16/2004	Yes	< 5.69	UJ
B12B	GG	GG 13-13.5	R2420565	712768	13.0 - 13.5	03/16/2004	Yes	< 5.57	UJ
B'13A	114CC-A`13A-SW	114-A'13A-0.5-1.0-SW	JB8970R	JB8970-2R	0.5 - 1.0	06/14/2012	Yes	1.4	J
B'13A	114CC-A`13A-SW	114-A'13A-0.5-1.0-SWS	JB8858	JB8858-1	0.5 - 1.0	06/13/2012	Yes	1.3	J
B'13A	114CC-A`13A-SW	114-A'13A-2.5-3.0-SW	JB8970R	JB8970-3R	2.5 - 3.0	06/14/2012	Yes	1.5	J
B'13A	114CC-A`13A-SW	114-A'13A-2.5-3.0-SWS	JB8858R	JB8858-2R	2.5 - 3.0	06/13/2012	Yes	0.89	J
B'13A	114CC-A`13A-SW	114-A'13A-4.5-5.0-SW	JB8970	JB8970-5	4.5 - 5.0	06/14/2012	Yes	0.63	J
B'13A	114CC-A`13A-SW	114-A'13A-4.5-5.0-SWS	JB8858R	JB8858-3R	4.5 - 5.0	06/13/2012	Yes	1.9	J
B'13A	114CC-A`13A-SW	114-A'13A-4.5-5.0-SWX	JB8970	JB8970-4	4.5 - 5.0	06/14/2012	Yes	1.2	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-6.0-6.5	JC31680	JC31680-13	6.0 - 6.5	11/13/2016	Yes	< 0.35	UJ
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-6.5-7.0	JC31680	JC31680-14	6.5 - 7.0	11/13/2016	Yes	0.38	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-8.0-8.5	JC31680	JC31680-15	8.0 - 8.5	11/13/2016	Yes	4.3	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-10.0-10.5	JC31680	JC31680-6	10.0 - 10.5	11/13/2016	Yes	0.49	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-12.0-12.5	JC31680	JC31680-7	12.0 - 12.5	11/13/2016	Yes	8.6	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-12.0-12.5X	JC31680	JC31680-8	12.0 - 12.5	11/13/2016	Yes	1.3	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-14.0-14.5	JC31680	JC31680-9	14.0 - 14.5	11/13/2016	Yes	2.8	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-16.0-16.5	JC31680	JC31680-10	16.0 - 16.5	11/13/2016	Yes	1.4	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-18.0-18.5	JC31680	JC31680-11	18.0 - 18.5	11/13/2016	Yes	4.3	J
B'13A	GAR-PDI-B'13A	GAR-PDI-B'13A-20.0-20.5	JC31680	JC31680-12	20.0 - 20.5	11/13/2016	Yes	1.2	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-1.0-1.5	JC31680	JC31680-16	1.0 - 1.5	11/13/2016	Yes	1.3	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-2.0-2.5	JC31680R	JC31680-22R	2.0 - 2.5	11/13/2016	Yes	2.0	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-4.0-4.5	JC31680R	JC31680-24R	4.0 - 4.5	11/13/2016	Yes	0.94	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-4.0-4.5X	JC31680R	JC31680-25R	4.0 - 4.5	11/13/2016	Yes	1.5	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-6.0-6.5	JC31680	JC31680-26	6.0 - 6.5	11/13/2016	Yes	0.76	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-8.0-8.5	JC31680R	JC31680-27R	8.0 - 8.5	11/13/2016	Yes	**82.7**	**J**
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-9.5-10.0	JC31680R	JC31680-28R	9.5 - 10.0	11/13/2016	Yes	**92.0**	**J**
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-10.0-10.5	JC31680	JC31680-17	10.0 - 10.5	11/13/2016	Yes	**25.9**	**J**
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-12.0-12.5	JC31680	JC31680-18	12.0 - 12.5	11/13/2016	Yes	3.9	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-14.0-14.5	JC31680	JC31680-19	14.0 - 14.5	11/13/2016	Yes	4.3	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-16.0-16.5	JC31680	JC31680-20	16.0 - 16.5	11/13/2016	Yes	8.8	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-18.0-18.5	JC31680	JC31680-21	18.0 - 18.5	11/13/2016	Yes	3.1	J
B'14A	GAR-PDI-B'14A	GAR-PDI-B'14A-20.0-20.5	JC31680R	JC31680-23R	20.0 - 20.5	11/13/2016	Yes	4.5	J
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-1.0-1.5	JC31680	JC31680-29	1.0 - 1.5	11/13/2016	Yes	< 0.31	UJ
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-2.0-2.5	JC31680	JC31680-35	2.0 - 2.5	11/13/2016	Yes	< 0.32	UJ
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-4.0-4.5	JC31680R	JC31680-37R	4.0 - 4.5	11/13/2016	Yes	1.7	J
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-6.0-6.5	JC31680	JC31680-38	6.0 - 6.5	11/13/2016	Yes	< 0.33	UJ
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-8.0-8.5	JC31680	JC31680-39	8.0 - 8.5	11/13/2016	Yes	< 0.33	UJ
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-9.5-10.0	JC31680	JC31680-40	9.5 - 10.0	11/13/2016	Yes	< 0.33	UJ
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-10.0-10.5	JC31680	JC31680-30	10.0 - 10.5	11/13/2016	Yes	16.4	J
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-12.0-12.5	JC31680	JC31680-31	12.0 - 12.5	11/13/2016	Yes	2.9	J
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-14.0-14.5	JC31680R	JC31680-32R	14.0 - 14.5	11/13/2016	Yes	0.72	J
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-16.0-16.5	JC31680	JC31680-33	16.0 - 16.5	11/13/2016	Yes	0.94	J
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-18.0-18.5	JC31680	JC31680-34	18.0 - 18.5	11/13/2016	Yes	2.5	J
B'15A	GAR-PDI-B'15A	GAR-PDI-B'15A-20.0-20.5	JC31680R	JC31680-36R	20.0 - 20.5	11/13/2016	Yes	0.76	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-0.5-1.0	JC35528R	JC35528-14R	0.5 - 1.0	01/15/2017	Yes	1.8	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-2.5-3.0	JC35528T	JC35528-21T	2.5 - 3.0	01/15/2017	Yes	1.3	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-4.5-5.0	JC35528	JC35528-23	4.5 - 5.0	01/15/2017	Yes	0.55	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-6.5-7.0	JC35528	JC35528-24	6.5 - 7.0	01/15/2017	Yes	0.49	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-7.5-8.0	JC35528T	JC35528-25T	7.5 - 8.0	01/15/2017	Yes	1.2	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-8.0-8.5	JC35528	JC35528-26	8.0 - 8.5	01/15/2017	Yes	< 0.33	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-10.0-10.5	JC35528	JC35528-15	10.0 - 10.5	01/15/2017	Yes	< 0.36	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-10.0-10.5X	JC35528	JC35528-16	10.0 - 10.5	01/15/2017	Yes	0.98	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-12.0-12.5	JC35528R	JC35528-17R	12.0 - 12.5	01/15/2017	Yes	0.97	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-14.0-14.5	JC35528R	JC35528-18R	14.0 - 14.5	01/15/2017	Yes	0.71	J
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-16.0-16.5	JC35528	JC35528-19	16.0 - 16.5	01/15/2017	Yes	< 0.33	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-18.0-18.5	JC35528	JC35528-20	18.0 - 18.5	01/15/2017	Yes	< 0.31	UJ
B'1A	GAR-PDI-B'1A	GAR-PDI-B'1A-20.0-20.5	JC35528	JC35528-22	20.0 - 20.5	01/15/2017	Yes	< 0.31	UJ
B'1B	EF-40	EF-B40-0.5	460257601	460-25760-9	0.5 - 1.0	04/25/2011	Yes	1.2	J
B'1B	EF-40	EF-B40-2.0	460257601	460-25760-10	2.0 - 2.5	04/25/2011	Yes	< 0.57	U
B'1B	EF-40	EF-B40-4.0	460257601	460-25760-12	4.0 - 4.5	04/25/2011	Yes	< 0.64	U
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-5.0-5.5	JC35528	JC35528-33	5.0 - 5.5	01/15/2017	Yes	0.83	J
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-5.5-6.0	JC35528	JC35528-34	5.5 - 6.0	01/15/2017	Yes	0.58	J
B'1B	EF-40	EF-B40-6.0	460258041	460-25804-11	6.0 - 6.5	04/26/2011	Yes	< 0.62	U
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-8.0-8.5	JC35528	JC35528-35	8.0 - 8.5	01/15/2017	Yes	< 0.33	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-10.0-10.5	JC35528	JC35528-27	10.0 - 10.5	01/15/2017	Yes	0.53	J
B'1B	EF-40	EF-B40-11.0	460258041	460-25804-13	11.0 - 11.5	04/26/2011	Yes	< 0.56	U
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-12.0-12.5	JC35528	JC35528-28	12.0 - 12.5	01/15/2017	Yes	< 0.34	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-14.0-14.5	JC35528	JC35528-29	14.0 - 14.5	01/15/2017	Yes	< 0.32	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-16.0-16.5	JC35528	JC35528-30	16.0 - 16.5	01/15/2017	Yes	< 0.33	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-18.0-18.5	JC35528	JC35528-31	18.0 - 18.5	01/15/2017	Yes	< 0.31	UJ
B'1B	GAR-PDI-B'1B	GAR-PDI-B'1B-20.0-20.5	JC35528	JC35528-32	20.0 - 20.5	01/15/2017	Yes	0.61	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
B'2A	EF-39	EF-B39-0.5	460257601	460-25760-5	0.5 - 1.0	04/25/2011	Yes	< 0.63	U
B'2A	EF-39	EF-B39-2.0	460257601	460-25760-6	2.0 - 2.5	04/25/2011	Yes	< 0.58	U
B'2A	EF-39	EF-B39-4.0	460257601	460-25760-8	4.0 - 4.5	04/25/2011	Yes	< 0.60	U
B'2A	EF-39	EF-B39-6.0	460258041	460-25804-6	6.0 - 6.5	04/26/2011	Yes	< 0.56	U
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-6.0-6.5	JC33472	JC33472-6	6.0 - 6.5	12/11/2016	Yes	0.48	J
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-6.0-6.5X	JC33472	JC33472-7	6.0 - 6.5	12/11/2016	Yes	< 0.35	U
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-6.5-7.0	JC33472	JC33472-8	6.5 - 7.0	12/11/2016	Yes	1.3	
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-7.0-7.5	JC33472	JC33472-9	7.0 - 7.5	12/11/2016	Yes	1.0	
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-8.0-8.5	JC33472	JC33472-10	8.0 - 8.5	12/11/2016	Yes	1.1	
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-10.0-10.5	JC33472	JC33472-2	10.0 - 10.5	12/11/2016	Yes	0.47	J
B'2A	EF-39	EF-B39-11.0	460258041	460-25804-7	11.0 - 11.5	04/26/2011	Yes	< 0.56	U
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-13.0-13.5	JC33472	JC33472-3	13.0 - 13.5	12/11/2016	Yes	0.36	J
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-15.0-15.5	JC33472	JC33472-4	15.0 - 15.5	12/11/2016	Yes	0.72	
B'2A	EF-39	EF-B39-17	460258041	460-25804-8	17.0 - 17.5	04/26/2011	Yes	< 0.57	U
B'2A	EF-39	EF-B39-17X	460258041	460-25804-9	17.0 - 17.5	04/26/2011	Yes	< 0.56	U
B'2A	GAR-PDI-B'2A	GAR-PDI-B'2A-18.0-18.5	JC33472	JC33472-5	18.0 - 18.5	12/11/2016	Yes	< 0.33	U
B'2A	EF-39	EF-B39-20.0	460258041	460-25804-10	20.0 - 20.5	04/26/2011	Yes	< 0.55	U
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-0.5-1.0	JC35951	JC35951-2	0.5 - 1.0	01/22/2017	Yes	6.9	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-2.5-3.0	JC35951	JC35951-8	2.5 - 3.0	01/22/2017	Yes	1.5	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-4.0-4.5	JC35951	JC35951-10	4.0 - 4.5	01/22/2017	Yes	0.53	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-4.5-5.0	JC35951	JC35951-11	4.5 - 5.0	01/22/2017	Yes	< 0.35	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-6.5-7.0	JC35951	JC35951-12	6.5 - 7.0	01/22/2017	Yes	0.60	
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-8.5-9.0	JC35951R	JC35951-13R	8.5 - 9.0	01/22/2017	Yes	1.7	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-10.5-11.0	JC35951	JC35951-3	10.5 - 11.0	01/22/2017	Yes	< 0.34	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-12.5-13.0	JC35951	JC35951-36	12.5 - 13.0	01/22/2017	Yes	11.7	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-12.5-13.0X	JC35951	JC35951-4	12.5 - 13.0	01/22/2017	Yes	< 0.32	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-14.5-15.0	JC35951	JC35951-5	14.5 - 15.0	01/22/2017	Yes	< 0.31	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-16.5-17.0	JC35951R	JC35951-6R	16.5 - 17.0	01/22/2017	Yes	0.40	J
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-18.5-19.0	JC35951	JC35951-7	18.5 - 19.0	01/22/2017	Yes	< 0.31	UJ
B'2B	GAR-PDI-B'2B	GAR-PDI-B'2B-20.0-20.5	JC35951	JC35951-9	20.0 - 20.5	01/22/2017	Yes	< 0.31	UJ
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-0.5-1.0	JC33472	JC33472-11	0.5 - 1.0	12/11/2016	Yes	3.7	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-2.0-2.5	JC33472	JC33472-17	2.0 - 2.5	12/11/2016	Yes	0.38	J
B'3A	GC	GC4-4.5	R2420565	712780	4.0 - 4.5	03/16/2004	Yes	< 5.22	UJ
B'3A	GC	GC6-6.3	R2420565	712781	6.0 - 6.3	03/16/2004	Yes	< 5	UJ
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-6.5-7.0	JC33472	JC33472-19	6.5 - 7.0	12/11/2016	Yes	< 0.36	U
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-7.0-7.5	JC33472	JC33472-20	7.0 - 7.5	12/11/2016	Yes	0.48	
B'3A	GC	GC8-8.5	R2420565	712782	8.0 - 8.5	03/16/2004	Yes	< 4.96	UJ
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-10.0-10.5	JC33472	JC33472-12	10.0 - 10.5	12/11/2016	Yes	0.73	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-12.0-12.5	JC33472	JC33472-13	12.0 - 12.5	12/11/2016	Yes	0.67	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-14.0-14.5	JC33472	JC33472-14	14.0 - 14.5	12/11/2016	Yes	0.48	
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-16.0-16.5	JC33472	JC33472-15	16.0 - 16.5	12/11/2016	Yes	0.37	J
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-18.0-18.5	JC33472	JC33472-16	18.0 - 18.5	12/11/2016	Yes	< 0.32	U
B'3A	GAR-PDI-B'3A	GAR-PDI-B'3A-20.0-20.5	JC33472	JC33472-18	20.0 - 20.5	12/11/2016	Yes	0.82	
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-0.5-1.0	JC35951	JC35951-14	0.5 - 1.0	01/22/2017	Yes	1.9	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-2.0-2.5	JC35951	JC35951-20	2.0 - 2.5	01/22/2017	Yes	0.64	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-4.0-4.5	JC35951	JC35951-22	4.0 - 4.5	01/22/2017	Yes	< 0.36	UJ
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-5.0-5.5	JC35951	JC35951-23	5.0 - 5.5	01/22/2017	Yes	6.5	
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-5.5-6.0	JC35951	JC35951-24	5.5 - 6.0	01/22/2017	Yes	3.5	
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-6.0-6.5	JC35951	JC35951-25	6.0 - 6.5	01/22/2017	Yes	0.50	
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-8.0-8.5	JC35951	JC35951-26	8.0 - 8.5	01/22/2017	Yes	0.36	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-10.0-10.5	JC35951	JC35951-15	10.0 - 10.5	01/22/2017	Yes	< 0.36	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-12.0-12.5	JC35951	JC35951-16	12.0 - 12.5	01/22/2017	Yes	< 0.32	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-14.0-14.5	JC35951	JC35951-17	14.0 - 14.5	01/22/2017	Yes	< 0.31	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-16.0-16.5	JC35951	JC35951-18	16.0 - 16.5	01/22/2017	Yes	< 0.34	U
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-18.0-18.5	JC35951	JC35951-19	18.0 - 18.5	01/22/2017	Yes	0.42	J
B'3B	GAR-PDI-B'3B	GAR-PDI-B'3B-20.0-20.5	JC35951	JC35951-21	20.0 - 20.5	01/22/2017	Yes	< 0.31	UJ

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-8.0-8.5	JC36740	JC36740-8	8.0 - 8.5	02/05/2017	Yes	0.37	J
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-8.5-9.0	JC36740	JC36740-9	8.5 - 9.0	02/05/2017	Yes	1.2	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-9.0-9.5	JC36740	JC36740-10	9.0 - 9.5	02/05/2017	Yes	1.0	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-11.0-11.5	JC36740	JC36740-1	11.0 - 11.5	02/05/2017	Yes	0.51	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-11.0-11.5X	JC36740	JC36740-2	11.0 - 11.5	02/05/2017	Yes	< 0.33	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-13.0-13.5	JC36740	JC36740-3	13.0 - 13.5	02/05/2017	Yes	< 0.34	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-15.0-15.5	JC36740	JC36740-4	15.0 - 15.5	02/05/2017	Yes	< 0.31	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-17.0-17.5	JC36740	JC36740-5	17.0 - 17.5	02/05/2017	Yes	< 0.32	U
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-19.0-19.5	JC36740	JC36740-6	19.0 - 19.5	02/05/2017	Yes	1.9	
B'4A	GAR-PDI-B'4AR	GAR-PDI-B'4AR-20.0-20.5	JC36740	JC36740-7	20.0 - 20.5	02/05/2017	Yes	0.44	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-1.0-1.5	JC36395	JC36395-10	1.0 - 1.5	01/22/2017	Yes	2.2	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-3.0-3.5	JC36395	JC36395-17	3.0 - 3.5	01/22/2017	Yes	< 0.36	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-3.0-3.5X	JC36395	JC36395-18	3.0 - 3.5	01/22/2017	Yes	0.89	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-5.0-5.5	JC36395	JC36395-19	5.0 - 5.5	01/22/2017	Yes	0.76	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-5.5-6.0	JC36395R	JC36395-20R	5.5 - 6.0	01/22/2017	Yes	0.43	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-7.0-7.5	JC36395	JC36395-21	7.0 - 7.5	01/22/2017	Yes	< 0.33	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-9.0-9.5	JC36395	JC36395-22	9.0 - 9.5	01/22/2017	Yes	< 0.32	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-11.0-11.5	JC36395	JC36395-11	11.0 - 11.5	01/22/2017	Yes	0.54	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-13.0-13.5	JC36395	JC36395-12	13.0 - 13.5	01/22/2017	Yes	< 0.32	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-15.0-15.5	JC36395	JC36395-13	15.0 - 15.5	01/22/2017	Yes	1.7	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-17.0-17.5	JC36395	JC36395-14	17.0 - 17.5	01/22/2017	Yes	0.32	J
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-19.0-19.5	JC36395	JC36395-15	19.0 - 19.5	01/22/2017	Yes	< 0.32	UJ
B'4B	GAR-PDI-B'4B	GAR-PDI-B'4B-20.0-20.5	JC36395	JC36395-16	20.0 - 20.5	01/22/2017	Yes	< 0.31	UJ
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-1.5-2.0	JC31222R	JC31222-1R	1.5 - 2.0	11/06/2016	Yes	0.68	J
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-3.5-4.0	JC31222	JC31222-2	3.5 - 4.0	11/06/2016	Yes	0.45	J
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-5.0-5.5	JC31222	JC31222-3	5.0 - 5.5	11/06/2016	Yes	< 0.33	UJ
B'5A	GAR-PDI-B'5A	GAR-PDI-B'5A-6.5-7.0	JC31222	JC31222-4	6.5 - 7.0	11/06/2016	Yes	0.83	J
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-8.0-8.5	JC36740	JC36740-17	8.0 - 8.5	02/05/2017	Yes	< 0.34	U
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-8.5-9.0	JC36740	JC36740-18	8.5 - 9.0	02/05/2017	Yes	0.97	
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-10.0-10.5	JC36740	JC36740-11	10.0 - 10.5	02/05/2017	Yes	< 0.34	U
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-12.0-12.5	JC36740	JC36740-12	12.0 - 12.5	02/05/2017	Yes	0.42	J
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-14.0-14.5	JC36740	JC36740-13	14.0 - 14.5	02/05/2017	Yes	< 0.32	U
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-16.0-16.5	JC36740	JC36740-14	16.0 - 16.5	02/05/2017	Yes	< 0.33	U
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-18.0-18.5	JC36740	JC36740-15	18.0 - 18.5	02/05/2017	Yes	< 0.31	U
B'5A	GAR-PDI-B'5AR	GAR-PDI-B'5AR-20.0-20.5	JC36740	JC36740-16	20.0 - 20.5	02/05/2017	Yes	< 0.31	U
B'5B	EF-41	EF-B41-0.5	460258041	460-25804-25	0.5 - 1.0	04/26/2011	Yes	< 0.57	U
B'5B	EF-41	EF-B41-2.0	460258041	460-25804-26	2.0 - 2.5	04/26/2011	Yes	< 0.60	U
B'5B	EF-41	EF-B41-4.0	460258041	460-25804-29	4.0 - 4.5	04/26/2011	Yes	< 0.67	U
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-6.0-6.5	JC35951	JC35951-32	6.0 - 6.5	01/22/2017	Yes	< 0.38	U
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-6.5-7.0	JC35951	JC35951-33	6.5 - 7.0	01/22/2017	Yes	< 0.34	U
B'5B	EF-41	EF-B41-7.0	460259551	460-25955-1	7.0 - 7.5	04/29/2011	Yes	< 0.59	UJ
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-8.0-8.5	JC35951	JC35951-34	8.0 - 8.5	01/22/2017	Yes	0.74	
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-8.0-8.5X	JC35951	JC35951-35	8.0 - 8.5	01/22/2017	Yes	< 0.33	U
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-10.0-10.5	JC35951	JC35951-27	10.0 - 10.5	01/22/2017	Yes	0.58	
B'5B	EF-41	EF-B41-12.5	460259551	460-25955-2	12.5 - 13.0	04/29/2011	Yes	< 0.56	UJ
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-14.0-14.5	JC35951	JC35951-28	14.0 - 14.5	01/22/2017	Yes	4.6	
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-16.0-16.5	JC35951	JC35951-29	16.0 - 16.5	01/22/2017	Yes	0.61	
B'5B	EF-41	EF-B41-17.5	460259551	460-25955-3	17.5 - 18.0	04/29/2011	Yes	< 0.56	UJ
B'5B	GAR-PDI-B'5B	GAR-PDI-B'5B-18.0-18.5	JC35951	JC35951-30	18.0 - 18.5	01/22/2017	Yes	< 0.31	UJ
B'5B	EF-41	EF-B41-20.0	460259551	460-25955-4	20.0 - 20.5	04/29/2011	Yes	< 0.54	UJ
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-1.5-2.0	JC31222	JC31222-19	1.5 - 2.0	11/06/2016	Yes	4.1	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-3.5-4.0	JC31222	JC31222-27	3.5 - 4.0	11/06/2016	Yes	< 0.36	UJ
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-5.5-6.0	JC31222	JC31222-28	5.5 - 6.0	11/06/2016	Yes	6.6	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-7.5-8.0	JC31222	JC31222-29	7.5 - 8.0	11/06/2016	Yes	< 0.34	UJ
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-9.5-10.0	JC31222	JC31222-30	9.5 - 10.0	11/06/2016	Yes	< 0.36	UJ
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-9.5-10.0X	JC31222	JC31222-31	9.5 - 10.0	11/06/2016	Yes	0.37	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-11.5-12.0	JC31222	JC31222-20	11.5 - 12.0	11/06/2016	Yes	0.70	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-13.0-13.5	JC31222	JC31222-21	13.0 - 13.5	11/06/2016	Yes	1.6	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-13.5-14.0	JC31222	JC31222-22	13.5 - 14.0	11/06/2016	Yes	3.8	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-15.0-15.5	JC31222R	JC31222-23R	15.0 - 15.5	11/06/2016	Yes	2.7	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-17.0-17.5	JC31222	JC31222-24	17.0 - 17.5	11/06/2016	Yes	0.62	J
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-19.0-19.5	JC31222	JC31222-25	19.0 - 19.5	11/06/2016	Yes	< 0.32	UJ
B'6A	GAR-PDI-B'6A	GAR-PDI-B'6A-20.0-20.5	JC31222	JC31222-26	20.0 - 20.5	11/06/2016	Yes	< 0.32	UJ

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-1.0-1.5	JC36395	JC36395-23	1.0 - 1.5	01/29/2017	Yes	2.3	J
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-3.0-3.5	JC36395	JC36395-31	3.0 - 3.5	01/29/2017	Yes	< 0.36	UJ
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-5.0-5.5	JC36395	JC36395-32	5.0 - 5.5	01/29/2017	Yes	2.8	J
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-7.0-7.5	JC36395	JC36395-33	7.0 - 7.5	01/29/2017	Yes	0.93	J
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-9.0-9.5	JC36395	JC36395-34	9.0 - 9.5	01/29/2017	Yes	1.2	J
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-9.5-10.0	JC36395	JC36395-35	9.5 - 10.0	01/29/2017	Yes	0.92	J
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-10.0-10.5	JC36395	JC36395-24	10.0 - 10.5	01/29/2017	Yes	< 0.36	UJ
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-11.0-11.5	JC36395	JC36395-25	11.0 - 11.5	01/29/2017	Yes	0.40	J
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-13.0-13.5	JC36395	JC36395-26	13.0 - 13.5	01/29/2017	Yes	0.39	J
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-15.0-15.5	JC36395	JC36395-27	15.0 - 15.5	01/29/2017	Yes	< 0.34	UJ
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-17.0-17.5	JC36395	JC36395-28	17.0 - 17.5	01/29/2017	Yes	< 0.32	UJ
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-19.0-19.5	JC36395	JC36395-29	19.0 - 19.5	01/29/2017	Yes	< 0.33	UJ
B'6B	GAR-PDI-B'6B	GAR-PDI-B'6B-20.0-20.5	JC36395	JC36395-30	20.0 - 20.5	01/29/2017	Yes	< 0.31	UJ
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-1.5-2.0	JC31222	JC31222-32	1.5 - 2.0	11/06/2016	Yes	< 0.31	UJ
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-3.5-4.0	JC31222	JC31222-41	3.5 - 4.0	11/06/2016	Yes	< 0.38	UJ
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-5.5-6.0	JC31222	JC31222-42	5.5 - 6.0	11/06/2016	Yes	0.66	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-7.5-8.0	JC31222	JC31222-43	7.5 - 8.0	11/06/2016	Yes	0.50	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-9.5-10.0	JC31222	JC31222-44	9.5 - 10.0	11/06/2016	Yes	< 0.34	UJ
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-11.5-12.0	JC31222R	JC31222-33R	11.5 - 12.0	11/06/2016	Yes	1.9	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-12.0-12.5	JC31222R	JC31222-34R	12.0 - 12.5	11/06/2016	Yes	1.2	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-12.5-13.0	JC31222R	JC31222-35R	12.5 - 13.0	11/06/2016	Yes	0.84	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-13.5-14.0	JC31222R	JC31222-36R	13.5 - 14.0	11/06/2016	Yes	0.71	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-15.5-16.0	JC31222R	JC31222-37R	15.5 - 16.0	11/06/2016	Yes	0.88	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-17.5-18.0	JC31222	JC31222-38	17.5 - 18.0	11/06/2016	Yes	**48.5**	**J**
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-19.5-20.0	JC31222	JC31222-39	19.5 - 20.0	11/06/2016	Yes	0.57	J
B'7A	GAR-PDI-B'7A	GAR-PDI-B'7A-20.0-20.5	JC31222	JC31222-40	20.0 - 20.5	11/06/2016	Yes	**64.3**	**J**
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-1.5-2.0	JC31222R	JC31222-5R	1.5 - 2.0	11/06/2016	Yes	0.46	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-3.5-4.0	JC31222	JC31222-13	3.5 - 4.0	11/06/2016	Yes	< 0.34	UJ
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-3.5-4.0X	JC31222R	JC31222-14R	3.5 - 4.0	11/06/2016	Yes	0.62	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-4.5-5.0	JC31222	JC31222-15	4.5 - 5.0	11/06/2016	Yes	< 0.33	UJ
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-6.5-7.0	JC31222R	JC31222-16R	6.5 - 7.0	11/06/2016	Yes	0.35	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-8.5-9.0	JC31222R	JC31222-17R	8.5 - 9.0	11/06/2016	Yes	1.1	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-10.5-11.0	JC31222	JC31222-6	10.5 - 11.0	11/06/2016	Yes	0.94	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-12.0-12.5	JC31222	JC31222-7	12.0 - 12.5	11/06/2016	Yes	0.38	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-12.5-13.0	JC31222R	JC31222-8R	12.5 - 13.0	11/06/2016	Yes	0.45	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-14.5-15.0	JC31222	JC31222-9	14.5 - 15.0	11/06/2016	Yes	0.94	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-16.5-17.0	JC31222R	JC31222-10R	16.5 - 17.0	11/06/2016	Yes	0.48	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-18.5-19.0	JC31222R	JC31222-11R	18.5 - 19.0	11/06/2016	Yes	0.43	J
B'8A	GAR-PDI-B'8A	GAR-PDI-B'8A-20.0-20.5	JC31222R	JC31222-12R	20.0 - 20.5	11/06/2016	Yes	0.71	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
B8B	114CC-A8B-PB	114-A8B-6.0-6.5-PB	JB12458	JB12458-5	6.0 - 6.5	07/30/2012	Yes	**748**	**J**
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-8.0-8.5	JB62474R	JB62474-1R	8.6 - 9.1	03/20/2014	Yes	**455**	**J**
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-8.0-8.5	JB62474R	JB62474-11R	9.9 - 10.4	03/20/2014	Yes	**1340**	**J**
B8B	114-WS-B8B	114-WS-B8B-8.0-8.5	JB56607R	JB56607-15R	10.3 - 10.8	12/31/2013	Yes	**5110**	**J**
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-10.0-10.5	JB62474R	JB62474-2R	10.6 - 11.1	03/20/2014	Yes	**3650**	**J**
B8B	114-B8B	114-B8B-19	JA54961	JA54961-1	14.9 - 15.4	08/26/2010	Yes	**738**	**J**
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-10.5-11.0	JB62474R	JB62474-3R	11.1 - 11.6	03/20/2014	Yes	2.1	J
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-11.0-11.5	JB62474R	JB62474-4R	11.6 - 12.1	03/20/2014	Yes	4.5	J
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-10.0-10.5	JB62474R	JB62474-12R	11.9 - 12.4	03/20/2014	Yes	3.8	J
B8B	114-WS-B8B	114-WS-B8B-10.0-10.5	JB56607R	JB56607-16R	12.3 - 12.8	12/30/2013	Yes	**79.1**	**J**
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-12.0-12.5	JB62474R	JB62474-5R	12.6 - 13.1	03/20/2014	Yes	5.2	J
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-12.0-12.5X	JB62474R	JB62474-6R	12.6 - 13.1	03/20/2014	Yes	2.7	J
B8B	114-NW-B8B	114-NW-B8B-12.5-13.0	JB56606	JB56606-1	17.5 - 18.0	12/30/2013	Yes	< 0.13	U
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-12.0-12.5	JB62474	JB62474-13	13.9 - 14.4	03/20/2014	Yes	3.2	J
B8B	114-WS-B8B	114-WS-B8B-12.0-12.5	JB56607	JB56607-17	14.3 - 14.8	12/30/2013	Yes	**144**	**J**
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-12.5-13.0	JB62474	JB62474-14	14.4 - 14.9	03/20/2014	Yes	14.1	J
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-14.0-14.5	JB62474	JB62474-7	14.6 - 15.1	03/20/2014	Yes	1.2	J
B8B	114-WS-B8B	114-WS-B8B-12.5-13.0	JB56607	JB56607-18	14.8 - 15.3	12/30/2013	Yes	**193**	**J**
B8B	114-NW-B8B	114-NW-B8B-14.5-15.0	JB56606	JB56606-2	19.3 - 19.8	12/30/2013	Yes	1.6	
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-14.0-14.5	JB62474	JB62474-15	15.9 - 16.4	03/20/2014	Yes	**111**	**J**
B8B	114-WS-B8B	114-WS-B8B-14.0-14.5	JB57101R	JB57101-1R	16.3 - 16.8	01/07/2014	Yes	**112**	
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-16.0-16.5	JB62474	JB62474-8	16.6 - 17.1	03/20/2014	Yes	**39.6**	**J**
B8B	114-NW-B8B	114-NW-B8B-16.5-17.0	JB56606	JB56606-3	21.3 - 21.8	12/30/2013	Yes	6.7	
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-16.0-16.5	JB62474	JB62474-16	17.9 - 18.4	03/20/2014	Yes	**76.5**	**J**
B8B	114-NW-B8B	114-NW-B8B-17.0-17.5	JB56606	JB56606-4	21.8 - 22.3	12/30/2013	Yes	14.6	
B8B	114-WS-B8B	114-WS-B8B-16.0-16.5	JB57101R	JB57101-2R	18.3 - 18.8	01/07/2014	Yes	**166**	
B8B	114-NW-B8B	114-NW-B8B-17.5-18.0	JB56606	JB56606-5	22.3 - 22.8	12/30/2013	Yes	19.9	
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-18.0-18.5	JB62474	JB62474-9	18.6 - 19.1	03/20/2014	Yes	**48.1**	**J**
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-18.0-18.5	JB62474	JB62474-17	19.9 - 20.4	03/20/2014	Yes	**80.7**	**J**
B8B	114-WS-B8B	114-WS-B8B-18.0-18.5	JB57101R	JB57101-3R	20.3 - 20.8	01/07/2014	Yes	**98.5**	
B8B	114-NW-WS-B8B-XN	114-WS-B8B-XN-20.0-20.5	JB62474	JB62474-10	20.6 - 21.1	03/20/2014	Yes	**53.6**	**J**
B8B	114-WS-B8B	114-WS-B8B-19.0-19.5	JB57101R	JB57101-4R	21.3 - 21.8	01/07/2014	Yes	**99.9**	
B8B	114-WS-B8B	114-WS-B8B-19.5-20.0	JB57101	JB57101-5	21.8 - 22.3	01/07/2014	Yes	**73.3**	
B8B	114-NW-WS-B8B-XS	114-WS-B8B-XS-20.0-20.5	JB62474R	JB62474-18R	21.9 - 22.4	03/20/2014	Yes	**333**	**J**
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-1.0-1.5	JC32140	JC32140-28	1.0 - 1.5	11/20/2016	Yes	0.84	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-3.0-3.5	JC32140	JC32140-35	3.0 - 3.5	11/20/2016	Yes	1.1	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-3.0-3.5X	JC32140	JC32140-36	3.0 - 3.5	11/20/2016	Yes	< 0.34	UJ
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-5.0-5.5	JC32140	JC32140-37	5.0 - 5.5	11/20/2016	Yes	0.57	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-7.0-7.5	JC32140	JC32140-38	7.0 - 7.5	11/20/2016	Yes	0.59	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-7.5-8.0	JC32140R	JC32140-39R	7.5 - 8.0	11/20/2016	Yes	1.2	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-8.0-8.5	JC32140	JC32140-40	8.0 - 8.5	11/20/2016	Yes	2.6	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-10.0-10.5	JC32140	JC32140-29	10.0 - 10.5	11/20/2016	Yes	6.1	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-12.0-12.5	JC32140	JC32140-30	12.0 - 12.5	11/20/2016	Yes	2.4	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-14.0-14.5	JC32140	JC32140-31	14.0 - 14.5	11/20/2016	Yes	2.2	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-16.0-16.5	JC32140	JC32140-32	16.0 - 16.5	11/20/2016	Yes	1.1	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-18.0-18.5	JC32140	JC32140-33	18.0 - 18.5	11/20/2016	Yes	3.5	J
B'9A	GAR-PDI-B'9A	GAR-PDI-B'9A-20.0-20.5	JC32140	JC32140-34	20.0 - 20.5	11/20/2016	Yes	2.0	J
B9B	114CC-A9B-SW	114-A9B-0.5-1.0-SW	JB12598	JB12598-1	0.5 - 1.0	07/31/2012	Yes	**242**	**J**
B9B	114-B9B-CC-SW	114-B9B-SW-2.0-2.5	JB77012	JB77012-6	2.0 - 2.5	09/18/2014	Yes	**305**	
B9B	114CC-A9B-SW	114-A9B-2.5-3.0-SW	JB12598	JB12598-3	2.5 - 3.0	07/31/2012	Yes	**95.5**	**J**
B9B	114-B9B-CC-SW	114-B9B-SW-4.0-4.5	JB77012R	JB77012-4R	4.0 - 4.5	09/18/2014	Yes	**921**	
B9B	114-B9B-CC-SW	114-B9B-SW-4.0-4.5X	JB77012	JB77012-5	4.0 - 4.5	09/18/2014	Yes	**1020**	
B9B	114CC-A9B-SW	114-A9B-4.5-5.0-SW	JB12598R	JB12598-4R	4.5 - 5.0	07/31/2012	Yes	0.27	J
B9B	114-B9B-CC-SW	114-B9B-SW-5.5-6.0	JB77012R	JB77012-3R	5.5 - 6.0	09/18/2014	Yes	**379**	
B9B	GAR-PDI-B9B	GAR-PDI-B9B-6.0-6.5	JC32158	JC32158-13	6.0 - 6.5	11/21/2016	Yes	**601**	
B9B	114-B9B-CC-PB	114-B9B-SW-6.0-6.5	JB77012R	JB77012-2R	6.0 - 6.5	09/18/2014	Yes	**484**	
B9B	114CC-A9B-PB	114-A9B-6.0-6.5-PB	JB12598	JB12598-2	6.0 - 6.5	07/31/2012	Yes	**2220**	**J**
B9B	GAR-PDI-B9B	GAR-PDI-B9B-8.0-8.5	JC32158	JC32158-14	8.0 - 8.5	11/21/2016	Yes	**1240**	
B9B	114-B9B-PB	114-B9B-PB-12.8-13.3	JB50372	JB50372-4	12.8 - 13.3	10/16/2013	Yes	0.66	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-0.5-1.0	JC32870	JC32870-2	0.5 - 1.0	12/04/2016	Yes	6.2	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-2.0-2.5	JC32870	JC32870-8	2.0 - 2.5	12/04/2016	Yes	3.5	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-3.0-3.5	JC32870	JC32870-10	3.0 - 3.5	12/04/2016	Yes	1.2	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-3.5-4.0	JC32870	JC32870-11	3.5 - 4.0	12/04/2016	Yes	1.3	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-4.0-4.5	JC32870	JC32870-12	4.0 - 4.5	12/04/2016	Yes	1.8	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-6.0-6.5	JC32870	JC32870-13	6.0 - 6.5	12/04/2016	Yes	0.39	J
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-8.0-8.5	JC32870	JC32870-14	8.0 - 8.5	12/04/2016	Yes	< 0.34	U
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-10.0-10.5	JC32870	JC32870-3	10.0 - 10.5	12/04/2016	Yes	0.38	J
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-12.0-12.5	JC32870	JC32870-4	12.0 - 12.5	12/04/2016	Yes	< 0.34	U
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-14.0-14.5	JC32870	JC32870-5	14.0 - 14.5	12/04/2016	Yes	0.56	
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-16.0-16.5	JC32870	JC32870-6	16.0 - 16.5	12/04/2016	Yes	0.44	J
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-18.0-18.5	JC32870	JC32870-7	18.0 - 18.5	12/04/2016	Yes	< 0.32	U
C'10A	GAR-PDI-C'10A	GAR-PDI-C'10A-20.0-20.5	JC32870	JC32870-9	20.0 - 20.5	12/04/2016	Yes	< 0.32	U
C10B	114-C10B	114-C10B-6.5-7.0	JB3645	JB3645-1	6.5 - 7.0	04/06/2012	Yes	**2770**	
C10B	114-C10B	114-C10B-8.5-9.0	JB3645	JB3645-2	8.5 - 9.0	04/06/2012	Yes	**4010**	
C10B	114-C10B	114-C10B-10.5-11.0	JB3645	JB3645-3	10.5 - 11.0	04/06/2012	Yes	**6600**	
C10B	114-C10B	114-C10B-12.5-13.0	JB3645	JB3645-4	12.5 - 13.0	04/06/2012	Yes	**7630**	
C10B	114-C10B	114-C10B-12.5-13.0X	JB3645	JB3645-5	12.5 - 13.0	04/06/2012	Yes	**8250**	
C10B	114-C10B	114-C10B-14.5-15.0	JB4964	JB4964-1	14.5 - 15.0	04/25/2012	Yes	**917**	
C10B	114-C10B	114-C10B-15.0-15.5	JB4964	JB4964-2	15.0 - 15.5	04/25/2012	Yes	**834**	
C10B	114-C10B-PB	114-C10B-PB-15.9-16.4	JB50372	JB50372-6	15.9 - 16.4	10/16/2013	Yes	2.0	J
C10B	114-C10B-PB	114-C10B-PB-15.9-16.4X	JB50372	JB50372-5	15.9 - 16.4	10/16/2013	Yes	1.3	J
C10B	114-C10B	114-C10B-19.9-20.4	JB4964	JB4964-3	19.9 - 20.4	04/25/2012	Yes	18.1	
C11B	114-C11B-CC-SW	114-C11B-SW-2.0-2.5	JB77397	JB77397-5	2.0 - 2.5	09/23/2014	Yes	**248**	
C11B	114-C11B-CC-SW	114-C11B-SW-4.0-4.5	JB77397	JB77397-4	4.0 - 4.5	09/23/2014	Yes	**81.1**	
C11B	GAR-PDI-B11B	GAR-PDI-B11B-6.0-6.5	JC32549R	JC32549-7R	6.0 - 6.5	11/30/2016	Yes	0.65	J
C11B	GAR-PDI-B11B	GAR-PDI-B11B-6.0-6.5X	JC32549R	JC32549-8R	6.0 - 6.5	11/30/2016	Yes	0.58	J
C11B	114-C11B-CC-SW	114-C11B-SW-5.5-6.0	JB77397	JB77397-3	5.5 - 6.0	09/23/2014	Yes	**109**	
C11B	114-C11B-CC-PB	114-C11B-PB-6.0-6.5	JB77397	JB77397-2	6.0 - 6.5	09/23/2014	Yes	**194**	
C11B	GAR-PDI-B11B	GAR-PDI-B11B-8.0-8.5	JC32549R	JC32549-9R	8.0 - 8.5	11/30/2016	Yes	**1790**	**J**
C11B	GAR-PDI-C11B	GAR-PDI-C11B-9.0-9.5	JC32774	JC32774-4	9.0 - 9.5	12/02/2016	Yes	**4470**	**J**
C11B	GAR-PDI-C11B	GAR-PDI-C11B-9.0-9.5X	JC32774	JC32774-5	9.0 - 9.5	12/02/2016	Yes	**3360**	**J**
C11B	GAR-PDI-B11B	GAR-PDI-B11B-10.0-10.5	JC32549	JC32549-2	10.0 - 10.5	11/30/2016	Yes	14.6	J
C11B	GAR-PDI-B11B	GAR-PDI-B11B-12.0-12.5	JC32549R	JC32549-3R	12.0 - 12.5	11/30/2016	Yes	14.3	J
C11B	114-C11B-PB	114-C11B-PB-13.5-14.0	JB50487AR	JB50487-8AR	13.5 - 14.0	10/17/2013	Yes	1.6	J
C11B	114-C11B-PB	114-C11B-PB-13.5-14.0X	JB50487AR	JB50487-7AR	13.5 - 14.0	10/17/2013	Yes	3.7	J
C11B	GAR-PDI-B11B	GAR-PDI-B11B-13.0-13.5	JC32549R	JC32549-4R	13.0 - 13.5	11/30/2016	Yes	0.33	J
C11B	114-C11B	114-C11B-14.5-15.0	JB4865R	JB4865-1R	14.5 - 15.0	04/24/2012	Yes	0.70	J
C11B	GAR-PDI-B11B	GAR-PDI-B11B-13.5-14.0	JC32549	JC32549-5	13.5 - 14.0	11/30/2016	Yes	**1450**	**J**
C11B	GAR-PDI-B11B	GAR-PDI-B11B-14.5-15.0	JC32549R	JC32549-6R	14.5 - 15.0	11/30/2016	Yes	2.6	J
C11B	GAR-PDI-C11B	GAR-PDI-C11B-16.0-16.5	JC33206	JC33206-9	16.0 - 16.5	12/08/2016	Yes	15.0	J
C11B	GAR-PDI-C11B	GAR-PDI-C11B-18.0-18.5	JC33206	JC33206-10	18.0 - 18.5	12/08/2016	Yes	1.8	J
C11B	GAR-PDI-C11B	GAR-PDI-C11B-20.0-20.5	JC33206	JC33206-11	20.0 - 20.5	12/08/2016	Yes	1.5	J
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-0.3-0.8	JC32870	JC32870-15	0.3 - 0.8	12/04/2016	Yes	7.2	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-2.0-2.5	JC32870	JC32870-21	2.0 - 2.5	12/04/2016	Yes	1.3	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-2.0-2.5X	JC32870	JC32870-22	2.0 - 2.5	12/04/2016	Yes	1.2	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-2.5-3.0	JC32870	JC32870-23	2.5 - 3.0	12/04/2016	Yes	0.64	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-4.0-4.5	JC32870	JC32870-25	4.0 - 4.5	12/04/2016	Yes	0.57	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-6.0-6.5	JC32870	JC32870-26	6.0 - 6.5	12/04/2016	Yes	5.1	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-8.0-8.5	JC32870	JC32870-27	8.0 - 8.5	12/04/2016	Yes	0.54	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-10.0-10.5	JC32870	JC32870-16	10.0 - 10.5	12/04/2016	Yes	0.58	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-12.0-12.5	JC32870	JC32870-17	12.0 - 12.5	12/04/2016	Yes	0.48	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-14.0-14.5	JC32870	JC32870-18	14.0 - 14.5	12/04/2016	Yes	< 0.32	U
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-16.0-16.5	JC32870	JC32870-19	16.0 - 16.5	12/04/2016	Yes	0.70	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-18.0-18.5	JC32870	JC32870-20	18.0 - 18.5	12/04/2016	Yes	0.61	
C'12A	GAR-PDI-C'12A	GAR-PDI-C'12A-20.0-20.5	JC32870	JC32870-24	20.0 - 20.5	12/04/2016	Yes	0.56	

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
C12B	114-C12B-CC-SW	114-C12B-SW-2.0-2.5	JB77550R	JB77550-5R	2.0 - 2.5	09/24/2014	Yes	**85.0**	**J**
C12B	EF-115	EF-B115-4.0-4.5	JB15502R	JB15502-2R	4.0 - 4.5	09/05/2012	Yes	**146**	**J**
C12B	114-C12B-CC-SW	114-C12B-SW-4.0-4.5	JB77550R	JB77550-4R	4.0 - 4.5	09/24/2014	Yes	**110**	**J**
C12B	114-C12B-CC-SW	114-C12B-SW-5.5-6.0	JB77550R	JB77550-3R	5.5 - 6.0	09/24/2014	Yes	**206**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-6.5-7.0	JC37244R	JC37244-7R	6.5 - 7.0	02/15/2017	Yes	1.5	J
C12B	114-C12B-CC-PB	114-C12B-PB-6.0-6.5	JB77550R	JB77550-2R	6.0 - 6.5	09/24/2014	Yes	**195**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-8.5-9.0	JC37244R	JC37244-8R	8.5 - 9.0	02/15/2017	Yes	**1870**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-9.0-9.5	JC37244	JC37244-9	9.0 - 9.5	02/15/2017	Yes	**1450**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-10.5-11.0	JC37244	JC37244-2	10.5 - 11.0	02/15/2017	Yes	**1500**	**J**
C12B	114-C12B-PB	114-C12B-PB-12.8-13.3	JB50487AR	JB50487-9R	12.8 - 13.3	10/17/2013	Yes	2.9	J
C12B	GAR-PDI-C12B	GAR-PDI-C12B-14.0-14.5	JC37244R	JC37244-3R	14.0 - 14.5	02/15/2017	Yes	1.5	J
C12B	GAR-PDI-C12B	GAR-PDI-C12B-16.0-16.5	JC37244	JC37244-4	16.0 - 16.5	02/15/2017	Yes	**59.0**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-18.0-18.5	JC37244R	JC37244-5R	18.0 - 18.5	02/15/2017	Yes	**25.7**	**J**
C12B	GAR-PDI-C12B	GAR-PDI-C12B-20.0-20.5	JC37244R	JC37244-6R	20.0 - 20.5	02/15/2017	Yes	**21.1**	**J**
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-0.3-0.8	JC32140	JC32140-41	0.3 - 0.8	11/20/2016	Yes	3.6	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-2.0-2.5	JC32140R	JC32140-47R	2.0 - 2.5	11/20/2016	Yes	0.94	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-4.0-4.5	JC32140	JC32140-49	4.0 - 4.5	11/20/2016	Yes	1.3	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-6.0-6.5	JC32140	JC32140-50	6.0 - 6.5	11/20/2016	Yes	1.2	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-6.5-7.0	JC32140	JC32140-51	6.5 - 7.0	11/20/2016	Yes	0.69	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-7.0-7.5	JC32140R	JC32140-52R	7.0 - 7.5	11/20/2016	Yes	0.51	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-8.0-8.5	JC32140	JC32140-53	8.0 - 8.5	11/20/2016	Yes	0.37	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-10.0-10.5	JC32140R	JC32140-42R	10.0 - 10.5	11/20/2016	Yes	0.91	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-12.0-12.5	JC32140	JC32140-43	12.0 - 12.5	11/20/2016	Yes	0.77	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-14.0-14.5	JC32140R	JC32140-44R	14.0 - 14.5	11/20/2016	Yes	0.52	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-16.0-16.5	JC32140	JC32140-45	16.0 - 16.5	11/20/2016	Yes	1.2	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-18.0-18.5	JC32140	JC32140-46	18.0 - 18.5	11/20/2016	Yes	1.2	J
C'13A	GAR-PDI-C'13A	GAR-PDI-C'13A-20.0-20.5	JC32140	JC32140-48	20.0 - 20.5	11/20/2016	Yes	2.9	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-2.0-2.5	JC33970	JC33970-7	2.0 - 2.5	12/18/2016	Yes	2.3	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-4.0-4.5	JC33970	JC33970-9	4.0 - 4.5	12/18/2016	Yes	0.93	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-6.0-6.5	JC33970	JC33970-10	6.0 - 6.5	12/18/2016	Yes	0.39	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-8.0-8.5	JC33970	JC33970-11	8.0 - 8.5	12/18/2016	Yes	0.78	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-8.5-9.0	JC33970	JC33970-12	8.5 - 9.0	12/18/2016	Yes	< 0.32	UJ
C13B	GAR-PDI-C13B	GAR-PDI-C13B-10.0-10.5	JC33970	JC33970-1	10.0 - 10.5	12/18/2016	Yes	0.59	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-10.0-10.5X	JC33970	JC33970-2	10.0 - 10.5	12/18/2016	Yes	0.91	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-12.0-12.5	JC33970	JC33970-3	12.0 - 12.5	12/18/2016	Yes	1.5	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-14.0-14.5	JC33970R	JC33970-4R	14.0 - 14.5	12/18/2016	Yes	1.1	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-16.0-16.5	JC33970	JC33970-5	16.0 - 16.5	12/18/2016	Yes	7.6	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-18.0-18.5	JC33970	JC33970-6	18.0 - 18.5	12/18/2016	Yes	7.2	J
C13B	GAR-PDI-C13B	GAR-PDI-C13B-20.0-20.5	JC33970	JC33970-8	20.0 - 20.5	12/18/2016	Yes	0.76	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-2.0-2.5	JC30780	JC30780-39	2.0 - 2.5	10/30/2016	Yes	6.5	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-4.0-4.5	JC30780T	JC30780-41T	4.0 - 4.5	10/30/2016	Yes	0.84	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-6.0-6.5	JC30780	JC30780-42	6.0 - 6.5	10/30/2016	Yes	3.9	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-8.0-8.5	JC30780	JC30780-43	8.0 - 8.5	10/30/2016	Yes	2.6	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-10.0-10.5	JC30780T	JC30780-31T	10.0 - 10.5	10/30/2016	Yes	0.82	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-10.5-11.0	JC30780	JC30780-32	10.5 - 11.0	10/30/2016	Yes	< 0.37	UJ
C14B	GAR-PDI-C14B	GAR-PDI-C14B-11.0-11.5	JC30780T	JC30780-33T	11.0 - 11.5	10/30/2016	Yes	0.67	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-12.0-12.5	JC30780	JC30780-34	12.0 - 12.5	10/30/2016	Yes	1.1	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-14.0-14.5	JC30780	JC30780-35	14.0 - 14.5	10/30/2016	Yes	8.2	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-16.0-16.5	JC30780T	JC30780-36T	16.0 - 16.5	10/30/2016	Yes	11.8	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-16.0-16.5X	JC30780	JC30780-37	16.0 - 16.5	10/30/2016	Yes	18.9	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-18.0-18.5	JC30780	JC30780-38	18.0 - 18.5	10/30/2016	Yes	1.5	J
C14B	GAR-PDI-C14B	GAR-PDI-C14B-20.0-20.5	JC30780T	JC30780-40T	20.0 - 20.5	10/30/2016	Yes	9.9	J

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							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
C'16A	EF-36	EF-B36-0.5	460257051	460-25705-20	0.5 - 1.0	04/22/2011	Yes	< 0.58	UJ
C'16A	EF-36	EF-B36-2.0	460257051	460-25705-21	2.0 - 2.5	04/22/2011	Yes	< 0.57	UJ
C'16A	EF-36	EF-B36-4.0	460257051	460-25705-23	4.0 - 4.5	04/22/2011	Yes	< 0.60	UJ
C'16A	EF-36	EF-B36-6.0	460257601	460-25760-21	6.0 - 6.5	04/25/2011	Yes	< 0.60	U
C'16A	EF-36	EF-B36-12.0	460257601	460-25760-24	12.0 - 12.5	04/25/2011	Yes	< 0.57	U
C'16A	EF-36	EF-B36-15.5	460257601	460-25760-25	15.5 - 16.0	04/25/2011	Yes	< 0.57	U
C'16A	EF-36	EF-B36-20.0	460257601	460-25760-26	20.0 - 20.5	04/25/2011	Yes	< 0.57	U
C'6A	EF-38A	EF-B38A-0.5	460257601	460-25760-1	0.5 - 1.0	04/25/2011	Yes	1.9	J
C'6A	EF-38	EF-B38-0.5	460257051	460-25705-32	0.5 - 1.0	04/22/2011	Yes	< 0.57	UJ
C'6A	EF-38A	EF-B38A-2.0	460257601	460-25760-2	2.0 - 2.5	04/25/2011	Yes	< 0.58	U
C'6A	EF-38	EF-B38-2.0	460257051	460-25705-33	2.0 - 2.5	04/22/2011	Yes	< 0.60	UJ
C'6A	EF-38A	EF-B38A-4.0	460257601	460-25760-4	4.0 - 4.5	04/25/2011	Yes	< 0.64	U
C'6A	EF-38A	EF-B38-6.0	460258041	460-25804-1	6.0 - 6.5	04/26/2011	Yes	< 0.62	U
C'6A	EF-38A	EF-B38-11.0	460258041	460-25804-3	11.0 - 11.5	04/26/2011	Yes	< 0.57	U
C'6A	EF-38A	EF-B38-16.0	460258041	460-25804-4	16.0 - 16.5	04/26/2011	Yes	< 0.55	U
C'6A	EF-38A	EF-B38-21.0	460258041	460-25804-5	21.0 - 21.5	04/26/2011	Yes	0.74	J
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-0.5-1.0	JC35045	JC35045-4	0.5 - 1.0	01/08/2017	Yes	7.2	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-2.5-3.0	JC35045	JC35045-10	2.5 - 3.0	01/08/2017	Yes	5.7	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-4.5-5.0	JC35045	JC35045-12	4.5 - 5.0	01/08/2017	Yes	< 0.34	U
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-6.0-6.5	JC35045	JC35045-13	6.0 - 6.5	01/08/2017	Yes	0.58	
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-6.5-7.0	JC35045	JC35045-14	6.5 - 7.0	01/08/2017	Yes	< 0.35	UJ
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-8.5-9.0X	JC35045	JC35045-16	6.5 - 7.0	01/08/2017	Yes	< 0.32	UJ
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-8.5-9.0	JC35045	JC35045-15	8.5 - 9.0	01/08/2017	Yes	0.50	J
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-10.5-11.0	JC35045	JC35045-5	10.5 - 11.0	01/08/2017	Yes	< 0.32	U
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-12.5-13.0	JC35045	JC35045-6	12.5 - 13.0	01/08/2017	Yes	< 0.32	U
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-14.5-15.0	JC35045	JC35045-7	14.5 - 15.0	01/08/2017	Yes	0.37	J
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-16.5-17.0	JC35045	JC35045-8	16.5 - 17.0	01/08/2017	Yes	< 0.32	U
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-18.5-19.0	JC35045	JC35045-9	18.5 - 19.0	01/08/2017	Yes	< 0.31	U
C'7A	GAR-PDI-C'7A	GAR-PDI-C'7A-20.0-20.5	JC35045	JC35045-11	20.0 - 20.5	01/08/2017	Yes	< 0.32	U
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-0.5-1.0	JC35045R	JC35045-17R	0.5 - 1.0	01/08/2017	Yes	2.9	
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-1.5-2.0	JC35045R	JC35045-18R	1.5 - 2.0	01/08/2017	Yes	2.5	
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-2.0-2.5	JC35045R	JC35045-24R	2.0 - 2.5	01/08/2017	Yes	1.5	
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-4.0-4.5	JC35045R	JC35045-26R	4.0 - 4.5	01/08/2017	Yes	3.8	
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-6.0-6.5	JC35045R	JC35045-27R	6.0 - 6.5	01/08/2017	Yes	0.74	
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-8.0-8.5	JC35045	JC35045-28	8.0 - 8.5	01/08/2017	Yes	< 0.32	U
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-10.0-10.5	JC35045R	JC35045-19R	10.0 - 10.5	01/08/2017	Yes	2.3	
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-12.0-12.5	JC35045R	JC35045-20R	12.0 - 12.5	01/08/2017	Yes	0.70	J
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-14.0-14.5	JC35045R	JC35045-21R	14.0 - 14.5	01/08/2017	Yes	0.45	
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-16.0-16.5	JC35045	JC35045-22	16.0 - 16.5	01/08/2017	Yes	< 0.32	UJ
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-18.0-18.5	JC35045	JC35045-23	18.0 - 18.5	01/08/2017	Yes	< 0.32	U
C'8A	GAR-PDI-C'8A	GAR-PDI-C'8A-20.0-20.5	JC35045R	JC35045-25R	20.0 - 20.5	01/08/2017	Yes	1.1	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-1.0-1.5	JC32870	JC32870-28	1.0 - 1.5	12/04/2016	Yes	3.0	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-2.0-2.5	JC32870	JC32870-35	2.0 - 2.5	12/04/2016	Yes	0.41	J
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-2.5-3.0	JC32870	JC32870-36	2.5 - 3.0	12/04/2016	Yes	< 0.36	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-4.0-4.5	JC32870	JC32870-38	4.0 - 4.5	12/04/2016	Yes	1.2	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-6.0-6.5	JC32870	JC32870-39	6.0 - 6.5	12/04/2016	Yes	0.81	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-8.0-8.5	JC32870	JC32870-40	8.0 - 8.5	12/04/2016	Yes	1.0	
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-10.0-10.5	JC32870	JC32870-29	10.0 - 10.5	12/04/2016	Yes	< 0.34	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-12.0-12.5	JC32870	JC32870-30	12.0 - 12.5	12/04/2016	Yes	< 0.35	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-12.0-12.5X	JC32870	JC32870-31	12.0 - 12.5	12/04/2016	Yes	< 0.35	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-14.0-14.5	JC32870	JC32870-32	14.0 - 14.5	12/04/2016	Yes	0.36	J
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-16.0-16.5	JC32870	JC32870-33	16.0 - 16.5	12/04/2016	Yes	< 0.33	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-18.0-18.5	JC32870	JC32870-34	18.0 - 18.5	12/04/2016	Yes	< 0.34	U
C'9A	GAR-PDI-C'9A	GAR-PDI-C'9A-20.0-20.5	JC32870	JC32870-37	20.0 - 20.5	12/04/2016	Yes	< 0.34	U

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
D12B	MW3B	MW3B-0-_664542	R2318036	664542	0.0 - 0.5	08/15/2003	Yes	**222**	**J**
D12B	MW3B	MW3B-2._664544	R2318036	664544	2.6 - 3.1	08/15/2003	Yes	**27.8**	**J**
D12B	MW3B	MW3B-6-_664545	R2318036	664545	6.0 - 6.5	08/15/2003	Yes	**40.8**	**J**
D12B	114-D12B	114-D12B-6.5-7.0	JB3645	JB3645-6	6.5 - 7.0	04/06/2012	Yes	1.6	
D12B	114-D12B	114-D12B-8.0-8.5	JB3645	JB3645-7	8.0 - 8.5	04/06/2012	Yes	0.27	J
D12B	114-D12B	114-D12B-10.5-11.0	JB3645	JB3645-8	10.5 - 11.0	04/06/2012	Yes	**1040**	
D12B	114-D12B	114-D12B-12.0-12.5	JB3645	JB3645-9	12.0 - 12.5	04/06/2012	Yes	**885**	
D12B	114-D12B	114-D12B-14.5-15.0	JB3645	JB3645-10	14.5 - 15.0	04/06/2012	Yes	0.46	J
D12B	MW3B	MW3B-17_664546	R2318036	664546	17.5 - 18.0	08/15/2003	Yes	< 4.4	UJ
D12B	MW3B	MW3B-28_665407	R2318079	665407	28.0 - 28.5	08/19/2003	Yes	< 5.06	UJ
D12B	MW3B	MW3B-35_665408	R2318079	665408	35.5 - 36.0	08/19/2003	Yes	< 4.83	UJ
D13B	P4-GA-D14B	114-D14B-0.0-0.5	JB74714	JB74714-21	0.0 - 0.5	08/21/2014	Yes	**20.5**	**J**
D13B	114-D13B-CC-SW	114-D13B-SW-2.0-2.5	JB77760R	JB77760-4R	2.0 - 2.5	09/26/2014	Yes	**39.2**	**J**
D13B	114-D13B	114-D13B-6.0-6.5	JB3645	JB3645-11	6.0 - 6.5	04/06/2012	Yes	**43.5**	
D13B	114-D13B-CC-SW	114-D13B-SW-4.0-4.5	JB77760	JB77760-3	4.0 - 4.5	09/26/2014	Yes	4.3	J
D13B	114-D13B-CC-SW	114-D13B-SW-5.5-6.0	JB77760	JB77760-2	5.5 - 6.0	09/26/2014	Yes	**119**	**J**
D13B	114-D13B	114-D13B-8.0-8.5	JB3645	JB3645-12R	8.0 - 8.5	04/06/2012	Yes	**32.6**	**J**
D13B	114-D13B-CC-PB	114-D13B-PB-6.0-6.5	JB77760	JB77760-1	6.0 - 6.5	09/26/2014	Yes	4.8	J
D13B	114-D13B	114-D13B-10.5-11.0	JB3756	JB3756-6	10.5 - 11.0	04/09/2012	Yes	3.0	J
D13B	114-D13B	114-D13B-12.0-12.5	JB3756	JB3756-7	12.0 - 12.5	04/09/2012	Yes	**25.4**	**J**
D13B	114-D13B	114-D13B-14.0-14.5	JB3756	JB3756-8	14.0 - 14.5	04/09/2012	Yes	19.1	J
D13B	114-D13B	114-D13B-16.0-16.5	JB3756	JB3756-9	16.0 - 16.5	04/09/2012	Yes	5.9	J
D13B	114-D13B	114-D13B-18.5-19.0	JB3756	JB3756-10	18.5 - 19.0	04/09/2012	Yes	**30.0**	**J**
D13B	114-D13B	114-D13B-18.5-19.0X	JB3756	JB3756-11	18.5 - 19.0	04/09/2012	Yes	**22.0**	**J**
D13B	114-D13B	114-D13B-20.5-21.0	JB3756	JB3756-12	20.5 - 21.0	04/09/2012	Yes	18.3	J
D13B	114-D13B	114-D13B-21.5-22.0	JB3756	JB3756-13	21.5 - 22.0	04/09/2012	Yes	12.1	J
D14B	GAR-PDI-D14B	GAR-PDI-D14B-5.0-5.5	JC33472	JC33472-21	5.0 - 5.5	12/11/2016	Yes	16.2	
D14B	GAR-PDI-D14B	GAR-PDI-D14B-7.0-7.5	JC33472	JC33472-22	7.0 - 7.5	12/11/2016	Yes	**309**	
D14B	GAR-PDI-D14B	GAR-PDI-D14B-8.5-9.0	JC33472	JC33472-23	8.5 - 9.0	12/11/2016	Yes	**341**	
D14B	GAR-PDI-D14B	GAR-PDI-D14B-9.0-9.5	JC33472	JC33472-24	9.0 - 9.5	12/11/2016	Yes	**73.3**	
D'9A	EF-37	EF-B37-0.5	460257051	460-25705-28	0.5 - 1.0	04/22/2011	Yes	< 0.56	UJ
D'9A	EF-37	EF-B37-2.0	460257051	460-25705-29	2.0 - 2.5	04/22/2011	Yes	0.67	J
D'9A	EF-37	EF-B37-4.0	460257051	460-25705-31	4.0 - 4.5	04/22/2011	Yes	< 0.58	UJ
D'9A	EF-37	EF-B37-6.0	460257601	460-25760-27	6.0 - 6.5	04/25/2011	Yes	0.82	J
D'9A	EF-37	EF-B37-11.0	460257601	460-25760-29	11.0 - 11.5	04/25/2011	Yes	< 0.57	U
E'14A	EF-119	EF-B119-4.0-4.5	JB15252	JB15252-4	4.0 - 4.5	08/31/2012	Yes	0.45	J
E'14A	EF-119	EF-B119-6.0-6.5	JB15252	JB15252-5	6.0 - 6.5	08/31/2012	Yes	0.20	J

Table 1A
Validated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte	CHROMIUM (HEXAVALENT)	
							CAS RN	18540-29-9	
							Units	mg/kg	
							CrSCC	20	
Grid ID	Location ID	Sample ID	Lab SDG	Lab ID	Depth Interval (ft bgs)	Collection Date	Validated	Result	Qualifier
Offsite	114-MW16AB-O	114-MW16AB-O-2.0-2.5	JC36049	JC36049-1	2.0 - 2.5	01/24/2017	Yes	2.3	J
Offsite	114-MW16AB-O	114-MW16AB-O-4.5-5.0	JC36049	JC36049-2	4.5 - 5.0	01/24/2017	Yes	4.0	J
Offsite	114-MW16AB-O	114-MW16AB-O-4.5-5.0X	JC36049R	JC36049-3R	4.5 - 5.0	01/24/2017	Yes	1.4	J
Offsite	114-MW16AB-O	114-MW16AB-O-5.5-6.0	JC36049	JC36049-4	5.5 - 6.0	01/24/2017	Yes	1.7	J

Notes:
Bolded value - Indicates exceedance of NJDEP CrSCC
CAS RN - Chemical Abstract Service Registry Number
Cr^{+6} - Hexavalent chromium
CrSCC - NJDEP Interim Chromium Soil Cleanup Criteria
ft bgs - feet below ground surface
mg/kg - milligram per kilogram
NJDEP - New Jersey Department of Environmental Protection
SDG - Sample Delivery Group
"X" at the end of the Sample ID indicates field duplicate sample.
Qualifiers:
J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sampl
U - The analyte was not detected at the reported Method Detection Limit.
UJ - The analyte was not detected above the reporting limit and the reporting limit was approximate.
R - The sample result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.
RA - The result for this analyte has been rejected, but is useable.

Table 1B
Unvalidated Cr^{+6} Sample Results Summary
Garfield Avenue Cross Sections
PPG, Jersey City, New Jersey

							Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Grid ID	**Location ID**	**Sample ID**	**Lab SDG**	**Lab ID**	**Depth Interval (ft bgs)**	**Collection Date**	**Validated**	**Result**	**Qualifier**
A'0	114GAR-2	114GAR2_3.0	JA99472	JA99472-1	3.0 - 3.0	02/15/2012	No	< 0.23	U
A'0	114GAR-2	114GAR2_3.0	JA99472R	JA99472-1R	3.0 - 3.0	02/15/2012	No	< 0.23	U
A'12A	PPG-1	PPG-1	JB6356	JB6356-6	5.0 - 5.0	05/11/2012	No	**30.7**	
A'13A	114TP-1N-(3)	114-TP1-N(4-6)	JA90809	JA90809-4	0.3 - 0.5	11/01/2011	No	0.78	
A'13A	114TP-1N-(5)	114-TP1-N(126-132)	JA90809	JA90809-6	10.5 - 11.0	11/01/2011	No	2.3	
A'13A	114-A`13A-PTR	114-A'13A-PTR-9.5-10.0	460560681	460-56068-3	9.5 - 10.0	05/14/2013	No	< 0.62	U
A'13A	114-A`13A-PTR	114-A'13A-PTR-9.5-10.0RM	460560681	460-56068-11	9.5 - 10.0	05/16/2013	No	< 0.49	U
A'13A	114-A`13A-PTR	114-A'13A-PTR-11.5-12.0	460560681	460-56068-5	11.5 - 12.0	05/14/2013	No	< 0.61	U
A'13A	114-A`13A-PTR	114-A'13A-PTR-11.5-12.0RM	460560681	460-56068-6	11.5 - 12.0	05/14/2013	No	0.52	J
A'13A	114-A`13A-PTR	114-A'13A-PTR-13.5-14.0	460560681	460-56068-7	13.5 - 14.0	05/14/2013	No	< 0.60	U
A'13A	114-A`13A-PTR	114-A'13A-PTR-13.5-14.0RM	460560681	460-56068-8	13.5 - 14.0	05/14/2013	No	< 0.49	U
A'13A	114-A`13A-PTR	114-A'13A-PTR-15.5-16.0	460560681	460-56068-9	15.5 - 16.0	05/14/2013	No	3.0	
A'13A	114-A`13A-PTR	114-A'13A-PTR-15.5-16.0RM	460560681	460-56068-10	15.5 - 16.0	05/14/2013	No	8.2	
A'13A	114-A`13A-PTR	114-A'13A-PTR-17.5-18.0	460560681	460-56068-2	17.5 - 18.0	05/14/2013	No	3.6	
A'13A	114-A`13A-PTR	114-A'13A-PTR-17.5-18.0RM	460560681	460-56068-4	17.5 - 18.0	05/14/2013	No	**23.1**	
A'13A	114-A`13A-PTR	114-A'13A-PTR-19.5-20.0	460560681	460-56068-17	19.5 - 20.0	05/17/2013	No	7.7	
A'13A	114-A`13A-PTR	114-A'13A-PTR-19.5-20.0RM	460560681	460-56068-18	19.5 - 20.0	05/17/2013	No	11.9	
A'13A	114-A`13A-PTR	114-A'13A-PTR-19.5-20.0RMX	460560681	460-56068-19	19.5 - 20.0	05/17/2013	No	12.1	
A'13A	114-A`13A-PTR	114-A'13A-PTR-19.5-20.0X	460560681	460-56068-20	19.5 - 20.0	05/17/2013	No	12.2	
A'14A	114TP-1S-(1)	114-TP1-S(12-19)	JA90809	JA90809-1	1.0 - 1.6	10/31/2011	No	1.8	
A'14A	114TP-1N-(2)	114-TP1-N(84-89)	JA90809	JA90809-2	7.0 - 7.4	11/01/2011	No	0.74	
A'14A	114TP-1N-(2)	114-TP1-ND(84-89)	JA90809	JA90809-3	7.0 - 7.4	11/01/2011	No	0.48	B
A'14A	114TP-1N-(4)	114-TP1-N(90-96)	JA90809	JA90809-5	7.5 - 8.0	11/01/2011	No	< 0.25	U
A'16A	143-P3A-WC-A`15A18A	143-P3A-WC-A`15A18A-C-0.0-4.0	JB44740	JB44740-14	0.0 - 4.0	08/14/2013	No	8.9	
A'16A	143-P3A-WC-A`15A18A	143-P3A-WC-A`15A18A-C-0.0-4.0	JB44740R	JB44740-14R	0.0 - 4.0	08/14/2013	No	16.4	
A'16A	143-P3A-WC-A`15A18A	143-P3A-WC-A`15A18A-C-4.0-6.0	JB44740	JB44740-15	4.0 - 6.0	08/14/2013	No	4.9	
A'16A	143-P3A-WC-A`15A18A	143-P3A-WC-A`15A18A-C-4.0-6.0	JB44740R	JB44740-15R	4.0 - 6.0	08/14/2013	No	5.8	
A'16A	143-P3A-WC-A`15A18A	143-P3A-WC-A`15A18A-C-6.0-10.0	JB44740	JB44740-16	6.0 - 10.0	08/14/2013	No	0.20	B
A'16A	143-P3A-WC-A`15A18A	143-P3A-WC-A`15A18A-C-6.0-10.0	JB44740R	JB44740-16R	6.0 - 10.0	08/14/2013	No	1.7	
A1A	PPG-8	PPG-8	JB6525	JB6525-24	7.0 - 7.0	05/14/2012	No	**26.8**	
A'1B	TPB	TPB-001	R2421885	738092	1.1 - 1.6	06/23/2004	No	< 4.76	U
A'1B	TPB	TPB-002	R2421885	738093	2.5 - 3.0	06/23/2004	No	< 5.14	U
A3A	PPG-7	PPG-7	JB6525	JB6525-18	10.0 - 10.0	05/14/2012	No	**32.3**	
A5A	PPG-6	PPG-6	JB6525	JB6525-12	6.5 - 6.5	05/14/2012	No	0.63	
B'12A	114GAR-1	114 GAR1_4.0	JA99548	JA99548-1	4.0 - 4.0	02/16/2012	No	< 0.24	U
B8B	114-NW-WC-B8B	114-NW-WC-B8B-C-0.0-12.5	JB60721	JB60721-1	0.0 - 12.5	02/27/2014	No	**63.4**	
B8B	114-NW-WC-B8B	114-NW-WC-B8B-C-0.0-12.5	JB60721R	JB60721-1R	0.0 - 12.5	02/27/2014	No	**74.1**	

Notes:
Bolded value - Indicates exceedance of NJDEP CrSCC
CAS RN - Chemical Abstract Service Registry Number
Cr^{+6} - Hexavalent chromium
CrSCC - NJDEP Interim Chromium Soil Cleanup Criteria
ft bgs - feet below ground surface
mg/kg - milligram per kilogram
NJDEP - New Jersey Department of Environmental Protection
SDG - Sample Delivery Group
"X" at the end of the Sample ID indicates field duplicate sample.
Qualifiers:
B - The result is qualified due to potential laboratory blank contamination.
J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.
U - The analyte was not detected at the reported Method Detection Limit.

Figures

16A 15A 14A 13A 12A 11A 10A 9A 8A 7A 6A 5A 4A 3A 2A 1A 0 1B 2B 3B

E'

D'

C'

B'

A'

A

B

2B 3B 4B 5B 6B 7B 8B 9B 10B 11B 12B 13B 14B

B'

A'

A

B

C

D

SITE 143

SITE 114

SITE 114

GARFIELD AVENUE

CARTERET AVENUE

MATCHLINE

MATCHLINE

LEGEND

- PROPERTY LINE
- FENCE LINE
- WATER LINE
- GAS LINE
- SEWER LINE
- ELECTRIC OVERHEAD LINE
- ELECTRIC UNDERGROUND LINE
- COMMUNICATION LINE
- SEWER LINE
- CURB LINE
- SHEET PILE
- BUILDING
- ELECTRICAL OVERHEAD LINE
- SEWER MANHOLE
- GAS VALVE
- HYDRANT
- WATER VALVE
- WATER MANHOLE
- CATCH BASIN
- MANHOLE
- BORING AND/OR TEST PIT LOCATION
- PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- NJ TRANSIT LIGHT RAIL

NOTE:

BORING LOCATIONS WITHIN SITE 114 HAVE BEEN FULLY OR PARTIALLY REMOVED DURING SITE 114 REMEDIAL EXCAVATION ACTIVITIES.

10 0 20

GRAPHIC SCALE IN FEET

AECOM

PPG
GARFIELD AVE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE
CROSS SECTION LOCATION PLAN

DATE: 06/21/2017 | DRWN: TDL | **FIGURE 1**

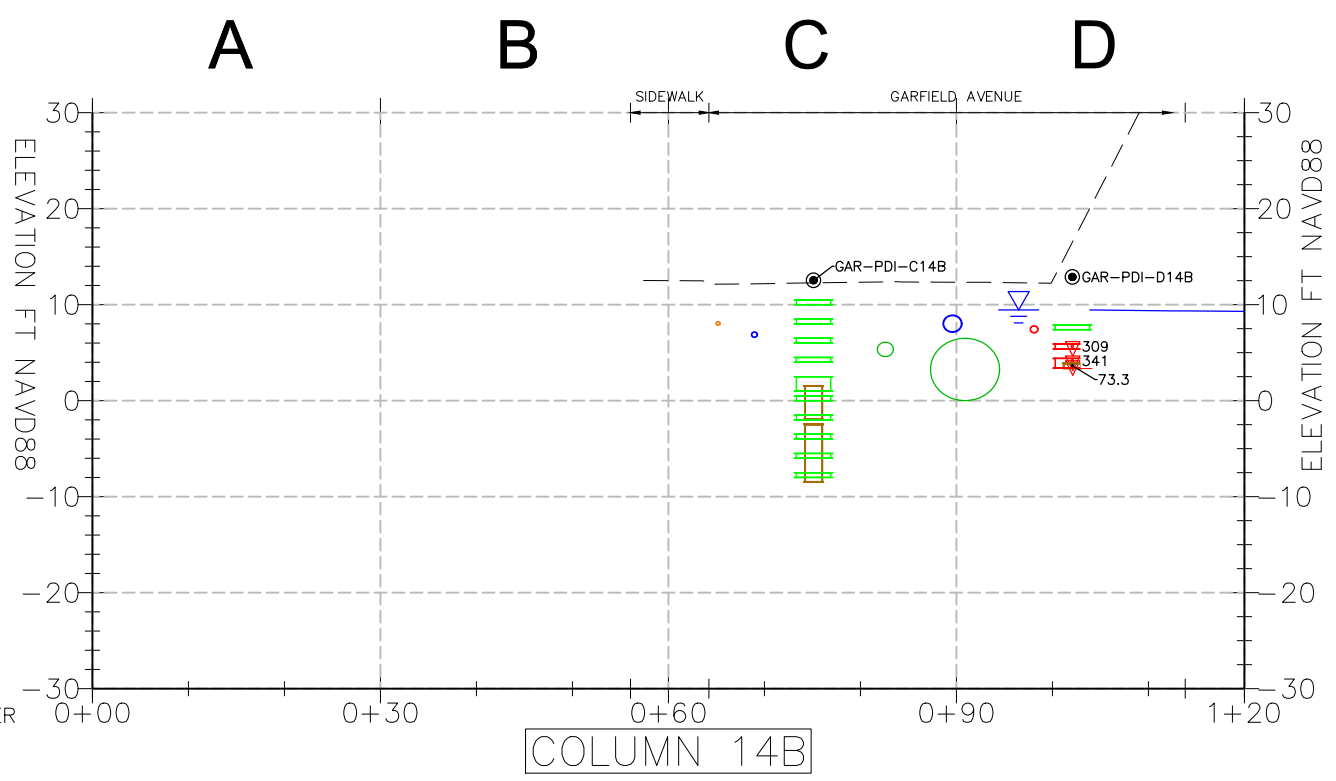
G:\jobs\[xxx_xx]\project files\gis industries\[profile] manual\ 30ft design\[cad\]\[xxx]garfield avenue cross sections\2017_06_21 cross section key layout.PDF NEW tdarsinee.kennedy Plotted:6/20/2017 8:11 PM

LEGEND

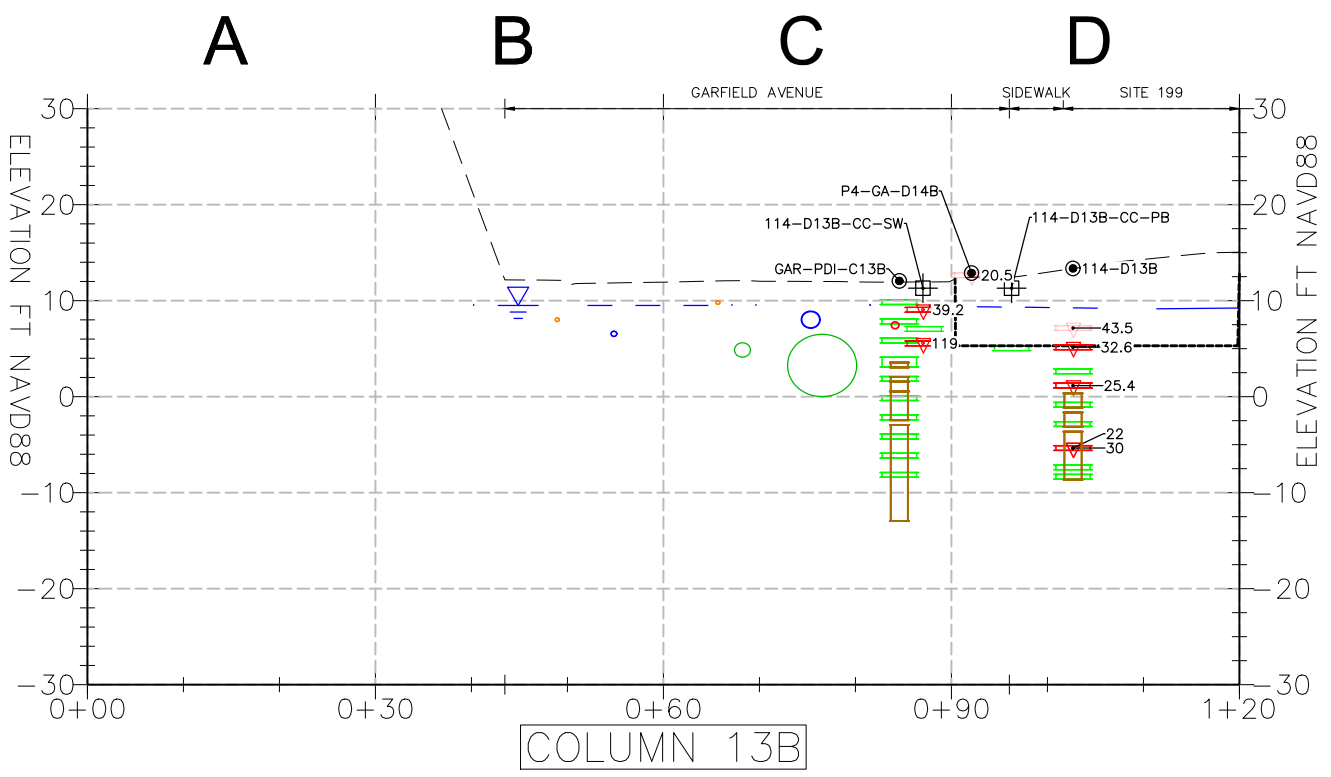
- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
- COMMUNICATION LINE (SIZE UNKNOWN)
- GAS LINE (8")
- COMBINED SEWER
  18" VITRIFIED CLAY PIPE
  24" CONCRETE BLOCK PIPE
  78" CARBON STEEL PIPE
- MANHOLE

ACRONYMS:

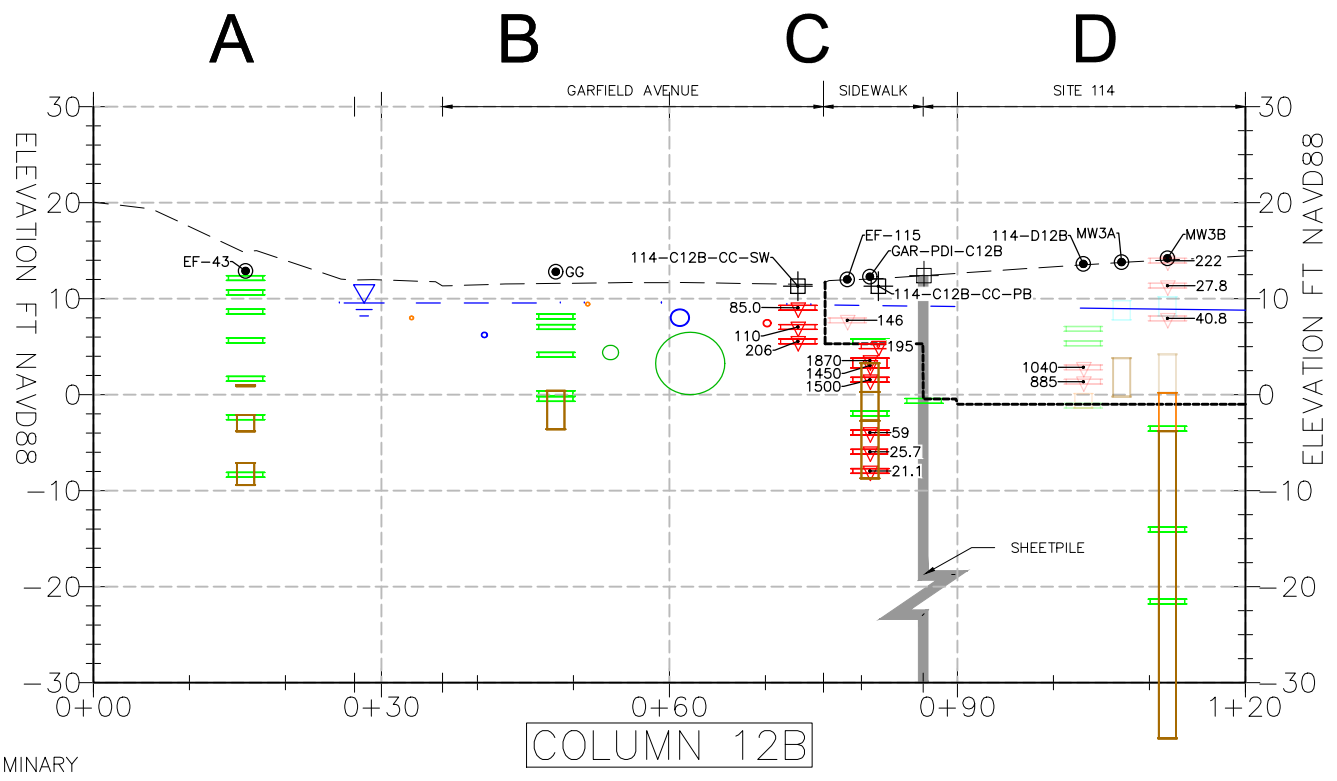
COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS



COLUMN 14B



COLUMN 13B



COLUMN 12B

NOTES:
1. ALL UTILITY LOCATIONS AND ELEVATIONS ARE APPROXIMATE
2. PREVIOUS EXCAVATION GRADES SHOWN ARE PRELIMINARY AND SUBJECT TO SUBSEQUENT REVISIONS.
3. BORING LOCATIONS WITHIN SITE 114 HAVE BEEN FULLY OR PARTIALLY REMOVED DURING SITE 114 REMEDIAL EXCAVATION ACTIVITIES, AS INDICATED BY THE TRANSPARENT (PALE COLORED) BOXES DEPICTING OBSERVATIONS AND ANALYTICAL RESULTS.

CONCEPTUALIZATION OF SITE CONDITIONS ONLY*

*REFER TO MEMO TEXT, TABLE 1, FIGURE 1, AND ATTACHMENTS PROVIDED AS PART OF THIS SUBMITTAL FOR SPECIFIC DATA INQUIRIES. ITEMS ARE PROJECTED TO CENTERLINE OF COLUMN AND MAY APPEAR TO BE IN DIFFERENT LOCATIONS THAN SHOWN ON PLAN VIEW.

AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 14B - 12B

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 2**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
- COMMUNICATION LINE (SIZE UNKNOWN)
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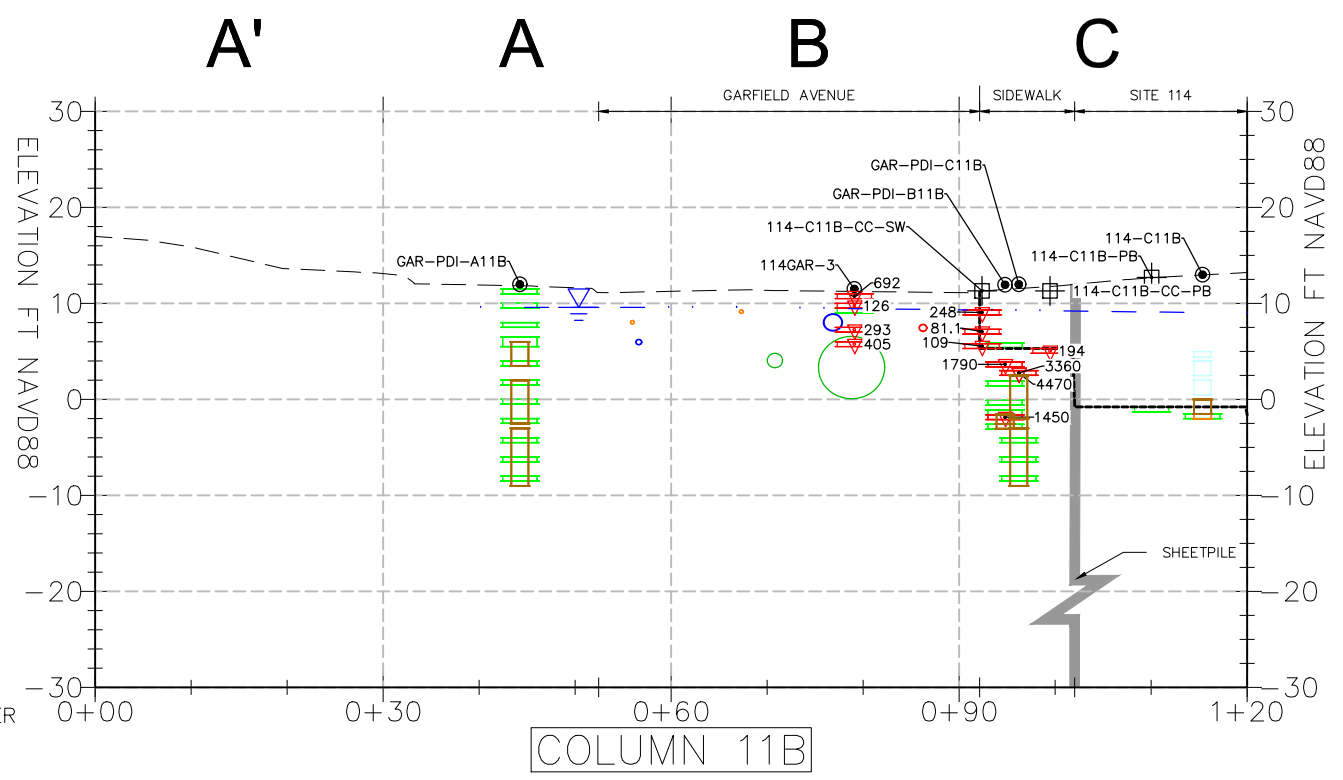
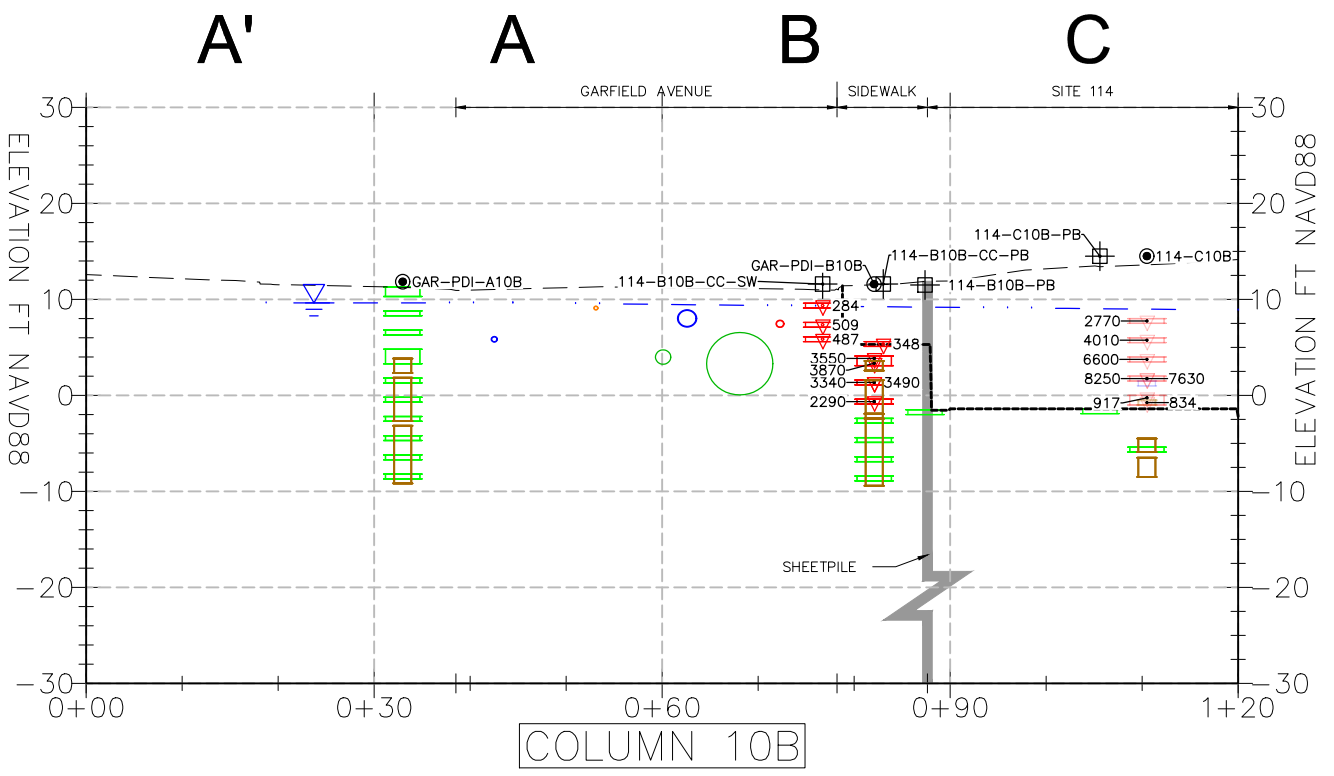
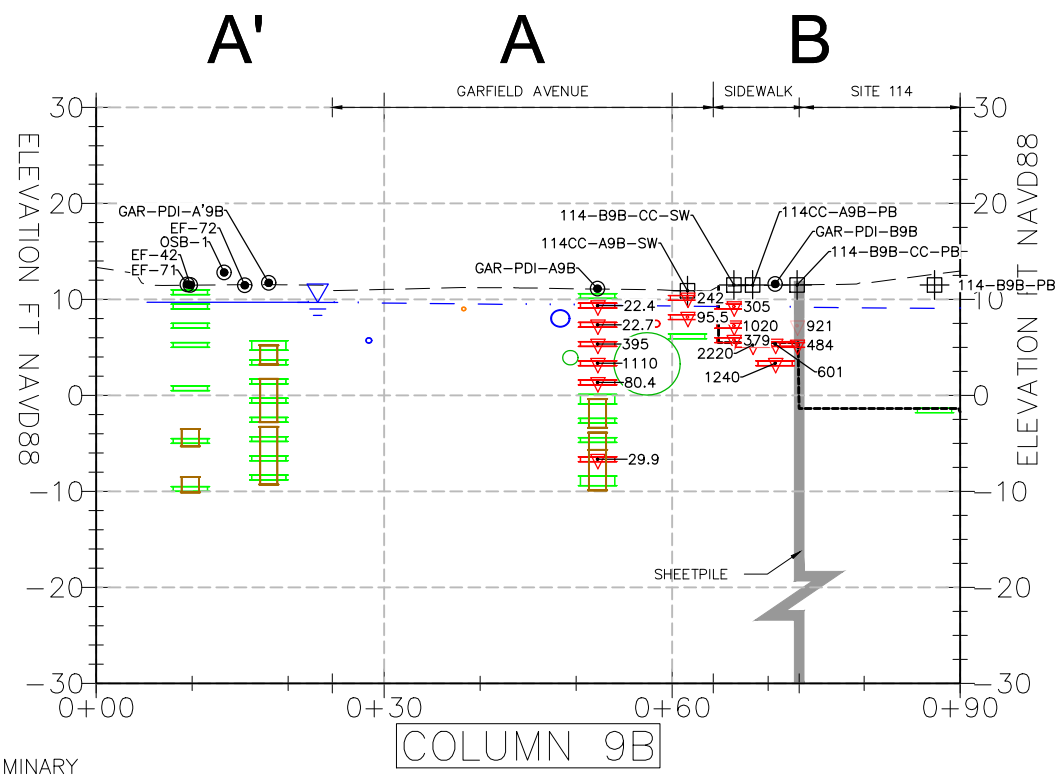
  78" CARBON STEEL PIPE
- MANHOLE







ACRONYMS:

COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS

NOTES:
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CONCEPTUALIZATION OF SITE CONDITIONS ONLY*

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AECOM

10 0 20
GRAPHIC SCALE IN FEET

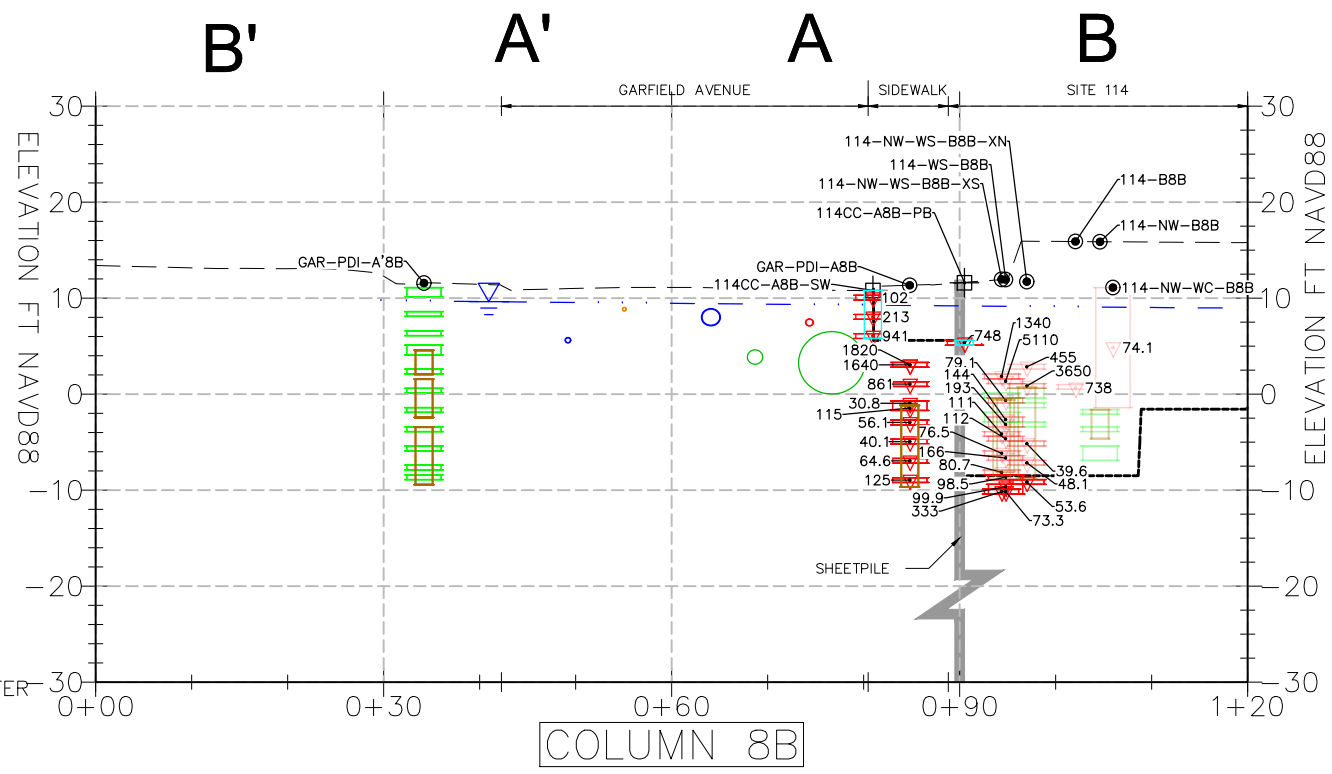
PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

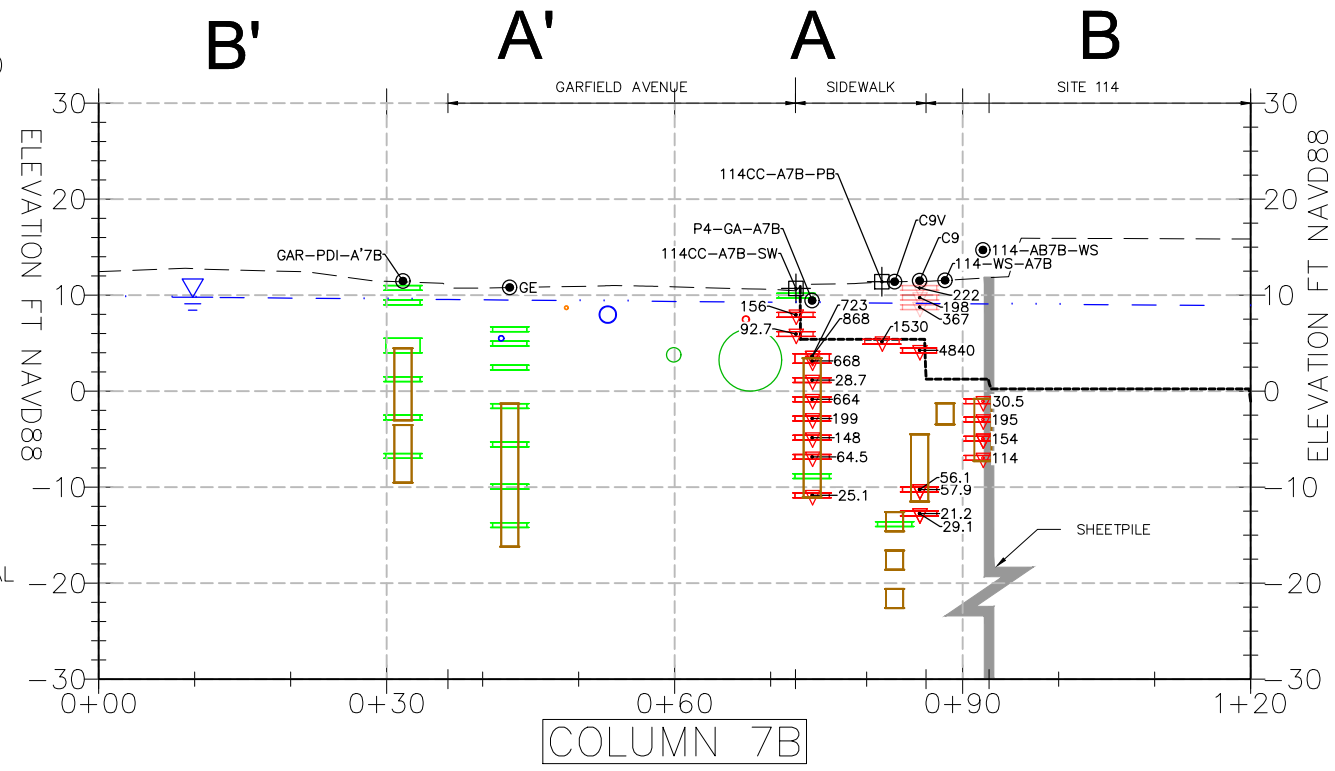
GARFIELD AVENUE CROSS SECTIONS COLUMNS 11B - 9B

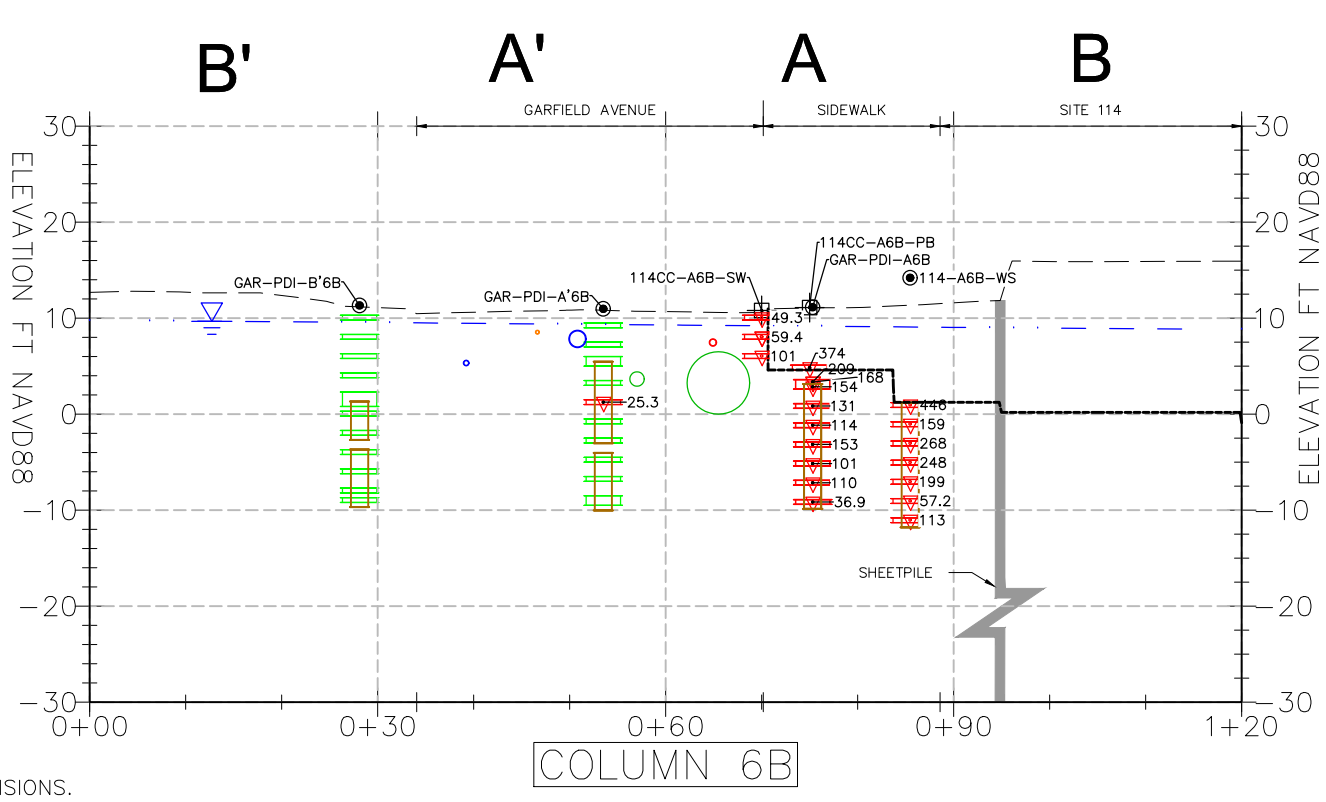
DATE: 06/30/2017 | DRWN: TDL | **FIGURE 3**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
- COMMUNICATION LINE (SIZE UNKNOWN)
- GAS LINE (8")
- COMBINED SEWER
  18" VITRIFIED CLAY PIPE
  24" CONCRETE BLOCK PIPE
  78" CARBON STEEL PIPE
- MANHOLE







ACRONYMS:

COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS

NOTES:
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CONCEPTUALIZATION OF SITE CONDITIONS ONLY*

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AECOM

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GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 8B - 6B

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 4**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
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ACRONYMS:

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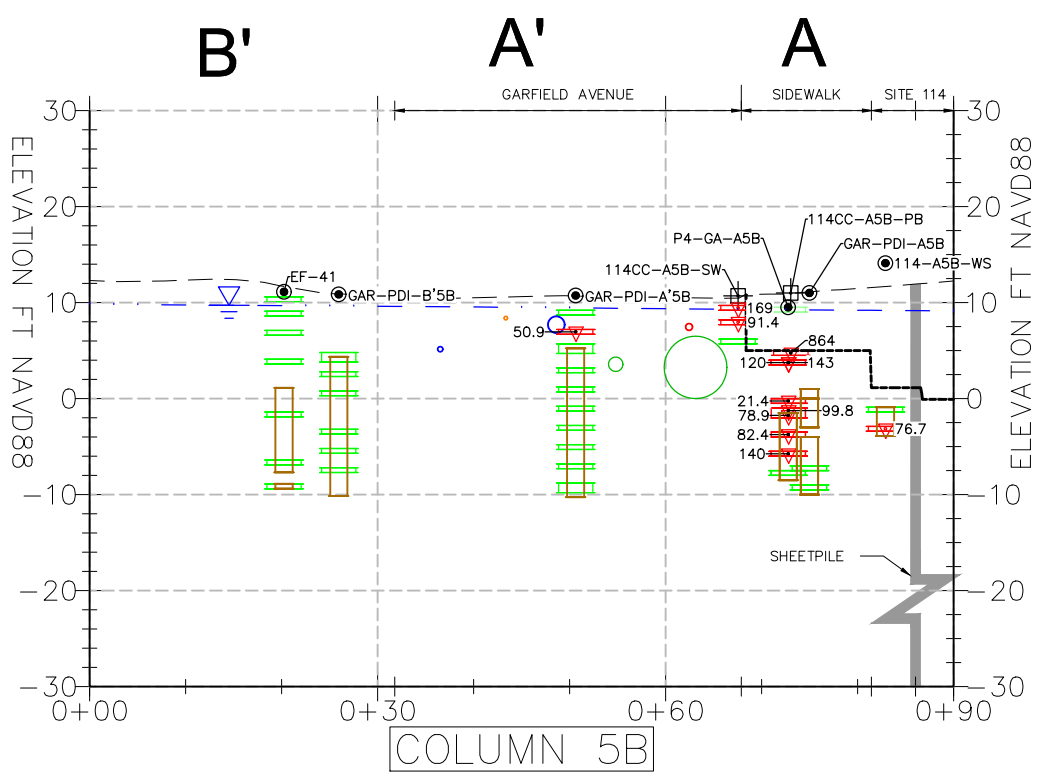
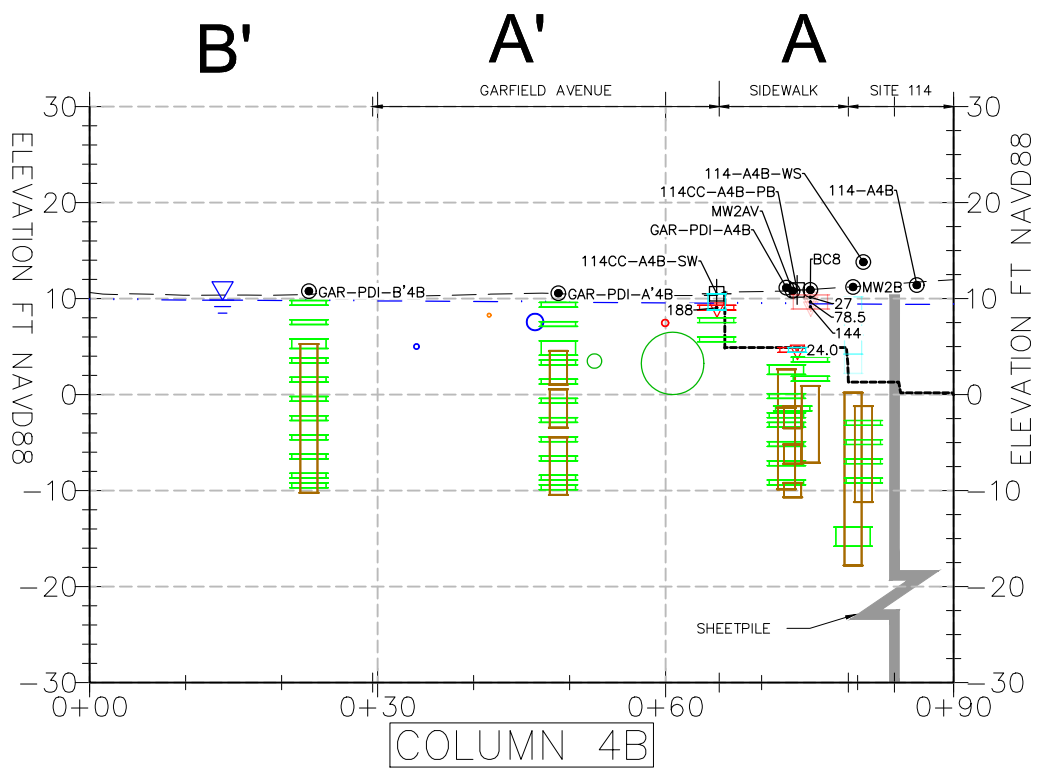
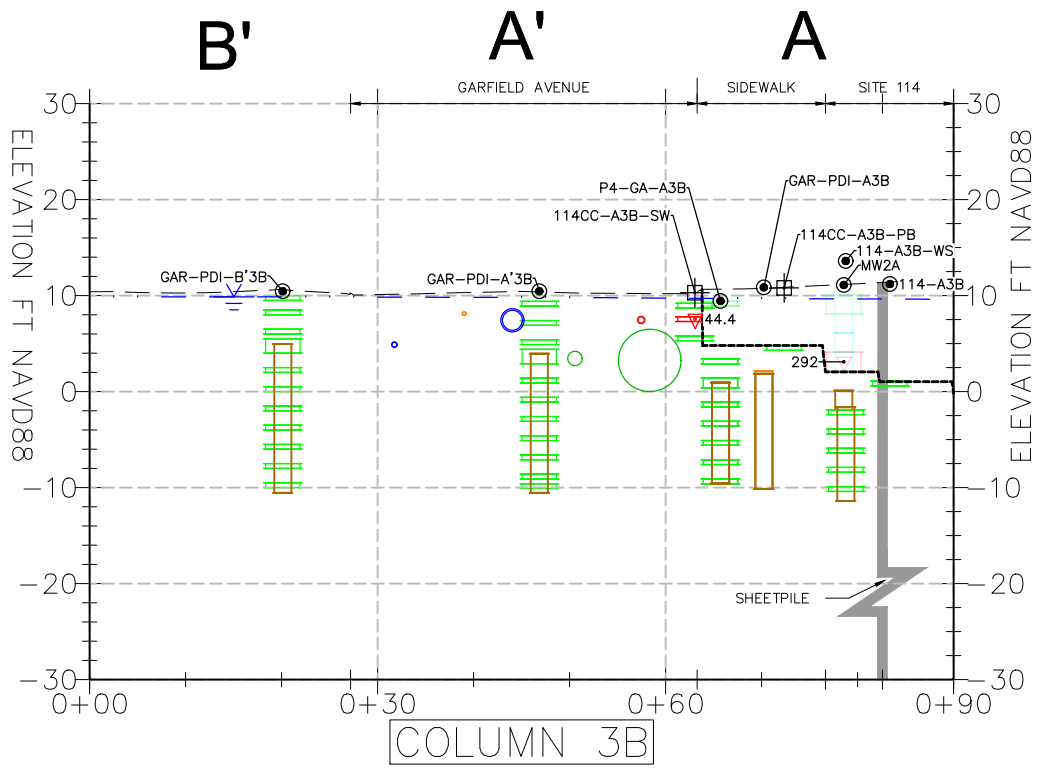
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS







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CONCEPTUALIZATION OF SITE CONDITIONS ONLY*

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AECOM

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GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 5B - 3B

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 5**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
- COMMUNICATION LINE (SIZE UNKNOWN)
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  78" CARBON STEEL PIPE
- MANHOLE

ACRONYMS:

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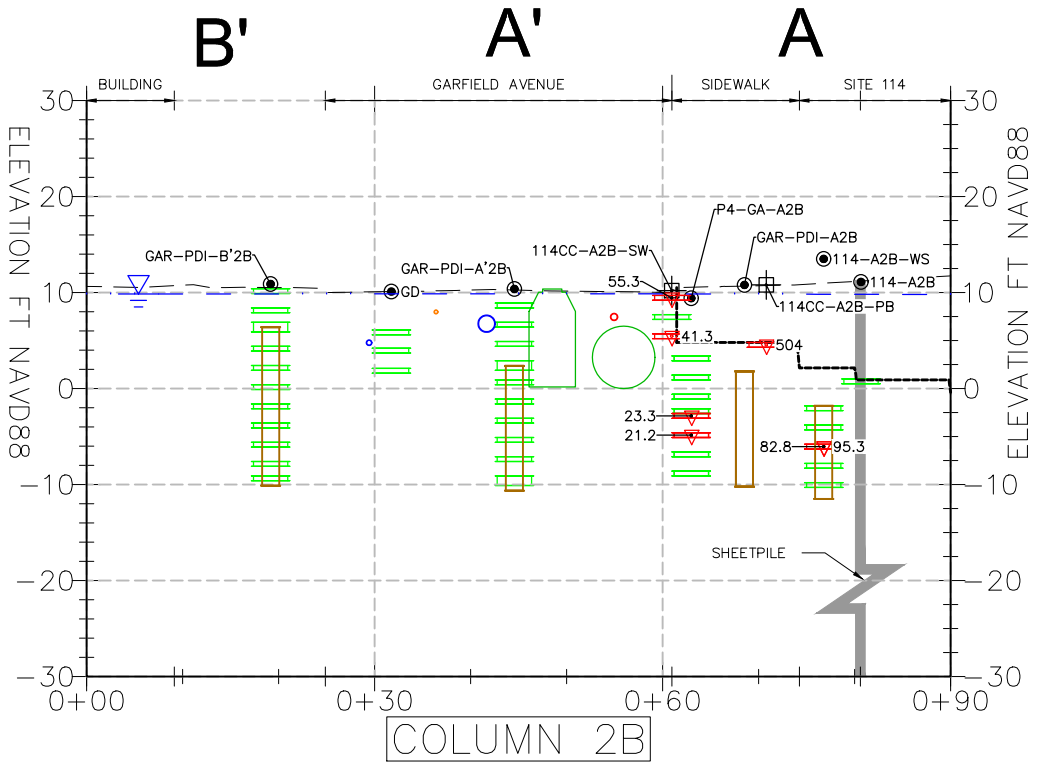
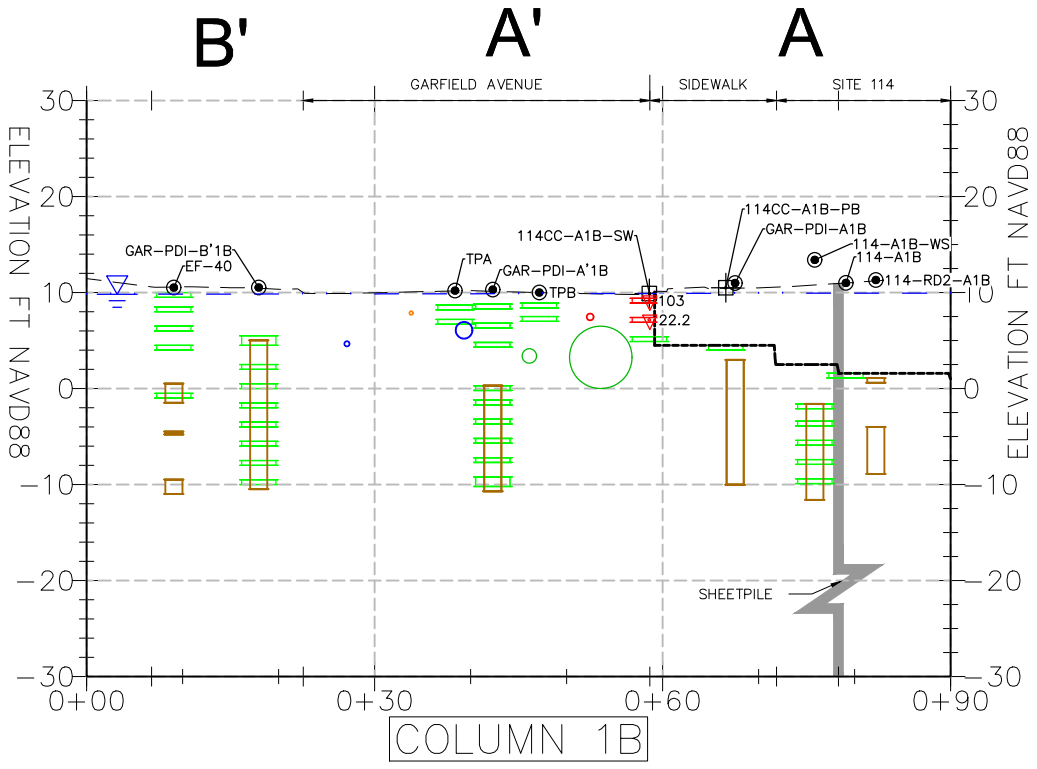
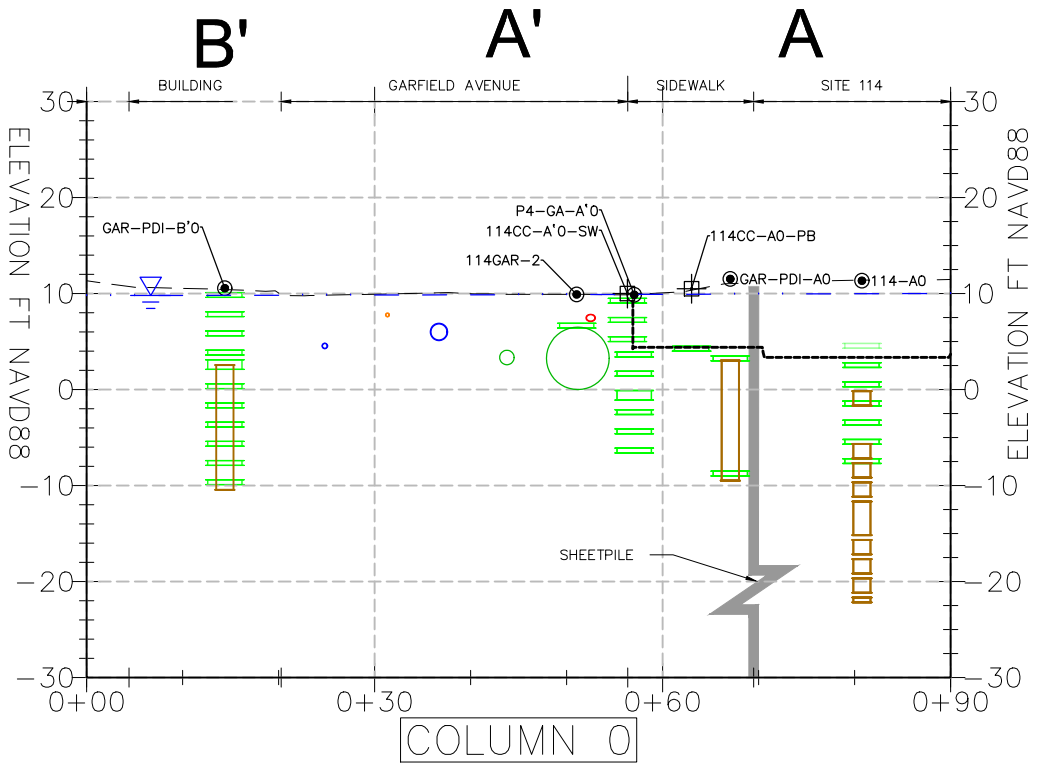
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS







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GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 2B - 0

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 6**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
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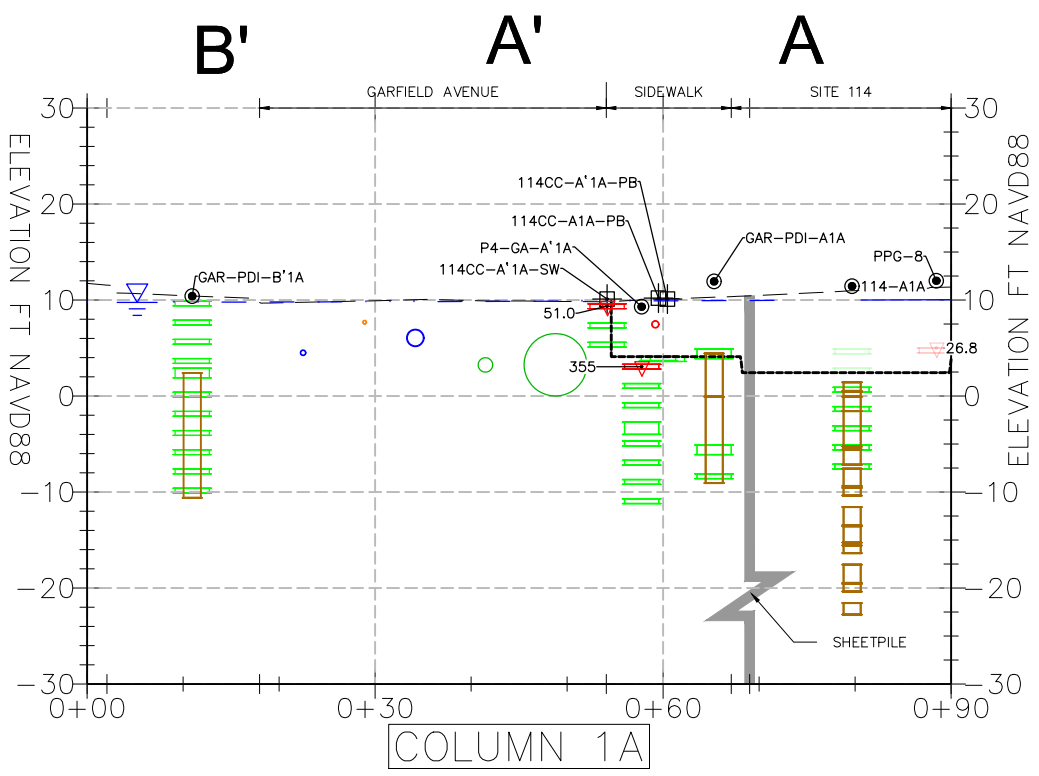

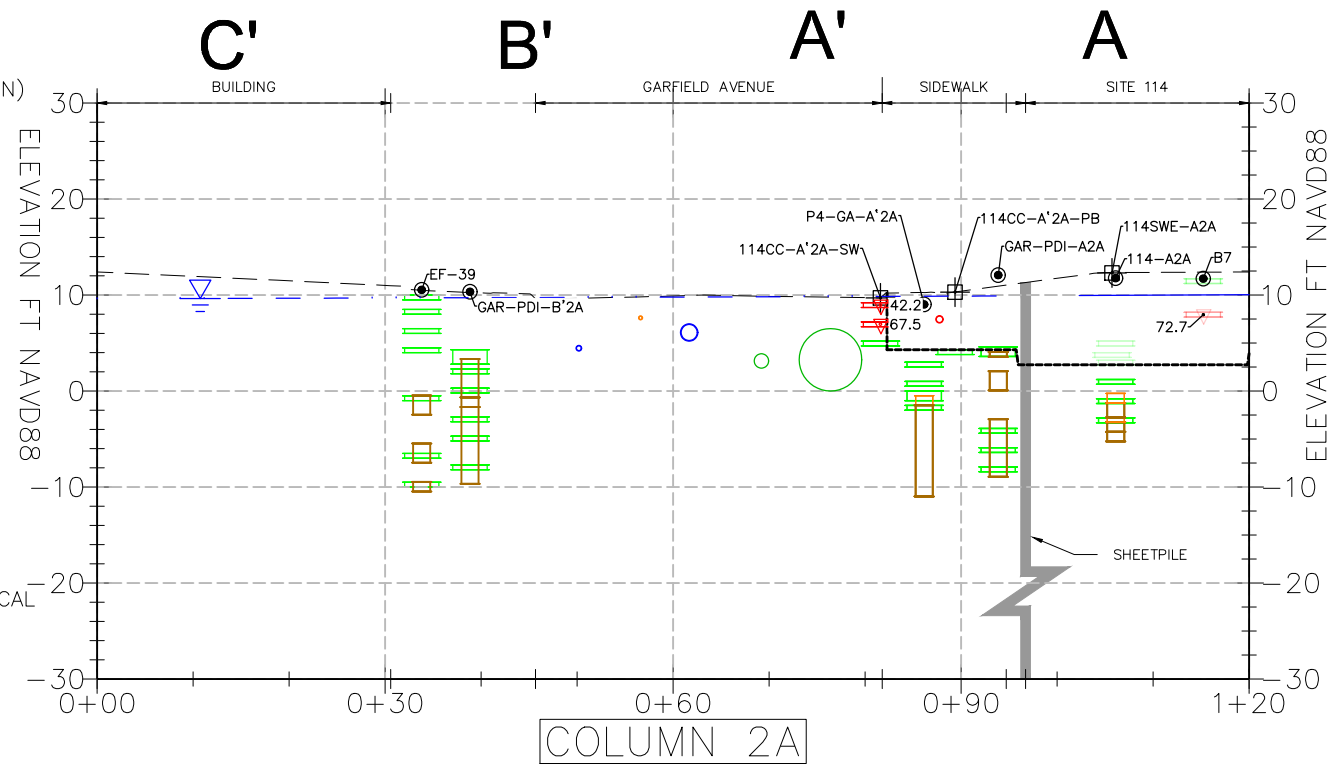

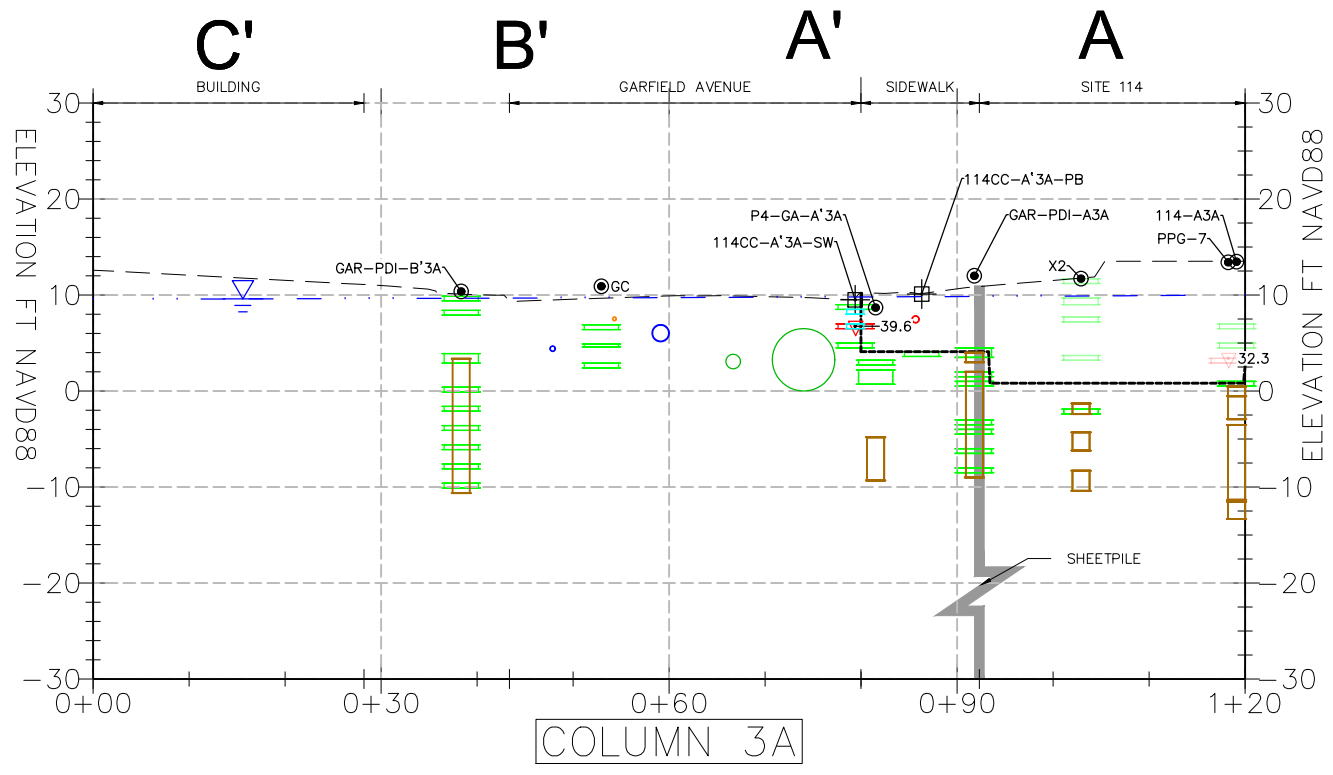

ACRONYMS:

COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS

NOTES:
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AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 1A - 3A

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 7**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
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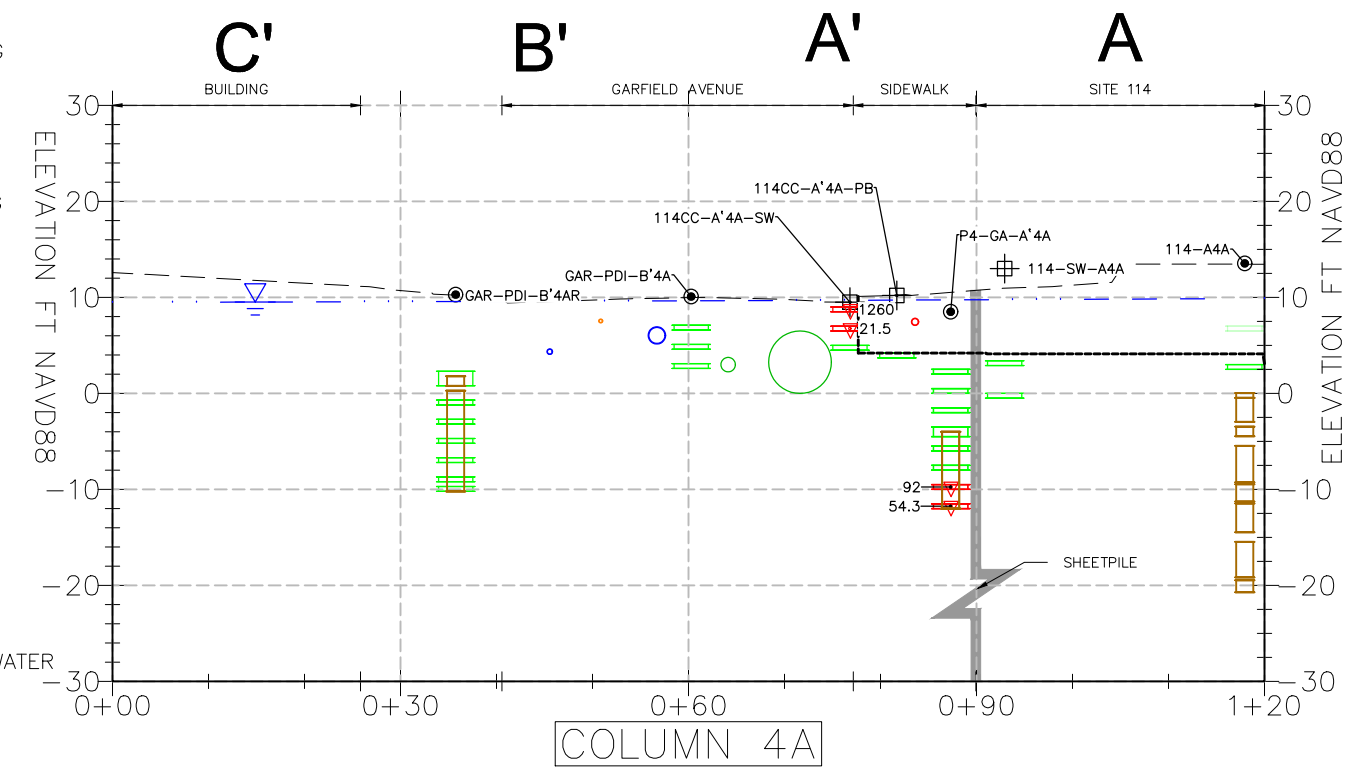
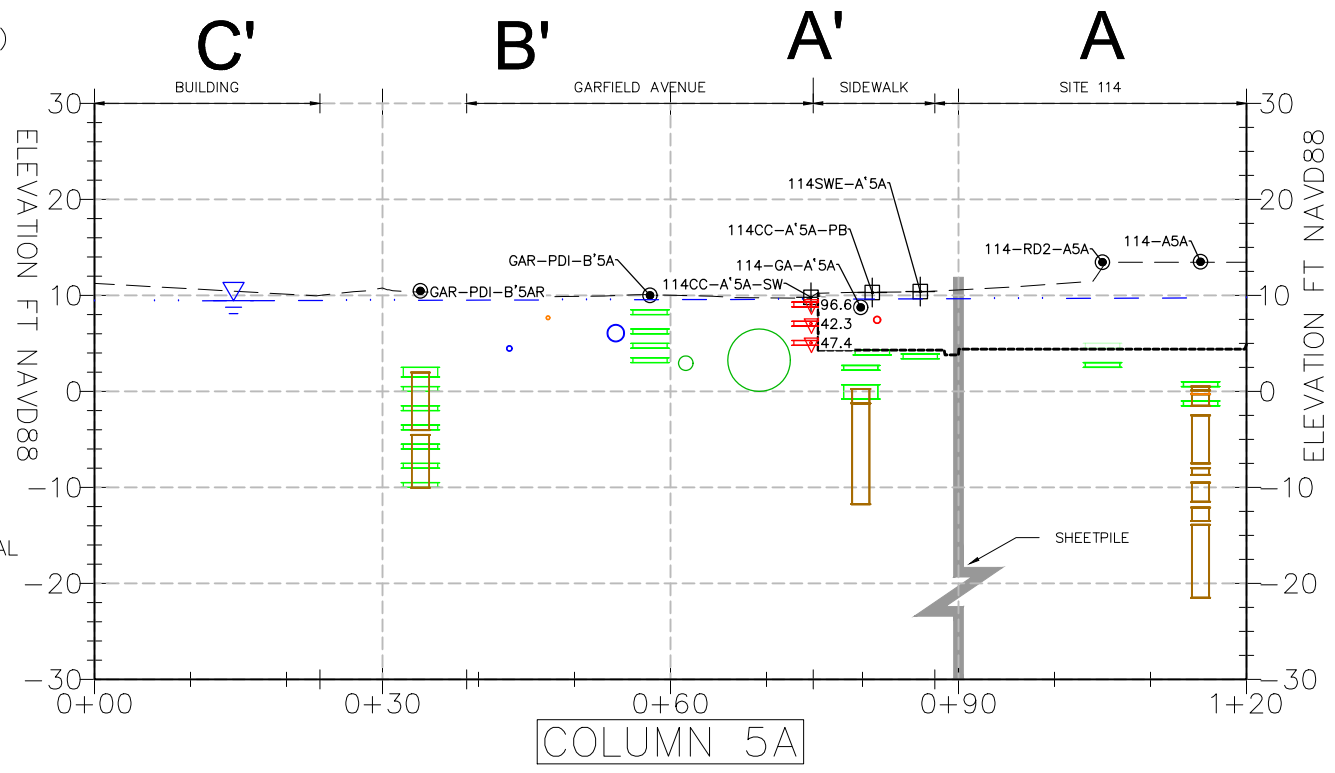
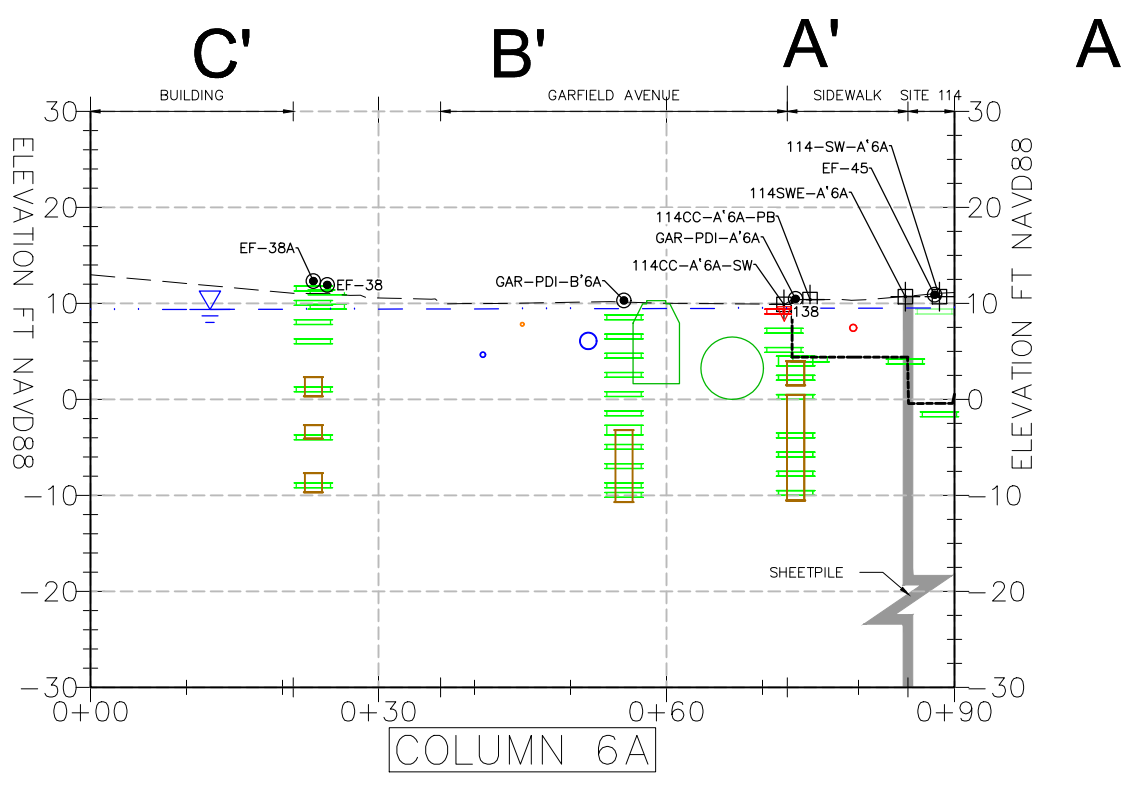




ACRONYMS:

COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS



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AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 4A - 6A

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 8**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
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ACRONYMS:

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Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
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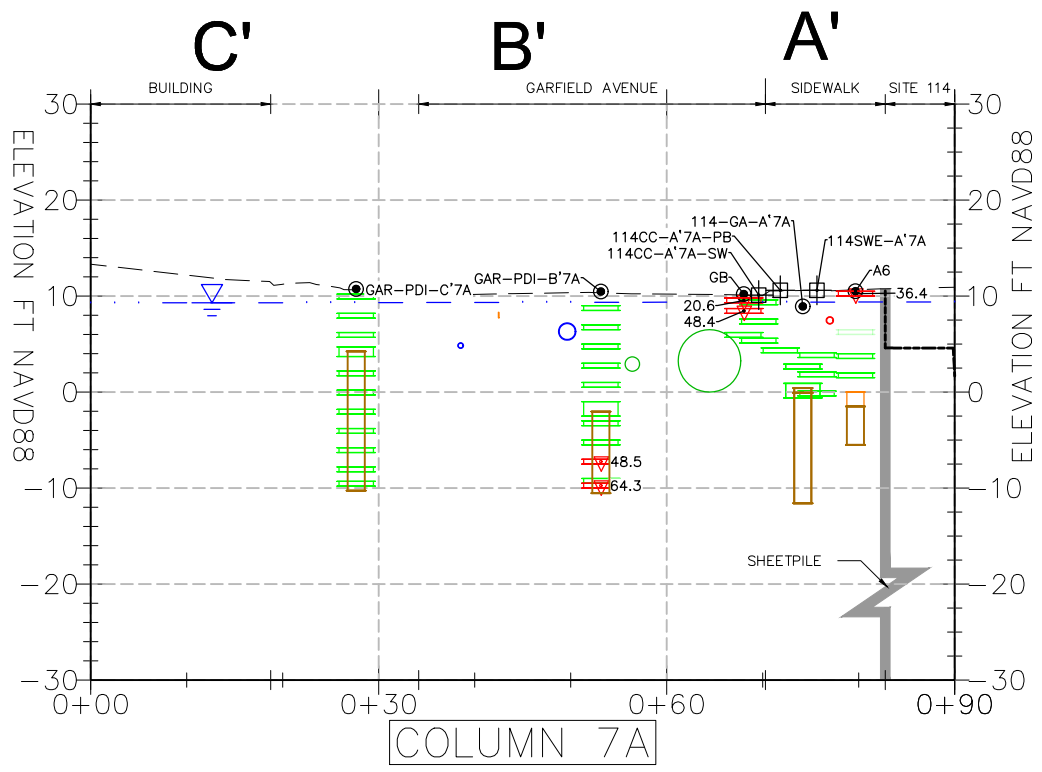

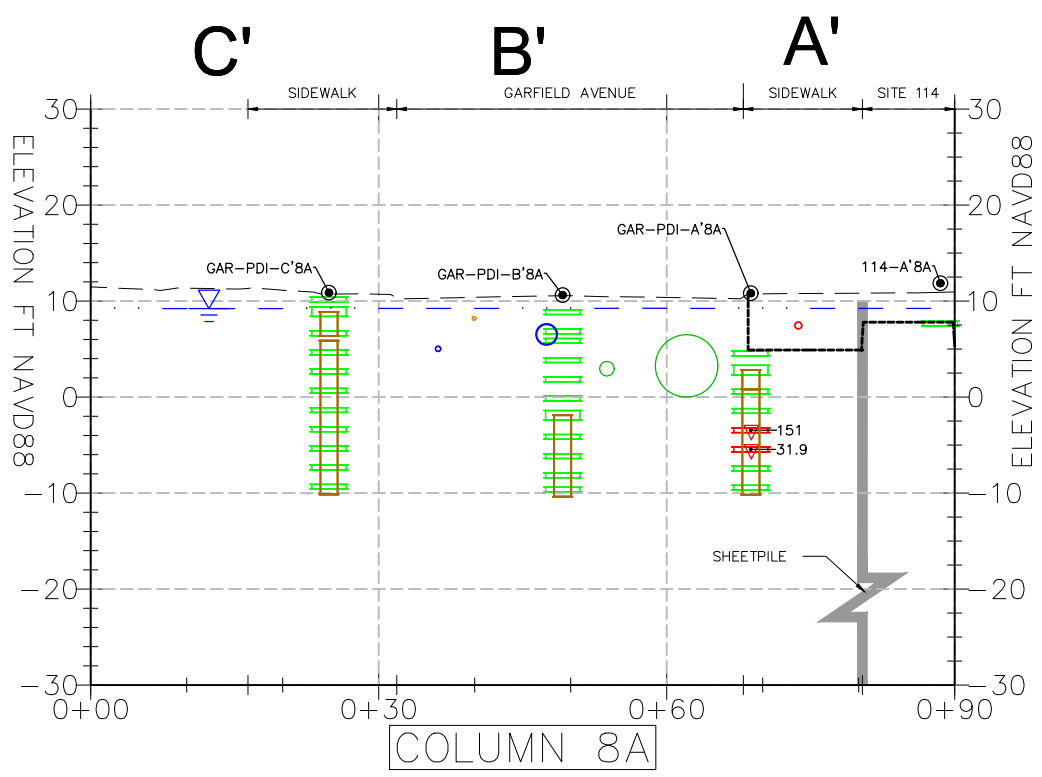

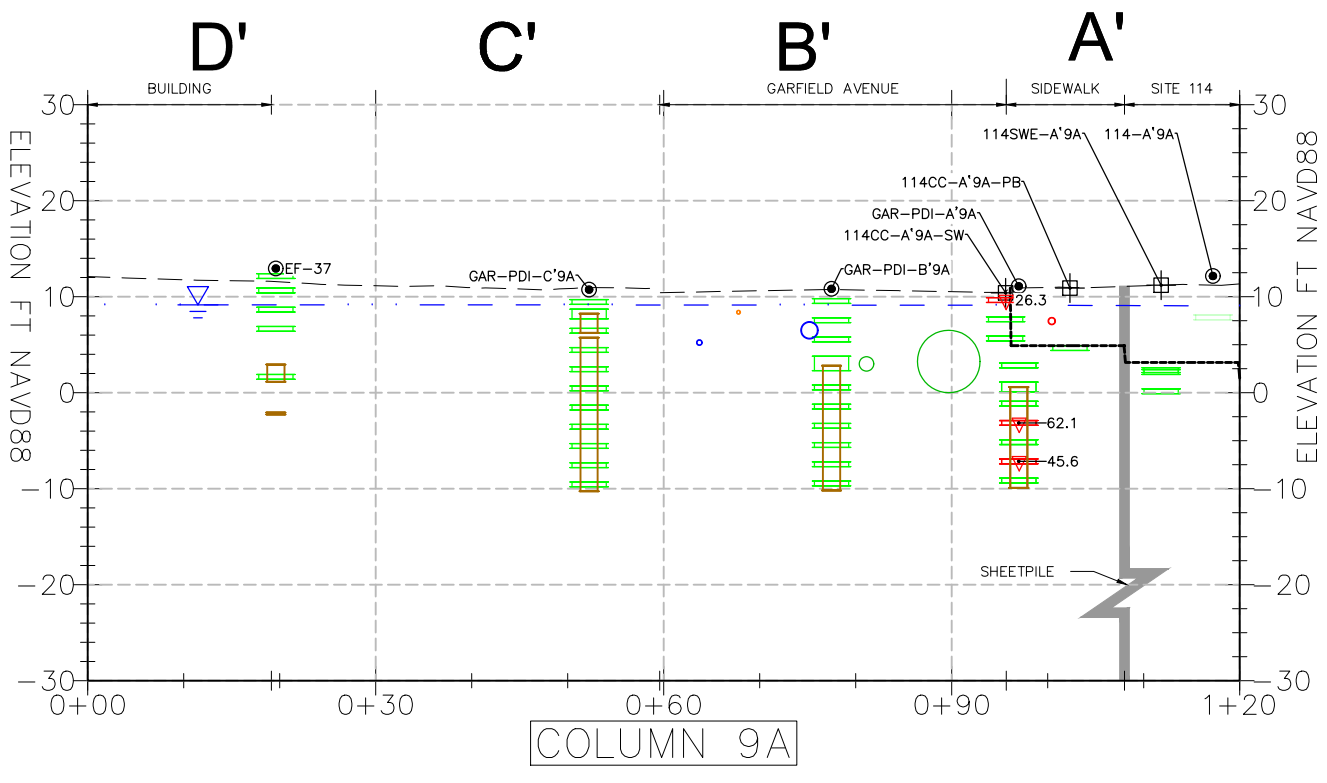

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AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 7A - 9A

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 9**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
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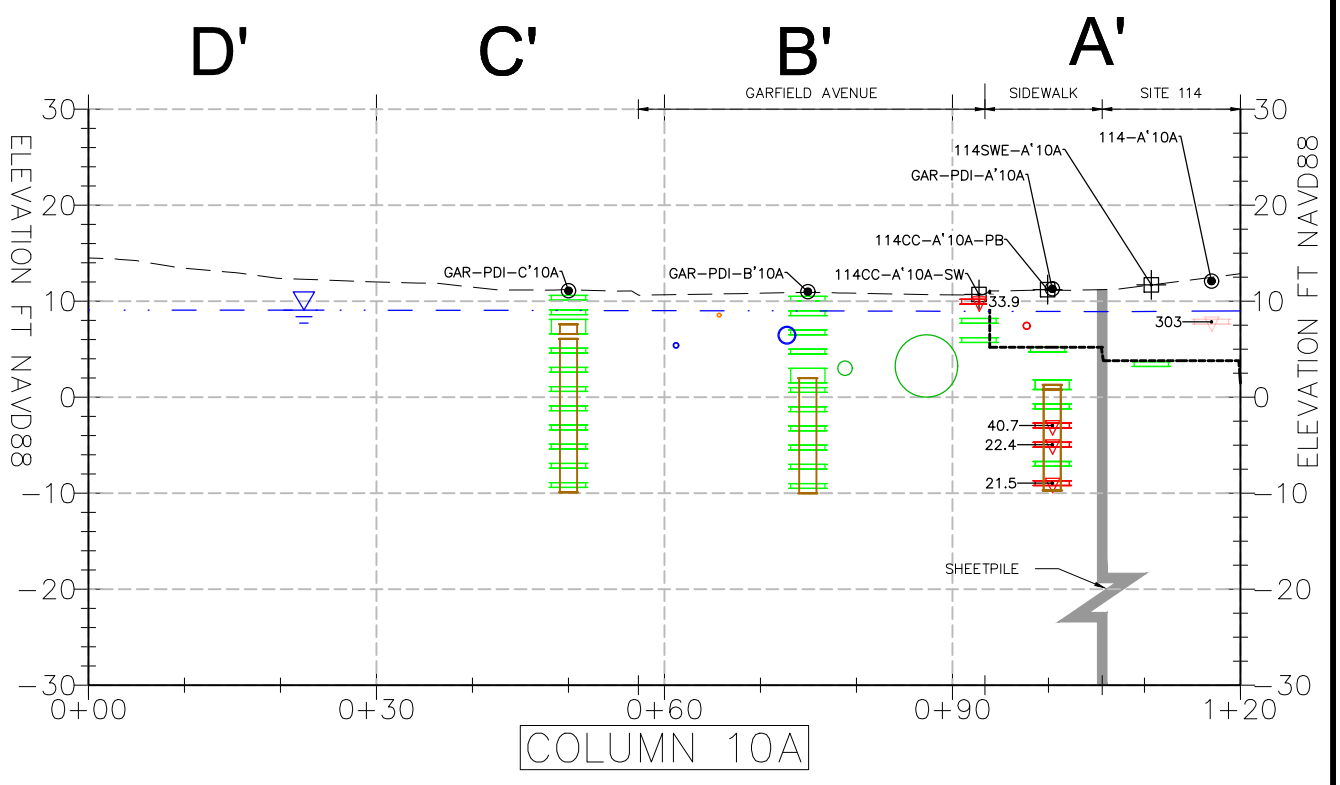
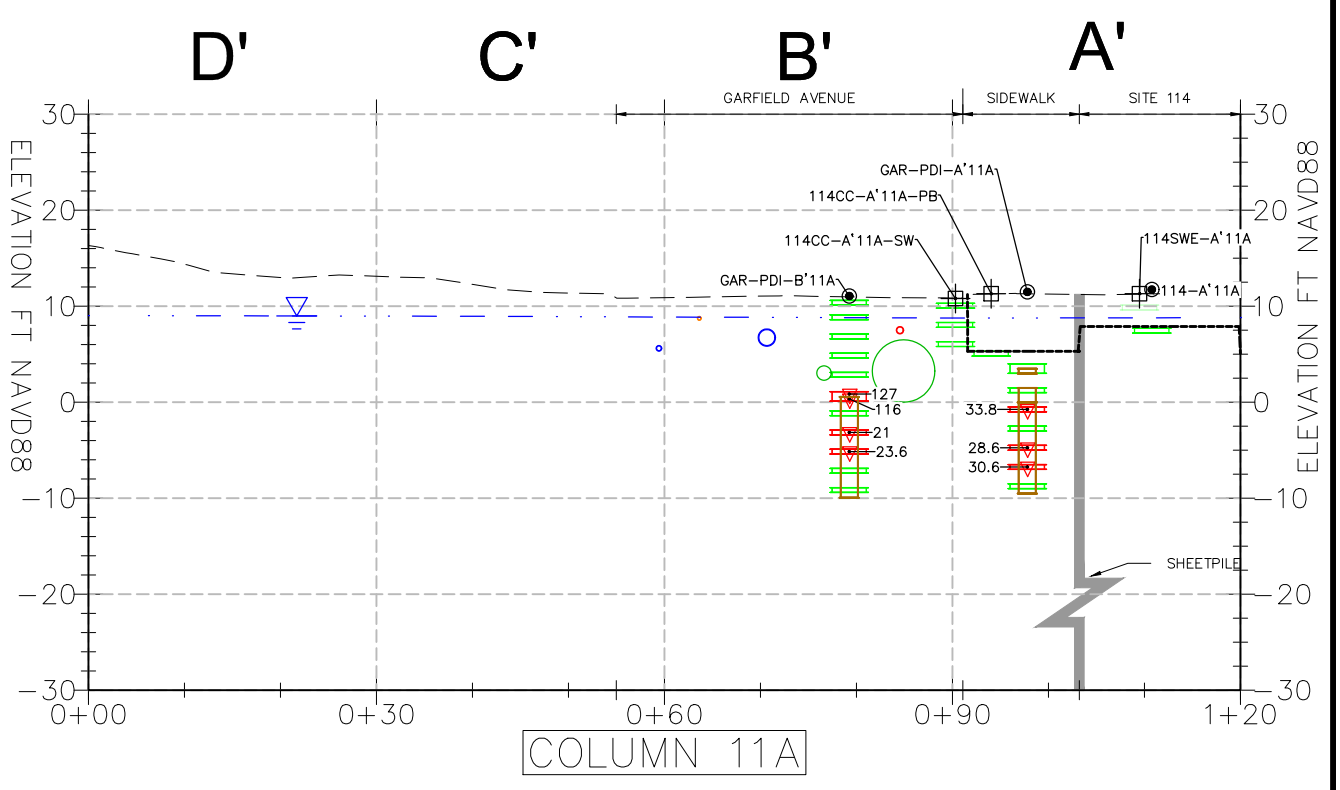
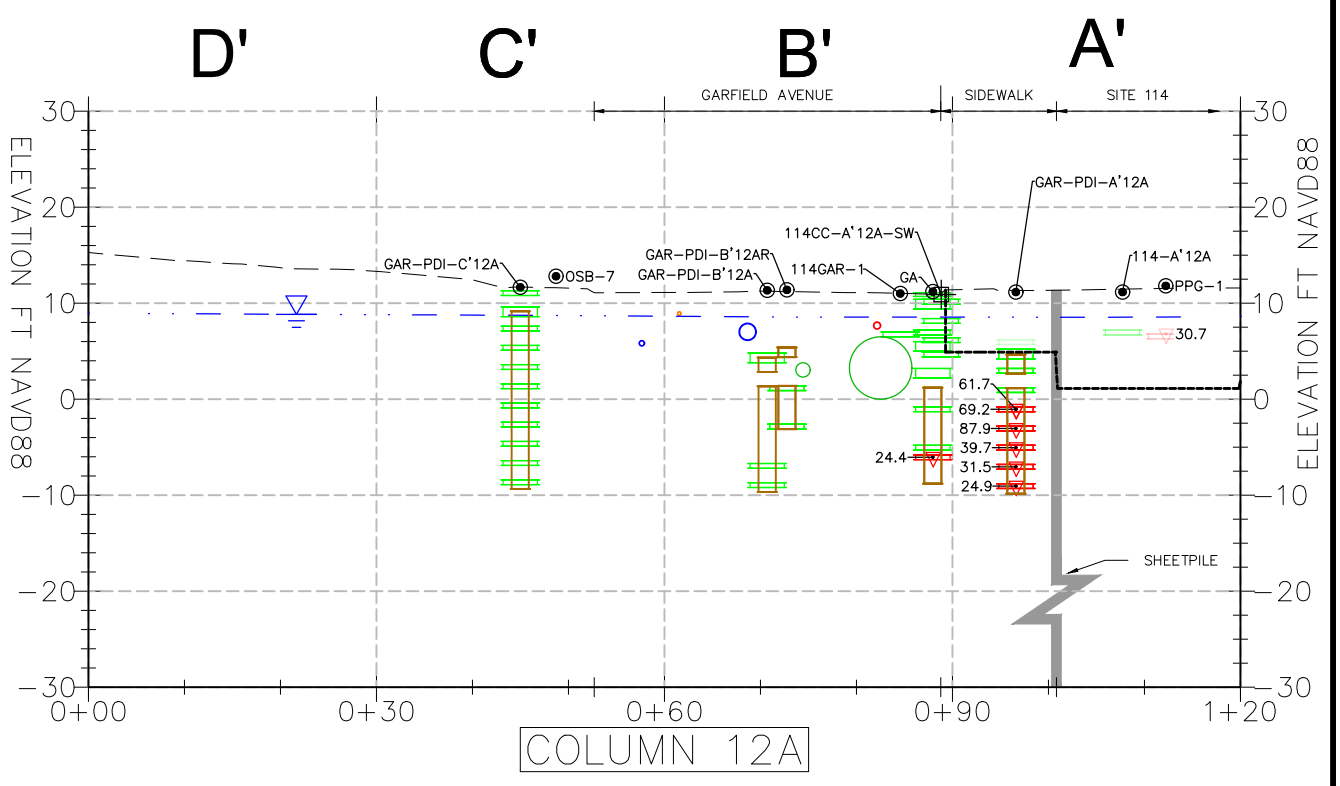




ACRONYMS:

COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS



NOTES:
1. ALL UTILITY LOCATIONS AND ELEVATIONS ARE APPROXIMATE
2. PREVIOUS EXCAVATION GRADES SHOWN ARE PRELIMINARY AND SUBJECT TO SUBSEQUENT REVISIONS.
3. BORING LOCATIONS WITHIN SITE 114 HAVE BEEN FULLY OR PARTIALLY REMOVED DURING SITE 114 REMEDIAL EXCAVATION ACTIVITIES, AS INDICATED BY THE TRANSPARENT (PALE COLORED) BOXES DEPICTING OBSERVATIONS AND ANALYTICAL RESULTS.

CONCEPTUALIZATION OF SITE CONDITIONS ONLY*

*REFER TO MEMO TEXT, TABLE 1, FIGURE 1, AND ATTACHMENTS PROVIDED AS PART OF THIS SUBMITTAL FOR SPECIFIC DATA INQUIRIES. ITEMS ARE PROJECTED TO CENTERLINE OF COLUMN AND MAY APPEAR TO BE IN DIFFERENT LOCATIONS THAN SHOWN ON PLAN VIEW.

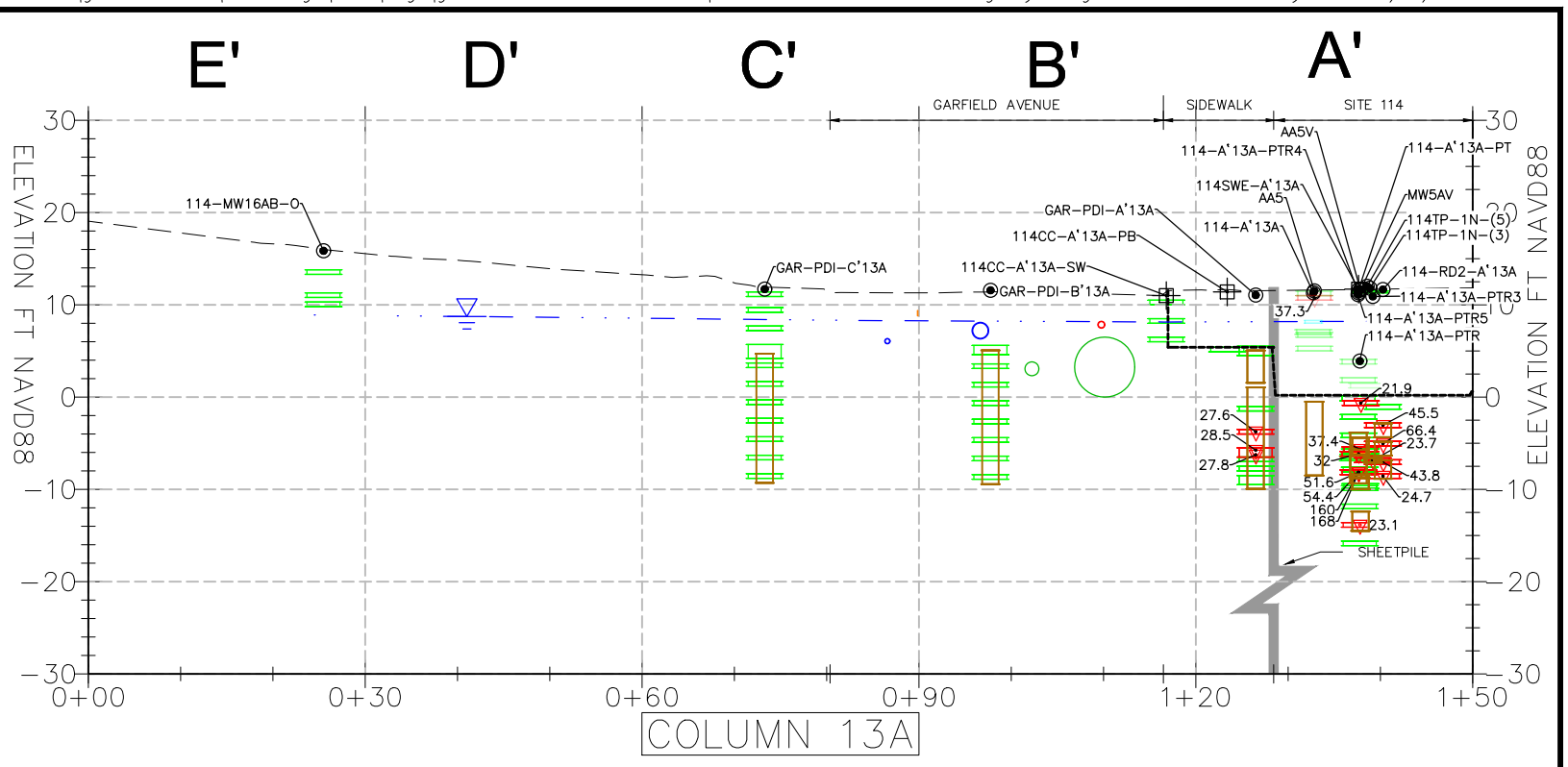
AECOM

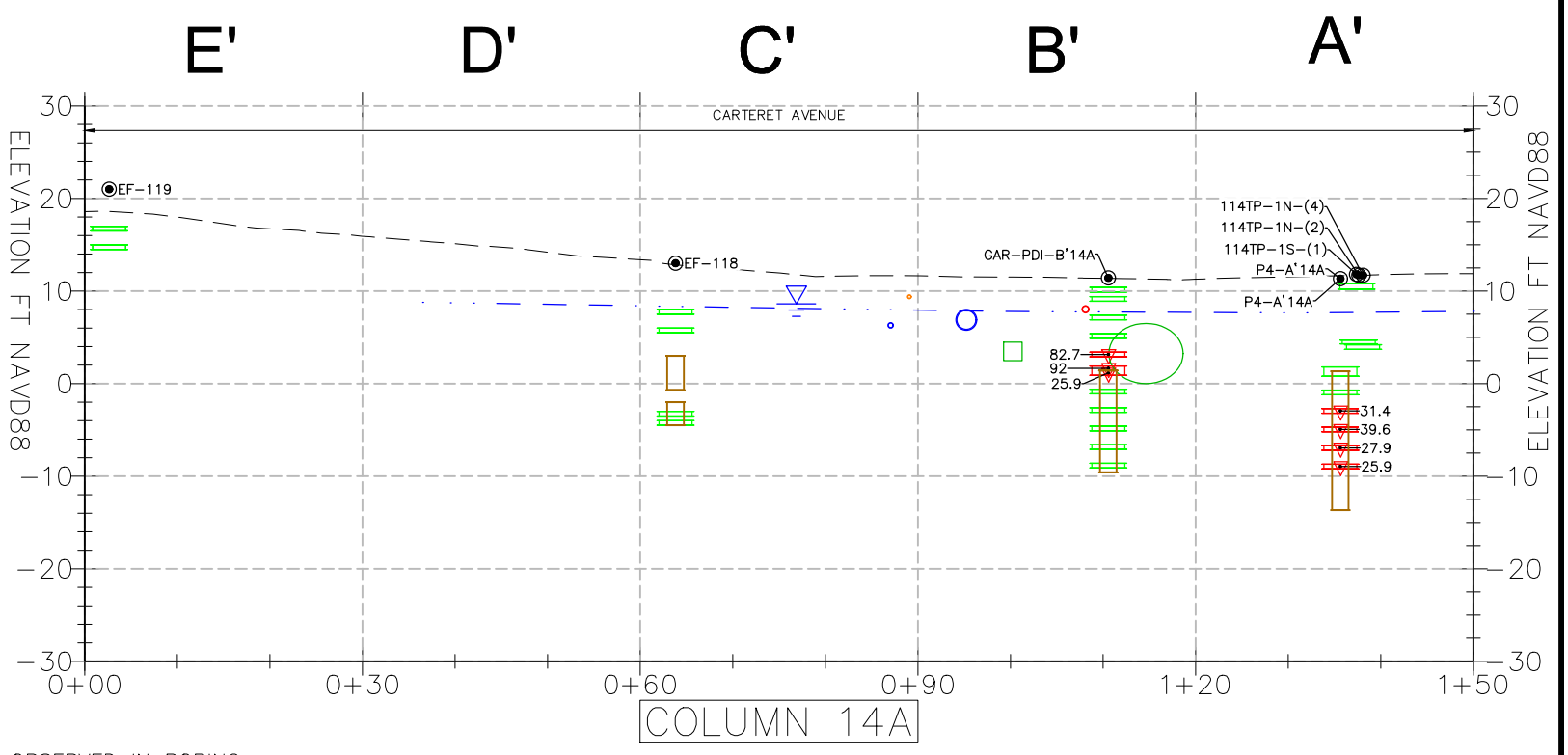
10 0 20
GRAPHIC SCALE IN FEET

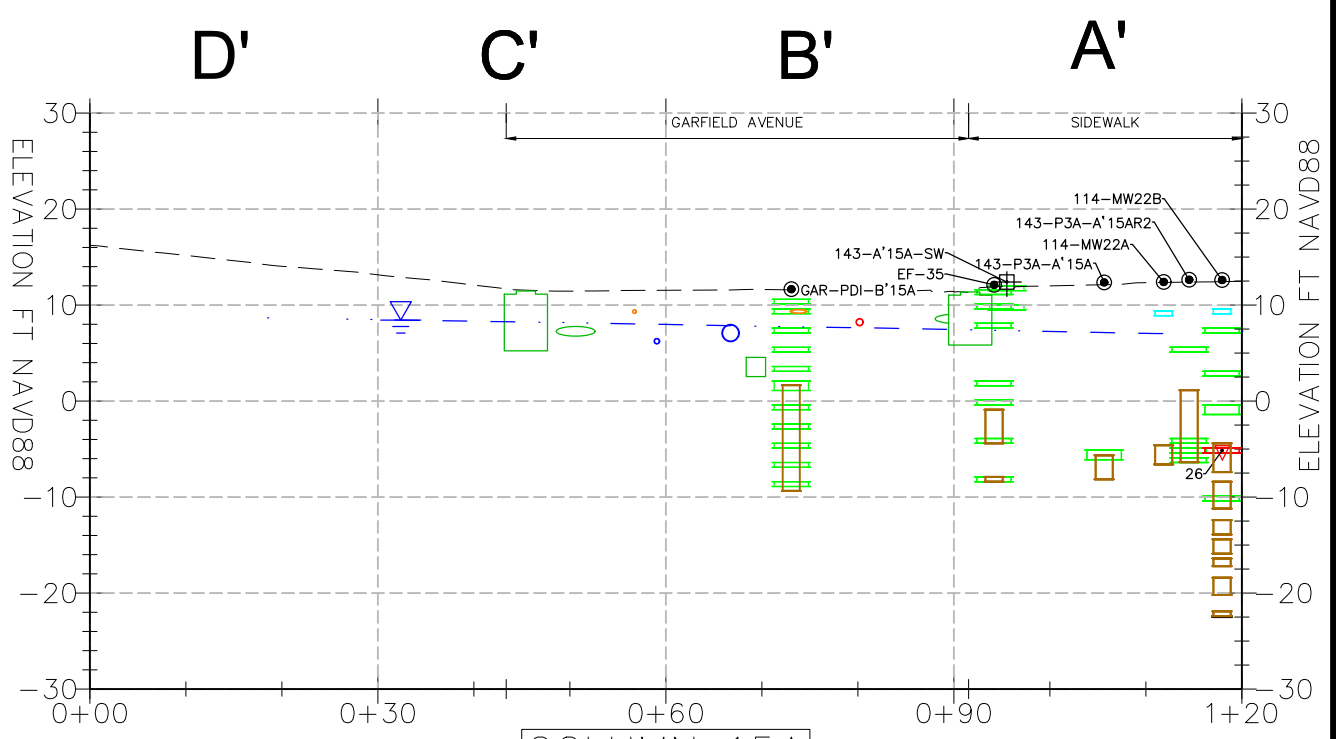
PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 10A - 12A

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 10**







LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
- COMMUNICATION LINE (SIZE UNKNOWN)
- GAS LINE (8")
- COMBINED SEWER
  18" VITRIFIED CLAY PIPE
  24" CONCRETE BLOCK PIPE
  78" CARBON STEEL PIPE
- MANHOLE
- CATCH BASIN

NOTES:
1. ALL UTILITY LOCATIONS AND ELEVATIONS ARE APPROXIMATE
2. PREVIOUS EXCAVATION GRADES SHOWN ARE PRELIMINARY AND SUBJECT TO SUBSEQUENT REVISIONS.
3. BORING LOCATIONS WITHIN SITE 114 HAVE BEEN FULLY OR PARTIALLY REMOVED DURING SITE 114 REMEDIAL EXCAVATION ACTIVITIES, AS INDICATED BY THE TRANSPARENT (PALE COLORED) BOXES DEPICTING OBSERVATIONS AND ANALYTICAL RESULTS.

ACRONYMS:

COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS

CONCEPTUALIZATION OF SITE CONDITIONS ONLY*

*REFER TO MEMO TEXT, TABLE 1, FIGURE 1, AND ATTACHMENTS PROVIDED AS PART OF THIS SUBMITTAL FOR SPECIFIC DATA INQUIRIES. ITEMS ARE PROJECTED TO CENTERLINE OF COLUMN AND MAY APPEAR TO BE IN DIFFERENT LOCATIONS THAN SHOWN ON PLAN VIEW.

AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMNS 13A - 15A

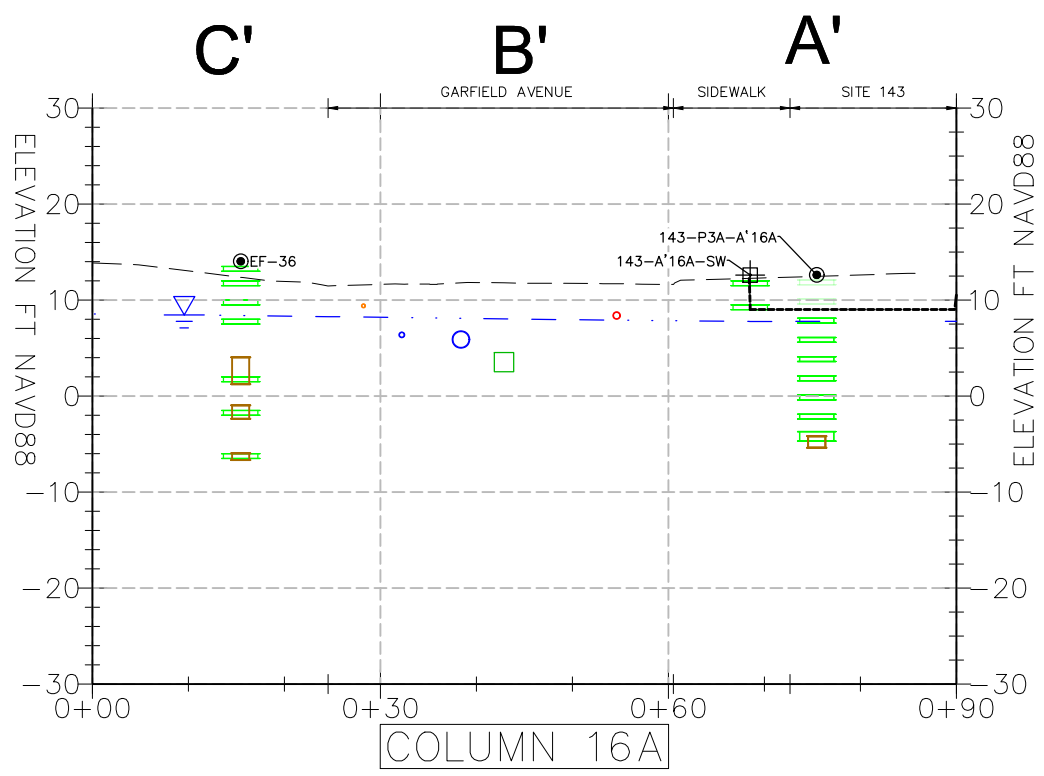
DATE: 06/30/2017 | DRWN: TDL | **FIGURE 11**

LEGEND

- COPR OBSERVED IN BORING
- GGM OBSERVED IN BORING
- MM OBSERVED IN BORING
- UND OBSERVED IN BORING
- SOIL ANALYTICAL RESULT < 20 MG/KG Cr^{+6}
- SOIL ANALYTICAL > 20 MG/KG Cr^{+6}
- 133-P3B-M41A — BORING AND/OR TEST PIT LOCATION
- 143-A'15A-SW — PIT BOTTOM OR SIDEWALL SAMPLE LOCATION
- 500 — Cr^{+6} SOIL CONCENTRATION >20 MG/KG
- REPRESENTATIVE GROUNDWATER CONDITIONS
- PRE-CONSTRUCTION SURFACE
- PREVIOUS EXCAVATION GRADE
- PL — PROPERTY LINE
- WATER LINE (6" AND 20")
- COMMUNICATION LINE (SIZE UNKNOWN)
- GAS LINE (8")
- COMBINED SEWER
  18" VITRIFIED CLAY PIPE
  24" CONCRETE BLOCK PIPE
  78" CARBON STEEL PIPE
- MANHOLE
- CATCH BASIN

ACRONYMS:

COPR	CHROMITE ORE PROCESSING RESIDUE
Cr^{+6}	HEXAVALENT CHROMIUM
FT NAVD88 DATUM	FEET IN THE NORTH AMERICAN VERTICAL OF 1988
GGM	GREEN-GRAY MUD
MG/KG	MILLIGRAMS PER KILOGRAM
MM	MEADOW MAT
UND	UNDISTURBED NATIVE DEPOSITS



NOTES:
1. ALL UTILITY LOCATIONS AND ELEVATIONS ARE APPROXIMATE
2. PREVIOUS EXCAVATION GRADES SHOWN ARE PRELIMINARY AND SUBJECT TO SUBSEQUENT REVISIONS.
3. BORING LOCATIONS WITHIN SITE 114 HAVE BEEN FULLY OR PARTIALLY REMOVED DURING SITE 114 REMEDIAL EXCAVATION ACTIVITIES, AS INDICATED BY THE TRANSPARENT (PALE COLORED) BOXES DEPICTING OBSERVATIONS AND ANALYTICAL RESULTS.

CONCEPTUALIZATION OF SITE CONDITIONS ONLY*

*REFER TO MEMO TEXT, TABLE 1, FIGURE 1, AND ATTACHMENTS PROVIDED AS PART OF THIS SUBMITTAL FOR SPECIFIC DATA INQUIRIES. ITEMS ARE PROJECTED TO CENTERLINE OF COLUMN AND MAY APPEAR TO BE IN DIFFERENT LOCATIONS THAN SHOWN ON PLAN VIEW.

AECOM

10 0 20
GRAPHIC SCALE IN FEET

PPG
GARFIELD AVENUE GROUP OF SITES
JERSEY CITY, NEW JERSEY

GARFIELD AVENUE CROSS SECTIONS COLUMN 16A

DATE: 06/30/2017 | DRWN: TDL | **FIGURE 12**

Attachment A

Boring Logs

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-A`11A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610745.125
Date Started Drilling: 3/21/2012	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683373.3125
Date Finished Drilling: 3/21/2012	**Core Size:**	**Boring Total Depth:** 5 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A`11A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
					FILL		Drilled through to 3 ft. No samples taken.	
1								
2								
3		0.1	moist	3	FILL		fine to medium silty SAND, and fine to medium gravel, (2.5YR 4/4) reddish brown, moist, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
				3	FILL		NO RECOVERY	
4	6							114-A'11A-4.5-4.5
5								

Comments:

PPG - PPG_LOGS.GDT - 9/19/12 14:41 - C:\DOCUMENTS AND SETTINGS\STANCHAK\MY DOCUMENTS\MY EQUIS WORK\PPG_JERSEY\GARFIELD AVENUE GROUP OF SITES\GARFIELD AVENUE GROUP OF SITES_11.GPJ

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-A`13A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610707.625
Date Started Drilling: 3/21/2012 9:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683316.6875
Date Finished Drilling: 3/21/2012 10:25:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 5 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A`13A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
					FILL		Drilled through to 3 ft. No samples taken.	
1								
2								
3		0.0	moist	4B	FILL		fine to medium silty SAND, (5YR 4/4) reddish brown, moist, granular COPR >1/4" on top of 3" recovery, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
				4B	FILL		NO RECOVERY	
4	3.6							114-A'13A-4.0-4.5
5								

Comments:

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-A`13A-PT

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610711.1875
Date Started Drilling: 3/18/2013 11:25:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683312.9375
Date Finished Drilling: 3/19/2013 12:00:00 PM	**Core Size:** 3 in	**Boring Total Depth:** 21 ft
Logged By: EW	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: Site 114 - A'13A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–7				NR		Drill to 7.5' bgs. No samples taken.	
8–9	2	0.0	moist to wet	FILL		fine to medium silty SAND, with fine to medium gravel, (7.5YR 2.5/1) black, moist to wet, slight iron sulfide-like odor with fully amended material.	114-A`13A-PT-7.5-8.0 114-A`13A-PT-7.5-8.0X
10–11	2	0.0	moist to wet	FILL		fine to medium silty SAND, with fine to medium gravel, (7.5YR 2.5/1) black, moist to wet, slight iron sulfide-like odor with fully amended material.	114-A`13A-PT-9.5-10.0 114-A`13A-PT-9.5-10.0X
12	1	0.0	moist to dry	FILL		fine to medium silty SAND, with fine to medium gravel, (7.5YR 2.5/1) black, moist to dry, iron sulfide-like odor with fully amended material.	114-A`13A-PT-11.5-12.0 114-A`13A-PT-11.5-12.0RM
13				NR		NO RECOVERY	
14	2	0.0	moist	FILL		fine to medium silty SAND, with fine to medium gravel, (7.5YR 2.5/1) black, moist to dry, iron sulfide-like odor with fully amended material.	114-A`13A-PT-13.5-14.0 114-A`13A-PT-13.5-14.0RM
15		0.0	dry	FILL		fine to medium SAND, with fine to coarse gravel, (7.5YR 4/4) brown, non plastic, loose, dry, no odor, no staining.	
16–17	2	0.0	moist to wet	SM		fine to medium SAND, with fine to medium gravel, (5YR 5/3) reddish brown, non plastic, loose, moist to wet, no odor, no staining. Soils consistent with UNDno.	114-A`13A-PT-15.5-16.0 114-A`13A-PT-15.5-16.0RM 114-A`13A-PT-15.5-16.0RM 114-A`13A-PT-15.5-16.0RMX
18–19	2	0.0	moist	SM		fine to medium SAND, with fine to coarse gravel, (5YR 5/3) reddish brown, non plastic, loose, moist, no odor, sheen found at top 6" of spoon with oil-like odor found in same interval. Soils consistent with UNDno.	114-A`13A-PT-17.5-18.0 114-A`13A-PT-17.5-18.0RM
20–21	1.5	0.0	moist	SM		fine to medium SAND, with fine to coarse gravel, (5YR 5/3) reddish brown, non plastic, loose, moist, no odor. Soils consistent with UNDno.	114-A`13A-PT-19.5-20.0 114-A`13A-PT-19.5-20.0X 114-A`13A-PT-19.5-20.0RM 114-A`13A-PT-19.5-20.0RMX

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 internval of this boring.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-A`13A-PTR3

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610712.8
Date Started Drilling: 6/2/2014 9:40:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683312.7
Date Finished Drilling: 6/2/2014 11:40:00 AM	**Core Size:**	**Boring Total Depth:** 20 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:**
Physical Location: Post Treatment Soil Sampling		**Surface Elevation:** 10.907 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	1	0.0	wet	FILL		Ammended DGA, some fine to coarse sand, (10YR 5/1) gray, medium dense, wet no odor no staining	
1	0			FILL		NO RECOVERY	
2							
3							
4							
5	0.8	0.0	wet	FILL		Ammended DGA, some fine to coarse sand, (10YR 6/1) gray, medium dense, wet no odor no staining	
6	1	0.0	moist	FILL		(Ammended DGA) fine silty SAND, little fine to coarse gravel, (10YR 2/1) black, medium dense, moist no odor no staining	
7	0			FILL		NO RECOVERY	
8							
9							
10	3	0.0	wet	FILL		(Ammended DGA) fine silty SAND, little fine to coarse gravel, (7.5YR 2.5/1) black, medium dense, wet no odor no staining	
11							
12							
13	0			FILL		NO RECOVERY	
14							
15	2.5	0.0	wet	FILL		(Ammended DGA), fine silty SAND, little fine to coarse gravel, (7.5YR 2.5/1) black, medium dense, wet no odor no staining	
16							
17	0.5						
18	0	0.0	moist	SM		fine to coarse SAND, some fine to coarse gravel, (5YR 4/3) reddish brown, very dense, moist to wet no odor no staining. Soils consistent with UNDno.	114-A`13A-PTR3-17.5-18.0
19				SM		NO RECOVERY, Geoprobe experienced maintenance issues	
20							

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

Comments:

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-A`13A-PTR4

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610711.1875
Date Started Drilling: 12/4/2014 9:55:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683312.9375
Date Finished Drilling: 12/4/2014 10:40:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 20 ft
Logged By: SP	**Project Manager:** Scott Mikaelian	**Depth to Water:**
Physical Location: Post Treatment		**Surface Elevation:** 11.3 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	dry	FILL		DGA, some gravel, (10YR 6/2) light brownish gray, loose, dry, no odor, no staining	
5	1	0.0	slightly moist	FILL		DGA, some gravel, (10YR 6/2) light brownish gray, loose, slightly moist, no odor, no staining	
6	3	0.0	moist	FILL		DGA, some gravel, (10YR 2/1) black, loose, moist, no odor	
9	1	NR		NR		NO RECOVERY	
10	5	0.0	saturated	FILL		DGA, (10YR 2/1) black, soft to medium dense, saturated, no odor	
15	2	0.0	wet	FILL		DGA, trace gravel, (10YR 2/1) black, loose to medium dense, wet, no odor	
17	3	0.0	slightly moist	SW		fine to medium SAND, trace gravel, (7.5YR 4/4) brown, slightly moist, no odor, no staining. Soils consistent with UNDno.	114-A`13A-PTR4-17.5-18.0
20							

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

Comments:

PPG - 2012-09 RA PPG_LOGS_A.GDT - 5/2/17 16:48

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-A0

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610916.6875
Date Started Drilling: 3/28/2012 9:30:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683647.3125
Date Finished Drilling: 3/28/2012 3:00:00 PM	**Core Size:** 3.25 in	**Boring Total Depth:** 35 ft
Logged By: D. Chamberland	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5					FILL		Drilled through to 5 ft. No samples taken.	
5–6	0.5	0	wet	3	FILL		fine to medium SAND, with 1" fine gravel, (5Y 2.5/1) black, (N 7/) light gray, wet, poorly graded	
6–7				3	FILL		NO RECOVERY	114-A0A-6.5-7.0
7–8	1.5	0	wet	3	FILL		fine to medium SAND, and silt, (10YR 2/2) very dark brown, wet	
8–9			wet	3	FILL		fine sandy SILT, 10% coarse sand, (10YR 3/3) dark brown, wet	114-A0A-8.5-9.0
9–10	2	0	wet	3	FILL		NO RECOVERY	
10–11							fine sandy SILT, little organics, (10YR 2/2) very dark brown, wet to moist, grades to black (7.5 YR 2.5/1) in last 0.2 ft	114-A0A-10.5-11.0
11–12	2	0	moist	3	FILL		SILT, little fine sand, (10YR 4/2) dark grayish brown, moist	
12–13			moist	3	FILL		SILT, 20-25% organics, (10YR 2/1) black, moist	114-A0A-12.5-13.0
13–14	2	0	wet	3	FILL		sandy SILT, 25-30% organics, (10YR 4/3) brown, moist	
14–15			moist	3	FILL		fine SAND, and silt, (2.5Y 3/1) very dark gray, wet, grades to (2.5 YR 4/3) olive brown.	
15–16	2	0.1	moist	3	FILL		medium SAND, 20% fine sand, (2.5Y 4/3) olive brown, moist	114-A0A-14.5-15.0
16–17			saturated	3	FILL		clayey SILT, (5GY 5/1) greenish gray, moist	
17–18	1.5	0.1	wet	3	FILL		fine SAND, 30% medium sand, (5Y 4/2) olive gray, saturated	114-A0A-16.5-17.0
18–19			moist	10	SP		fine to medium SAND, 30% brick fragments, (2.5YR 3/6) dark red, (N 3/) very dark gray, wet	
19–20	1.5	0.1	moist	10	SP		fine to medium SAND, graded, trace coarse sand, (2.5YR 3/6) dark red, moist	114-A0A-18.5-19.0
20–21				10	SP		NO RECOVERY	
21–22	1.5	0	moist	10	SP		medium to coarse SAND, poorly sorted, (2.5YR 3/4) dark reddish brown, moist	114-A0A-20.5-21.0
22–23				10	SP		NO RECOVERY	
23–24	2	0	moist	10	SP		fine to medium SAND, trace coarse sand trace rock fragments, (2.5YR 4/6) red, moist	114-A0A-22.5-23.0
24–25							NO RECOVERY medium to coarse SAND, little fine sand, (2.5YR 4/6) red, medium dense, moist	
25–26	1.5	0	wet	10	SP		medium to coarse SAND, little fine sand, (2.5YR 4/6) red, medium dense, wet to moist	114-A0A-24.5-25.0
26–27			wet	11	GP		fine to medium GRAVEL, little medium to coarse sand trace rock fragments, (2.5YR 2.5/4) dark reddish brown, wet to moist	
27–28	1.5	0	wet	11	GP		NO RECOVERY	114-A0A-26.5-27.0
28–29				10	SM		silty SAND, some to little gravel, (2.5YR 2.5/4) dark reddish brown, wet	114-A0A-28.5-29.0
29–30	1.5	0	wet	10	SM		NO RECOVERY	
30–31				10	SM		silty SAND, little medium to coarse gravel, (2.5YR 2.5/4) dark reddish brown, wet	114-A0A-30.5-31.0
31–32	1.5	0	wet	10	SM		NO RECOVERY	
32–33				10	SM		silty SAND, some coarse sand trace gravel, (2.5YR 3/4) dark reddish brown, wet	114-A0A-32.5-33.0
33–34	1.5	0	wet	11	GP		NO RECOVERY	
34–35			wet	10	SP		fine GRAVEL, 20% coarse sand, (2.5YR 3/4) dark reddish brown, wet	114-A0A-34.5-35.0
35				10	SP		fine to medium SAND, little gravel, (2.5YR 3/4) dark reddish brown, wet NO RECOVERY	

Comments:

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-A1A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610903.1875
Date Started Drilling: 3/27/2012 9:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683622.875
Date Finished Drilling: 3/27/2012 3:05:00 PM	**Core Size:** 3.25 in	**Boring Total Depth:** 35 ft
Logged By: R. Matos	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A1A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1				3	FILL		Drilled through to 5 ft. No samples taken.	
2								
3								
4								
5	8.4	0.3	moist	3	SM		silty SAND, (2.5Y 3/3) dark olive brown, loose, moist to	
6				3	SM		wet no odor, black band of clayey sands from 6.5 to 7.0, Compression of sample and loss of water in pore space	
7	9.6	0.3	wet	3	SC		resulted reduced recovery of soils	114-A1A-6.5-7.0
8				3	SC		NO RECOVERY	
9	22.8	0.2	wet	3	SC		clayey SAND, and silt, (2.5Y 3/1) very dark gray, wet, some gravel angular	114-A1A-8.5-9.0
10		0.4	wet	3	SC		SAA, loose, clay increases some gravel, no odor, angular, Compression of sample and loss of water in pore space resulted reduced	
11	24	0.3	wet	3	SC		recovery of soils	114-A1A-10.5-11.0
12		0.4		8	SM		NO RECOVERY (2.5Y 3/1) very dark gray, wet to moist, sand mixture, same a previous unit, no gravel	
13	24	0.2	wet	8	SM		CLAY, with fine sand little silt, (2.5Y 3/3) dark olive	114-A1A-12.5-13.0
14		0.3		9	SM		brown, high plasticity, wet to moist no odor, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
15	20.4	0.3	wet	9	ML		NO RECOVERY	114-A1A-14.5-15.0
16							SAA. 80% fine silty SAND, 20% organics, (2.5Y 3/1) very dark	
17	19.2	0.4	wet	9	ML		gray, medium plasticity, wet no odor	114-A1A-16.5-17.0
18				10	SM		SAA fine silty SAND, (2.5Y 5/1) gray, non plastic loose, wet	
19	21.6	0.0	moist	10	SM		no odor	114-A1A-18.5-19.0
20				10	SP		clayey SILT, little sand <20%, (5Y 5/1) gray, non plastic, wet to moist no odor, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
21	9.6	0.0	wet	10	SP		NO RECOVERY	114-A1A-20.5-21.0
22				10	SP		fine SAND, little <10% silt, (5R 4/6) red, loose, wet to moist no odor, SAA, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
23	22.8	0.0	wet	10	SP		NO RECOVERY	114-A1A-22.5-23.0
24							80% fine SAND, some medium sand, (5R 4/6) red, loose, moist no odor, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
25	20.4	0.0		10	SP		NO RECOVERY	114-A1A-24.5-25.0
26				10	SP		fine to medium SAND, and 70% fine sand and 30% medium sand, (7.5R 4/4) weak red, loose, wet no odor,	
27	9.6	0.0	wet	10	SP		Compression of sample and loss of water in pore space	114-A1A-26.5-27.0
28				10	SP		resulted reduced recovery of soils NO RECOVERY	
29	22.8	0.0	wet	10	SP		fine to medium SAND, 80% fine sand some well rounded gravel, (5R 4/6) red, loose, wet to moist no	114-A1A-28.5-29.0
30		0.0	wet	10	SP		odor, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
31	9.6	0.0	moist	10	SP		NO RECOVERY SAA, no gravel	114-A1A-30.5-31.0
32				10	SP		NO RECOVERY	
33	14.4	0.0		10	SP		fine SAND, (5R 4/6) red, loose, wet no odor, Compression of sample and loss of water in pore space resulted reduced recovery of soils	114-A1A-32.5-33.0
34				10	SP		NO RECOVERY SAA	
35							fine to medium SAND, (7.5YR 5/8) strong brown, loose, wet to moist no odor	114-A1A-34.5-35.0
							fine to medium SAND, with 20% subangular to	

Comments:

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Boring ID: 114-A1A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610903.1875
Date Started Drilling: 3/27/2012 9:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683622.875
Date Finished Drilling: 3/27/2012 3:05:00 PM	**Core Size:** 3.25 in	**Boring Total Depth:** 35 ft
Logged By: R. Matos	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A1A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
							surounded gravel, (2.5YR 4/6) red, wet to moist, Compression of sample and loss of water in pore space resulted reduced recovery of soils NO RECOVERY fine to coarse gravelly SAND, 20-30% subangular gravel, (2.5YR 4/6) red, moist no odor, Compression of sample and loss of water in pore space resulted reduced recovery of soils NO RECOVERY SAA, Compression of sample and loss of water in pore space resulted reduced recovery of soils NO RECOVERY	

Comments:

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Boring ID: 114-A1B-WS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe Dual Tube	**Coordinates (NJSPNAD83) x:** 610928.84
Date Started Drilling: 5/4/2017 10:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683682.316
Date Finished Drilling: 5/4/2017 10:30:00 AM	**Core Size:** 2.0 in	**Boring Total Depth:** 25 ft
Logged By: S. Paige	**Project Manager:** Scott Mikaelian	**Depth to Water:** 10.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 13.378 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	3	0.0	dry to wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 10.0 feet.	
5–10	3	0.0					
10–15	3	0.0					
15–20	5	0.0	moist	SW		medium SAND, some coarse gravel, (5YR 4/3) reddish brown, dense, moist, no odor, no staining. Soils consistent with UNDno.	114-A1B-WS-15.0-15.5 114-A1B-WS-16.8-17.3 114-A1B-WS-18.8-19.3
20–25	5	0.0					114-A1B-WS-20.8-21.3 114-A1B-WS-22.8-23.3

Notes:
bgs - below surface grade
MM - meadow mat
COPR - chromite ore processing residue
GGM - green grey mud
UNDno - non-organic undisturbed native deposits
UNDorg - organic undisturbed native deposits
MGP - manufactured gas plant
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 internval of this boring.

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Boring ID: 114-A2A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610887.1875
Date Started Drilling: 3/28/2012 8:30:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683599.125
Date Finished Drilling: 3/28/2012 9:30:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 17 ft
Logged By: D. Chamberland	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0					FILL		Drilled through to 5 ft. No samples taken.	
5	1	0	saturated	6	FILL		medium to coarse gravelly SAND, little fine sand, (N 2.5/) black, saturated	
6				6	FILL		NO RECOVERY	114-A2A-6.5-7.0
7	1.5	0	wet	6	FILL		medium to coarse SAND, some medium gravel, (N 2.5/) black, wet	
8			moist	3	FILL		medium to coarse silty SAND, little coarse gravel little fine sand, (10YR 3/2) very dark grayish brown, (N 2.5/) black, moist, poorly graded	
9				3	FILL		NO RECOVERY	114-A2A-8.5-9.0
10	2	0	moist	3	FILL		medium sandy SILT, 5-10% organics trace fine sand, (7.5YR 3/3) dark brown, moist	114-A2A-10.5-11.0
11	2	0	moist	3	FILL		SILT, little fine to medium sand, (10YR 2/2) very dark brown, non plastic, moist	
12			moist	7	PT		60% PEAT (decayed organics), 40% orgainc silt, (10YR 2/1) black, moist, (soils consistent with Meadow Mat)	114-A2A-12.5-13.0
13	2	0	moist	7	OL		organic SILT, 10% PEAT (decayed organics), (10YR 3/2) very dark grayish brown, moist, (soils consistent with Meadow Mat)	
14			moist	7	PT		60% PEAT (decayed organics), 30% silt, 10% fine sand, (10YR 3/2) very dark grayish brown, moist, (soils consistent with Meadow Mat)	114-A2A-14.5-15.0
15	2	0	moist	9	OL		Organic SILT, 10% fine sand, trace fiberous organics, (2.5Y 3/2) very dark grayish brown, moist, (soils consistent with Meadow Mat)	
16			moist	8	SP		fine SAND, (5G 5/1) greenish gray, moist	
17			moist	10	GP		coarse GRAVEL, and 35% coarse sand, (10YR 3/1) very dark gray, moist	

Comments:

PPG - PPG_LOGS.GDT - 8/20/12 13:32 - C:\DOCUMENTS AND SETTINGS\STANCHAK\MMY DOCUMENTS\MY EQUIS WORK\PPG_JERSEY\GARFIELD AVENUE GROUP OF SITES\GARFIELD AVENUE GROUP OF SITES_5.GPJ

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Boring ID: 114-A2B-WS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe Dual Tube	**Coordinates (NJSPNAD83) x:** 610940.535
Date Started Drilling: 5/4/2017 8:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683703.486
Date Finished Drilling: 5/4/2017 8:50:00 AM	**Core Size:** 2.0 in	**Boring Total Depth:** 25 ft
Logged By: S. Paige	**Project Manager:** Scott Mikaelian	**Depth to Water:** 10.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 13.512 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	2	0.0	dry to wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 10.0 feet.	
5–10	3	0.0					
10–15	3	0.0					
15–20	5	0.0	moist to wet	SW		medium SAND, some coarse gravel, (5YR 4/3) reddish brown, dense, moist to wet, no odor, no staining. Soils consistent with UNDno.	114-A2B-WS-15.3-15.8 114-A2B-WS-17.3-17.8 114-A2B-WS-19.3-19.8
20–25	5	0.0					114-A2B-WS-21.3-21.8 114-A2B-WS-23.3-23.8

Notes:
bgs - below surface grade
MM - meadow mat
COPR - chromite ore processing residue
GGM - green grey mud
UNDno - non-organic undisturbed native deposits
UNDorg - organic undisturbed native deposits
MGP - manufactured gas plant
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 internval of this boring.

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Boring ID: 114-A3A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610886.125
Date Started Drilling: 3/26/2012 11:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683568
Date Finished Drilling: 3/27/2012 9:00:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 35 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A3A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–4				3	FILL		Drilled through to 5 ft. No samples taken.	
5	20.4	0.0		3	FILL		fine to medium sandy SILT, and coarse gravel, calcium deposits, quartz pebbles >=1/2", (5GY 5/2) grayish green	
6		0.0		3	FILL			
7		0.0	moist	3	FILL		fine to coarse FILL MATERIAL, moist	114-A3A-6.5-7.0
		0.0	wet	3	FILL		fine to coarse silty SAND, and medium gravel, (10B 7/1) light bluish gray, moist, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
8	12			3	FILL			
9				3	FILL		NO RECOVERY	114-A3A-8.5-9.0
10	0						fine to coarse silty SAND, and fine to medium gravel, (10GY 2.5/1) greenish black, wet	
11		0.0	wet	3	FILL		NO RECOVERY	
12	12			3	FILL		NO RECOVERY fine to coarse silty SAND, (10B 2.5/1) bluish black, wet, Compression of sample and loss of water in pore space resulted reduced recovery of soils	114-A3A-12.5-13.0
13		0.0	moist	8	SM		NO RECOVERY	
14	24	0.0	moist	8	SM		fine to medium silty SAND, and 20% organics and silt and clay, (10YR 3/2) very dark grayish brown, moist	114A3A-14.5-15.0
15		0.0	moist	8	SM		fine to medium silty SAND, and clay, moist	
16	16.8	0.0	moist	8	SC-SM		fine to medium silty SAND, (10YR 3/2) very dark grayish brown, moist	
		0.0		8	SC-SM			
17		0.0		8	SC-SM		fine to medium silty SAND, and clay, moist	114-A3A-16.5-17.0
18	24	0.0	moist	8	SC-SM		SAA 15.0-16.0, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
				8	SM		NO RECOVERY	
19		0.0	moist	10	SW		SAA	114A3A-18.5-19.0
20	24						fine to medium silty SAND, (10BG 6/1) greenish gray, moist	
21		0.0	moist	10	SW		fine to coarse silty SAND, and fine to medium gravel, (2.5YR 4/4) reddish brown, moist	114-A3A-20.5-21.0
22	24	0.0	moist	10	SW		fine to coarse silty SAND, trace fine to medium gravel, (2.5YR 4/4) reddish brown, moist to wet	
23		0.0	moist	10	SC-SM		fine to medium silty SAND, (2.5YR 4/4) reddish brown, moist to wet	114-A3A-22.5-23.0
24	21.6						fine silty SAND, little clay, (2.5YR 4/6) red, moist	
		0.0	moist	10	SC-SM		fine silty SAND, and clay, (2.5YR 4/6) red, moist,	
25		0.0	wet	10	SC-SM		Compression of sample and loss of water in pore space resulted reduced recovery of soils	114-A3A-24.5-25.0
26	21.6			10	SC-SM		NO RECOVERY	
27				10	SC-SM		wet to saturated, SAA and green water, Compression of sample and loss of water in pore space resulted reduced recovery of soils	114-A3A-26.5-27.0
28							NO RECOVERY	
29								114-A3A-28.5-29.0
30								
31								114-A3A-30.5-31.0
32								
33								114-A3A-32.5-33.0
34								
35								114-A3A-34.5-35.0

Comments:

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: 114-A3B-WS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe Dual Tube	**Coordinates (NJSPNAD83) x:** 610953.631
Date Started Drilling: 5/3/2017 10:55:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683725.085
Date Finished Drilling: 5/3/2017 11:35:00 AM	**Core Size:** 2.0 in	**Boring Total Depth:** 25 ft
Logged By: S. Paige	**Project Manager:** Scott Mikaelian	**Depth to Water:** 10.0 ft
Physical Location: Actual-WS		**Surface Elevation:** 13.557 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	3	0.0	dry to wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 10.0 feet.	
5–10	2	0.0					
10–15	3	0.0					
15–20	5	0.0	moist to dry	SW		medium to coarse SAND, some coarse gravel, (5YR 4/3) reddish brown, dense, moist to dry, no odor, no staining. Soils consistent with UNDno.	114-A3B-WS-15.5-16.0 114-A3B-WS-17.5-18.0 114-A3B-WS-19.5-20.0
20–25	5	0.0					114-A3B-WS-21.5-22.0 114-A3B-WS-23.5-24.0

Notes:
bgs - below surface grade
MM - meadow mat
COPR - chromite ore processing residue
GGM - green grey mud
UNDno - non-organic undisturbed native deposits
UNDorg - organic undisturbed native deposits
MGP - manufactured gas plant
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 internval of this boring.

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Boring ID: 114-A4A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:**
Date Started Drilling: 3/26/2012	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:**
Date Finished Drilling: 3/26/2012	**Core Size:** 3.25 in	**Boring Total Depth:** 35 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1				3	FILL		Drilled through to 5 ft. No samples taken.	
2								
3								
4								
5	1.5	0.0	moist	3	FILL		medium-fine silty SAND, (10YR 4/6) red, moist, no odor	
6			moist	3	FILL		medium-fine silty SAND, (2.5YR 4/4) dark red, moist, no odor	
7	1.5		moist	3	FILL		medium-fine silty SAND, medium-coarse gravel, (10YR 4/1) dark gray, moist, no odor	114-A4A-6.5-7.0
8		0.0	moist	3	FILL		medium-fine silty SAND, medium-coarse gravel, (10YR 4/1) dark gray, moist, no odor	
9	1.67							
10		0.0	moist	3	FILL		medium-fine silty SAND, medium-coarse gravel, (10YR 4/1) dark gray, moist, no odor	
11	1.58		moist	3	FILL		medium-fine silty SAND, some clay, (10YR 3/4) dark yellowish brown, moist, no odor	114-A4A-10.5-11.0
12		0.0	moist	3	FILL		medium-fine silty SAND, some clay, (10YR 3/4) dark yellowish brown, moist, no odor	
13	2							114-A4A-12.5-13.0
14		0.0	moist	3	FILL		medium-fine silty SAND, some clay, (10YR 3/4) dark yellowish brown, moist, no odor	
15	1.5		moist	8	OL		organic SILT, 10% degraded organic PEAT (decayed organics), (10YR 2/1) black, moist	114-A4A-14.5-15.0
16			moist	10	SM		medium-fine silty SAND, (10YR 5/1) dark gray, moist, no odor	
17	1		moist	10	SM		fine to medium silty SAND, some fine to coarse gravel, (Gley 6/1) dark brown, non plastic, moist, no odor	114-A4A-16.5-17.0
18			moist	10	SM		fine to medium silty SAND, (5YR 4/4) reddish brown, non plastic, moist, no odor	
19	1.83		moist	10	SM		fine to medium silty SAND, (5YR 4/4) reddish brown, non plastic, moist, no odor	114-A4A-18.5-19.0
20		0.0	moist	10	SM		fine to medium silty SAND, medium to fine gravel, (5YR 4/4) reddish brown, non plastic, moist, no odor	
21	2						fine to medium silty SAND, (2.5YR 4/4) reddish brown, non plastic, moist, no odor	114-A4A-20.5-21.0
22		0.0	wet	10	SM		fine to medium silty SAND, (2.5YR 4/4) reddish brown, non plastic, wet, no odor	
23	1.83							114-A4A-22.5-23.0
24		0.0	moist	10	SM		fine to medium silty SAND, (2.5YR 4/6) reddish brown, moist, no odor	
25	2							114-A4A-24.5-25.0
26		0.0	moist	10	SM		fine to medium silty SAND, (2.5YR 4/6) reddish brown, moist, no odor	
27	1							114-A4A-26.5-27.0
28		0.0	saturated	10	SM		fine to medium silty SAND, trace clay, (2.5YR 4/6) red, saturated, no odor	
29	2		moist	10	SM		coarse to fine silty SAND, trace clay, (2.5YR 4/6) red, moist, no odor	114-A4A-28.5-29.0
30		0.0	moist	10	SM		fine to medium silty SAND, some clay, (2.5YR 4/6) red, moist, no odor	
31	1.67							114-A4A-30.5-31.0
32		0.0	moist	10	SM		fine silty SAND, some clay, (2.5YR 4/6) red, moist, no odor	
33	1.25		moist	10	SM		fine to medium silty SAND and CLAY, (2.5YR 4/6) red, moist, no odor	114-A4A-32.5-33.0
34		0.0						
								114-A4A-34.5-35.0

Comments:

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Boring ID: 114-A4B-WS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe Dual Tube	**Coordinates (NJSPNAD83) x:** 610968.041
Date Started Drilling: 5/3/2017 10:25:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683749.625
Date Finished Drilling: 5/3/2017 10:52:00 AM	**Core Size:** 2.0 in	**Boring Total Depth:** 25 ft
Logged By: S. Paige	**Project Manager:** Scott Mikaelian	**Depth to Water:** 9.0 ft
Physical Location: Actual-WS		**Surface Elevation:** 13.807 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	2	0.0	dry to wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 9.0 feet.	
5–10	2	0.0					
10–15	3	0.0					
15–20	5	0.0	moist	SW		medium to coarse SAND, some coarse gravel, (5YR 4/3) reddish brown, dense, moist, no odor, no staining. Soils consistent with UNDno.	114-A4B-WS-16.5-17.0 114-A4B-WS-18.5-19.0
20–25	5	0.0					114-A4B-WS-20.5-21.0 114-A4B-WS-22.5-23.0

Notes:
bgs - below surface grade
MM - meadow mat
COPR - chromite ore processing residue
GGM - green grey mud
UNDno - non-organic undisturbed native deposits
UNDorg - organic undisturbed native deposits
MGP - manufactured gas plant
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 internval of this boring.

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Boring ID: 114-A5A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610855.3125
Date Started Drilling: 3/23/2012 11:55:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683515.5
Date Finished Drilling: 3/23/2012 3:00:00 PM	**Core Size:** 3.25 in	**Boring Total Depth:** 35 ft
Logged By: D. Chamberland	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A5A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–4					FILL		Drilled through to 5 ft. No samples taken.	
5	4.8			3	FILL		NO RECOVERY	
6		0.0	wet	3	FILL		FILL MATERIAL, wet	
7				3	FILL		NO RECOVERY	
8	18	0.0	wet	3	FILL		FILL MATERIAL, with 30% sand, wet	
		0.0	wet	3	FILL		fine SAND, (10YR 2/1) black, medium dense, wet to moist	
9				3	FILL		NO RECOVERY	
10	15.6							
11		0.0	moist	3	FILL		FILL MATERIAL, moist	
12		0.0	moist	3	FILL		fine SAND, trace silt and fine to medium sand, (7.5YR 4/1) dark gray, moist, silt grades to silty sand	
13		0.0	moist	3	OL		SILT, (10YR 3/1) very dark gray, soft, moist	114-A5A-12.5-13.0
	24	0.0	moist	7	PT		80% PEAT (meadow mat), 10% silt, 10% clay, moist	
14		0.0	moist	7	SM		fine silty SAND, with 15% organics, (10YR 5/2) grayish brown, moist	
15				8	SP		NO RECOVERY	114-A5A-14.5-15.0
16	12	0.0	moist	8	SP		fine SAND, with trace organics, (10YR 6/2) light brownish gray, moist	
17		0.0	moist	8	SP		SAND, with red and green mottling, (10YR 5/1) gray, moist	114-A5A-16.5-17.0
18		0.0	wet	8	SW		little medium gravel and rock fragments, wet to moist, SAA	
19		0.0	wet	8	SW		little fine to medium GRAVEL, wet, SAA	114-A5A-18.5-19.0
20	22.8							
21				10	SW		NO RECOVERY	114-A5A-20.5-21.0
22	24	0.0	moist	10	SW		medium SAND, some fine gravel and rock fragments, (5YR 4/4) reddish brown, moist to wet	
23		0.0		10	SW		NO RECOVERY	114-A5A-22.5-23.0
24	24						SAA	
25				8	SP		NO RECOVERY	114-A5A-24.5-25.0
26	24	0.0	moist	8	SP		medium SAND, (5YR 4/4) reddish brown, moist	
		0.0	moist	10	SM		medium silty SAND, and fine clay layering, (2.5YR 5/2) weak red, moist	
27				10	SM		NO RECOVERY	114-A5A-26.5-27.0
28	19.2	0.0	moist	10	SM		SILT, and sand layers, (2.5YR 5/2) weak red, moist, grades to silt	
29		0.0	moist	10	SM		medium SAND, with few silt layers, (5YR 4/4) reddish brown, moist	114-A5A-28.5-29.0
30	24							
31		0.0	moist	10	SC-SM		with clay and one silt layer at 33.5, moist, SAA	114-A5A-30.5-31.0
32	24							
33		0.0	moist	10	SW		fine to medium SAND, trace coarse sand, (2.5YR 4/4) reddish brown, very dense, moist	114-A5A-32.5-33.0
34	24							
35								114-A5A-34.5-35.0

Comments:

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Boring ID: 114-A5B-WS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe Dual Tube	**Coordinates (NJSPNAD83) x:** 610983.848
Date Started Drilling: 5/3/2017 8:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683775.904
Date Finished Drilling: 5/3/2017 10:00:00 AM	**Core Size:** 2.0 in	**Boring Total Depth:** 18 ft
Logged By: S. Paige	**Project Manager:** Scott Mikaelian	**Depth to Water:** 10.0 ft
Physical Location: Actual-WS		**Surface Elevation:** 14.098 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	3	0.0	dry to wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 10.0 feet.	
5–10	3	0.0					
10–15	2	0.0					
15–16	3	0.0	dry	SM		fine to medium silty SAND, trace fine to medium gravel, (7.5YR 3/2) dark brown, dense, dry, no odor, no staining. Soils consistent with UNDno.	114-A5B-WS-15.0-15.5
16–18			dry to moist	SP		medium to coarse SAND, (5YR 4/3) reddish brown, dense, dry to moist, no odor, no staining, refusal at 18.0 feet. Soils consistent with UNDno.	114-A5B-WS-17.0-17.5

Notes:
bgs - below surface grade
MM - meadow mat
COPR - chromite ore processing residue
GGM - green grey mud
UNDno - non-organic undisturbed native deposits
UNDorg - organic undisturbed native deposits
MGP - manufactured gas plant
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 internval of this boring.

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Boring ID: 114-A6B-WS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe Dual Tube	**Coordinates (NJSPNAD83) x:** 610998.79
Date Started Drilling: 5/2/2017 12:00:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683799.831
Date Finished Drilling: 5/2/2017	**Core Size:** 2.0 in	**Boring Total Depth:** 26 ft
Logged By: S. Paige	**Project Manager:** Scott Mikaelian	**Depth to Water:** 8.0 ft
Physical Location: Actual-WS		**Surface Elevation:** 14.222 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	2	0.0	dry to wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 8.0 feet.	
5–10	3	0.0					
10–15	5	0.0					
13–15			moist	SP		medium to coarse SAND, some fine gravel, (5YR 3/2) dark reddish brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	114-A6B-WS-13.0-13.5
15–20	5	0.0					114-A6B-WS-15.0-15.5 114-A6B-WS-17.0-17.5 114-A6B-WS-19.0-19.5
20–25	5	0.0					114-A6B-WS-21.0-21.5 114-A6B-WS-23.0-23.5
25–26	1	0.0					114-A6B-WS-25.0-25.5

Notes:
bgs - below surface grade
MM - meadow mat
COPR - chromite ore processing residue
GGM - green grey mud
UNDno - non-organic undisturbed native deposits
UNDorg - organic undisturbed native deposits
MGP - manufactured gas plant
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 internval of this boring.

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Boring ID: 114-A`8A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610792
Date Started Drilling: 3/21/2012 1:10:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683449.1875
Date Finished Drilling: 3/21/2012 1:30:00 PM	**Core Size:** 3.25 in	**Boring Total Depth:** 5 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A`8A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
					FILL		Drilled through to 3 ft. No samples taken.	
1								
2								
3		0.1	moist	3	FILL		fine to medium SAND, some silt and coarse gravel, (7.5YR 4/1) dark gray, moist	
			moist	3	FILL		fine to medium silty SAND, trace fine to medium gravel, (7.5YR 4/2) brown, moist	
4	24							114-A'8A-4.0-4.5
		0.1	moist	6	FILL		Dark Grey FILL MATERIAL, with ash and brick, moist	
5								

Comments:

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Boring ID: 114-A`9A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610777.6875
Date Started Drilling: 3/21/2012 11:55:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683423.6875
Date Finished Drilling: 3/21/2012 12:06:00 PM	**Core Size:** 3.25 in	**Boring Total Depth:** 5 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A`9A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
					FILL		Drilled through to 3 ft. No samples taken.	
1								
2								
3		1.1	moist	6	FILL		fine to coarse FILL MATERIAL, and ash and sand, (2.5YR 3/1) dark reddish gray, moist	
				6	FILL		SAA + brick	
		0.6	moist	3	FILL		fine to coarse silty SAND, some gravel, (7.5YR 6/1) gray, moist, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
4	14.4							114-A'9A-4.0-4.5
					FILL		NO RECOVERY	
5								

Comments:

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Boring ID: 114-A`10A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610763.8125
Date Started Drilling: 3/21/2012 11:10:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683396.625
Date Finished Drilling: 3/21/2012 11:50:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 5 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A`10A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
					FILL		Drilled through to 3 ft. No samples taken.	
1								
2								
3		0.6		3	FILL		fine to medium silty SAND, (5YR 3/4) dark reddish brown	
				3	FILL		fine to medium silty SAND, (5YR 5/8) yellowish red	
				6	FILL		fine to coarse SAND, trace fine to medium gravel and ash, (2.5Y 5/1) gray	
4	24							114-A'10A-4.0-4.5
		0.9		3	FILL		BRICK, and wood fragments and ash, nails	
5								

Comments:

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Boring ID: 114-A`12A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** GeoProbe	**Coordinates (NJSPNAD83) x:** 610729
Date Started Drilling: 3/21/2012 10:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683348.125
Date Finished Drilling: 3/21/2012 10:45:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 5 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: A`12A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
					FILL		Drilled through to 3 ft. No samples taken.	
1								
2								
3		0.2	moist	3	FILL		fine to coarse silty SAND, and fine to coarse gravel, (7.5YR 3/3) dark brown, moist, Compression of sample and loss of water in pore space resulted reduced recovery of soils	
				3	FILL		NO RECOVERY	
4	9.6							114-A'12A-4.0-4.5
5								

Comments:

114-A’13A-PTR

No Test Pit/Boring Log Available

114-A’13A-PTR5

No Test Pit/Boring Log Available

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Boring ID: 114-AB7B-WS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe Dual Tube	**Coordinates (NJSPNAD83) x:** 611024.498
Date Started Drilling: 5/2/2017 9:55:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683836.11
Date Finished Drilling: 5/2/2017	**Core Size:** 2.0 in	**Boring Total Depth:** 22 ft
Logged By: S. Paige	**Project Manager:** Scott Mikaelian	**Depth to Water:** 8.0 ft
Physical Location: Actual-WS		**Surface Elevation:** 14.694 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	2.5	0.0	dry to wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 8.0 feet.	
5–10	3	0.0					
10–15	3	0.0					
15–20	5	0.0	dry	SM		fine to medium silty SAND, some fine to medium gravel, (7.5YR 4/2) brown, dense, dry, no odor, no staining. Soils consistent with UNDno.	114-AB7B-WS-15.5-16.0
			dry	SP		medium to coarse SAND, trace fine to coarse gravel, (5YR 4/3) reddish brown, dense, dry, no odor, no staining, refusal at 22.0 feet. Soils consistent with UNDno.	114-AB7B-WS-17.4-17.9
							114-AB7B-WS-19.4-19.9
20–22	2	0.0					114-AB7B-WS-21.4-21.9

Notes:
bgs - below surface grade
MM - meadow mat
COPR - chromite ore processing residue
GGM - green grey mud
UNDno - non-organic undisturbed native deposits
UNDorg - organic undisturbed native deposits
MGP - manufactured gas plant
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 internval of this boring.

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Boring ID: 114-C10B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611098.1875
Date Started Drilling: 4/6/2012 9:23:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683874.875
Date Finished Drilling: 4/6/2012 10:29:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 23 ft
Logged By: B. Murphy	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0					FILL		Drilled through to 13 ft. No samples taken.	
5	2	0	moist	3	FILL		fine to medium gravelly SAND, trace wood fragments, (7.5YR 3/3) dark brown, low plasticity, medium dense, moist, no odor	114-C10B-6.5-7.0
7	2	0	moist	3	FILL		fine to coarse silty SAND, and fine to medium gravel, (7.5YR 4/3) brown, low plasticity, medium dense, moist, no odor	114-C10B-8.5-9.0
9	2	0	moist	3	FILL		fine to medium silty SAND, and fine to medium gravel trace shale fragments and brick, (7.5YR 3/4) dark brown, low plasticity, medium dense, moist, no odor	114-C10B-10.5-11.0
11	2	0	moist	3	FILL		fine to medium silty SAND, trace fine to medium gravel trace brick, (7.5YR 3/3) dark brown, non plastic, medium dense, moist, no odor	114-C10B-12.5-13.0
13		0		5	FILL		fine to medium SAND, little fine gravel , 15% GGM, (7.5YR 3/2) dark brown, low plasticity , medium dense,	

Comments:

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Boring ID: 114-C10B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611098.1875
Date Started Drilling: 4/6/2012 9:23:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683874.875
Date Finished Drilling: 4/6/2012 10:29:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 23 ft
Logged By: B. Murphy	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
14	2	0		3	FILL		moist , no odor , green staining fine silty SAND, trace medium angular gravel, (7.5YR 4/3) brown, low plasticity , dense, moist , no odor	
15		0		3	FILL		silty SAND, (10YR 3/3) dark brown, low plasticity , dense, moist , no odor	114-C10B-14.5-15.0
16	0.5	0		7	OL		95% organic SILT, 5% PEAT (decayed organics), (7.5YR 3/2) dark brown, low plasticity , stiff, moist , slight organic odor, rooted	114-C10B-15.0-15.5
				7	OL		NO RECOVERY	
17					OL		NO RECOVERY	
18								
19		0		8	SM		silty SAND, mottled with (2.5 YR 5/6) red fine sand, (N 3/) very dark gray, some organics, low plasticity , very dense, slightly moist, no odor	
20	1.4	0		10	SP		fine SAND, trace coarse gravel, (2.5YR 5/3) reddish brown, non plastic, loose, moist , no odor	114-C10B-19.9-20.4
				10	SP		NO RECOVERY	
21		0		10	SP		fine SAND, trace coarse gravel, (2.5YR 5/3) reddish brown, non plastic , loose, moist , no odor	
22	2							
								114-C10B-22.5-23.0
23								

Comments:

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Boring ID: 114-C11B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611118.3125
Date Started Drilling: 4/23/2012 1:15:00 PM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683904
Date Finished Drilling: 4/24/2012 10:22:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 15 ft
Logged By: B. Murphy	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0					FILL		Drilled through to 5 ft. No samples taken.	
5	2	0	wet	6	FILL		fine SAND, some ash and fine gravel, (5B 4/1) dark bluish gray, non plastic, loose, wet, no odor	
			wet	6	FILL		fine SAND, some ceramics and ash, (5Y 6/2) light olive gray, non plastic, loose, wet, no odor, poorly graded	
7	1.6	0	moist	3	FILL		silty SAND, (10YR 4/2) dark grayish brown, non plastic, dense, moist, no odor	
			moist	4B	FILL		fine SAND, little fine to medium gravel, 10% COPR, (7.5YR 3/1) very dark gray, non plastic, loose, moist, no odor, green staining	
9				4B	FILL		NO RECOVERY	
10	1.5	0	slightly moist	4B	FILL		fine SAND, 15% COPR, (7.5YR 3/2) dark brown, non plastic, very dense, slightly moist, no odor	
11				4B	FILL		NO RECOVERY	
12	1.5	0	slightly moist	4B	FILL		fine SAND, little fine to medium gravel, 15% COPR, (7.5YR 3/2) dark brown, non plastic, very dense, slightly moist, no odor	
13				4B	FILL		NO RECOVERY	
14	1.8	0	slightly moist	7	OL		90% organic SILT, 10% PEAT (decayed organics), (10YR 3/4) dark yellowish brown, non plastic, dense, slightly moist, no odor, (soils consistent with Meadow Mat)	
15		0	moist	7	PT		75% PEAT (decayed organics), 20% silt, 5% clay, (10YR 2/1) black, low plasticity, stiff, moist, slight organic odor, rooted, (soils consistent with Meadow Mat)	114-C11B-14.5-15.0

Comments:

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Boring ID: 114-D12B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611144.625
Date Started Drilling: 4/6/2012 10:32:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683916.6875
Date Finished Drilling: 4/6/2012 12:25:00 PM	**Core Size:** 3.25 in	**Boring Total Depth:** 15 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0					FILL		Drilled through to 5 ft. No samples taken.	
5	2	0	moist	3	FILL		fine to coarse SAND, and fine to medium gravel, (7.5YR 3/1) very dark gray, low plasticity, medium dense, moist, no odor	114-D12B-6.5-7.0
7	1.5	0.0-0.2	moist	3	FILL		fine silty SAND, trace clay and shale fragments, (10YR 2/1) black, medium plasticity, soft, moist, moderate hydrocarbon-like odor	114-D12B-8.0-8.5
				3	FILL		NO RECOVERY	
9	2	1.4-2.3	moist	3	FILL		fine to medium silty SAND, some medium gravel, (2.5Y 4/4) olive brown, low plasticity, medium dense, moist, no odor	
10		2.3-2.4	moist	3	FILL		fine to medium silty SAND, and fine to medium gravel, (5YR 4/4) reddish brown, moist, no odor	114-D12B-10.5-11.0
11	1.5	0.0-2.2	moist	3	FILL		fine to medium SAND, little silt, (2.5Y 4/4) olive brown, non plastic, medium dense, moist, no odor	114-D12B-12.0-12.5
				3	FILL		NO RECOVERY	
13	2	0	moist	3	FILL		fine to medium silty SAND, (5YR 4/4) reddish brown, low plasticity, medium dense, moist, no odor	
14		0	moist	7	PT		50% PEAT (decayed organics) (degraded organic material), 45% SILT, 5% clay, (consistent with Meadow Mat), (7.5YR 3/3) dark brown, non plastic, medium stiff, moist, moderate organic odor	114-D12B-14.5-15.0
15								

Comments:

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-D13B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611158.8125
Date Started Drilling: 4/6/2012 2:00:00 PM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683945.875
Date Finished Drilling: 4/9/2012 9:22:00 AM	**Core Size:** 3.25 in	**Boring Total Depth:** 23 ft
Logged By: A. Potts	**Project Manager:** Chris Martell	**Depth to Water:** -
Physical Location: Site 114		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
5	1.5	0.0-0.1	moist	3	FILL		fine to coarse silty SAND, some brick and medium gravel, (7.5YR 3/1) very dark gray, moist, no odor	
6		0.2-0.4	moist	3	FILL		fine to coarse silty SAND, (7.5YR 3/1) very dark gray, medium plasticity, medium dense, moist, no odor	114-D13B-6.0-6.5
7				3	FILL		NO RECOVERY	
8	1.5	0	moist	3	FILL		fine to coarse silty SAND, (7.5YR 3/1) very dark gray, low plasticity, medium dense, moist, no odor	114-D13B-8.0-8.5
9				3	FILL		NO RECOVERY	
10	2	0	moist	3	FILL		fine to medium silty SAND, trace fine to medium gravel, (5YR 4/4) reddish brown, low plasticity, medium dense, moist, no odor	
11			moist	3	FILL		fine to medium silty SAND, some clay, (5YR 4/4) reddish brown, medium plasticity, medium dense, moist, no odor	114-D13B-10.5-11.0
12	1.5	0	moist	4C	FILL		fine to medium silty SAND, some clay, (5YR 4/4) reddish brown, medium plasticity, medium dense, moist, no odor, green gray staining	114-D13B-12.0-12.5
13				4C	FILL		NO RECOVERY	
14	1.5	0	moist	4C	SC-SM		fine silty SAND, some clay, (10BG 5/1) greenish gray, medium plasticity, medium dense, moist, no odor, some green gray staining	114-D13B-14.0-14.5
15				4C	SC-SM		NO RECOVERY	
16	1.5	0.2	moist	8	SM		fine silty SAND, (10BG 5/1) greenish gray, medium plasticity, medium dense, moist, no odor	114-D13B-16.0-16.5
17				8	SM		NO RECOVERY	
18	2	0	moist	8	SM		fine silty SAND, (10BG 5/1) greenish gray, medium plasticity, medium dense, moist, no odo	
19		0	moist	10	SP		fine to medium SAND, trace coarse gravel, (7.5YR 4/4) brown, yellow/red mottling, moist, no odor	114-D13B-18.5-19.0
20	2		moist	10	SM		fine to medium silty SAND, trace fine to medium gravel, (5YR 4/4) reddish brown, medium plasticity, medium dense, moist, no odor	114-D13B-20.5-21.0
21		0	moist	10	SM		fine to medium silty SAND, trace coarse gravel, (5YR 4/4) reddish brown, low plasticity, medium dense, moist, no odor	
22	1						NO RECOVERY	114-D13B-21.5-22.0
23								

Comments:

AECOM
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732.564.3200 office telephone

Boring ID: 114-GA-A`5A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610820.1
Date Started Drilling: 8/18/2014 11:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683524.3
Date Finished Drilling: 8/18/2014 12:40:00 PM	**Core Size:** 3 in	**Boring Total Depth:** 20.5 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 8.749 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	5	4.7	moist	FILL		DGA, trace brick, (10YR 4/1) dark gray, non plastic, loose, moist, no odor.	114-GA-A`5A-0.0-0.5
1		3.5	moist	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, loose, moist.	
2							114-GA-A`5A-2.0-2.5
3							
4							114-GA-A`5A-4.0-4.5
5	5	2.7	moist	FILL		fine to coarse silty DGA, little mica, little gravel, (10YR 4/2) dark grayish brown, non plastic, loose, moist, no odor, iron oxide staining.	
6		5.7	moist	FILL		ASH, little silt, little cobbles, (10YR 3/1) very dark gray, non plastic, loose, moist, no odor.	114-GA-A`5A-6.0-6.5
7		0.5	moist	FILL		fine to medium clayey SILT, trace mica, trace ash, (10YR 4/2) dark grayish brown, low plasticity, moist, no odor.	
8							114-GA-A`5A-8.0-8.5
9		0.0	moist	OH		silty CLAY, little organics, (10YR 4/1) dark gray, medium plasticity, moist, slight sulfur odor. Soils consistent with UNDorg.	114-GA-A`5A-8.5-9.0
10		0.0	moist	OL		clayey SILT, little organics, (10YR 4/2) dark grayish brown, low plasticity, medium dense, moist, no odor. Soils consistent with UNDorg.	114-GA-A`5A-9.0-9.5
11	5	0.0	moist	SM		fine silty SAND, trace mica, (10YR 4/2) dark grayish brown, non plastic, moist, no odor. Soils consistent with UNDno.	114-GA-A`5A-10.0-10.5
12		0.0	dry to moist	SM		fine to coarse silty SAND, trace pebbles, non plastic, loose, dry to moist, no odor, iron oxide staining, reddish brown. Soils consistent with UNDno.	114-GA-A`5A-12.0-12.5
13		0.0	dry to moist	SP		fine SAND, little medium to coarse sand, non plastic, loose, dry to moist, no odor, iron oxide staining, reddish brown. Soils consistent with UNDno.	
14							114-GA-A`5A-14.0-14.5
15	5.5	0.0	moist	SW		fine to medium SAND, little coarse sand, little cobbles, non plastic, loose, moist, no odor, reddish brown. Soils consistent with UNDno.	
16							114-GA-A`5A-16.0-16.5
17		0.0	wet	SW		fine to medium SAND, trace cobbles, non plastic, loose, wet, reddish brown. Soils consistent with UNDno.	
18							114-GA-A`5A-18.0-18.5
19							
20							114-GA-A`5A-20-20.5

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

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

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Boring ID: 114-GA-A`7A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610789.3
Date Started Drilling: 8/18/2014 9:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683475.7
Date Finished Drilling: 8/18/2014 10:30:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 20.5 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 8.922 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	5	7.3	moist	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, dense, moist.	114-GA-A`7A-0.0-0.5
1		7.2	moist	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, medium dense to dense, moist.	
2							114-GA-A`7A-2.0-2.5
3							
4							114-GA-A`7A-4.0-4.5
5	5	7.5		FILL		fine to medium silty SAND, some ash, (10YR 4/2) dark grayish brown.	
6							114-GA-A`7A-6.0-6.5
7		7.2	moist to wet	FILL		SILT, trace fine sand, (10YR 4/2) dark grayish brown, low plasticity, medium stiff, moist to wet, no odor.	
8							114-GA-A`7A-8.0-8.5
9		4.9		MH		SILT, little roots, trace very fine sand, (10YR 4/1) dark gray, low plasticity, medium stiff. Soils consistent with UNDorg.	114-GA-A`7A-8.5-9.0
		0.0		MH		SILT, little roots, trace very fine sand, (10YR 4/2) dark grayish brown, low plasticity, medium stiff. Soils consistent with UNDno.	114-GA-A`7A-9.0-9.5
10	5	0.0	saturated	ML		SILT, trace fine gravel, (10YR 4/2) dark grayish brown, low plasticity, very loose to medium soft, saturated. Soils consistent with UNDno.	114-GA-A`7A-10.0-10.5
11							
12		0.0	wet	ML		SILT, some fine to coarse gravel, (10YR 4/2) dark grayish brown, non plastic, medium stiff, wet. Soils consistent with UNDno.	114-GA-A`7A-12.0-12.5
13		2.0	wet	SP		fine to medium SAND, some fine gravel, little coarse gravel, (2.5YR 4/3) reddish brown, non plastic, dense to very dense, wet. Soils consistent with UNDno.	
14							114-GA-A`7A-14.0-14.5
15	5.5	2.0	wet to saturated	SP		medium to coarse SAND, some fine gravel, little coarse gravel, trace cobbles, (2.5YR 3/3) dark reddish brown, non plastic, very dense, wet to saturated. Soils consistent with UNDno.	
16							114-GA-A`7A-16.0-16.5
17							
18							114-GA-A`7A-18.0-18.5
19							
20							114-GA-A`7A-20.0-20.5

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

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

TEST PIT FIELD LOG

PROJECT
DESCRIPTION PPG - Site 114
LOCATION Garfield Ave, South

TEST PIT No. GAR-1
FILE No.
DATE 2/16/12

ENGINEER Tom Graf
WEATHER 30s-40s, light rain

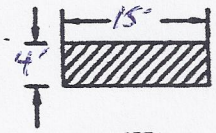
EXCAVATION EQUIPMENT
CONTRACTOR ENTACT
OPERATOR
MAKE MODEL
CAPACITY REACH

GROUND ELEV.
TIME STARTED 2/16/12 @ 0700
TIME COMPLETED 2/16/12 @ 1145

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0	8" ASPHALT			
1'	6" CONCRETE			
2'	8" Reddish brown WELL GRADED SAND, some fine to coarse gravel, few silt	M		
3'	2.0' Grey to olive grey SILTY SAND, some medium to coarse sand, little fine to coarse gravel and 3-8" angular cobbles + ma boulders - 25% FILL (coal ash, cinders, metal, and brick) mixed throughout	M		
4'		M		
5'	~~Bottom of Excavation at 4.5' bgs~~			
6'	Bottom of Excavation at GA25' 6bgs			
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: Test pit completed on Garfield Ave, near SW corner of site 114 in order to locate sewer line and determine distance to shoring alignment

TEST PIT PLAN



VOLUME= cu.yd.

LEGEND: BOUNDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR.) 0-10%
LITTLE (LI.) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F-FINE
M-MEDIUM
C-COARSE
F/M-FINE TO MEDIUM
F/C-FINE TO COARSE
V-VERY
GR.-GRAY
BN.-BROWN
YEL-YELLOW

EXCAVATION EFFORT

E ____ EASY
M ____ MODERATE
D ____ DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING G.W. (HRS.)
No Groundwater

G:\WELLOGS\TESTPIT

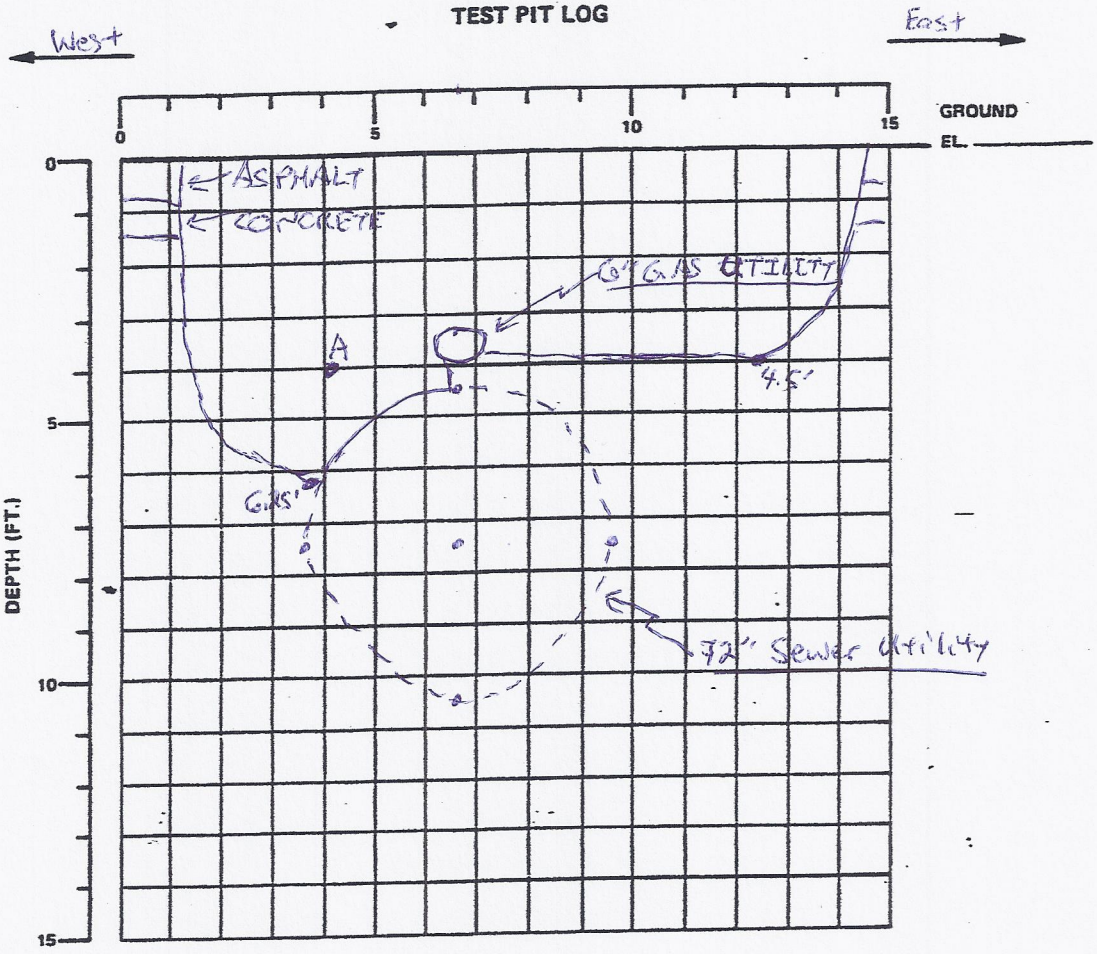
FIGURE 1. TEST PIT LOG

JOB NO. 60158739
PROJECT PSL - SITE 114
DATE 2/16/12

TEST PIT NO. GAR-1
LOCATION Garfield Ave., South
LOGGED BY Tom Coutt

Metcalf & Eddy, Inc.

TEST PIT LOG



NOTES: Test Pit completed in order to locate a sewer utility on Garfield Ave.

SAMPLES:	NO.	DEPTH
	AC114GAR1-4.0	4.0'

TEST PIT FIELD LOG

PROJECT
DESCRIPTION PBL - Site 114
LOCATION Garfield Ave.

TEST PIT No. GAR-2
FILE No.
DATE 2/15/12

ENGINEER Tom Craft
WEATHER 40s, overcast, mist

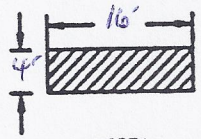
EXCAVATION EQUIPMENT
CONTRACTOR ENTACT
OPERATOR
MAKE MODEL
CAPACITY REACH

GROUND ELEV.
TIME STARTED 2/15/12 @ 1100
TIME COMPLETED 2/15/12 @ 1330

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0	8" ASPHALT			
1'	3'4" Dark gray WELL GRADED SAND WITH ~~SAND~~ GRAVEL AND SILT, wet at 3.5'	M		
2'	wood debris from 2-4'			
3'				
▽ DTW=3.5'				
4'	Bottom of Excavation at 4'6SG			
5'				
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: Test Pit completed to 4'6SG in order to locate a 72" sewer utility.

TEST PIT PLAN



VOLUME= cu.yd.

LEGEND: BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"–18"	A
18"–36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR.) 0–10%
LITTLE (LI.) 10–20%
SOME (SO) 20–35%
AND 35–50%

ABBREVIATIONS

F–FINE
M–MEDIUM
C–COARSE
F/M–FINE TO MEDIUM
F/C–FINE TO COARSE
V–VERY
GR.–GRAY
BN.–BROWN
YEL–YELLOW

EXCAVATION EFFORT

E ____ EASY
M ____ MODERATE
D ____ DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING G.W. (HRS.)
No Groundwater

C:\WELLOGS\TESTPIT

FIGURE 1. TEST PIT LOG

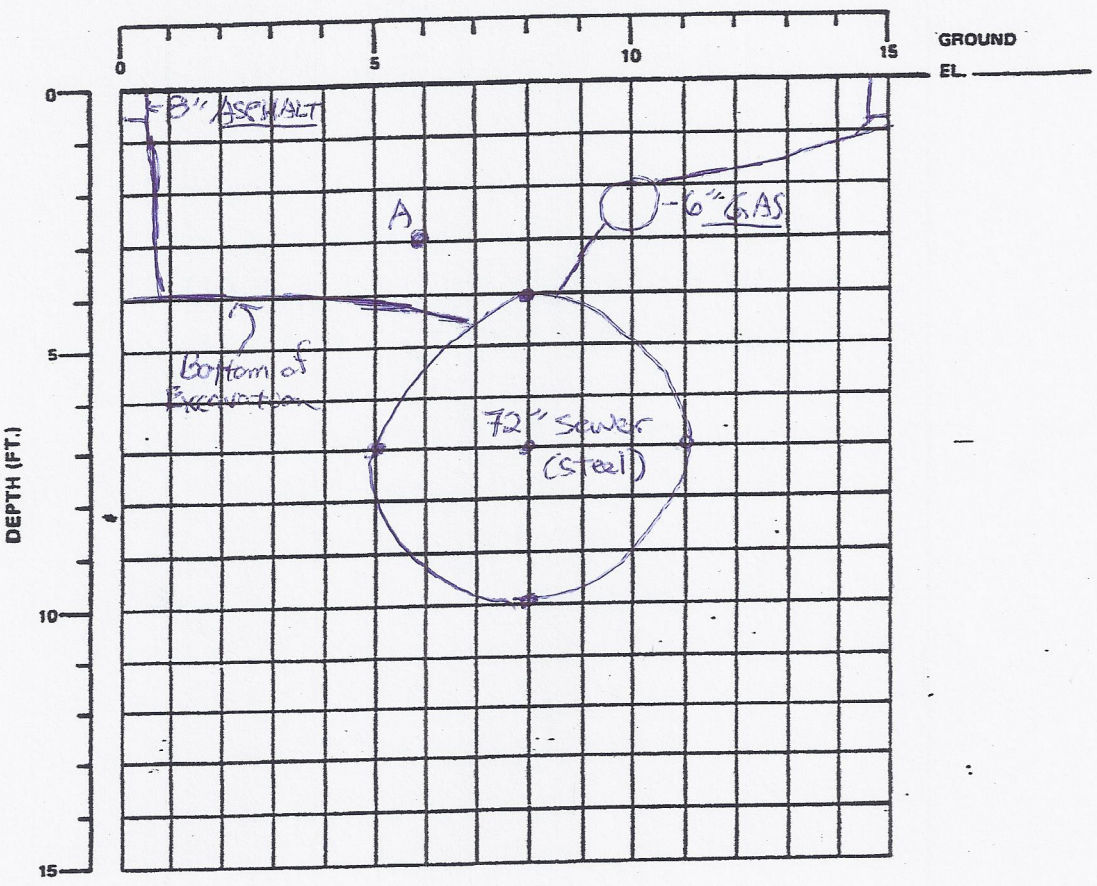
JOB NO. 60158739
PROJECT PP6
DATE 2/15/12

TEST PIT NO. PP6AR-2
LOCATION Site 114- Garfield Ave
LOGGED BY Tom Craft

AECOM
~~Metcalf & Eddy, Inc.~~

TEST PIT LOG

W ← → E



NOTES: Excavation completed to 4' bgs in order to locate 72" sewer line

SAMPLES:	NO.	DEPTH
	A	3.0'

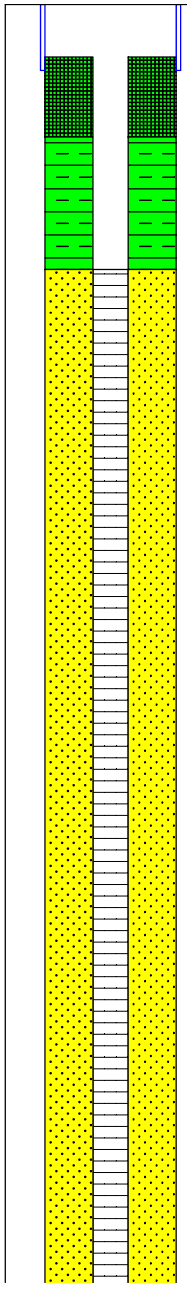
ID: 114GAR-2_3.0

Client: PPG Industries
Site: Site 114
Site Location: Jersey City, NJ
Geologist: M.Merdinger, P. Kelly
Drilling Company: Advanced Drilling Inc
Driller A. Heiliy

Drilling Date: 1/2/2007
Well Completion Date: 1/5/2007
Elevation 17.06
State Plane Coordinates **X:** 610609.6 **Y:** 683362.9
Drilling Method: Split spoon

ENSR | AECOM

114-MW16A

Depth (ft)	Well Construction Diagram	Well Construction Description and Sample Information	PID (ppm)	Blows/6"	Lithology	Lithologic Description
0		Concrete Steel PVC Bent-cement grout #00 Sand Pack #1 Sand Pack PVC Screen	0.0			ASPHALT
1						Dark Brown (7.5YR 3/3) SILT, trace fine Sand and Clay, Fill material (fractured rock, terracotta asphalt, ceramics), dry. No odor.
2						No Sample
3			0.0			Brown (7.5YR 4/2) clayey SILT, trace fine Sand and rock fragments, moist. No odor.
4						No Sample
5			0.0			Yellowish Brown (10YR 5/4) very fine silty SAND, some Clay, 25% COPR, wet. No odor.
6						No Sample
7						Light Brown, some Yellow, fine SAND, little fine to coarse Gravel, moist.
8						
9						

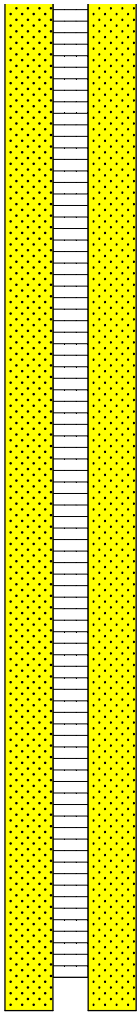
NOTES: Coordinates are provided in New Jersey State Plane NAD 1983

Client: PPG Industries
Site: Site 114
Site Location: Jersey City, NJ
Geologist: M.Merdinger, P. Kelly
Drilling Company: Advanced Drilling Inc
Driller A. Heiliy

Drilling Date: 1/2/2007
Well Completion Date: 1/5/2007
Elevation 17.06
State Plane Coordinates **X:** 610609.6 **Y:** 683362.9
Drilling Method: Split spoon

ENSR | AECOM

114-MW16A

Depth (ft)	Well Construction Diagram	Well Construction Description and Sample Information	PID (ppm)	Blows/6"	Lithology	Lithologic Description
10						
11						
12						
13						Red Brown SAND and CLAY, some fine Gravel, little coarse Gravel.
14						
15						
16						
17						
18						Green Brown coarse SAND, some Clay, little fine Gravel.
19						End of Boring at 19 ft.

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983

AECOM
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732.564.3200 office telephone

Boring ID: 114-MW16AB-5E

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60279173-GA.RI.RPT.HDS	**Drilling Method:** Direct Push/Hand Auger	**Coordinates (NJSPNAD83) x:** 610616
Date Started Drilling: 1/24/2017 10:20:00 AM	**Rig Type:** Geoprobe/Hand Auger	**Coordinates (NJSPNAD83) y:** 683362
Date Finished Drilling: 1/24/2017 10:45:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 7 ft
Logged By: E. Acs	**Project Manager:** Bill Spronz	**Depth to Water:** 5.0 ft
Physical Location: Actual - Historical Data Study		**Surface Elevation:** 15.486 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		ASPHALT		ASPHALT	
1			moist	FILL		SILT, trace fine sand and fill material, (7.5YR 4/2) brown, firm, moist, no odor, no staining.	
2							114-MW16AB-5E-2.0-2.5
3							
4							114-MW16AB-5E-4.0-4.5
5	2	0.0	wet	FILL		fine silty SAND, some clay, (10YR 5/4) yellowish brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	
6							114-MW16AB-5E-5.5-6.0
7							

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

Comments: No CCPW (COPR or GGM) identified in any interval of this boring.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-MW16AB-5N

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60279173-GA.RI.RPT.HDS	**Drilling Method:** Direct Push/Hand Auger	**Coordinates (NJSPNAD83) x:** 610613
Date Started Drilling: 1/24/2017 9:35:00 AM	**Rig Type:** Geoprobe/Hand Auger	**Coordinates (NJSPNAD83) y:** 683369
Date Finished Drilling: 1/24/2017 10:10:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 7 ft
Logged By: E. Acs	**Project Manager:** Bill Spronz	**Depth to Water:** 5.5 ft
Physical Location: Actual - Historical Data Study		**Surface Elevation:** 15.948 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1			moist	FILL		SILT, trace fine sand and clay, (7.5YR 3/2) dark brown, firm, moist, no odor, no staining.	
2	5						114-MW16AB-5N-2.0-2.5
3							
4							
5							114-MW16AB-5N-4.5-5.0
		0.0					
6	2		wet	FILL		fine silty SAND, some clay, (10YR 5/4) yellowish brown, medium dense, wet, no odor, no staining, water at 5.5 feet.	114-MW16AB-5N-5.5-6.0
7							

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

Comments: No CCPW (COPR or GGM) identified in any interval of this boring.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-MW16AB-5S

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60279173-GA.RI.RPT.HDS	**Drilling Method:** Direct Push/Hand Auger	**Coordinates (NJSPNAD83) x:** 610610
Date Started Drilling: 1/24/2017 10:55:00 AM	**Rig Type:** Geoprobe/Hand Auger	**Coordinates (NJSPNAD83) y:** 683360
Date Finished Drilling: 1/24/2017 11:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 7 ft
Logged By: E. Acs	**Project Manager:** Bill Spronz	**Depth to Water:** 4.5 ft
Physical Location: Actual - Historical Data Study		**Surface Elevation:** 16.009 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1	5		moist	FILL		fine silty SAND, some clay and fill material, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	
2							114-MW16AB-5S-2.0-2.5
3							
4							
5			wet	FILL		fine silty SAND, some clay, (10YR 5/4) yellowish brown, medium dense, wet, no odor, no staining, water at 4.5 feet.	114-MW16AB-5S-4.5-5.0
6	2	0.0					114-MW16AB-5S-5.5-6.0
7							

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

Comments: No CCPW (COPR or GGM) identified in any interval of this boring.

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Boring ID: 114-MW16AB-5W

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60279173-GA.RI.RPT.HDS	**Drilling Method:** Direct Push/Hand Auger	**Coordinates (NJSPNAD83) x:** 610607
Date Started Drilling: 1/24/2017 11:25:00 AM	**Rig Type:** Geoprobe/Hand Auger	**Coordinates (NJSPNAD83) y:** 683366
Date Finished Drilling: 1/24/2017 11:55:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 7 ft
Logged By: E. Acs	**Project Manager:** Bill Spronz	**Depth to Water:** 4.5 ft
Physical Location: Actual - Historical Data Study		**Surface Elevation:** 16.304 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1			moist	FILL		SILT, trace clay and fill material, (7.5YR 4/2) brown, firm, moist, no odor, no staining.	
2	5						114-MW16AB-5W-2.0-2.5
3							
4							
5			wet	FILL		fine to medium silty SAND, some clay, (10YR 5/4) yellowish brown, medium dense, wet, no odor, no staining, water at 4.5 feet.	114-MW16AB-5W-4.5-5.0
6	2	0.0					114-MW16AB-5W-5.5-6.0
7							

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

Comments: No CCPW (COPR or GGM) identified in any interval of this boring.

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Boring ID: 114-MW16AB-O

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60279173-GA.RI.RPT.HDS	**Drilling Method:** Direct Push/Hand Auger	**Coordinates (NJSPNAD83) x:** 610612
Date Started Drilling: 1/24/2017 8:50:00 AM	**Rig Type:** Geoprobe/Hand Auger	**Coordinates (NJSPNAD83) y:** 683364
Date Finished Drilling: 1/24/2017 9:30:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 7 ft
Logged By: E. Acs	**Project Manager:** Bill Spronz	**Depth to Water:** 4.5 ft
Physical Location: Actual - Historical Data Study		**Surface Elevation:** 15.845 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1	5		moist	FILL		SILT, trace fine sand and clay, (7.5YR 3/2) dark brown, firm, moist, no odor, no staining.	
2							114-MW16AB-O-2.0-2.5
3							
4							
5			wet	FILL		fine silty SAND, (10YR 5/4) yellowish brown, medium dense, wet, no odor, no staining, water at 4.5 feet.	114-MW16AB-O-4.5-5.0
6	2	0.0					114-MW16AB-O-5.5-6.0
7							

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

Comments: No CCPW (COPR or GGM) identified in any interval of this boring.

ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22A**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 1 of 3
	Coordinates: X-610687.9 Y-683257.2	Depth of Boring: 19.00
End Date: 11/20/2006	Elevation: 13.08	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Blows/6"	Sample ID	Sample Parameters
0		CONCRETE: CONCRETE				
		FILL: Dark Reddish Brown (5YR 3/2) SILT, some fine Sand, little Clay, Fill material (brick, tile, rock), dry. No odor.				
		NR: No Sample	0.0 ppm			
2		FILL: Reddish Brown (5YR 4/4) SILT, little Clay and fine Sand, Fill Material (rounded and angular rocks, tile fragments, slag), ~1% COPR, moist. No odor.	0.0 ppm			
		NR: No Sample				
4		FILL: Black Cinders, Ash, Slag and Rock fragments, oyster shell, trace Red (10R 4/6) Clay, moist. No odor.				
		NR: No Recovery				
		FILL: Black and Very Dark Gray Brown (10YR 3/2) sandy SILT, glass, dry. No odor.	2.3 ppm	6		
		FILL: Light Olive Brown (2.5Y 5/6) SILT, medium dense, dry. No odor.		7		
6		NR: No Recovery		3		

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22A**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 2 of 3
	Coordinates: X-610687.9 Y-683257.2	Depth of Boring: 19.00
End Date: 11/20/2006	Elevation: 13.08	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Blows/6"	Sample ID	Sample Parameters
				1		
		FILL: Reddish Gray (10YR 5/1) silty SAND, coarse fill Sand, Fill material (slag, concrete), wet. No odor.	0.3 ppm	1		
		FILL: Dark Grayish Brown (10YR 4/2) SILT, little Clay, trace Gray rounded medium Gravel, wet. No odor.		1		
8		NR: No Recovery		1		
				1		
		FILL: Very Dark Gray (7.5YR 3/1) SILT, some coarse Sand, wet. No odor.	0.0 ppm	WH		
		FILL: Dark Brown (7.5YR 3/2) SILT, trace to little Clay down gradient, oyster shell, moist, loose. No odor.		WH		
10				WH		
				WH		
		FILL: Dark Brown (7.5YR 3/2) SILT, little Sand, trace to little Clay down gradient, oyster shell, moist, loose. No odor.	0.0 ppm	WH		
				1		
12				15		
				19		
		FILL: Olive (5Y 4/3) SAND, little Silt, moist. No odor.				

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22A**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 3 of 3
	Coordinates: X-610687.9 Y-683257.2	Depth of Boring: 19.00
End Date: 11/20/2006	Elevation: 13.08	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Blows/6"	Sample ID	Sample Parameters
		FILL: Olive Brown (2.5 Y 4/3) silty CLAY, trace fine Gravel, wet. No odor.	0.0 ppm	17		
				15		
14				22		
				16		
		FILL: Reddish Brown (5YR 4/4) very fine SAND, some Silt, Shale.	0.0 ppm	WH		
		FILL: Dark Reddish Brown (2.5YR 3/4) fine to medium SAND, trace Silt, wet. No odor.		WH		
16		FILL: Dark Reddish Brown (2.5YR 3/4) amd Yellow mottled silty SAND, some fine to medium Gravel, wet. No odor.		22		
		NR: No Recovery		19		
		FILL: Very Dark Gray (Gley N3/0) CLAY, medium stiff, moist.	0.0 ppm	19		
		FILL: Dusky Red (10R 3/4) silty SAND, some fine to coarse Gravel, Lime Green-stained CLAY interbedded, moist. No odor.		19		
18				26		
				45		
		NULL: End of boring at 19 feet.				

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22B**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 1 of 5
	Coordinates: X-610693.8 Y-683255.1	Depth of Boring: 35.00
End Date: 11/21/2006	Elevation: 13.47	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		CONCRETE: CONCRETE			
		FILL: Dark Reddish Brown (5YR 3/2) SILT, some fine Sand, little Clay, Fill material (brick, tile, rock), dry. No odor.			
		NR: No Sample	0.0 ppm		
2		FILL: Reddish Brown (5YR 4/4) SILT, little Clay and fine Sand, Fill Material (rounded and angular rocks, tile fragments, slag), ~1% COPR, moist. No odor.	0.0 ppm		
		NR: No Sample			
4		FILL: Black Cinders, Ash, Slag and Rock fragments, oyster shell, trace Red (10R 4/6) Clay, moist. No odor.			
		NR: No Recovery			
		FILL: Black and Very Dark Gray Brown (10YR 3/2) sandy SILT, glass, dry. No odor.	2.3 ppm	114-MW22BA (5.0-5.5)	Cr+6, TAL Metals
		FILL: Light Olive Brown (2.5Y 5/6) SILT, medium dense, dry. No odor.			
6		NR: No Recovery			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22B**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 2 of 5
	Coordinates: X-610693.8 Y-683255.1	Depth of Boring: 35.00
End Date: 11/21/2006	Elevation: 13.47	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
		FILL: Reddish Gray (10YR 5/1) silty SAND, coarse fill Sand, Fill material (slag, concrete), wet. No odor.	0.3 ppm		
		FILL: Dark Grayish Brown (10YR 4/2) SILT, little Clay, trace Gray rounded medium Gravel, wet. No odor.			
8		NR: No Recovery			
		FILL: Very Dark Gray (7.5YR 3/1) SILT, some coarse Sand, wet. No odor.	0.0 ppm		
		FILL: Dark Brown (7.5YR 3/2) SILT, trace to little Clay down gradient, oyster shell, moist, loose. No odor.		114-MW22BB (9.5-10.0)	MS/MSD, Cr+6, TAL Metals
10					
		FILL: Dark Brown (7.5YR 3/2) SILT, little Sand, trace to little Clay down gradient, oyster shell, moist, loose. No odor.	0.0 ppm		
12					
		FILL: Olive (5Y 4/3) SAND, little Silt, moist. No odor.			
		FILL: Olive Brown (2.5 Y 4/3) silty CLAY, trace fine Gravel, wet. No odor.	0.0 ppm	114-MW22BC (13.0-14.0)	Cr+6, TAL Metals
				114-MW22BCD (13.0-14.0)	Cr+6, TAL Metals
14					

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ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22B**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 3 of 5
	Coordinates: X-610693.8 Y-683255.1	Depth of Boring: 35.00
End Date: 11/21/2006	Elevation: 13.47	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
		FILL: Reddish Brown (5YR 4/4) very fine SAND, some Silt, Shale.	0.0 ppm		
		FILL: Dark Reddish Brown (2.5YR 3/4) fine to medium SAND, trace Silt, wet. No odor.			
16		FILL: Dark Reddish Brown (2.5YR 3/4) amd Yellow mottled silty SAND, some fine to medium Gravel, wet. No odor.			
		NR: No Recovery			
		FILL: Very Dark Gray (Gley N3/0) CLAY, medium stiff, moist.	0.0 ppm		
		FILL: Dusky Red (10R 3/4) silty SAND, some fine to coarse Gravel, Lime Green-stained CLAY interbedded, moist. No odor.		114-MW22BD (14.5-18.0)	Cr+6, TAL Metals
18					
		FILL: Olive Brown (2.5 Y 4/3) silty CLAY, moist. No odor.	0.0 ppm		
		FILL: Dusky Red (10R 3/2) CLAY, some Gravel, moist. No odor.			
20		FILL: Reddish Brown (5YR 4/3) SILT, little angular fine Gravel, moist. No odor.			
		NR: No Recovery			
		FILL: Olive Brown (2.5Y 4/3) silty CLAY, interbedded	0.0 ppm		

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22B**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 4 of 5
	Coordinates: X-610693.8 Y-683255.1	Depth of Boring: 35.00
End Date: 11/21/2006	Elevation: 13.47	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
22		Reddish Brown SILT at 22.2 feet, little rounded fine to medium Gravel, moist. No odor.			
		SAND: Strong Brown (7.5YR 5/8) SAND, trace Silt, moist. No odor. (Native)		114-MW22BE (22.5-23.0)	Cr+6, TAL Metals
		SILT: Reddish Brown (5YR 4/4) SILT and fine to medium angular and rounded GRAVEL, trace Clay, wet. No odor.	0.0 ppm		
24		NR: No Recovery			
		SILT: Reddish Brown (5YR 4/4) SILT and fine to medium angular and rounded GRAVEL, trace Clay, wet. No odor.	0.2 ppm		
		CLAY: Reddish Brown (5YR 4/4) CLAY, little Silt, moist, medium stiff. No odor.		114-MW22BF (25.5-26.0)	Cr+6, TAL Metals
26		SAND: Reddish Brown (5YR 4/4) coarse SAND, some fine Gravel and Silt, wet. No odor.			
		SILT: Reddish Brown (5YR 4/4) SILT, moist. No odor.			
		NR: No Recovery	0.3 ppm		
		SAND: Reddish Brown (5YR 4/4) coarse SAND, some fine Gravel and Silt, moist. No odor.			
28		SILT: Reddish Brown (5YR 4/4) SILT, moist. No odor.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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ENSR | AECOM	Client: PPG Industries	BORING ID: **114-MW22B**
	Site: Site 114	
Start Date: 11/15/2006	Project: **Site Investigation**	Page: 5 of 5
	Coordinates: X-610693.8 Y-683255.1	Depth of Boring: 35.00
End Date: 11/21/2006	Elevation: 13.47	Geologist: M. Merdinger
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
		NR: No Recovery			
		SILT: Reddish Brown (5YR 4/4) SILT, little Clay, trace fine Gravel, moist. No odor.	0.0 ppm	114-MW22BG (29.0-29.5)	MS/MSD, Cr+6, TAL Metals
30		NR: No Recovery			
		GRAVEL: Reddish Brown (5YR 4/4) GRAVEL, little Silt, wet. No odor.	0.2 ppm		
32		SILT AND GRAVEL: Reddish Brown (5YR 4/4) SILT and GRAVEL, trace Clay, wet. No odor.			
		NR: No Recovery			
34		SILTSTONE: Gray Rock, angular, trace Silt and coarse Sand, wet. No odor.			
		NULL: End of boring at 35 feet.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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Boring ID: 114-NW-B8B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 611045
Date Started Drilling: 12/30/2013 11:14:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683849
Date Finished Drilling: 1/7/2014 10:20:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 20.5 ft
Logged By: A. Bogucki	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: IRM NorthWest		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	3.5	0.0	moist	FILL		fine to medium silty SAND, some gravel, (10YR 4/2) dark grayish brown, non plastic, dense, moist.	
				NR		No recovery; material inferred to be same as above.	
5–10	3	0.0	moist	FILL		fine to medium silty SAND, some gravel, (10YR 4/2) dark grayish brown, non plastic, dense, moist.	
				NR		No recovery; material inferred to be same as above.	
10–15	4	0.0	wet	FILL		fine to medium silty SAND, some gravel, (10YR 4/2) dark grayish brown, non plastic, dense, wet.	
				NR		No recovery; material inferred to be same as above.	
		0.0	slightly moist	FILL		SILT, little fine sand, (10YR 2/1) black, low plasticity, very dense, slightly moist, slight sulfur odor.	114-NW-B8B-12.5-13.0
		0.0	moist	FILL		fine silty SAND, some rock fragments, (10YR 6/2) light brownish gray, non plastic, very dense, moist.	114-NW-B8B-14.5-15.0
15–20	5	0.0	wet	FILL		fine to medium silty SAND, some gravel, (10YR 3/2) very dark grayish brown, non plastic, dense, wet.	114-NW-B8B-16.5-17.0 114-NW-B8B-17.0-17.5
		0.0	wet	SM		fine to coarse silty SAND, some gravel with rock fragments little clay, (2.5YR 5/6) red, low plasticity, very dense, wet. Soil consistent with UNDno.	114-NW-B8B-17.5-18.0
20	0.5	0.0	wet	SM		fine to coarse silty SAND, some gravel with rock fragments little clay, (2.5YR 5/6) red, low plasticity, very dense, wet. Soil consistent with UNDno.	

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

AECOM
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Boring ID: 114-NW-WS-B8B-XN

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 611043
Date Started Drilling: 3/20/2014 10:10:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683860
Date Finished Drilling: 3/20/2014 11:00:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 20.5 ft
Logged By: MI	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: IRM PDI		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	4	0.0		FILL		DGA	
4				NR		NO RECOVERY	
5	5	0.0	slightly moist	FILL		fine to medium SAND, some DGA brick, (7.5YR 7/1) light gray, loose, slightly moist, no odor, no staining.	
		0.0	dry to sl moist	FILL		fine to medium silty SAND, trace coal, cinders, (7.5YR 3/2) dark brown, dense, dry to slightly moist, no odor, no staining.	
8		0.0	moist	FILL		fine to medium SAND, little fine to coarse gravel, (7.5YR 4/2) brown, loose, moist, no odor, no staining.	114-WS-B8B-XN-8.0-8.5
		0.0	moist	FILL		fine silty SAND, (7.5YR 5/4) brown, dense, moist, no odor, no staining.	
10		0.0	dry to sl moist	FILL		fine silty SAND, little fine to coarse gravel, (7.5YR 5/8) strong brown, dense, dry to slightly moist, no odor, no staining.	
		0.0	dry to sl moist	FILL		sandy SILT, trace fine gravel, (7.5YR 3/3) dark brown, non plastic, stiff, dry to slightly moist, no odor, no staining.	114-WS-B8B-XN-10.0-10.5 114-WS-B8B-XN-10.5-11.0
12	5	0.0	dry to sl moist	SM		UNDno SILT, with fine sand trace organics, (10YR 5/2) grayish brown, non plastic soft, moist, no odor, no staining. Soil consistent with UNDno.	114-WS-B8B-XN-11.0-11.5 114-WS-B8B-XN-12.0-12.5
14		0.0	slightly moist	SM		UNDno fine SAND, with silt, fine to coarse gravel, (5YR 5/2) reddish gray, loose to hard, slightly moist, no odor, no staining. Soil consistent with UNDno.	114-WS-B8B-XN-14.0-14.5
16	5	0.0	dry to sl moist	SP		UNDno fine to coarse SAND, with fine to coarse gravel, (2.5YR 4/8) red, loose to hard, dry to slightly moist, no odor, no staining. Soil consistent with UNDno.	114-WS-B8B-XN-16.0-16.5 114-WS-B8B-XN-18.0-18.5
20	0.5	0.0	dry to sl moist	SP		UNDno fine to coarse SAND, with fine to coarse gravel, (2.5YR 4/8) red, loose to hard, dry to slightly moist, no odor, no staining. Soil consistent with UNDno.	114-WS-B8B-XN-20.0-20.5

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

PPG - PPG_LOGS.GDT - 3/26/14 13:27

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-NW-WS-B8B-XS

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 611031
Date Started Drilling: 3/20/2014 9:10:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683844
Date Finished Drilling: 3/20/2014 9:50:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 20.5 ft
Logged By: MI	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: IRM PDI		**Surface Elevation:** 10.1 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	4	0.0		FILL		DGA	
4				NR		NO RECOVERY	
5	5	0.0		FILL		DGA	
6		0.0	moist	FILL		fine to medium SAND, some DGA little cinders, trace coal, wood fragments, (7.5YR 7/1) light gray, loose, moist to wet, no odor, no staining.	
7		0.0	to wet	FILL		fine to coarse SAND, little coal,cinders, (7.5YR 3/1) very dark gray, loose, moist, no odor, no staining.	
8		0.0	moist dry	FILL		fine silty SAND, little coarse gravel, (10YR 5/6) yellowish brown, dense, dry to slightly moist, no odor, no staining.	114-WS-B8B-XS-8.0-8.5
9		0.0	to sl	FILL		sandy SILT, trace wood fragments, cinders, (7.5YR 3/3) dark brown, dense to stiff, dry to slightly moist, no odor, no staining.	
10		0.0	moist dry	FILL		sandy SILT, with fine to medium gravel, little wood fragments, trace coal, (7.5YR 3/2) dark brown, non plastic, soft, moist, no odor, no staining.	114-WS-B8B-XS-10.0-10.5
11			to sl moist				
12	5		moist				114-WS-B8B-XS-12.0-12.5
13		0.0	dry to sl moist	SM		UNDno fine to coarse SAND, with fine to coarse gravel, trace silt, (2.5YR 4/8) red, loose to hard, dry to slightly moist, no odor, no staining. Soil consistent with UNDno.	114-WS-B8B-XS-12.5-13.0
14							114-WS-B8B-XS-14.0-14.5
15		0.0	dry to sl moist	SM		UNDno fine to coarse SAND, with fine to coarse gravel, trace silt, (2.5YR 4/8) red, loose to hard, dry to slightly moist, no odor, no staining. Soil consistent with UNDno.	
16							114-WS-B8B-XS-16.0-16.5
17	5.5						
18							114-WS-B8B-XS-18.0-18.5
19							
20							114-WS-B8B-XS-20.0-20.5

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 10/11/16 10:54

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-RD2-A`13A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Split Spoon	**Coordinates (NJSPNAD83) x:** 610714.5625
Date Started Drilling: 11/12/2012 1:08:00 PM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683313.6875
Date Finished Drilling: 11/12/2012 1:55:00 PM	**Core Size:** 2 in	**Boring Total Depth:** 20.5 ft
Logged By: EW	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: A'13A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–12							Boring advanced directly to 12.5 ft bgs.	
13	1.3	0.0	moist	3	FILL		fine sandy SILT with fine to medium sand, trace fine gravel, (7.5YR 5/1) gray, moist to wet, fill material. No CCPW (GGM or COPR) present.	114-RD2-A`13A-12.5-13.0
14				3	FILL		NO RECOVERY	
15	1.5	0.0	moist	3	GW		SAND, trace medium to coarse gravel, (2.5YR 5/3) reddish brown, non plastic, loose, moist, no odor, fill material. No CCPW (GGM or COPR) present.	114-RD2-A`13A-14.5-15.0
16				3	GW		NO RECOVERY	
17	1.5	0.0	moist	3	GW		SAND, with medium to coarse gravel trace silt, (2.5YR 4/3) reddish brown, non plastic, loose, moist, no odor, fill material. No CCPW (GGM or COPR) present.	114-RD2-A`13A-16.5-17.0
18				3	GW		NO RECOVERY	
19	2	0.0	moist	3	GW		fine to medium SAND, little fine gravel coarse gravel, (2.5YR 4/3) reddish brown, non plastic, loose, moist, no odor, fill material. No CCPW (GGM or COPR) present.	114-RD2-A`13A-18.5-19.0
20								114-RD2-A`13A-20.0-20.5

Comments: (1) No CCPW (GGM or COPR) present in any interval of this boring. (2) 3 attempts made to obtain best recovery.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-RD2-A1B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Split Spoon	**Coordinates (NJSPNAD83) x:**
Date Started Drilling: 11/12/2012 8:20:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:**
Date Finished Drilling: 11/12/2012 10:30:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 20.2 ft
Logged By:	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: A1B		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–8							Boring advanced directly to 8.2 ft bgs.	
9	1.3	0.0	moist	3	FILL		fine silty SAND, trace fine gravel, (7.5YR 4/1) dark gray, low plasticity, soft, moist, no odor, 8.2-8.3 trace green stained very fine sands. Fill material.	
10				3	FILL		NO RECOVERY	
11	1.8	0.3	moist	9	MH		SILT, trace 10% Organics, (7.5YR 2.5/1) black, low plasticity, soft, moist, no odor, UND-NO. No CCPW (GGM or COPR) present.	
		0.0	moist	3	FILL		SILT, trace fine sand, (7.5YR 3/1) very dark gray, low plasticity, soft, moist, no odor, fill material. No CCPW (GGM or COPR) present.	
12				3	FILL		NO RECOVERY	
13	2	0.0	moist	3	FILL		fine sandy SILT, (7.5YR 5/1) gray, low plasticity, soft, moist, no odor, fill material. No CCPW (GGM or COPR) present.	
14								
15	2	0.0	wet	3	FILL		fine sandy SILT, (7.5YR 5/1) gray, non plastic, soft, wet to saturated, no odor, fill material. No CCPW (GGM or COPR) present.	
16		0.0	wet	3	SP		fine to medium SAND, (2.5YR 4/3) reddish brown, non plastic, loose, moist to wet, no odor, fill material. red sands. No CCPW (GGM or COPR) present.	
17	2	0.0	wet	3	SP		fine to medium SAND, (2.5YR 4/3) reddish brown, non plastic, loose, moist to wet, no odor, fill material, red sands. No CCPW (GGM or COPR) present.	
18								
19	2	0.0	wet	3	SP		fine to medium SAND, (2.5YR 4/3) reddish brown, non plastic, loose, moist to wet, no odor, fill material, red sands. No CCPW (GGM or COPR) present.	
20								

Comments: (1) 3 attempts made to obtain best recovery. (2) No CCPW (GGM or COPR) present in any interval of this boring.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-RD2-A5A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Split Spoon	**Coordinates (NJSPNAD83) x:** 610842.6875
Date Started Drilling: 11/12/2012 11:08:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683513.1875
Date Finished Drilling: 11/12/2012 11:45:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 12.5 ft
Logged By: EW	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: A5A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
							Boring advanced directly to 8.5 ft bgs.	
9	1.7	0.0	moist	3	FILL		fine sandy SILT, with fine to medium gravel, (7.5YR 3/2) dark brown, non plastic, loose, moist, no odor, fill material. Wood fragments and ash. No CCPW (GGM or COPR) present.	114-RD2-A5A-8.5-9.0
10				3	FILL		NO RECOVERY	
11	1.8	0.0	moist	3	FILL		SILT, trace fine sand, (7.5YR 2.5/2) very dark brown (10YR 4/3) brown, low plasticity, soft, moist, no odor, fill material. No CCPW (GGM or COPR) present.	114-RD2-A5A-10.5-11.0 114-RD2-A5A-10.5-11.0X 114-RD2-A5A-10.5-11.0X
12				3	FILL		NO RECOVERY	

Comments: (1) No CCPW (GGM or COPR) present in any interval of this boring. (2) 3 attempts made to obtain best recovery.

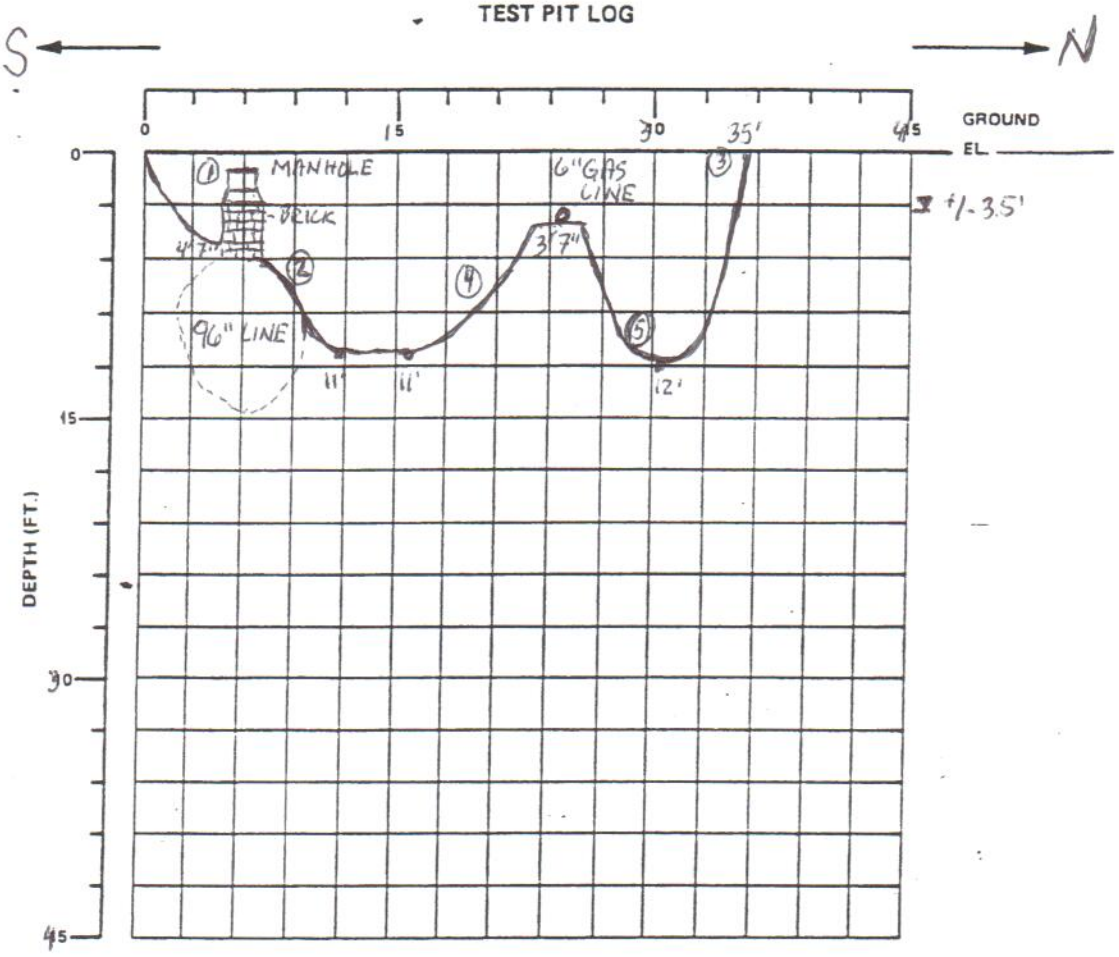
FIGURE 1. TEST PIT LOG

JOB NO. 60158739.0408
PROJECT PPG SITE 114
DATE 10/31 - 11/1/11

TEST PIT NO. TP-1 CAR
LOCATION CARTERET AVE NEAR GARFIELD
LOGGED BY PAPAGIAN/KANTOR

Metcalf & Eddy, Inc.

TEST PIT LOG



NOTES: MANHOLE w/PRESSURE RELIEF VALVE C/L 6'5" FROM SOUTH WALL. TOP of 96" LINE 5'8" BGS. 6" ACTIVE GAS LINE 10'5 of NORTH WALL 3'7" BGS

SAMPLES	NO.	DEPTH
①	114-TP-1S	12-19"
②	114-TP-1N	84-89"
③	114-TP-1N	4-6"
④	114-TP-1N	90-96"
⑤	114-TP-1N	126-132"

10/31

SAMPLES COLLECTED AT SUSPECTED "CLEAN" ZONES

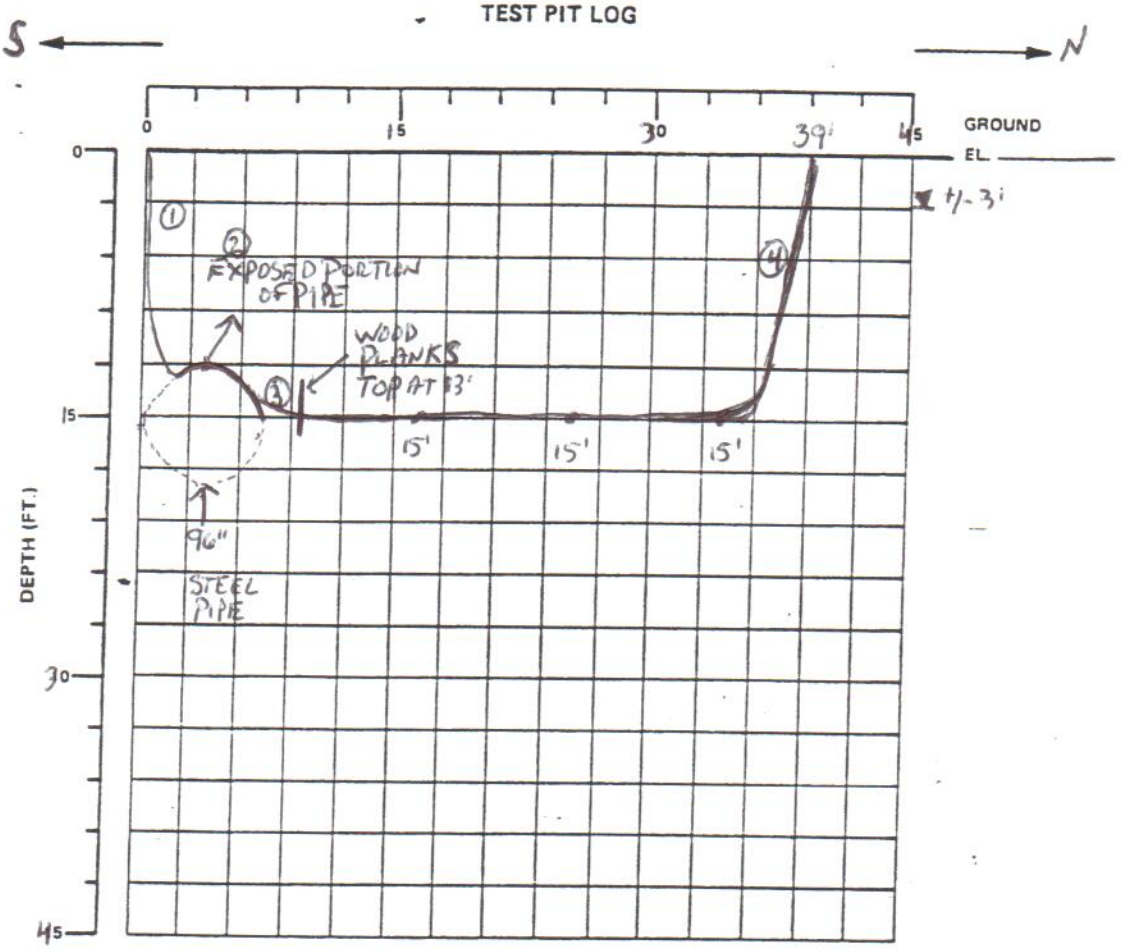
FIGURE 1. TEST PIT LOG

JOB NO. 60158739.0408
PROJECT PPG - SITE 114
DATE 10/25 - 10/27/11

TEST PIT NO. TP-2 CAR
LOCATION CARTERET AVE. WEST OF CANAL
LOGGED BY KANTOR / PAPAGIAN

Metcalf & Eddy, Inc.

TEST PIT LOG



NOTES: Top of 96" Line "Felt" by excavator at 12' not visually confirmed due to water/sloughing of sidewalls

Interbedded ash and debris and brown to reddish brown silt and f-c sand gray to brown silt with debris from 90-120 feet.

	NO.	DEPTH	
SAMPLES: ①	114-TP2-S	48-54"	10/25
②	114-TP2-S	72-78"	
③	114-TP2-N	160-174"	-10/26
④	114-TP2-NW	78-84"	-10/27

Samples collected from suspected "clean" zones within test pit

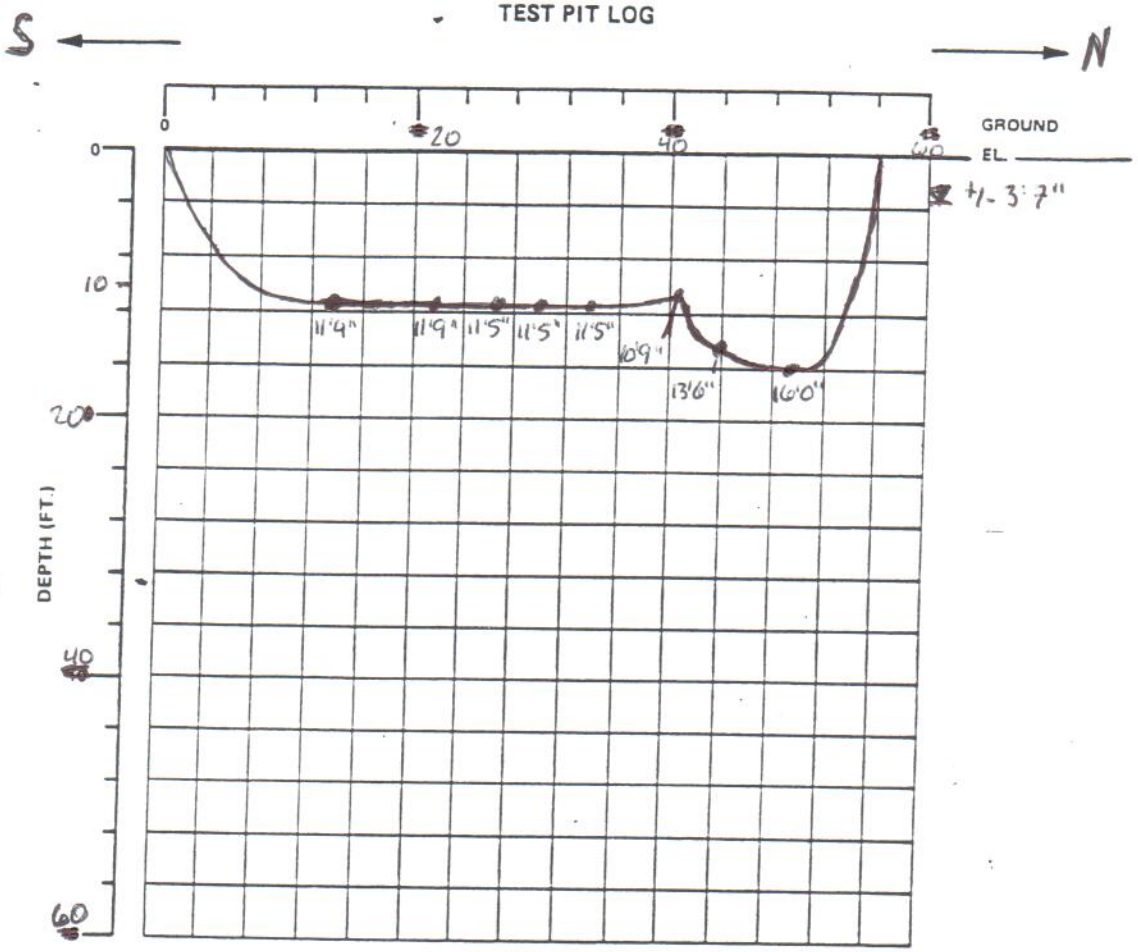
FIGURE 1. TEST PIT LOG

JOB NO. 60158739.0408
PROJECT PAG-SITE 1/4
DATE 10/20 - 10/24/11

TEST PIT NO. TP-3CAR
LOCATION CARTERET AVE. / MORRIS CANAL
LOGGED BY KANTOR

[redacted]

TEST PIT LOG



NOTES: 0-11" ASPHALT AND STONE
11"-29" 100% COPR
29"-35" 100% GGM (DENSE)
35"-45" GGM, ASH, DEBRIS
45"-50" 100% GGM (DENSE)
50-78" GGM, ASH, DEBRIS
78"-186" 100% GGM
186-198" BLACK ORGANIC SILT, PEAT NEAR BOTTOM

SAMPLES:	NO.	DEPTH
	NONE COLLECTED	

NO UTILITIES OBSERVED

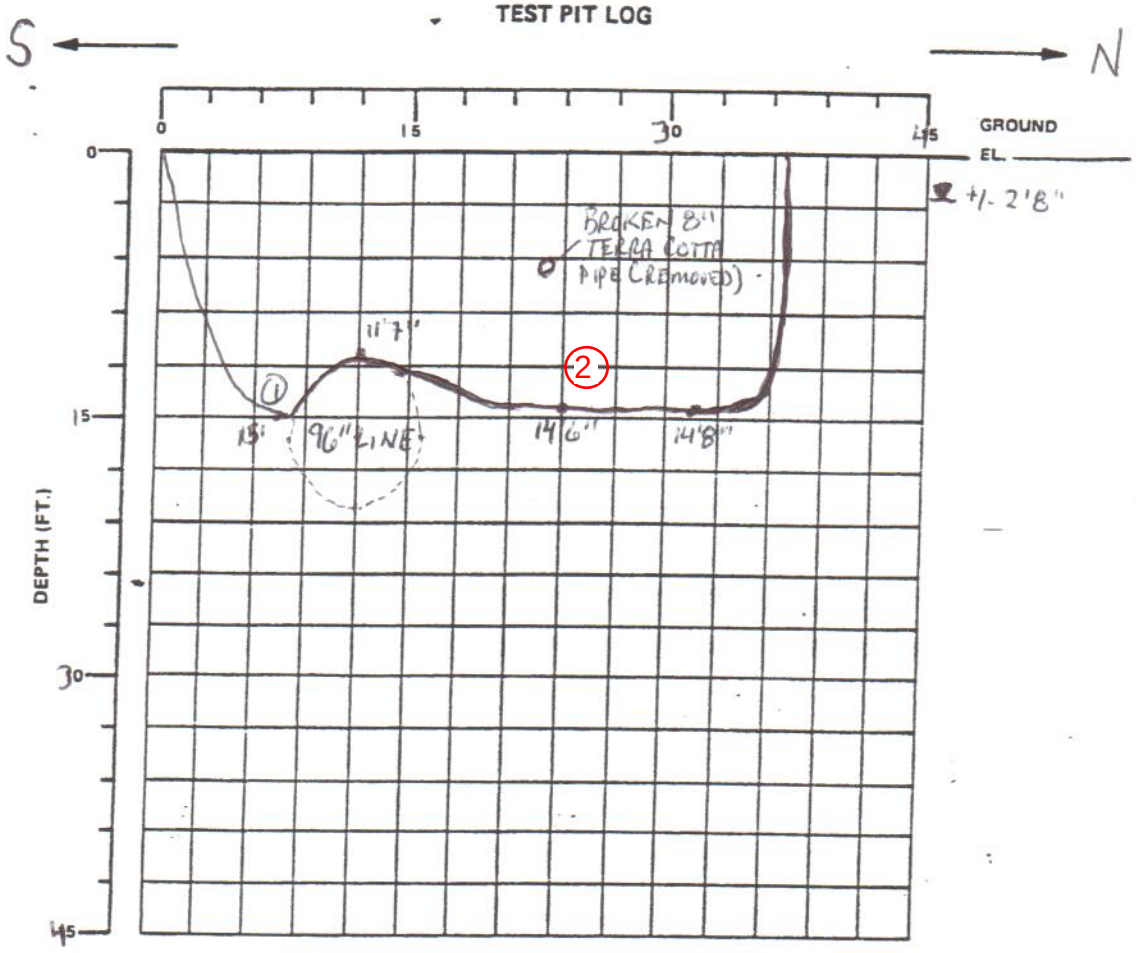
FIGURE 1. TEST PIT LOG

JOB NO. 60158739.0408
PROJECT PPG SITE 114
DATE 11/3-11/7/11

TEST PIT NO. #TP-4CAR
LOCATION CARTERET AVE, NEAR 70 CAR. GATE
LOGGED BY PAPAGIAN / KANTOR

Metcalf & Eddy, Inc.

TEST PIT LOG



NOTES:
0-6" ASPHALT + STONE
6"-48" BROWN F-C SAND WITH DEBRIS
48-58" 100% COPR (25' FROM NORTH WALL)
58-86" ASH AND GGM (30%)
86-146" - DARK BROWN F-M SAND AND SILT WITH DEBRIS AND VISUAL AND OLFACTORY MGP IMPACTS (BLEBS, SHEEN, ODOR)
146-180" BROWN TO VARY DARK BROWN SILT AND LITTLE GRAVEL

MGP IMPACTS OBSERVED ABOUT 7 FEET BGS.

SAMPLES:	NO.	DEPTH
①	114-TP4-S	168-180" 11/7
②	114-TP4-N	146-156

SAMPLES COLLECTED AT SUSPECTED "CLEAN" ZONE

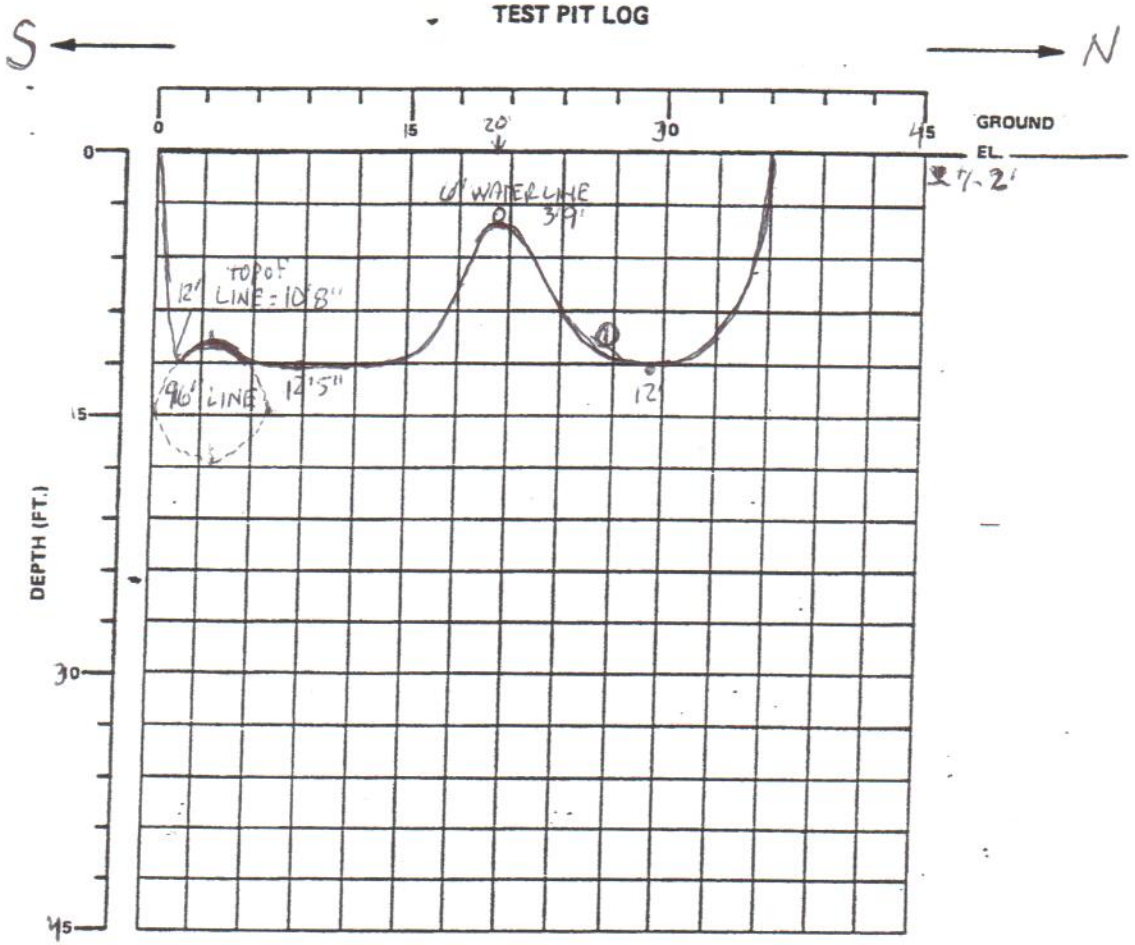
FIGURE 1. TEST PIT LOG

JOB NO. 60158739 0408
PROJECT PPG - SITE 114
DATE 11/8 - 11/9/11

TEST PIT NO. TP-5 CAR
LOCATION CARTERET AVE WEST OF HALLADAY STREET
LOGGED BY PAPAGIANNI / KANTOR

Metcalf & Eddy, Inc.

TEST PIT LOG



NOTES:
0-8" ASPHALT + STONE
8-18" RED BROWN F-C SAND GRAVEL AND BRICK
18-22" ASH AND CCM (30%)
22-36" BROWN F-C SAND AND GRAVEL, LITTLE BRICK
36-45" YELLOW-BROWN F-C SAND
45-84" BROWN F-C SAND GRAVEL AND ASH, 15% CCM AND DEBRIS
84-101" DARK GRAY M-F SAND AND GRAVEL, ASH AND CONCRETE
101-125" 100% CCM
125-137" DARK GRAY SILTY SAND AND GRAVEL - MGP IMPACTED
137-150" BROWN SILT

SAMPLES:	NO.	DEPTH
	① 114-TP5-N	132-144" 1118

SAMPLE COLLECTED AT SUSPECTED "CLEAN" ZONE

29 MGP IMPACTS AROUND 10 FEET, COATED TO SATURATED SOIL, OIL ON WATER, ODOR, SHEEN

TEST PIT FIELD LOG

PROJECT	TEST PIT No. 1
DESCRIPTION PPG Site 114	FILE No.
LOCATION Casteret Ave, Jersey City	DATE 11-1-11

EXCAVATION EQUIPMENT

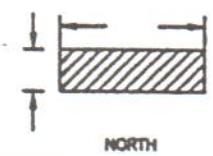
ENGINEER Rita Papazian
CONTRACTOR Entact
OPERATOR Stevie
MAKE Takeuchi MODEL Mini Exc
CAPACITY John Deere REACH 9' exc.
WEATHER 56°F Sunny, Breezy

GROUND ELEV.
TIME STARTED 10-31-11 0830
TIME COMPLETED 11-1-11 1130

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0	Ø-4"-Asphalt			
	4-6"-stone - c sand & c gravel	M		
1'	6-25" - Brown f-c Sand w/ gravel	M		
2'	25"-31" - Ash & Concrete	D		
3'	31"-36" - Brown f-c sand & gravel, brick and wood debris			
4'	36"-68" - DK grey m-c Sand & gravel, Brick wood, cement, Ash debris	D (36"-42")		
5'				
6'	68-96" - Brown silt	M		
7'				
8'	96-132" - Brown silt w/ little clay	E		
9'				
10'				
11'	Bott - 11.0'			
12'				
13'				
14'				

REMARKS: H_2O seeping in At 3.5', At 1.1' bgs uncover a manhole, at 5.8" uncover the 96" line. Gas line found at 3' 7" in northern part of test pit.

TEST PIT PLAN



VOLUME= _____ cu.yd.

LEGEND: BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR.) 0-10%
LITTLE (LI.) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F-FINE
M-MEDIUM
C-COARSE
F/M-FINE TO MEDIUM
F/C-FINE TO COARSE
V-VERY
GR.-GRAY
BN.-BROWN
YEL.-YELLOW

EXCAVATION EFFORT

E ____ EASY
M ____ MODERATE
D ____ DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING (HRS.) G.W.
No Groundwater

C:\WBLOCKS\TESTPIT

TEST PIT FIELD LOG

PROJECT
DESCRIPTION PPG Site 114
LOCATION Casteret Ave., Jersey City

TEST PIT No. 2
FILE No.
DATE 10-25-11

ENGINEER Rita Papagian
WEATHER 58-62°F light wind, Sunny

EXCAVATION EQUIPMENT
CONTRACTOR Entact
OPERATOR Stevie
MAKE Takeuchi MODEL Mini exc
CAPACITY John Deere REACH 9' Exc

GROUND ELEV.
TIME STARTED 10/25/11 @ 0825
TIME COMPLETED 10/27/11 @ 1105

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0	0-4" Asphalt 4-7" Gravel 7-12" m-c lt brown SAND, few c gravel	M		
1'	12"-18"-Greyish white Ash, Porcelain Debris, Glass	D(12-18")		
2'	18-40" - DK brown m-c Sand w cement block & brick debris	M(18-40")		
3'				
4'	40-48" Ash	D(40-48")		
	48-62" - Reddish brown SILT w/ f-m gravel	E(48-62")		
5'				
	62-68" - Greyish white Ash	E		
6'	68-72" - DK brown silt w/m Sand & Black f sand			
	72-96" - Reddish brown SILT	E		
7'				
8'				
	96-108" - Grey SILT w/ little ash, Glass, brick, and cement debris	E		
9'				
	108-144" - Brown silt w/ m-c Sand, cement blocks and wood debris	E		
10'				
11'				
12'				
	Both - 12.0'			
13'				
14'				

REMARKS: H_2O is at 3.0', Both the ~~Northern~~ Eastern & western walls had severe Slaughing. At 12' we encountered a pipe but couldn't expose it because pumps couldn't keep up with the water flowing into test pit. We were unable to continue w/ the excavation due to side wall Slaughing.

TEST PIT PLAN

VOLUME= _____ cu.yd.

C:\WBLOCKER\TESTPIT

LEGEND:
BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR.) 0-10%
LITTLE (LI.) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F-FINE
M-MEDIUM
C-COARSE
F/M-FINE TO MEDIUM
F/C-FINE TO COARSE
V-VERY
GR.-GRAY
BN.-BROWN
YEL-YELLOW

EXCAVATION EFFORT

E ____ EASY
M ____ MODERATE
D ____ DIFFICULT
GROUNDWATER

ELAPSED TIME TO READING (HRS.) G.W.
No Groundwater

TEST PIT FIELD LOG

PROJECT
DESCRIPTION ~~6A~~ PP6 Site 114
LOCATION Costers Ave, Jersey City

TEST PIT No. 3
FILE No.
DATE 10-20-11

ENGINEER Ron Kantor
WEATHER 56-64°F Partly Cloudy Light Breeze

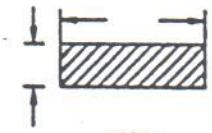
EXCAVATION EQUIPMENT
CONTRACTOR Entact
OPERATOR Steve
MAKE Takeuchi MODEL miniexc
CAPACITY REACH

GROUND ELEV.
TIME STARTED 10/20/11 @ 0810
TIME COMPLETED 10/24/11 @ 1304

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0	0-7" Asphalt 7-11" Stone			
1'	11"-29" - 100% COPR	M		
2'				
3'	29"-35" Dense Green Grey mud (GGM)	D		
	35"-45" - mix GGM, ASH, BRICK, WOOD	D		
4'	45-50" - Dense GGM			
5'	50-78" - mix GGM, Ash, Brick, wood	D		
6'				
7'	78"-136" - GGM	M		
8'				
9'				
10'				
11'				
12'	BOH - 11'4"			
13'				
14'				

REMARKS: H_2O @ 3.7'. At 29"-35" - Very hard green grey mud was difficult to dig through.

TEST PIT PLAN



VOLUME= _____ cu.yd.

LEGEND:
BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
8"-18"	A
18"-36"	B
36" and Larger	C

PROPORTIONS USED
TRACE (TR.) 0-10%
LITTLE (LI.) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS
F-FINE
M-MEDIUM
C-COARSE
F/M-FINE TO MEDIUM
F/C-FINE TO COARSE
V-VERY
GR.-GRAY
BN.-BROWN
YEL-YELLOW

EXCAVATION EFFORT
E _____ EASY
M _____ MODERATE
D _____ DIFFICULT

GROUNDWATER
ELAPSED TIME TO READING (HRS.) G.W.
No Groundwater

C:\WBLOCKS\TESTPIT

TEST PIT FIELD LOG

PROJECT
DESCRIPTION
LOCATION

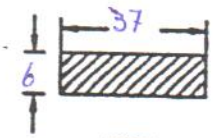
TEST PIT No. TP-4
FILE No.
DATE 11-7-11

ENGINEER Rita Papazian
EXCAVATION EQUIPMENT
CONTRACTOR Entact
OPERATOR Stevie
MAKE John Deere MODEL
CAPACITY REACH
GROUND ELEV.
TIME STARTED 11-3-11 0750
TIME COMPLETED 11-7-11 1105
WEATHER 57-60°F Cloudy, windy

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0	0-4" Asphalt	M/E		
1'	4-6" Stone	↓		
2'	6-9" f-c light brn sand			
3'	9-48" Brown f-c sand w/ wood & metal (fence) debris	M		
4'	48"-58" - COPR			
5'	58"-86" GGM, little Ash	D		
6'				
7'	86" – 146" - Dark brown f-m sand, little silt, Pore space & H_2O had TLM, wood debris, metal debris, Strong MGPO.	M		
8'				
9'				
10'				
11'				
12'	146-175" - Brown silt w/ little gravel (f-c) mottled w/ little black silt	E		
13'				
14'	BOH 14.5'			

REMARKS: Top of steel line @ 11.7' (96" line)

TEST PIT PLAN



VOLUME= cu.yd.

LEGEND: BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"–18"	A
18"–36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR.) 0–10%
LITTLE (LI.) 10–20%
SOME (SO) 20–35%
AND 35–50%

ABBREVIATIONS

F–FINE
M–MEDIUM
C–COARSE
F/M–FINE TO MEDIUM
F/C–FINE TO COARSE
V–VERY
GR.–GRAY
BN.–BROWN
YEL.–YELLOW

EXCAVATION EFFORT

E ____ EASY
M ____ MODERATE
D ____ DIFFICULT
GROUNDWATER

ELAPSED TIME TO READING G.W. (HRS.)
No Groundwater

G:\WBLOCKER\TESTPIT

TEST PIT FIELD LOG

PROJECT
DESCRIPTION PPG site 114
LOCATION carteret Ave, Jersey City

TEST PIT No. TP-5
FILE No.
DATE 11-8-11 / 11-9-11

ENGINEER Rita Papazian
WEATHER Sunny, 69°F

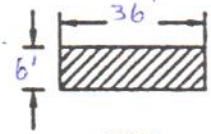
EXCAVATION EQUIPMENT
CONTRACTOR Entact
OPERATOR Stevie
MAKE John Deere MODEL
CAPACITY 14 ton excavator REACH

GROUND ELEV.
TIME STARTED 11-8-11 @ 0830
TIME COMPLETED 11-9-11 @ 1430

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK No.
0	0-5" Asphalt 5-8" stone 8-18" - Reddish brown f-c sand & f gravel, brick debris	M		
1'				
2'	18"-22" GGM, Ash 22"-36" - Brown f-c sand, f-c gravel, little brick fragments	D		
3'		M		
4'	36"-45"- yellowish brown f-c sand 45"-84" - Brown f-c Sand and f-c gravel, Ash, cement debris, little GGM	E (36-45")		
5'		D (45-84")		
6'				
7'	84"-101" - Dark grey m-f Sand and f-c gravel, Ash, cement debris	M		
8'				
9'	101"-125"- GGM	D		
10'				
11'	125"-137" - DK grey silty sand w/ f-c gravel, TLM coated soil and TLM saturated soil	E		
12'	~~137-168 Brown Silt~~ 137-150" Brown Silt.	E		
13'				
14'	BOH 12.5'			

REMARKS: water seeping in at 2', 96" line encountered at 10.8' bgs, water line encountered at 3.9' bgs. ~~FLAT~~ No sidewall sloughing during excavation.

TEST PIT PLAN



VOLUME= cu.yd.

LEGEND: BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" and Larger	C

PROPORTIONS USED

TRACE (TR.) 0-10%
LITTLE (LI.) 10-20%
SOME (SO) 20-35%
AND 35-50%

ABBREVIATIONS

F-FINE
M-MEDIUM
C-COARSE
F/M-FINE TO MEDIUM
F/C-FINE TO COARSE
V-VERY
GR.-GRAY
BN.-BROWN
YEL-YELLOW

EXCAVATION EFFORT

E ____ EASY
M ____ MODERATE
D ____ DIFFICULT

GROUNDWATER

ELAPSED TIME TO READING G.W. (HRS.)
No Groundwater

O:\WBLOCKS\TESTPIT

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-WS-A7B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 611016
Date Started Drilling: 12/30/2013 8:36:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683828
Date Finished Drilling: 12/30/2013 10:37:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 15 ft
Logged By: A. Bogucki	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: Western Silver		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	3	0.0	moist	FILL		fine to medium silty SAND, some gravel, little rock fragments, (10YR 4/2) dark grayish brown, non plastic, loose, moist.	
1				NR		No recovery; material inferred to be same as above.	
2			moist	FILL		fine to medium silty SAND, some gravel, little rock fragments, (10YR 4/2) dark grayish brown, non plastic, loose, moist.	
3							
4							
5				NR		No recovery; material inferred to be same as above.	
5	5	0.0	moist	FILL		fine to medium silty SAND, some gravel, some rock fragments, (10YR 4/2) dark grayish brown, non plastic, dense, moist.	
6							
7							
8		0.0	moist	FILL		fine to medium SAND, some rock fragments, little silt, (7.5YR 4/2) brown, non plastic, dense, moist.	
8		0.0	slightly moist	FILL		fine silty SAND, some angular gravel, (5YR 4/3) reddish brown, non plastic, very dense, slightly moist.	
9							
10	5	0.0	moist to wet	FILL		fine to medium silty SAND, some gravel, little metal, (10YR 4/2) dark grayish brown, non plastic, very dense, moist to wet.	
11							
12							
13		0.0	moist	SM		fine silty SAND, some gravel, some rock fragments, little clay, little medium to coarse sand, (5YR 5/4) reddish brown, non plastic, very dense, moist to wet, few bands of clayey material of medium plasticity. Soils consistent with UNDno.	
14							
15							

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 114-WS-B8B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 611036
Date Started Drilling: 12/30/2013 10:38:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683853
Date Finished Drilling: 1/7/2014 9:00:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 20 ft
Logged By: A. Bogucki	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: Western Silver		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	3.5	0.0	moist	FILL		fine to medium silty SAND, some gravel, some rock fragments, (10YR 4/2) dark grayish brown, non plastic, dense, moist.	
3				NR		No recovery; material inferred to be same as above.	
4			moist	FILL		fine to medium silty SAND, some gravel, some rock fragments, (10YR 4/2) dark grayish brown, non plastic, dense, moist.	
5	5	0.0	moist to wet	FILL		fine to medium silty SAND, some gravel, trace glass, (10YR 4/2) dark grayish brown, non plastic, very dense, moist to wet.	
7		0.0	moist to wet	FILL		fine to medium silty SAND, some gravel, (10YR 2/1) black, non plastic, very dense, moist to wet, slight burnt odor.	
8		0.0	moist	FILL		fine to medium silty SAND, with cobbles, (5YR 3/4) dark reddish brown, non plastic, very dense, moist.	
9		0.0	moist	FILL		SILT, little gravel, (7.5YR 2.5/2) very dark brown, low plasticity, dense, moist, moderate sewage odor.	114-WS-B8B-8.0-8.5
10	5	0.0	moist	FILL		SILT, little gravel, (7.5YR 2.5/2) very dark brown, low plasticity, medium dense, moist to wet, moderate sewage odor.	114-WS-B8B-10.0-10.5
12		0.0	moist to wet	FILL		fine to coarse silty SAND, some brick, (5YR 3/2) dark reddish brown, non plastic, dense, moist to wet.	114-WS-B8B-12.0-12.5
13		0.0	wet	SM		fine to coarse silty SAND, little gravel, (5YR 4/3) reddish brown, non plastic, medium dense, wet. Soil consitent with UNDno.	114-WS-B8B-12.5-13.0
14		0.0	moist	SM		fine silty SAND, some rock fragments little clay, little medium to coarse sand, (5YR 4/4) reddish brown, non plastic, very dense, moist to wet. Soil consistent with UNDno.	114-WS-B8B-14.0-14.5
15	5	0.0	moist	ML-SM		fine to coarse silty SAND, with fine to coarse gravel, subangular well graded, (5YR 3/3) dark reddish brown, non plastic medium dense to dense, moist, no odor, no staining. Refusal encountered at 20.0'. Soil consistent with UNDno.	114-WS-B8B-16.0-16.5
18							114-WS-B8B-18.0-18.5
19							114-WS-B8B-19.0-19.5
20							

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

PPG - PPG_LOGS.GDT - 1/23/14 12:47

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 143-P3A-A`15A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Soft Dig/Geoprobe	**Coordinates (NJSPNAD83) x:** 610681.8125
Date Started Drilling: 4/8/2013 8:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683259
Date Finished Drilling: 4/8/2013 2:59:00 PM	**Core Size:** 3 in	**Boring Total Depth:** 21 ft
Logged By: MI	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: Site 143 - A'15A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
	1	0.0		1	CONCRETE		CONCRETE	
		0.0	dry	3	FILL		fine to medium SAND, little fine gravel, (7.5YR 3/2) dark brown, non plastic, loose, dry, no odor, no staining.	
1		0.0	dry	3	FILL		fine to medium SAND, little fine gravel, (7.5YR 3/2) dark brown, non plastic, loose, dry, no odor, no staining.	
	2							
2		0.0	dry	3	FILL		fine to medium GRAVEL, little fine sand, (7.5YR 3/2) dark brown, non plastic, loose, dry, no odor, no staining.	
3		0.0	dry	6	FILL		fine to medium SAND, little fine to coarse gravel, trace cinders, ash, (7.5YR 3/1) very dark gray, non plastic, loose, dry, no odor, no staining.	
	2							
4		0.0	dry	6	FILL		fine to medium SAND, little fine to coarse gravel, trace cinders, ash, (7.5YR 3/1) very dark gray, non plastic, loose, dry, no odor, no staining.	
5		0.0	moist	6	FILL		fine SAND, with ash, little cinders, coal, (7.5YR 4/1) dark gray, non plastic loose, moist no odor no staining	
	1							
6				6	NR		NO RECOVERY	
7		0.0	moist	6	FILL		SILT, some cinders, coal,fine sand little ash, (7.5YR 3/3) dark brown, non plastic soft, moist no odor no staining	
	0.8							
8				NR	NR		NO RECOVERY	
9		0.0	moist	3	FILL		SILT, little fine sand, trace roots, (7.5YR 3/3) dark brown, non plastic, soft, moist, no odor, no staining.	
	2							
10								
11		0.0	moist	3	FILL		SILT, little fine sand, trace roots, (7.5YR 3/3) dark brown, non plastic, soft, moist, no odor, no staining.	
	2							
12								
13		0.0	slightly moist	3	FILL		fine to medium SAND, some fine to coarse gravel, trace cobbles, (5YR 4/3) reddish brown, non plastic, hard, slightly moist, no odor.	
		0.0	slightly moist	3	FILL		fine to medium SAND, some fine to coarse gravel, trace cobbles, (5YR 4/3) reddish brown, non plastic, hard, slightly moist, no odor.	
14	1.8							
15				NR	NR		NO RECOVERY	
		0.0	slightly moist	3	FILL		fine to medium SAND, some fine to coarse gravel, trace cobbles,fill material, (2.5YR 4/6) red (5YR 4/3) reddish brown, non plastic, hard, slightly moist, no odor.	
16	1.3							
				NR	NR		NO RECOVERY	
17		0.0	slightly moist	3	FILL		fine to medium SAND, some fine to coarse gravel, trace cobbles,fill material, (2.5YR 4/6) red (5YR 4/3) reddish brown, non plastic, hard, slightly moist, no odor.	143-P3A-A`15A-17.5-18.0
	2							
18		0.0	slightly moist	10	SM		fine SAND, with medium gravel, trace silt, (2.5YR 4/8) red, non plastic, dense, slightly moist, no odor, no staining. Soils consistent with UNDno.	143-P3A-A`15A-18.0-18.5 143-P3A-A`15A-18.0-18.5X
19		0.0	slightly moist	10	SM		fine SAND, with medium gravel, trace silt, (2.5YR 4/8) red, non plastic, dense, slightly moist, no odor, no staining. Soils consistent with UNDno.	143-P3A-A`15A-18.5-19.0
	1.5							
20								143-P3A-A`15A-20.0-20.5
				NR	NR		NO RECOVERY	
21								

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.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 143-P3A-A`15AR2

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610689.8125
Date Started Drilling: 4/1/2014 9:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683255.1875
Date Finished Drilling: 4/1/2014 10:10:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 20 ft
Logged By: MI	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: Site 143 - A'15AR2		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		1	CONCRETE		CONCRETE	
1	3.2	0.0	slightly moist	3	FILL		fine to medium SAND, some fine to coarse gravel, (2.5YR 4/2) weak red, loose, slightly moist, no odor, no staining.	
2								
3		0.0	slightly moist	3	FILL		fine to medium SAND, with cinders, some silt, little ash, (7.5YR 2.5/1) black, loose to dense, slightly moist, no odor, no staining.	
4				NR	NR		NO RECOVERY	
5	3.5	0.0	dry	3	FILL		fine to medium SAND, little cinders, (7.5YR 2.5/1) black, loose to dense, dry to slightly moist, no odor, no staining.	
		0.0	to slight moist	3	FILL		fine to medium silty SAND, trace ash, (10YR 5/4) yellowish brown, loose to dense, slightly moist, no odor, no staining.	
6		0.0		3	FILL			
7			slightly moist				fine silty SAND, and ash, little fine gravel, trace ceramics, (7.5YR 5/1) gray, loose, slightly moist, no odor, no staining.	143-P3A-A`15A-R2-7.0-7.5
			slightly moist					
8		0.0	moist to wet	3	FILL		SILT, some fine sand, trace cinders, roots, (7.5YR 3/4) dark brown, non plastic, soft, moist to wet, no odor, no staining.	
9				NR	NR		NO RECOVERY	
10	5	0.0	moist to wet	3	FILL		SILT, some fine sand, trace cinders, roots, (7.5YR 3/4) dark brown, non plastic, soft, moist to wet, no odor, no staining.	
11								143-P3A-A`15A-R2-11.0-11.5
12		0.0	moist to wet	10	SP-SM		UNDno fine to medium SAND, trace silt, (10YR 5/4) yellowish brown, loose to dense, moist to wet, no odor, no staining. Soils consistent with UNDno.	143-P3A-A`15A-R2-11.5-12.0
13		0.0	moist to wet	10	SP-SM		UNDno fine to medium SAND, some fine to coarse gravel, little silt, (5YR 5/2) reddish gray, loose to dense, moist to wet, no odor, no staining. Soils consistent with UNDno.	
14								
15	4	0.0	moist to wet	10	SP-SM		UNDno fine to coarse SAND, with fine to medium gravel, trace silt, (2.5YR 5/6) red, loose, moist to wet, no odor, no staining. Soils consistent with UNDno.	
16								
17		0.0	slightly moist	10	SP-SM		UNDno fine to coarse SAND, with fine to coarse gravel, (2.5YR 4/6) red, loose to hard, slightly moist, no odor, no staining. Soils consistent with UNDno.	143-P3A-A`15A-R2-16.5-17.0 143-P3A-A`15A-R2-17.0-17.5 143-P3A-A`15A-R2-17.5-18.0 143-P3A-A`15A-R2-18.0-18.5 143-P3A-A`15A-R2-18.5-19.0
18								
19				NR	NR		NO RECOVERY	
20								

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: 143-P3A-A`16A

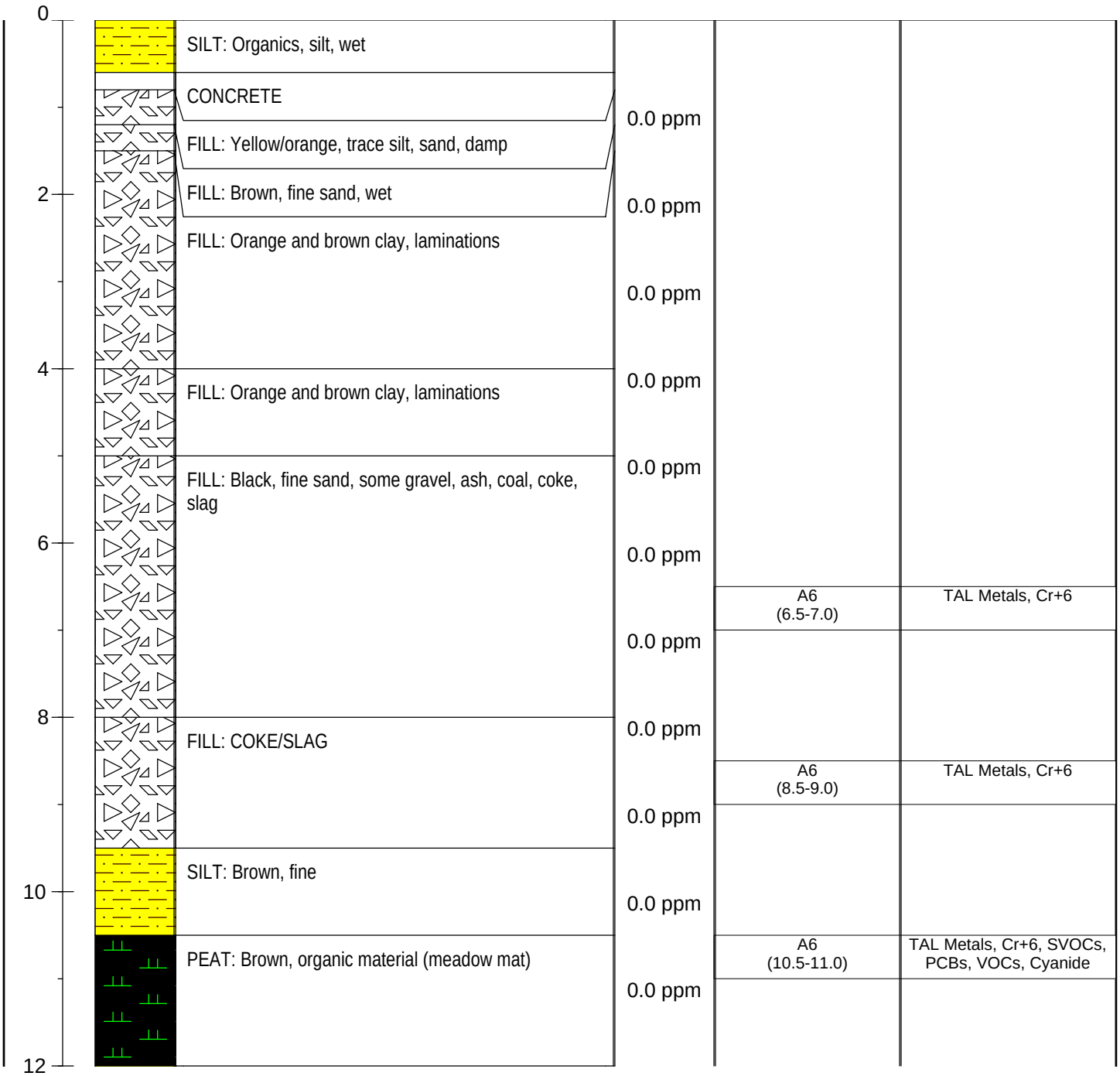
Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610668.25
Date Started Drilling: 4/18/2013 8:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683232.3125
Date Finished Drilling: 4/18/2013 1:30:00 PM	**Core Size:** 3 in	**Boring Total Depth:** 18 ft
Logged By: MI	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: Site 143 - A'16A		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1	2	0.0	slightly moist	FILL		fine to medium silty SAND, with coarse gravel, trace cinders, ash, (5YR 4/3) reddish brown, non plastic, loose, slightly moist, no odor, no staining.	143-P3A-A`16A-0.5-1.0
2							
3	1.2	0.0	slightly moist	FILL		fine to medium silty SAND, with coarse gravel, trace cinders, ash, brick, (5YR 4/3) reddish brown, non plastic, loose, slightly moist, no odor, no staining.	143-P3A-A`16A-2.5-3.0
				NR		NO RECOVERY	143-P3A-A`16A-2.5-3.0X
4							
5	1.6	0.0	slightly moist	FILL		fine to medium silty SAND, with coarse gravel, trace cinders, ash, (5YR 4/3) reddish brown, non plastic, loose, slightly moist, no odor, no staining.	143-P3A-A`16A-4.5-5.0
6				NR		NO RECOVERY	
7	2	0.0	slightly moist	FILL		fine to medium silty SAND, with coarse gravel, trace cinders, ash, (5YR 4/3) reddish brown, non plastic, loose, slightly moist, no odor, no staining.	143-P3A-A`16A-6.5-7.0
		0.0	moist	FILL		SILT, with fine sand, little coal, (7.5YR 3/4) dark brown, non plastic, soft, moist, no odor, no staining.	
8							
9	1	0.0	moist	FILL		SILT, with fine sand, (7.5YR 3/4) dark brown, low plasticity, soft, moist, no odor, no staining.	143-P3A-A`16A-8.5-9.0
				NR		NO RECOVERY	
10							
11	2	0.0	moist	FILL		SILT, with fine sand, (7.5YR 3/4) dark brown, low plasticity, soft, moist, no odor, no staining.	143-P3A-A`16A-10.5-11.0
		0.0	moist	FILL		fine SAND, trace roots, (10YR 5/6) yellowish brown, non plastic, loose, moist, no odor, no staining.	
12							
13	2	0.0	moist	FILL		fine SAND, no coarse gravel, (10YR 4/6) dark yellowish brown, non plastic, loose, moist, no odor, no staining.	143-P3A-A`16A-12.5-13.0
14		0.0	moist	FILL		fine to medium SAND, with coarse gravel, (2.5YR 4/3) reddish brown, non plastic, loose, moist, no odor, no staining.	
15	2	0.0	moist	FILL		fine to medium SAND, with medium gravel, (2.5YR 4/3) reddish brown, non plastic, loose, moist, no odor, no staining.	143-P3A-A`16A-14.5-15.0
16							
17	2	0.0	moist	FILL		fine to medium SAND, with medium gravel, (2.5YR 4/3) reddish brown, non plastic, loose, moist, no odor, no staining.	143-P3A-A`16A-16.3-16.8
		0.0	moist	SM		UNDno fine to coarse SAND, with fine to coarse gravel, (2.5YR 4/8) red, non plastic, loose, moist, no odor, no staining. Soils consistent with UNDno.	143-P3A-A`16A-16.8-17.3
18							

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.

ENSR | AECOM	Client: **PPG**	BORING ID: **A6**
	Site: **PPG - Jersey City, NJ**	
Start Date: 9/2/2002	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610797.7 Y-683480.19	Depth of Boring: 16.00
End Date: 9/2/2002	Elevation: 12.35	Geologist:
	Drill Subcontractor: Terra Probe	Driller:

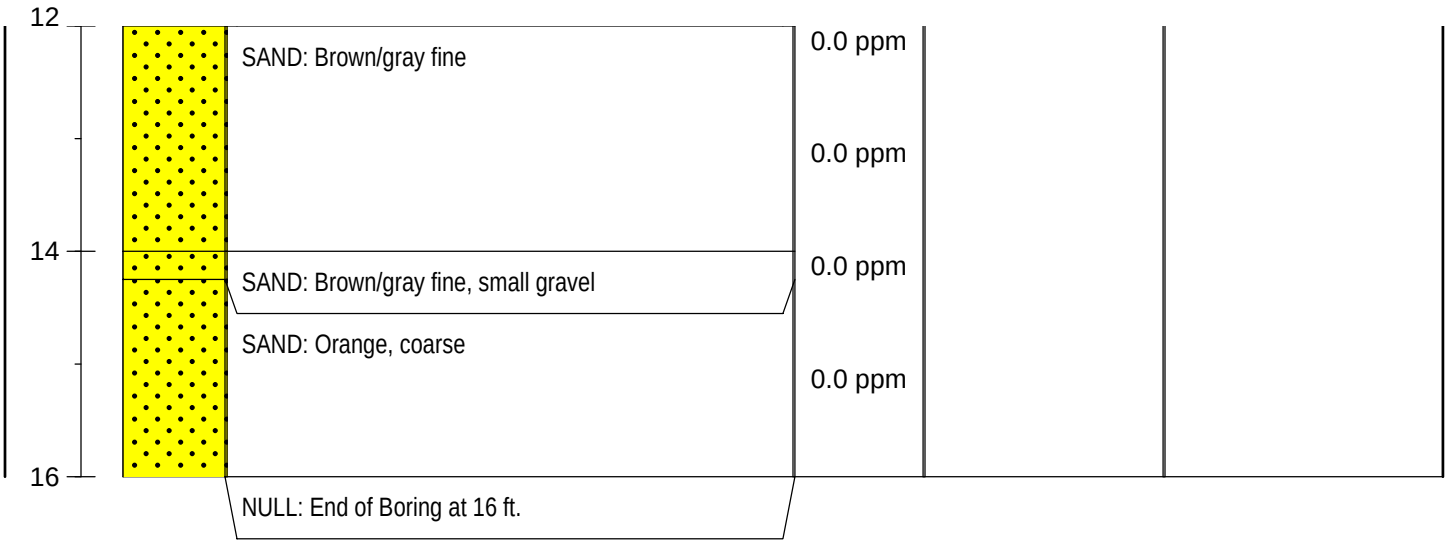


Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

ENSR | AECOM	Client: **PPG**	BORING ID: **A6**
	Site: **PPG - Jersey City, NJ**	
Start Date: 9/2/2002	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610797.7 Y-683480.19	Depth of Boring: 16.00
End Date: 9/2/2002	Elevation: 12.35	Geologist:
	Drill Subcontractor: Terra Probe	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

AECOM

Project Number:

Site: PPG-114 Jersey City

Boring ID: A7A

Sheet: of

Drilling Method:

Ground Elev.:

Date Started:

Date Finished:

Depth of Boring:

Water Level:

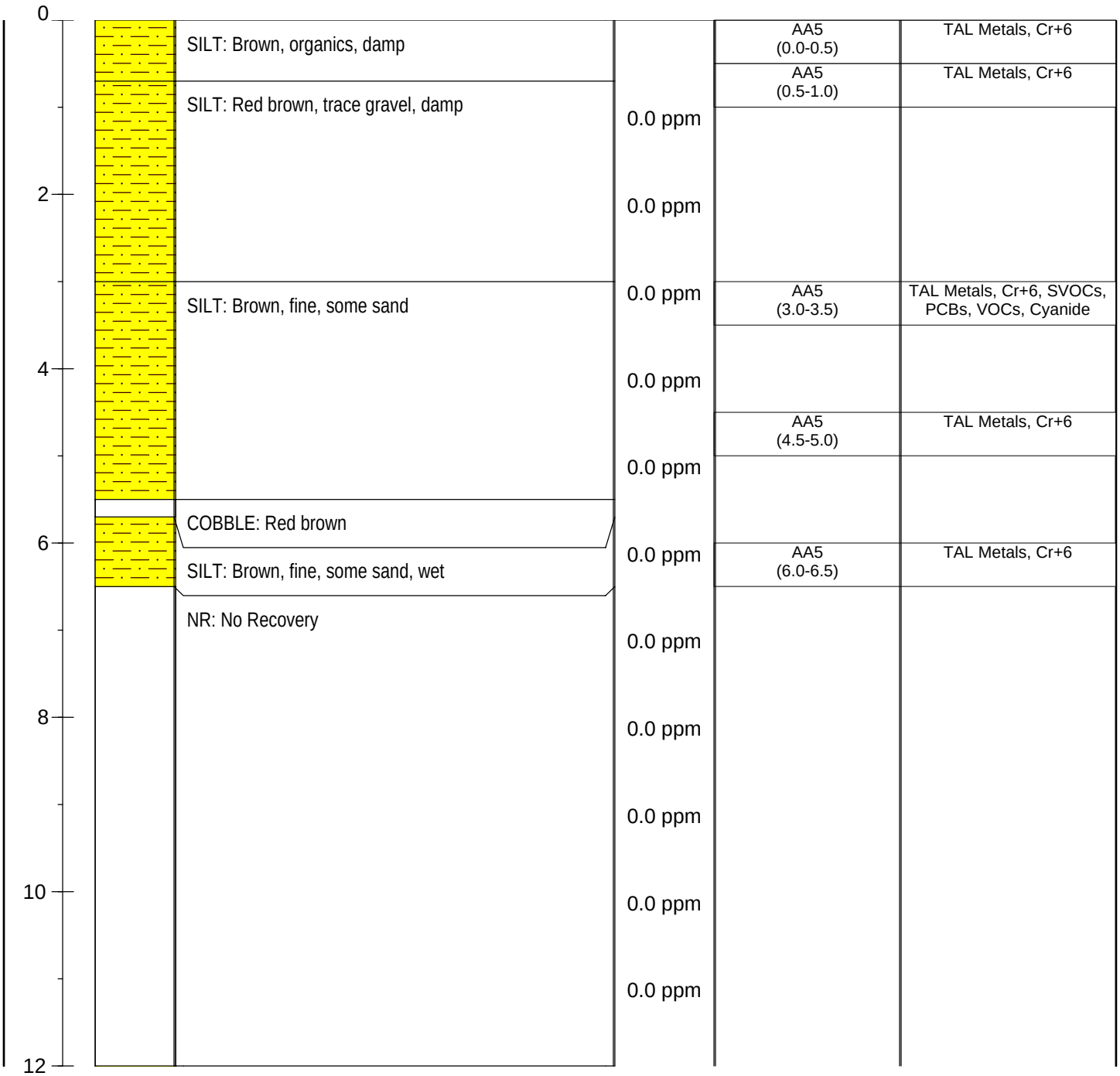
Depth Feet	Elevation Feet	Elapsed Time	Lab Sample ID	Recovery Feet	Moisture	PID ppm	LIBOH	Classification of Material: USCS, Modified Rainwater
0 5			CE	2.7	MOIST			0-1.0 - 7.5 YR Reddish Yellow M-F Sand 1.0-1.3 2.5YR 4/4 Reddish Brn 25% Coarse Gravel 1.3-2.0-2.5YR Dusky Red M-F, Silty Sand Trace Crushed Stone 2.0-2.7, 5YR 5/4 Brown M-F Silty Sand FG
5 7			114 A7A 6.0-6.5@	2.0 0905	MOIST			2.7-5.0 - NO RECOVERY 5.0-5.7 SAA 6.0-7.0 7.5 YR 3/4 DK Brn. M-F Silty Sand, little M-F Gravel Trace coarse gravel, Low plast. NB/0/S.
			+ 114 A7A 6.5-7.0@	0915				

XRF Cu PPM

671

785

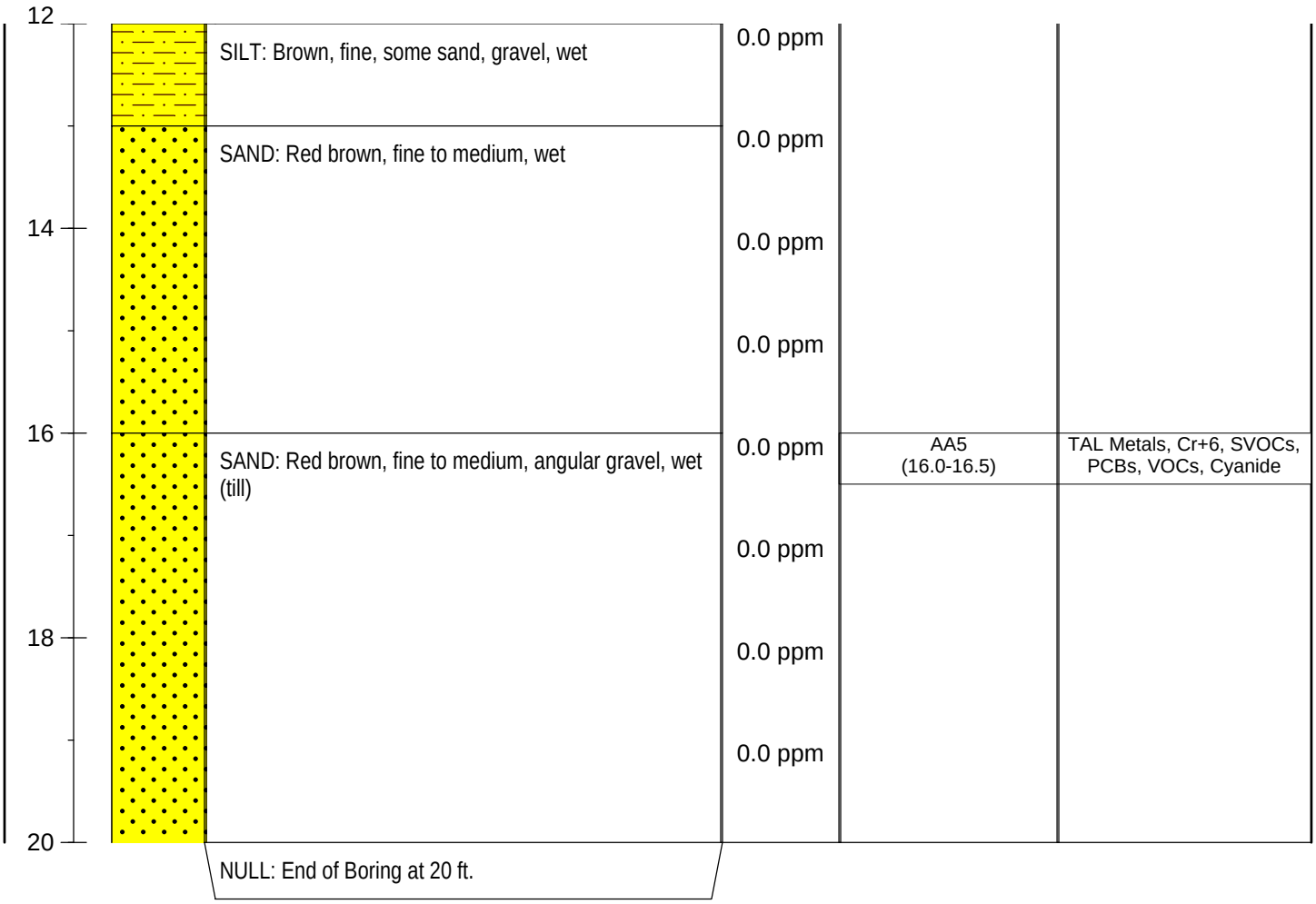
ENSR | AECOM	Client: **PPG**	BORING ID: **AA5**
	Site: **PPG - Jersey City, NJ**	
Start Date: 9/2/2003	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610709.23 Y-683319.69	Depth of Boring: 20.00
End Date: 9/2/2003	Elevation: 13.05	Geologist:
	Drill Subcontractor: Terra Probe	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

ENSR | AECOM	Client: PPG	BORING ID: AA5
	Site: PPG - Jersey City, NJ	
Start Date: 9/2/2003	Project: Site Investigation	Page: 2 of 2
	Coordinates: X-610709.23 Y-683319.69	Depth of Boring: 20.00
End Date: 9/2/2003	Elevation: 13.05	Geologist:
	Drill Subcontractor: Terra Probe	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **AA5V**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/3/2005	Project: **Site Investigation**	Page: 1 of 3
	Coordinates: X-610713 Y-683316	Depth of Boring: 28.00
End Date: 10/3/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		UNKNOWN: No Sleeves Collected.			
2					
4					
6					
8					
10					
12					

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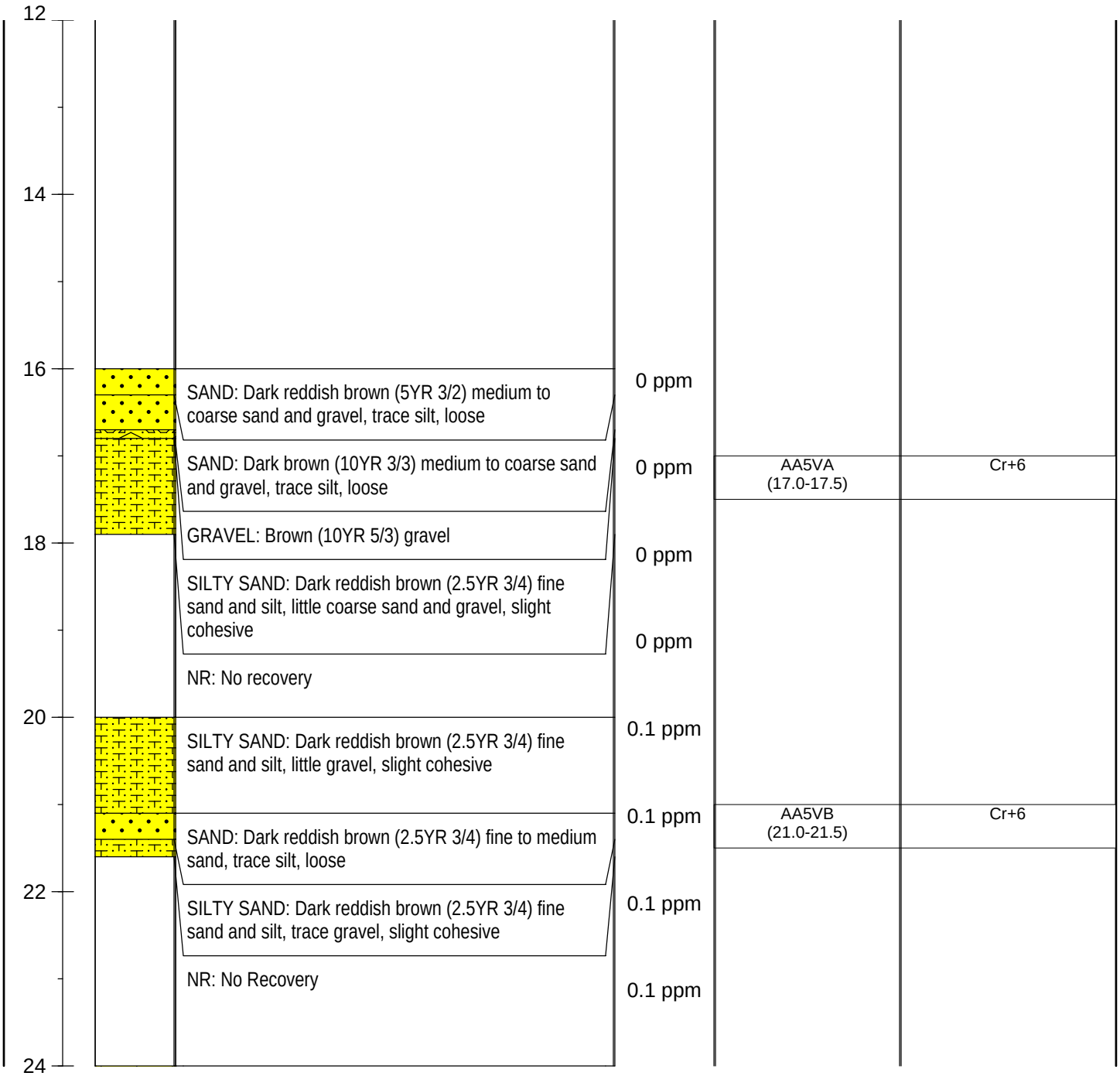
ENSR | AECOM	Client: PPG	BORING ID: AA5V
	Site: PPG - Jersey City, NJ	
Start Date: 10/3/2005	Project: Site Investigation	Page: 2 of 3
	Coordinates: X-610713 Y-683316	Depth of Boring: 28.00
End Date: 10/3/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:



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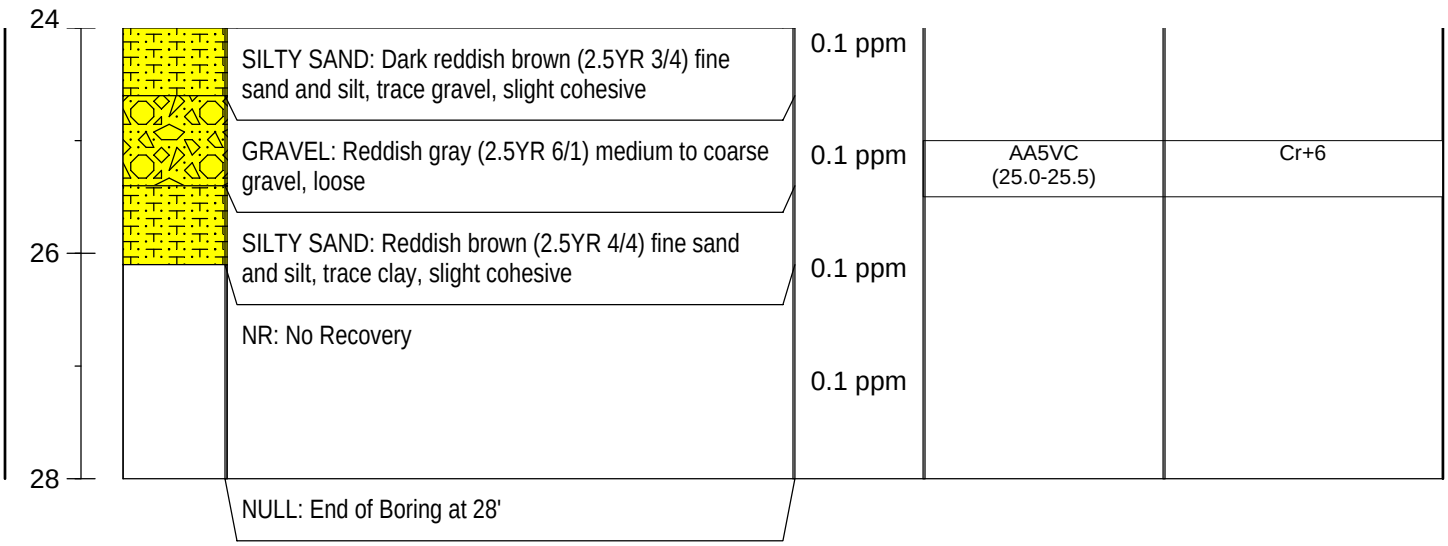
ENSR | AECOM	Client: **PPG**	BORING ID: **AA5V**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/3/2005	Project: **Site Investigation**	Page: 3 of 3
	Coordinates: X-610713 Y-683316	Depth of Boring: 28.00
End Date: 10/3/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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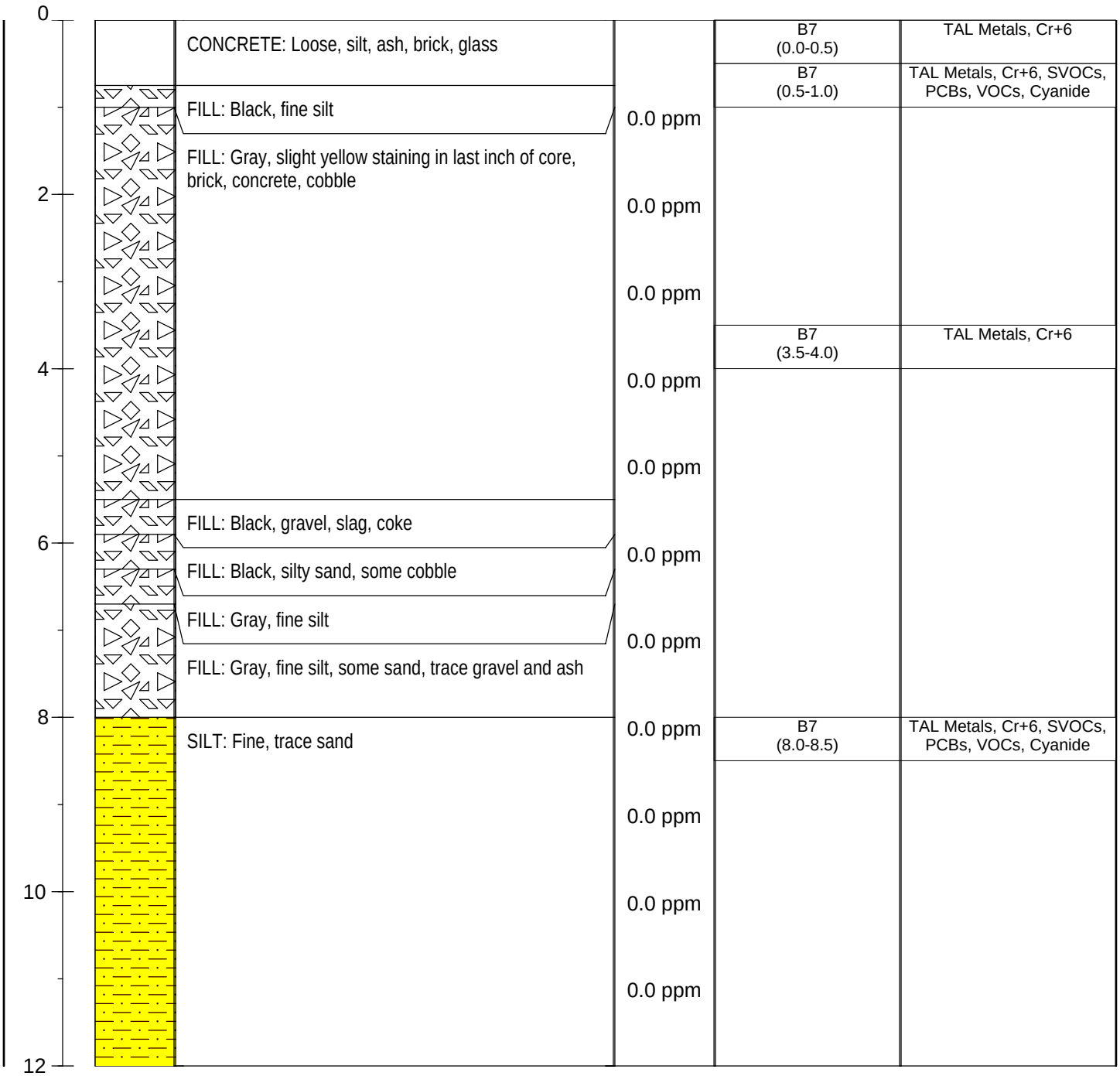
ENSR | AECOM	Client: **PPG**	BORING ID: **B7**
	Site: **PPG - Jersey City, NJ**	
Start Date: 8/21/2003	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610898.81 Y-683601.86	Depth of Boring: 12.00
End Date: 8/21/2003	Elevation: 13.11	Geologist:
	Drill Subcontractor: S&S	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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ENSR | AECOM	Client: **PPG**	BORING ID: **B7**
	Site: **PPG - Jersey City, NJ**	
Start Date: 8/21/2003	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610898.81 Y-683601.86	Depth of Boring: 12.00
End Date: 8/21/2003	Elevation: 13.11	Geologist:
	Drill Subcontractor: S&S	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12		NULL: End of Boring at 12 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: BC8

Project Name: PPG Garfield Ave	**Drilling Company:** Terra Probe Incorporated	
Project Number: 60240739	**Drilling Method:** Direct Push (Geoprobe)	**Coordinates (NJSPNAD83) x:** 610958.6875
Date Started Drilling: 9/3/2003	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683743.3125
Date Finished Drilling: 9/3/2003	**Core Size:** 1.25 inches	**Boring Total Depth:** 18 ft
Logged By:	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location: IRM#1		**Surface Elevation:** 10.89 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0				ASPHALT			
				SAND		Black	BC8S0.5-1)
1				SAND		Brown, some silt	BC8S1.5-2)
			damp	SILT		Light orange, trace sand, some ash, trace cobble	BC8S1-1.5)
2							
3							
4			wet	SAND		Gray, some silt	
5			saturated	SAND		Gray, little gravel	
6							
7			wet	PEAT		Black, organic material	BC8S7-7.5)
8			wet	SILT		Black, fine	
9							BC8S9-9.5
10			wet	SAND		Red brown, trace silt, cobble	
11							
12			wet	SAND		Red brown, trace silt	
			wet	SAND		Red brown, trace silt, cobble	
13							
14							
15							
16			wet	SAND		Red brown, trace silt, cobble, weathered rock fragment	
17							
18						End of Boring	

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

Comments:

ENSR | AECOM	Client: **PPG**	BORING ID: **C9**
	Site: **PPG - Jersey City, NJ**	
Start Date: 9/3/2003	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-611015.15 Y-683832.21	Depth of Boring: 23.00
End Date: 9/3/2003	Elevation: 12.97	Geologist:
	Drill Subcontractor: Terra Probe	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		ASPHALT			
		FILL: Brown fine sand, wood, brick, cobble (yellow stained), some silt	0.0 ppm	C9 (0.5-1.0)	TAL Metals, Cr+6
				C9 (1.0-1.5)	TAL Metals, Cr+6
2			1.8 ppm		
		FILL: Brown fine silt, trace sand		C9 (2.5-3.0)	TAL Metals, Cr+6, SVOCs, PCBs, VOCs, Cyanide
			26 ppm		
4		FILL: Brown to gray-yellow, fine sand, some silt	32 ppm		
			4 ppm		
6			0.0 ppm		
			0.0 ppm	C9 (7.0-7.5)	TAL Metals, Cr+6
8		FILL: Brown/yellow/orange, fine sand, trace silt, cobble	0.0 ppm		
			0.0 ppm		
10		FILL: Brown silt, with wood	0.0 ppm		
			0.0 ppm		
12					

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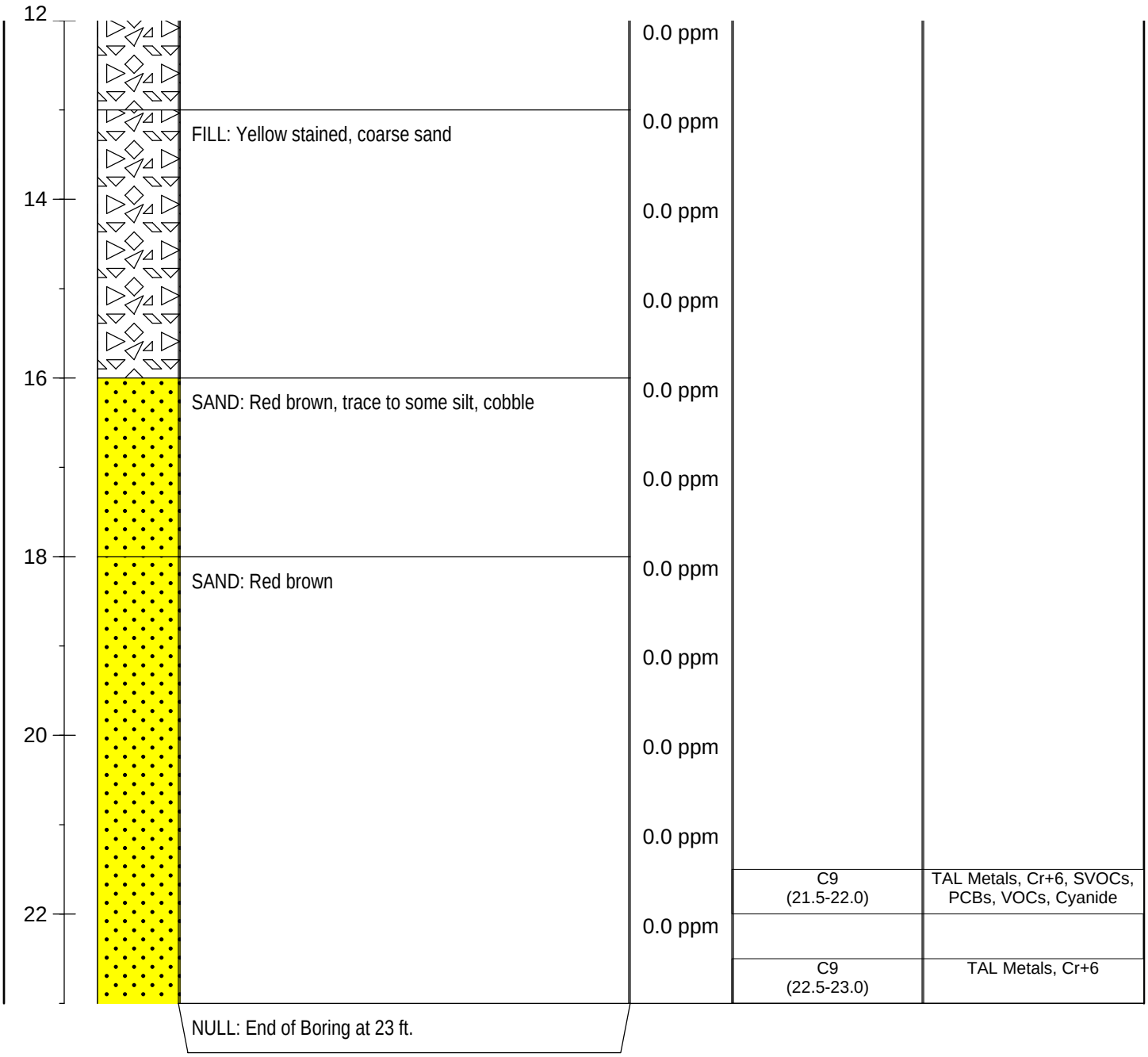
ENSR | AECOM	Client: **PPG**	BORING ID: **C9**
	Site: **PPG - Jersey City, NJ**	
Start Date: 9/3/2003	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-611015.15 Y-683832.21	Depth of Boring: 23.00
End Date: 9/3/2003	Elevation: 12.97	Geologist:
	Drill Subcontractor: Terra Probe	Driller:



Depth (ft)	Description	PID	Sample ID	Sample Parameters
12		0.0 ppm		
	FILL: Yellow stained, coarse sand	0.0 ppm		
14		0.0 ppm		
		0.0 ppm		
16	SAND: Red brown, trace to some silt, cobble	0.0 ppm		
		0.0 ppm		
18	SAND: Red brown	0.0 ppm		
		0.0 ppm		
20		0.0 ppm		
		0.0 ppm		
			C9 (21.5-22.0)	TAL Metals, Cr+6, SVOCs, PCBs, VOCs, Cyanide
22		0.0 ppm		
			C9 (22.5-23.0)	TAL Metals, Cr+6
	NULL: End of Boring at 23 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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AECOM

Project Number:		Boring ID:	C9B
Site: PPG Site 114	Jersey City, NJ	Sheet:	of:
		Drilling Method:	Geo probe
		Ground Elev:	
Project Manager: C. Martell	Logged By: B. Murphy	Date Started: 4/26/12	Depth of Boring:
Drilling Co.: SGS	Driller: D. Latimer	Date Finished: 4/26/12	Water Level:

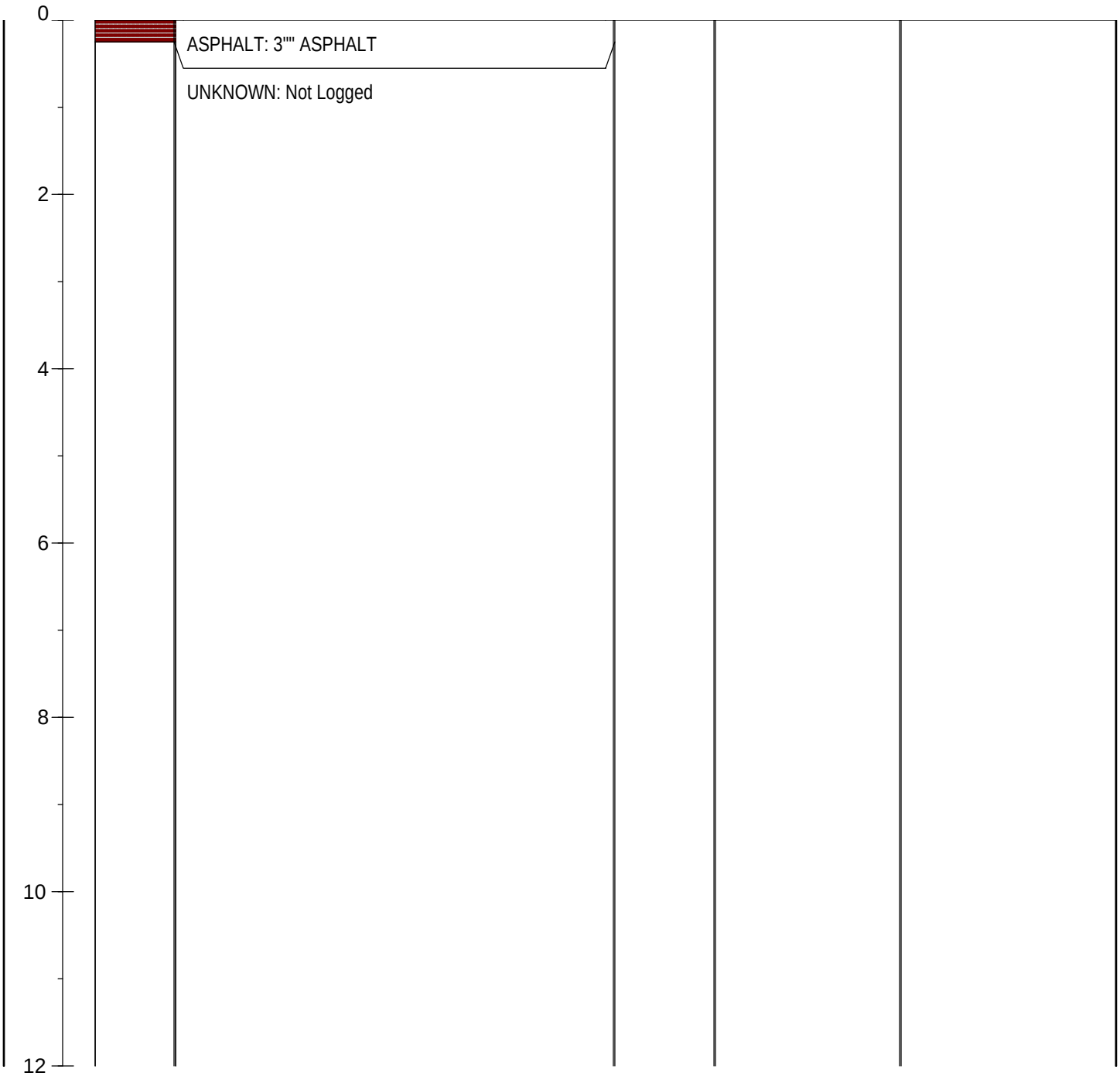
Depth feet	Elevation feet	Blow Counts	Lab Sample ID	Recovery Feet	Moisture	PID ppm	USCS	Classification of Material USCS; Modified Burmeister
5 – 7			~~Sample 114-C9B 5.5-6.0 @ 0945~~	1.0	MOIST	0.0 0.0 0.0	fill	5.0-6.0: 7.5YR 4/3 Brown F-Sand trace Silt with F-M gravel loose ~~soft~~ non plastic ~~dry~~ n|o|s trace wood fragments 6.0-7.0: No Recovery
7 – 9			NO SAMPLE COPR	2.0	MOIST	0.0 0.0 0.0	fill	7.0-8.3: 7.5YR 5/2 DK Brown F-Sand with F-gravel and trace wood fragments soft, nonplastic n|o|s 8.3-9.0: 5Y 6/2 light olive gray F Sand with Ash little F-M gravel 20% COPR loose n|o|s
9 – 11			NO Sample GGM & COPR	2.0	MOIST	0.0 0.0 0.0	fill	9.0-9.4: SAA (5.3-9.0) 9.4-10.0: 10YR 2/2 V. DK Brown F-Sand 5% COPR Firm nonplastic n|o|s 10.0-11: 5Y 5/2 olive gray GGM with 1" lens of F-Sand trace little F-M gravel (subangular) end Ash
11 – 13			Sample 114-C9B 12.3-12.8 @ 0905	1.8	MOIST	0.0 0.0 0.0	fill	dense nonplastic n|o - green staining 11.0-12.8: 7.5YR 4/6 Strong Brown F-Sand w| trace Silt dense nonplastic n|o|s 12.8-13.0: No Recovery
13 – 15			Sample 114-C9B 14.1-14.6 @ 1024	2.0 @ 1.6	MOIST	0.0 0.0 0.0	fill	13.0-14.6: 7.5YR 3/3 DK. Brown F-Sand with trace Silt dense non plastic n|o|s 14.6-15.0: No Recovery
15 – 17			Sample 114-C9B 16.5-17 Post @	2.0	MOIST	0.0 0.0 0.0	fill	15.0-16.0: 7.5YR 3/2 DK. Brown F Sand w| little F-M gravel V. dense non plastic n|o|s. 16.0-17.0: 7.5YR 4/3 Brown F-Sand w| some silt v dense non plastic n|o|s:
17 – 19			Sample 114-C9B R3 18.3 @ 1051	1.8	MOIST	0.0 0.0 0.0	fill	17.0-18.8: 10Y 4/2 DK. grayish olive Silt with trace F-Sand w| trace organics. nonplastic med. dense n|o|s.
19 – 21			Sample 114-C9B 19.5-20.0 @ 1103	1.0	MOIST	0.0 0.0 0.0	fill	19.0-20.0: 2.5YR 4/2 Weak Red F-Sand w| trace Silt and trace F-gravel dense non plastic n|o|s.
21 – 23			Sample 114-C9B 22.0-22.5 @ 1134	1.5	MOIST	0.0 0.0 0.0	fill	21.0-22.5: 2.5YR 3/2 Dusky Red. F Sand w| M-C gravel (subangular) m dense non plastic n|o|s.
								EOB @ 23' bgs

XRF
Cr
PPM

15
66
881
25.1
14.5K
27.3
7235
6907
5216
3790
4713
5848
184
1226
203

ENSR | AECOM	Client: **PPG**	BORING ID: **C9V**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/6/2005	Project: **Site Investigation**	Page: 1 of 4
	Coordinates: X-611014.86 Y-683837.42	Depth of Boring: 36.00
End Date: 10/6/2005	Elevation: 13.00	Geologist: McCray, Scott
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters



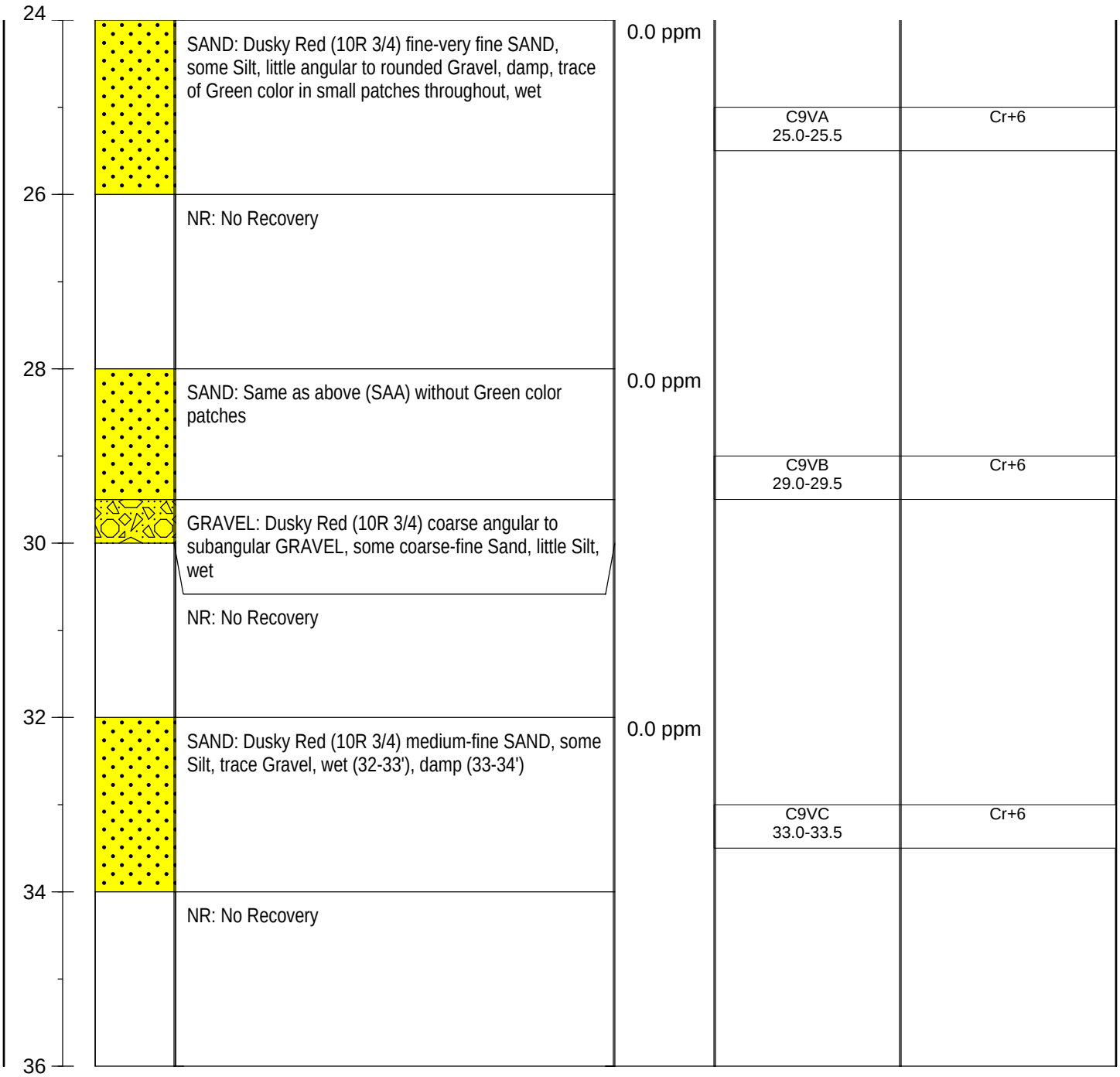
NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **C9V**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/6/2005	Project: **Site Investigation**	Page: 2 of 4
	Coordinates: X-611014.86 Y-683837.42	Depth of Boring: 36.00
End Date: 10/6/2005	Elevation: 13.00	Geologist: McCray, Scott
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12					
14					
16					
18					
20					
22					
24					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG	BORING ID: C9V
	Site: PPG - Jersey City, NJ	
Start Date: 10/6/2005	Project: Site Investigation	Page: 3 of 4
	Coordinates: X-611014.86 Y-683837.42	Depth of Boring: 36.00
End Date: 10/6/2005	Elevation: 13.00	Geologist: McCray, Scott
	Drill Subcontractor: Ameridrill	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **C9V**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/6/2005	Project: **Site Investigation**	Page: 4 of 4
	Coordinates: X-611014.86 Y-683837.42	Depth of Boring: 36.00
End Date: 10/6/2005	Elevation: 13.00	Geologist: McCray, Scott
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
36		NULL: End of Boring at 36 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: EF-35

Project Name: PPG Soil RIWP	**Drilling Company:** SGS North America	
Project Number: 6015-4801	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610667.276
Date Started Drilling: 4/22/2011	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683255.627
Date Finished Drilling: 4/22/2011	**Core Size:** 12 in	**Boring Total Depth:** 25 ft
Logged By: B. Daniels, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** NA
Physical Location: drilled in sidewalk, right outside property line 143		**Surface Elevation:** 12.1 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	dry	CONCRETE		Concrete	
1		0	moist	FILL		Brown (7.5YR 4/3) Clayey SILT, fome fine to coarse Sand, trace Fill Material (gravel, glass), soft, moist. No odor.	EF-B35-0.5
2		0					EF-B35-2.0
3		0					EF-B35-2.5
4		0					EF-B35-4.0
5	0		moist	VOID		No Recovery	
6							
7							
8							
9							
10	5	0	wet	FILL		Dark Yellowish Brown (10YR 4/4) SILT (ML), graded to very fine Sand at 12-13', trace Gravel, soft, wet. No odor.	EF-B35-10.0
11		0					
12		0					EF-B35-12.0
13		0	moist	SAND		Reddish Brown (5YR 4/4) fine SAND (SP-SM), little medium angular Gravel and Silt, trace medium Sand, dense, moist. No odor.	EF-B35-13.0
14		0					
15	1.5	0	wet	SAND		Reddish Brown (5YR 4/3) very fine to fine SAND (SP-SM), little Silt, loose, wet. No odor.	
16		0	moist	SAND AND SILT		Reddish Brown (5YR 4/4) SILT and fine SAND, little subangular Gravel, dense, moist. No odor.	EF-B35-16.0
17			moist	VOID		No Recovery	
18							
19							
20	0.5	0	moist	SAND		Same as above, liner split in core barrel - lost most of sample.	EF-B35-20.0
21			moist	AND SILT		No Recovery	
22				VOID			
23							
24							
25				NULL		End of boring at 25 ft.	

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

Comments: No COPR/GGM identified at this location.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: EF-36

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610619.877
Date Started Drilling: 4/22/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683269.884
Date Finished Drilling: 4/25/2011	**Core Size:** 2 in	**Boring Total Depth:** 25 ft
Logged By: B. Daniels, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 5 ft
Physical Location: SW corner of Garfield Avenue & Carteret Avenue		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	1	Fill		Concrete	EF-B36_0.5
			moist	3	Fill		Brown (7.5YR 5/4) CLAY and SILT, trace fine Gravel, trace Organics, medium stiff, moist. Slight organic odor.	
2		0						EF-B36_2.0
3		0						EF-B36_2.5
4		0						EF-B36_4.0
5		0						
6		0	wet	3	Fill		Reddish Brown (5YR 5/4) fine SAND and SILT, trace Mudstone, slightly mottled, loose to medium dense, wet. No odor.	EF-B36_6.0
7		0	wet	10	SP-SM		Reddish Brown (2.5YR 4/4) fine SAND, little Silt and fine subangular Gravel, medium dense, wet. No odor.	
8	3.1							EF-B36_7.5
9			wet	10	SP-SM		No Recovery	
10		0						
11		0	wet	10	SP-SM		Same as above, soft to medium dense.	
12		0						EF-B36_12.0
13	2.8							
14			wet	10	SP-SM		No Recovery	
15		0						
16		0	moist	10	GM		Reddish Brown (2.5YR 4/4) SILT and fine to medium sub-round to sub-angular Gravel (Red Mudstone fragments), little medium Sand, dense, moist. No odor.	EF-B36_15.5
17			moist	11	GM		No Recovery	
18	1.4							
19								
20		0						EF-B36_20.0
21			moist	11	GM		Reddish Brown (2.5YR 4/4) fine to medium angular to sub-round GRAVEL, some coarse Sand, little Silt and fine Sand, dense, moist. No odor.	
22			moist	11	GM		No Recovery	
23	0.7							
24								
25								
26							End of boring at 25 ft.	
27								
28								
29								
30								
31								
32								
33								
34								
35								

Comments: No COPR/GGM identified at this location.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: EF-37

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610679.529
Date Started Drilling: 4/22/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683445.78
Date Finished Drilling: 4/25/2011	**Core Size:** 2 in	**Boring Total Depth:** 16.5 ft
Logged By: B. Daniels, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 5 ft
Physical Location: South side of French Park, in gated area		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	2	Fill		Black Asphalt	EF-B37_0.5
			moist	3	Fill		Brown (7.5YR 4/3) fine to coarse SAND, some fine to coarse Gravel and Fill Material (slag, coal, glass, brick), little Silt, loose to medium dense. No odor.	
2		0						EF-B37_2.0
3		0						EF-B37_2.5
4		0						EF-B37_4.0
5		0	moist	3	Fill		Yellowish Brown (10YR 5/4) fine SAND and SILT, trace Fill Material (slag, ash, cinders), loose. No odor.	
6		0	wet	3	Fill		Same as above.	EF-B37_6.0
7	3.8	0	wet	10	SP-SM		Reddish Brown (2.5YR 4/4) SILT, some medium to coarse Sand, little fine to medium Mudstone fragments, very loose to medium dense. No odor.	
8		0						EF-B37_7.5
9								
10		0	wet	10	SP-SM		No Recovery	
11		0	moist	10	SP-SM		Reddish Brown (2.5YR 4/4) SILT and fine SAND, some fine to medium Rock fragments (Mudstone, Quartzite), medium dense. No odor.	EF-B37_11.0
12	1.8							
13			moist	10	SP-SM		No Recovery	
14								
15		0						
16	0.2		moist	13	GM		Black DIABASE and Red MUDSTONE fragments (weathered), little Silt, very dense.	
			moist	13	GM		No Recovery	
17							Refusal at 16.5 ft.	
18								
19								
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Comments: No COPR/GGM identified at this location.

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732.564.3200 office telephone

Boring ID: EF-38

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610761.209
Date Started Drilling: 4/22/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683529.983
Date Finished Drilling: 4/22/2011	**Core Size:** 2 in	**Boring Total Depth:** 3.8 ft
Logged By: B. Daniels	**Project Manager:** Robert Cataldo	**Depth to Water:** N/A ft
Physical Location: Garfield Avenue, near OSB-5		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	3	OL		Black Topsoil, some Organics, dry, loose. No odor.	EF-B38_0.5
			dry	3	Fill		Dark Brown (7.5YR 3/2) fine to medium SAND, some fine to medium Gravel and Fill Material (coal, slag, brick, glass), trace Silt, medium dense. No odor.	
2		0						EF-B38_2.0
			moist	3	Fill		Very Dark Grayish Brown (10YR 3/2) SILT and CLAY, little medium to coarse Gravel and Fill Material (slag, brick, debris), medium stiff. Slight organic odor.	EF-B38_2.5
3		0						
4							Refusal at 3.8 ft.	
5								
6								
7								
8								
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Comments: No COPR/GGM identified at this location.

AECOM
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Boring ID: EF-38A

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610761.701
Date Started Drilling: 4/25/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683534.172
Date Finished Drilling: 4/26/2011	**Core Size:** 2 in	**Boring Total Depth:** 23 ft
Logged By: E. Acs, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 4.6 ft
Physical Location: Garfield Avenue, near OSB-5		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0		1	Fill		Concrete Sidewalk	EF-B38A_0.5
			dry	6	Fill		Black to Very Dark Gray (10YR 3/1) fine to medium SAND, some fine to medium Gravel, Ash and Cinders, loose. No odor.	
2		0	dry	3	Fill		Reddish Brown (5YR 4/4) fine to medium SILTY SAND, little Clay, loose. No odor.	EF-B38A_2.0
3		0						EF-B38A_2.5
4		0						EF-B38A_4.0
5		0	moist	3	Fill		Gray to Dark Gray Brown (10YR 3/3) SILT, trace fine Sand and Clay, soft. No odor.	
			wet	3	Fill			
6		0					Brown (7.5YR 5/3) SILT, trace fine to coarse Sand, very soft. No odor.	EF-B38_6.0
7		0						
8	3.2		wet	10	SP-SM		Reddish Brown (2.5YR 4/4) fine to medium SAND and Silt, little fine sub-round Gravel, soft to medium dense.	EF-B38_7.5
9			wet	10	SP-SM		No Recovery	
10		0						
11		0	wet	10	SP-SM		Same as above, little fine to medium sub-round Gravel.	EF-B38_11.0
12								
13	2		wet	10	SP-SM		No Recovery	
14								
15		0						
16		0	moist	10	SP-SM		Same as above, little fine to medium sub-round Gravel.	EF-B38_16.0
17			moist	10	SP-SM		No Recovery	
18	1.4							
19								
20		0						
21	2	0	moist	10	SP-SM		Same as above, little fine to medium sub-round Gravel.	EF-B38_21.0
22			wet	10	SP-SM		Reddish Brown (2.5YR 4/4) fine SAND, some Silt, trace fine angular Gravel at 21.9 ft, loose to medium dense. No odor.	
23			wet	10	SP-SM		No Recovery	
24							Refusal at 23 ft.	
25								
26								
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Comments: No COPR/GGM identified at this location.

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Boring ID: EF-39

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610822.756
Date Started Drilling: 4/25/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683631.856
Date Finished Drilling: 4/26/2011	**Core Size:** 2 in	**Boring Total Depth:** 25 ft
Logged By: E. Acs, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 4.4 ft
Physical Location: Garfield Avenue, near center of French Park Building		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	3	OL		Topsoil and Grass	EF-B39_0.5
			dry	6	Fill		Black to Very Dark Gray (10YR 3/3) fine to medium SAND, little	
2		0	to	3	Fill		fine to coarse Gravel, Ash and Cinders, little Silt, loose. No	EF-B39_2.0
3		0	moist				odor.	EF-B39_2.5
			moist				Reddish Brown (5YR 4/4) fine to medium SILTY SAND, trace Clay, loose. No odor.	
4		0						EF-B39_4.0
5		0	moist	3	Fill		Very Dark Gray (10YR 3/1) SILT, little Clay, trace fine to	
			wet	3	Fill		medium Sand and Gravel, organics, medium stiff.	
6		0					Brown (7.5YR 4/3) SILT, some fine Sand, trace medium angular Gravel and Clay, slight Black staining, very soft.	EF-B39_6.0
7			moist	10	SP-SM		Reddish Brown (2.5YR 4/4) SILT and medium SAND, some fine	
	2		moist	10	SP-SM		to medium angular Gravel, trace Clay, dense. No odor.	
8							No Recovery	
9								
10								
11		0						EF-B39_11.0
12		0	moist	10	SP-SM		Reddish Brown (2.5YR 4/4) and Weak Red (10R 4/4) coarse SAND and SILT, some fine to medium Gravel and Mudstone fragments, dense. No odor.	
	2							
13								
14			moist	10	SP-SM		No Recovery	
15								
16		0						
17		0	moist	10	SP-SM		Reddish Brown (2.5YR 4/4) fine SAND and SILT, little fine angular Gravel, medium dense. No odor.	EF-B39_17.0X
	2							EF-B39_17.0
18								
19			moist	10	SP-SM		No Recovery	
20		0						EF-B39_20.0
21			moist	10	SP-SM		Same as above, little medium angular Gravel. Liner in core barrel shattered, only 1 ft of recovery left for sample.	
22			moist	10	SP-SM		No Recovery	
	1							
23								
24								
25								
26							End of boring at 25 ft.	
27								
28								
29								
30								
31								
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Comments: No COPR/GGM identified at this location.

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Boring ID: EF-40

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610859.097
Date Started Drilling: 4/25/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683692.277
Date Finished Drilling: 4/26/2011	**Core Size:** 2 in	**Boring Total Depth:** 25 ft
Logged By: E. Acs, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 4.6/20 ft
Physical Location: Garfield Avenue, near north end of French Park Building		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	3	OL		Topsoil and Grass	EF-B40_0.5
2		0	dry	3	Fill		Black to Very Dark Gray (10YR 3/3) fine to medium SAND, little fine to coarse Gravel, Ash and Cinders, little Silt, loose. No odor.	EF-B40_2.0
3		0	dry	3	Fill		Reddish Brown (5YR 4/4) fine to medium SILTY SAND, trace fine to coarse Gravel, loose. No odor.	EF-B40_2.5
4		0	moist	3	Fill		Very Dark Gray (10YR 3/1) SILT, little Clay, trace fine to medium Sand and Gravel, organics, medium stiff.	EF-B40_4.0
5		0	wet	3	Fill		Same as above.	
6		0						EF-B40_6.0
7		0						
8	3.6	0	moist	3	Fill		Dark Grayish Brown (10YR 4/2) SILT, interbedded with Yellowish Brown (10YR 5/6) fine Sand, medium dense. No odor.	EF-B40_7.5
9			moist	10	SP-SM		Reddish Brown (2.5YR 4/4) fine SAND and SILT, little fine angular Gravel, medium dense. No odor.	
10		0	moist	10	SP-SM		No Recovery	
11		0	moist	10	SP-SM		Same as above, fine to coarse SAND.	EF-B40_11.0
12								
13	2		moist	10	SP-SM		No Recovery	
14								
15		0						EF-B40_15.0
16			moist	10	SP-SM		Same as above, fine to coarse SAND.	
17			moist	10	SP-SM		No Recovery	
18	0.3							
19								
20		0						
21		0	wet	10	SP-SM		Reddish Brown (2.5YR 4/4) SILT and medium SAND, some fine to medium angular Gravel and coarse Sand, dense. No odor.	
22		0					Core liner shattered in Core Barrel.	
23	2.5		wet	10	SP-SM		No Recovery	
24								
25								
26							End of boring at 25 ft.	
27								
28								
29								
30								
31								
32								
33								
34								
35								

Comments: No COPR/GGM identified at this location.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: EF-41

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610927.99
Date Started Drilling: 4/26/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683804.273
Date Finished Drilling: 4/29/2011	**Core Size:** 2 in	**Boring Total Depth:** 22 ft
Logged By: B. Daniels, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 3.3 ft
Physical Location: Garfield Avenue, near French Park Parking Lot		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	2	Fill		Black Asphalt	EF-B41_0.5
			dry	3	Fill		Brown (7.5YR 4/3) fine to medium SAND, little Silt and fine to medium angular Gravel, little Fill Material (ash, cinders, slag), loose. No odor.	
2		0	moist	3	Fill			EF-B41_2.0
3		0	moist	3	Fill		Black (7.5YR 2.5/1) fine SANDY SILT, trace fine angular Gravel and Fill Material (debris), soft. Organic odor.	EF-B41_2.5X EF-B41_2.5
4		0	wet	3	Fill		Brown (7.5YR 4/3) CLAYEY SILT, trace fine to coarse angular Gravel, medium stiff. No odor.	EF-B41_4.0
5		0					Strong Brown (7.5YR 5/6) SILT and very fine SAND, soft. No odor.	
6		0						
7		0	wet	10	SP		Reddish Brown (5YR 4/4) very fine and fine SAND, trace Silt, loose. No odor.	EF-B41_7.0
8	2.7		wet	10	SP		No Recovery	
9								
10		0						
11		0	moist	10	SP-SM		Weak Red (10YR 4/4) fine SAND and fine sub-round GRAVEL, little Silt, medium dense. No odor.	
			moist	10	SP-SM			
12		0	to				Black to Strong Brown (7.5YR 5/6) to Reddish Brown (5YR 4/4) SILT graded to fine Sand, trace Shells, medium firm to loose. No odor.	
13	5	0	wet					EF-B41_12.5
14		0						
15		0	moist	10	ML		Reddish Brown (5YR 4/4) SILT, some fine sub-angular Gravel, dense. No odor.	
16		0	wet	10	ML		Strong Brown to Reddish Brown SILT, some fine to medium Sand, trace fine angular Gravel, loose. No odor.	
17		0						
18	3.8		moist	11	GP-GM		Reddish Brown (2.5YR 4/4) fine to medium SAND and GRAVEL, angular, some Silt, dense. No odor.	EF-B41_17.5
19								
20		0	moist	11	GP-GM		No Recovery	EF-B41_20.0
21	0.5		moist	11	GP-GM		Same as above.	
			moist	11	GP-GM		No Recovery	
22								
23							Refusal at 22 ft.	
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Comments: No COPR/GGM identified at this location.

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Boring ID: EF-42

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 611001.931
Date Started Drilling: 4/26/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683907.586
Date Finished Drilling: 4/29/2011	**Core Size:** 2 in	**Boring Total Depth:** 25 ft
Logged By: B. Daniels, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 3.5 ft
Physical Location: Garfield Avenue, near Light Rail		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	3	Fill		Brown (7.5YR 4/2) fine to coarse angular GRAVEL and fine to medium SAND, trace Fill Material (brick) and organics, loose. No odor.	EF-B42_0.5
2		0						EF-B42_2.0
3		0	moist	3	Fill		Very Dark Brown (7.5YR 2.5/2) CLAY and SILT, trace fine to coarse angular Gravel and Fill Material (brick), medium stiff. No odor.	EF-B42_2.5
4		0	wet	3	Fill		Same as above.	EF-B42_4.0
5		0						
6		0	wet	3	Fill		Dark Brown (7.5YR 3/4) fine to medium angular GRAVEL, trace Silt, loose. No odor.	EF-B42_6.0
7	1.6	0	moist	3	Fill		Dark Grayish Brown (10YR 4/2) SILT, grading to very fine Sand and Silt, trace Shells, soft. No odor.	
8			moist	3	Fill		No Recovery	
9								
10		0						
11		0	moist to wet	3	Fill		Dark Gray (10YR 4/1) SILT, some interbedded medium Sand and fine angular Gravel, soft. No odor.	EF-B42_10.5
12	1.2		wet	3	Fill		No Recovery	
13								
14								
15		0						
16		0	moist	10	SP-SM		Reddish Brown (2.5YR 4/4) fine SAND, little Silt, trace fine angular Gravel, dense. No odor.	EF-B42_16.0
17	1.8		moist	10	SP-SM		No Recovery	
18								
19								
20		0						
21		0	moist	10	ML		Reddish Brown (2.5YR 4/4) SILT, some very fine Sand, little medium angular Gravel, dense. No odor.	EF-B42_21.0
22	1.6		moist	10	ML		No Recovery	
23								
24								
25								
26							End of boring at 25 ft.	
27								
28								
29								
30								
31								
32								
33								
34								
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Comments: No COPR/GGM identified at this location.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: EF-43

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 611069.834
Date Started Drilling: 4/26/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683962.263
Date Finished Drilling: 4/29/2011	**Core Size:** 2 in	**Boring Total Depth:** 25 ft
Logged By: B. Daniels, M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 3.5 ft
Physical Location: Garfield Avenue, near Light Rail		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0		1	Fill		Concrete	EF-B43_0.5
			dry to moist	3	Fill		Brown (7.5YR 4/3) fine to coarse SAND and SILT, some-little fine to coarse angular Gravel, trace Fill Material (slag) and Boulders, loose. No odor.	
2		0						EF-B43_2.0
3		0	moist	3	Fill		Brown (7.5YR 4/2) CLAY and Silt, little fine to medium Sand and Gravel, trace Fill Material, soft. No odor.	EF-B43_2.5
4		0	wet	3	Fill		Brown (7.5YR 4/2) SILT and fine Sand, little fine to medium Gravel, medium dense. No odor.	EF-B43_4.0
5		0						
6		0	moist	3	Fill		Dark Grayish Brown (10YR 4/2) SILT, some fine Sand, trace fine angular Gravel and Cobbles, soft. No odor.	EF-B43_6.0
7	1.7		moist	3	Fill		No Recovery	
8								
9								
10		0						
11		0	moist	3	Fill		Same as above, some Gray to Green mottling, trace Shells.	EF-B43_11.0
12								
13	2		moist	10	SP-SM		Reddish Brown (2.5YR 4/4) fine SAND and SILT, medium dense. No odor.	
14			moist	10	SP-SM		No Recovery	
15		0						
16		0	moist	10	ML		Reddish Brown (2.5YR 4/4) to Weak Red (10R 4/4) SILT, some medium Sand, little medium angular Gravel, dense. No odor.	EF-B43_16.0
17	1.7		moist	10	ML		No Recovery	
18								
19								
20		0						
21		0	wet	10	ML		Black SILT, semi-cohesive, firm. No odor.	EF-B43_21.0
22	2.3		wet to moist	10	ML		Reddish Brown (2.5YR 4/4) SILT, some fine to coarse Sand and fine to medium angular Gravel, soft to medium dense. No odor.	
23			moist	10	ML		No Recovery	
24								
25								
26							End of boring at 25 ft.	
27								
28								
29								
30								
31								
32								
33								
34								
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Comments: No COPR/GGM identified at this location.

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30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: EF-45

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) x:** 610816.912
Date Started Drilling: 4/29/2011	**Rig Type:** Airknife/Geoprobe	**Coordinates (NJSPNAD83) y:** 683499.942
Date Finished Drilling: 4/29/2011	**Core Size:** 2 in	**Boring Total Depth:** 3 ft
Logged By: M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** 1.0 ft
Physical Location: On Site 114, near MW-1		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1	2	0 0	dry	3	Fill		Dark Gray Brown (10YR 4/2) SILT, mottled, medium dense. No odor.	
2			wet	6	Fill		Black CINDERS and ASH, some Silt, little fine Sand, loose. No odor.	EF-B45_1.5
3			wet	6	Fill		No Recovery	
							End of boring at 3 ft.	

Comments: No COPR/GGM identified at this location.

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30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: EF-71

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife	**Coordinates (NJSPNAD83) x:** 610997.133
Date Started Drilling: 6/8/2011	**Rig Type:** Airknife	**Coordinates (NJSPNAD83) y:** 683898.779
Date Finished Drilling: 6/8/2011	**Core Size:** 2 in	**Boring Total Depth:** 3 ft
Logged By: M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** N/A ft
Physical Location: On Garfield Avenue, near Light Rail.		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	3	Fill		TOPSOIL and Grass	
				3	Fill		Brown (7.5YR 4/2) SILT and medium SAND, some medium to coarse angular Gravel and Fill (brick, concrete, slag, coal, asphalt), trace organics, loose. No odor.	
2		0	dry	6	Fill			
3			moist	9	CL-ML		Black SILT and CINDERS, little Coal fragments, interbedded with Strong Brown (7.5YR 5/6) medium Silty Sand (40%), loose. No odor.	EF-B71_2.5X EF-B71_2.5
4							Interbedded Weak Red (10YR 4/3) SILT and Gray (Gley1 6/0) SILTY CLAY, trace coarse Sand, semi-cohesive, soft. No odor.	
5							End of boring at 3 ft.	
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Comments: No COPR/GGM identified at this location.

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Boring ID: EF-72

Project Name: PPG Soil RIWP	**Drilling Company:** SGS	
Project Number: 6015-4801	**Drilling Method:** Airknife	**Coordinates (NJSPNAD83) x:** 611011.37
Date Started Drilling: 6/8/2011	**Rig Type:** Airknife	**Coordinates (NJSPNAD83) y:** 683913.719
Date Finished Drilling: 6/8/2011	**Core Size:** 12 in	**Boring Total Depth:** 3 ft
Logged By: M. Merdinger	**Project Manager:** Robert Cataldo	**Depth to Water:** N/A ft
Physical Location: On Garfield Avenue, near Light Rail.		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number
1		0	dry	3	Fill		TOPSOIL and Grass	
			dry	3	Fill		Brown (7.5YR 5/3) fine to medium SAND and medium to coarse angular Gravel, some Silt, little Fill Material (coal, concrete), loose. No odor.	
2		0	moist	6	Fill			
3			moist	9	CL-ML		Black medium SAND and CINDERS, little medium Coal fragments, loose. No odor.	EF-B72_2.5
4							Interbedded Weak Red (10YR 4/3) SILT and Gray (Gley1 6/0) SILTY CLAY, trace Cobbles and Black fine Sand, semi-cohesive, soft. No odor.	
5							End of boring at 3 ft.	
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35								

Comments: No COPR/GGM identified at this location.

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Boring ID: EF-115

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Soft Dig	**Coordinates (NJSPNAD83) x:** 611124.827669
Date Started Drilling: 9/5/2012 1:20:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683932.117083
Date Finished Drilling: 9/5/2012 1:45:00 PM	**Core Size:** 2 in	**Boring Total Depth:** 4.5 ft
Logged By: Ben Daniels	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: Garfield Avenue		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
	4.5			CONCRETE		CONCRETE	
1			wet	FILL		silty SAND, some fine to medium gravel, (7.5YR 2.5/2) very dark brown, wet, no odor, angular	EF-B115-0.5-1.0
2							EF-B115-2.0-2.5
3			wet	FILL		FILL MATERIAL, (5GY 5/1) greenish gray, wet, no odor green staining, Crushed fill.	
4							EF-B115-4.0-4.5

Comments:

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Boring ID: EF-118

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60154801	**Drilling Method:** Soft Dig/Geoprobe	**Coordinates (NJSPNAD83) x:** 610626.8125
Date Started Drilling: 8/31/2012 9:07:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683334.4375
Date Finished Drilling: 8/31/2012 11:00:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 20 ft
Logged By: Ben Daniels	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location:		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
				1	CONCRETE		CONCRETE	
1			moist	3	FILL		silty SAND, and fine to coarse gravel trace fill material, (7.5YR 4/3) brown, moist, no odor, subangular, (coal, concrete, asphalt) trace organics.	
2			wet	3	FILL		SILT, little fine to medium sand and fine to coarse gravel, (7.5YR 5/4) brown, wet, no odor, angular, Trace fill material (wood fragments). Wet at 2 f t.	
3								
4								
5	33.6		moist	10	ML		SILT, little fine to medium gravel, (7.5YR 4/4) brown, stiff, moist, no odor, angular	EF-B118-5.0-5.5
6								
7			moist	10	ML		SILT, little fine to medium gravel, (5YR 4/4) reddish brown, soft, moist, no odor, angular	EF-B118-7.0-7.5
8								
9								
10	44.4		dry	10	ML		SILT, little fine to coarse sand and fine to coarse gravel, (5YR 4/3) reddish brown, stiff, dry, no odor, angular	
11								
12								
13								
14								
15	30		wet	10	SW		fine to medium SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, dense, wet, no odor, angular	
16								EF-B118-16.0-16.5
17			wet	10	SP		fine SAND, (5YR 4/3) reddish brown, dense, wet, no odor	
			wet	10	SP			
			wet	11	GW		fine SAND, little coarse sand and fine to medium gravel, (7.5YR 4/4) brown, dense, wet, no odor, angular	EF-B118-17.0-17.5
18							medium to coarse GRAVEL, (5YR 4/3) reddish brown, loose, wet, no odor, angular, Pulverized rock.	
19								
20								

Comments:

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Boring ID: EF-119

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60154801	**Drilling Method:** Soft Dig/Geoprobe	**Coordinates (NJSPNAD83) x:** 610579
Date Started Drilling: 8/31/2012 9:06:00 AM	**Rig Type:** Geoprobe	**Coordinates (NJSPNAD83) y:** 683356.6875
Date Finished Drilling: 8/31/2012 10:33:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 7.40000009536743 ft
Logged By: Ben Daniels	**Project Manager:** Chris Martell	**Depth to Water:**
Physical Location:		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
				1	CONCRETE		CONCRETE	
1		0.0	moist	3	FILL		fine to medium SAND, little silt and fine to medium gravel, (7.5YR 5/3) brown, moist, no odor, angular, Trace fill material (coal, brick)	
2		0.0	moist	10	ML		SILT, little fine to coarse sand and fine to coarse gravel, (5YR 5/4) reddish brown, moist, angular	
3								
4								EF-B119-4.0-4.5
5								
6	16.8		moist	10	ML		SILT, little fine to medium sand and fine to medium gravel, (5YR 4/4) reddish brown, medium soft, moist, no odor, angular	EF-B119-6.0-6.5
7								

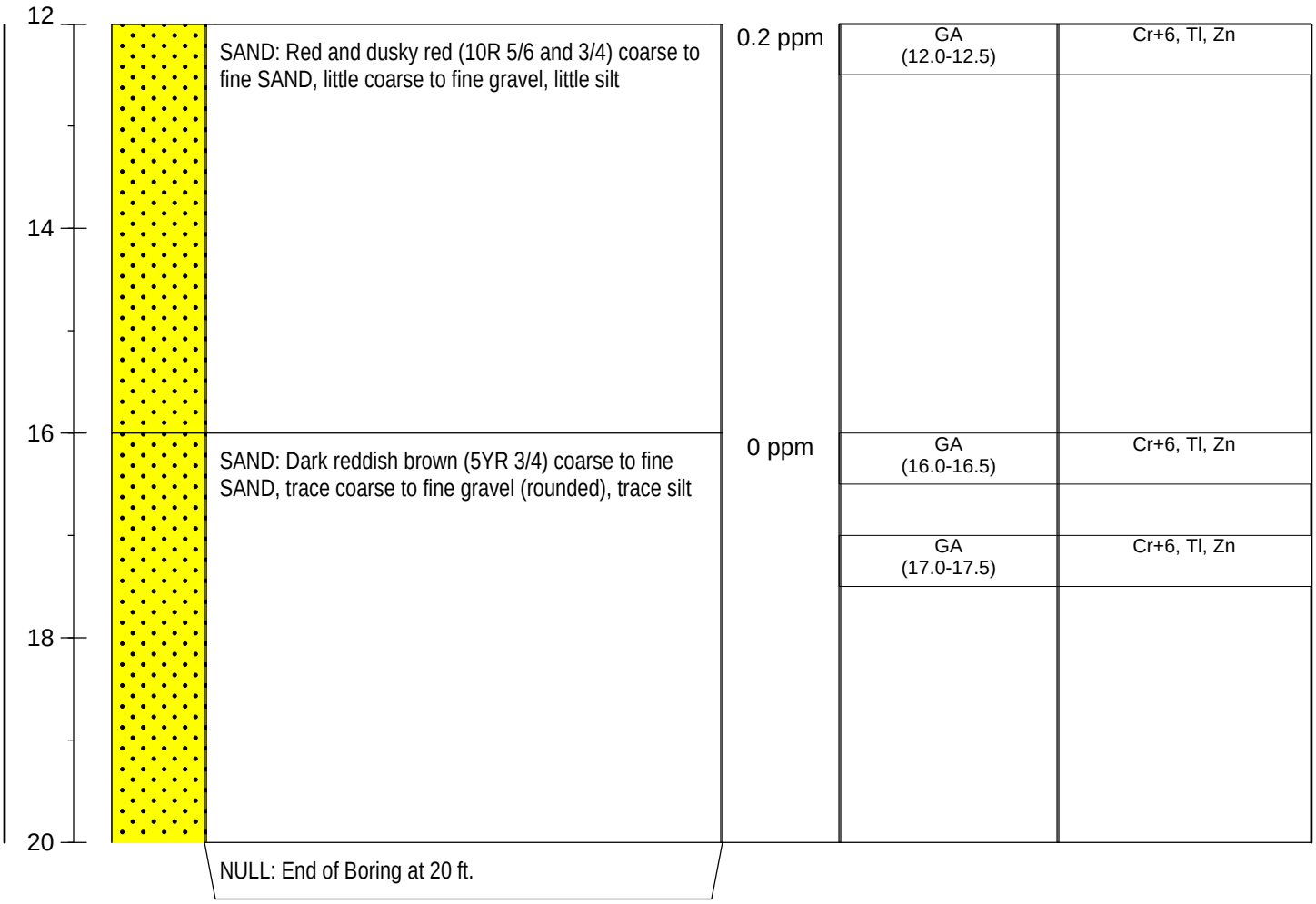
Comments:

ENSR | AECOM	Client: **PPG**	BORING ID: **GA**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/15/2004	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610700.73 Y-683335.9	Depth of Boring: 20.00
End Date: 3/15/2004	Elevation: 13.94	Geologist: R. Feinberg
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		CEMENT: Concrete (2"")		GA (0.1-0.5)	Cr+6, Tl, Zn
		FILL: Grayish brown (10YR 5/2) coarse to fine SAND, little coarse to fine gravel, trace silt, trace crushed rock/Red and weak red (10R 4/6 and 2.5Y 4/2) clayey SILT, trace fine sand, trace coal		GA (0.8-1.8)	Cr+6, Tl, Zn
2					
4		FILL: Reddish gray, black and reddish brown (2.5YR 5/1, 5YR 2.5/1 and 4/4) coarse to fine SAND, some coarse to fine gravel, trace silt, (coal ash), dry (14"")/Very dark gray, dark brown and black (10YR 3/1 and 3/3, GLEY1 2.5/N) SILT, some coarse to fine sand	0.1 ppm	GA (4.0-4.5)	Cr+6, Tl, Zn
				GA (5.2-6.2)	Cr+6, Tl, Zn (includes duplicate)
6					
8		FILL: Dusky red (2.5YR 3/2) coarse to fine SAND, trace coarse to fine gravel, trace silt, trace vegetation	0.6 ppm	GA (8.0-8.5)	Cr+6, Tl, Zn
				GA (8.5-9.0)	Cr+6, Tl, Zn
10		SILT: Very dark grayish brown (10YR 3/2) clayey SILT, wet (27"")/Dark brown (7.5YR 3/2) coarse to fine SAND, little silt			
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **GA**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/15/2004	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610700.73 Y-683335.9	Depth of Boring: 20.00
End Date: 3/15/2004	Elevation: 13.94	Geologist: R. Feinberg
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12		SAND: Red and dusky red (10R 5/6 and 3/4) coarse to fine SAND, little coarse to fine gravel, little silt	0.2 ppm	GA (12.0-12.5)	Cr+6, Tl, Zn
16		SAND: Dark reddish brown (5YR 3/4) coarse to fine SAND, trace coarse to fine gravel (rounded), trace silt	0 ppm	GA (16.0-16.5)	Cr+6, Tl, Zn
				GA (17.0-17.5)	Cr+6, Tl, Zn
20		NULL: End of Boring at 20 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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Boring ID: GAR-PDI-A`1B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610894.693
Date Started Drilling: 10/30/2016 11:40:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683689.094
Date Finished Drilling: 10/30/2016 12:40:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.5
Physical Location: Actual- GA PDI		**Surface Elevation:** 10.302 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	4.5		moist	FILL		fine silty SAND, little fill debris, (5YR 2.5/1) black, medium dense, moist, no odor, no staining, water at 3.5 feet.	GAR-PDI-A'1B-1.5-2.0
3							
4							GAR-PDI-A'1B-3.5-4.0
5				NR		NO RECOVERY	
6	5	0.0	wet	FILL		SILT, trace fill debris, (5YR 4/1) dark gray, firm, wet, no odor, no staining.	GAR-PDI-A'1B-5.5-6.0
7							GAR-PDI-A'1B-6.5-7.0
8				FILL		WOOD, no odor, no staining.	
9							
10							
11	5	0.0	wet	SW		fine to coarse silty SAND, trace fine to coarse gravel, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'1B-10.0-10.5
12							GAR-PDI-A'1B-11.5-12.0
13							
14							GAR-PDI-A'1B-13.5-14.0
15	5	0.0	wet	SW		fine to coarse SAND, trace fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-A'1B-15.5-16.0
17							
18							GAR-PDI-A'1B-17.5-18.0
19							
20	1	0.0					GAR-PDI-A'1B-19.5-20.0
21							GAR-PDI-A'1B-20.0-20.5

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:02

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-A`2B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610909.636
Date Started Drilling: 10/30/2016 10:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683713.76
Date Finished Drilling: 10/30/2016 11:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.0
Physical Location: Actual- GA PDI		**Surface Elevation:** 10.378 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	4		moist	FILL		fine to medium SAND, little fill debris, (7.5YR 3/4) dark brown, moist, no odor, no staining.	GAR-PDI-A'2B-1.5-2.0
3			moist	FILL		medium to coarse GRAVEL, little ash, trace cinders, (5YR 2.5/1) black, medium dense, moist to wet, no odor, no staining, water at 3.0 feet.	
4			wet	FILL		SILT, trace wood, fill debris and shells, (5YR 6/1) gray, soft, wet, no odor, no staining.	GAR-PDI-A'2B-3.5-4.0
5				NR		NO RECOVERY	
6	5	0.0	wet	FILL		SILT, some fill debris, little wood, (5YR 6/1) gray, soft, wet, no odor, no staining.	GAR-PDI-A'2B-5.5-6.0
7							GAR-PDI-A'2B-7.5-8.0
8			wet	ML		SILT, trace fine sand, (5YR 6/3) light reddish brown, firm, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'2B-8.0-8.5
9			wet	SM		fine to coarse silty SAND, trace fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'2B-9.5-10.0
10		0.0					
11	5						GAR-PDI-A'2B-11.5-12.0
12							
13							GAR-PDI-A'2B-13.5-14.0
14							
15		0.0	wet	SM		fine silty SAND, little fine gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'2B-15.5-16.0
16							
17	5						GAR-PDI-A'2B-17.5-18.0
18							
19							GAR-PDI-A'2B-19.5-20.0
20	1	0.0					GAR-PDI-A'2B-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:02

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Boring ID: GAR-PDI-A`3A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610832.341
Date Started Drilling: 1/8/2017 10:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683587.673
Date Finished Drilling: 1/8/2017 10:55:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 7.5 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.017 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		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2							
3			dry to wet	FILL		SILT, little fine to medium sand, trace fill debris, (7.5YR 3/4) dark brown, firm, dry to wet, no odor, no staining, water at 6.0 feet. Refusal at 7.5 feet.	
4							
5	2.5	0.0					
6							
7							

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

Comments: 1) 3 attempts were made to obtain best recovery 2) No CCPW (COPR or GGM) present in any interval of this boring.

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Boring ID: GAR-PDI-A`3B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610925.569
Date Started Drilling: 10/23/2016 12:20:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683740.349
Date Finished Drilling: 10/23/2016 1:10:00 PM	**Core Size:**	**Boring Total Depth:** 21 ft
Logged By: KW	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.448 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	4.5	0.0		ASPHALT		ASPHALT	
				CONCRETE		Concrete slab	
1			dry to moist	FILL		fine silty SAND, trace fill debris, (7.5YR 3/3) dark brown, dense, dry to moist, no odor, no staining.	GAR-PDI-A'3B-1.0-1.5
2							
3			saturated	FILL		CINDERS, some ash, (5YR 6/1) gray, loose, saturated, no odor, no staining, water at 3.5 feet.	GAR-PDI-A'3B-3.0-3.5
4			saturated	FILL		fine to medium silty SAND, trace fill debris, (5YR 2.5/1) black, medium dense, saturated, no odor, no staining.	
5				NR		No Recovery	
5	5	0.0	saturated	FILL		CINDERS, some ash, little wood, (5YR 2.5/1) black, loose, saturated, no odor, no staining.	GAR-PDI-A'3B-5.0-5.5
6							GAR-PDI-A'3B-6.0-6.5
7			saturated	ML		SILT, (5YR 6/1) gray, stiff, saturated, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'3B-6.5-7.0
							GAR-PDI-A'3B-7.0-7.5
8			saturated	ML		SILT, (7.5YR 6/3) light brown, stiff, saturated, no odor, no staining. Soils consistent with UNDno.	
9							GAR-PDI-A'3B-9.0-9.5
10	5	0.0	saturated	SM		fine to coarse silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, dense, saturated, no odor, no staining. Soils consistent with UNDno.	
11							GAR-PDI-A'3B-11.0-11.5
12							
13							GAR-PDI-A'3B-13.0-13.5
14							
15	5	0.0	saturated	SW		fine to coarse SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, loose, saturated, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'3B-15.0-15.5
16							
17							GAR-PDI-A'3B-17.0-17.5
18							
19			saturated	SP		fine SAND, some fine to coarse gravel, (5YR 4/3) reddish brown, very dense, saturated, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'3B-19.0-19.5
20	1	0.0					GAR-PDI-A'3B-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A`4B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610941.377
Date Started Drilling: 10/23/2016 11:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683767.313
Date Finished Drilling: 10/23/2016 12:15:00 PM	**Core Size:**	**Boring Total Depth:** 21 ft
Logged By: KW	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.559 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
				CONCRETE		Concrete slab	
1			dry to moist	FILL		fine to medium silty SAND, trace fill debris, (5YR 2.5/1) black, dense, dry to moist, no odor, no staining.	GAR-PDI-A'4B-1.0-1.5
2	3.5						
3							GAR-PDI-A'4B-3.0-3.5
4				NR		No Recovery	
5		0.0	saturated	FILL		fine to medium silty SAND, trace fill debris, (5YR 2.5/1) black, medium dense, saturated, no odor, no staining, water at 5.5 feet.	GAR-PDI-A'4B-5.0-5.5
							GAR-PDI-A'4B-5.5-6.0
6			saturated	ML		SILT, little fine sand, (7.5YR 6/3) light brown, firm, saturated, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'4B-6.0-6.5
7	4.5						GAR-PDI-A'4B-7.0-7.5
8							
9							GAR-PDI-A'4B-9.0-9.5
10				NR		No Recovery	
		0.0	wet	SP		fine to coarse SAND, trace fine to coarse gravel, (5YR 4/3) reddish brown, loose, wet, no odor, no staining. Soils consistent with UNDno.	
11			saturated	SM		fine to medium silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, dense, saturated, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'4B-11.0-11.5
12	4						
13							GAR-PDI-A'4B-13.0-13.5
14				NR		No Recovery	
15		0.0	wet	ML		SILT, (7.5YR 6/3) light brown, soft, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'4B-15.0-15.5
			saturated	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/3) reddish brown, dense, saturated, no odor, no staining. Soils consistent with UNDno.	
16							
17	5						GAR-PDI-A'4B-17.0-17.5
18							
19							GAR-PDI-A'4B-19.0-19.5
20	1	0.0					GAR-PDI-A'4B-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:02

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A`5B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610954.148
Date Started Drilling: 10/23/2016 10:25:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683788.677
Date Finished Drilling: 10/23/2016 11:15:00 AM	**Core Size:**	**Boring Total Depth:** 21 ft
Logged By: KW	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.732 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	4		moist	FILL		SILT, little cinders, trace ash and fill debris, (7.5YR 3/3) dark brown, soft, moist, no odor, no staining.	GAR-PDI-A'5B-1.5-2.0
3							
4				NR		No Recovery	GAR-PDI-A'5B-3.5-4.0
5	5	0.0	wet	FILL		SILT, trace ash and fill debris, (5YR 2.5/1) black, soft, wet, no odor no staining, water at 5.0 feet.	GAR-PDI-A'5B-5.0-5.5
6			wet	ML		SILT, trace fine sand, (5YR 6/3) light reddish brown, firm, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'5B-5.5-6.0
7							
8							GAR-PDI-A'5B-7.5-8.0
9							
10							GAR-PDI-A'5B-9.5-10.0
11	5	0.0	saturated	SM		fine silty SAND, trace fine gravel, (5YR 4/3) reddish brown, loose, saturated, no odor, no staining. Soils consistent with UNDno.	
12							GAR-PDI-A'5B-11.5-12.0
13							
14							GAR-PDI-A'5B-13.5-14.0
15	5	0.0	saturated	SM		fine to medium silty SAND, some fine to coarse gravel, (5YR 4/3) reddish brown, dense, saturated, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-A'5B-15.5-16.0
17							
18							GAR-PDI-A'5B-17.5-18.0
19							
20	1	0.0					GAR-PDI-A'5B-19.5-20.0
21							GAR-PDI-A'5B-20.0-20.5

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:02

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A`6A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610801.306
Date Started Drilling: 11/17/2016 11:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683501.142
Date Finished Drilling: 11/17/2016 12:15:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.478 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 sidewalk	
1–5			wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, wet, no odor, no staining, water at 4.0 feet.	
5–6	4	0.0	wet	FILL		fine to medium SAND, some ash, little fill debris, (5Y 2.5/2) black, loose, wet, no odor, no staining.	GAR-PDI-A'6A-6.0-6.5
6–7			moist	SP		fine to medium SAND, trace silt, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6A-6.5-7.0
7–8			wet	ML		SILT, (7.5YR 4/3) brown, soft, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6A-8.0-8.5
8–9				NR		NO RECOVERY	
9–10	5	0.0	wet	SM		fine silty SAND, (2.5Y 5/2) grayish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6A-10.0-10.5
10–14			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6A-14.0-14.5
14–15	5	0.0					
15–16							GAR-PDI-A'6A-16.0-16.5
16–18							GAR-PDI-A'6A-18.0-18.5
18–20	1	0.0	wet	SM		fine to medium silty SAND, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6A-20.0-20.5
20–21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:02

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A`6B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610971.311
Date Started Drilling: 10/23/2016 9:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683816.329
Date Finished Drilling: 10/23/2016 10:25:00 AM	**Core Size:**	**Boring Total Depth:** 21 ft
Logged By: KW	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.968 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	4		moist	FILL		SILT, some ash, cinders, concrete and fill debris, (7.5YR 3/4) dark brown, firm, moist, no odor, no staining.	GAR-PDI-A'6B-1.5-2.0
3							GAR-PDI-A'6B-3.5-4.0
4				NR		No Recovery	
5	5	0.0	saturated	FILL		SILT, some ash and cinders, (5YR 2.5/1) black, soft, saturated, no odor, no staining, water at 5.0 feet.	GAR-PDI-A'6B-5.0-5.5
6			saturated	ML		SILT, trace fine sand, (5YR 6/3) light reddish brown, firm, saturated, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6B-5.5-6.0
7							
8							GAR-PDI-A'6B-7.5-8.0
9							
10							GAR-PDI-A'6B-9.5-10.0
11	4	0.0	saturated	SM		fine to medium silty SAND, trace fine to medium gravel, (5YR 4/3) reddish brown, very dense, saturated, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6B-11.5-12.0
12			saturated	ML		SILT, little fine sand, trace fine gravel, (5YR 4/4) reddish brown, stiff, saturated, no odor, no staining. Soils consistent with UNDno.	
13							GAR-PDI-A'6B-13.5-14.0
14				NR		No Recovery	
15	5	0.0	wet	SM		fine to medium silty SAND, some fine to coarse gravel, (5YR 3/2) dark reddish brown, very dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'6B-15.5-16.0
16							
17							GAR-PDI-A'6B-17.5-18.0
18							
19							GAR-PDI-A'6B-19.5-20.0
20	1	0.0					GAR-PDI-A'6B-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:02

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-A`7B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610966.756
Date Started Drilling: 1/29/2017 1:30:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683855.766
Date Finished Drilling: 1/29/2017 2:30:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.468 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1			moist	FILL		fine to medium SAND, little fine to medium gravel, (7.5YR 4/2) brown, loose, moist, no odor, no staining.	GAR-PDI-A'7B-0.5-1.0
2	4.5		moist to wet	FILL		SILT, little fine sand and fill debris, (7.5YR 2.5/2) very dark brown, medium stiff, moist to wet, no odor, no staining, water at 4.5 feet.	GAR-PDI-A'7B-2.0-2.5
3							
4							
5				NR		NO RECOVERY	
6	5	0.0	wet	FILL		SILT, little fine sand, (7.5YR 5/1) gray, medium stiff, wet, no odor, no staining.	GAR-PDI-A'7B-6.0-6.5 GAR-PDI-A'7B-6.5-7.0
7			wet	SM		fine SAND, little silt, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'7B-7.0-7.5
8							
9							
10	4.5	0.0	wet	SM		fine SAND, some medium to coarse gravel, trace silt, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'7B-10.0-10.5
11							
12							
13							
14							GAR-PDI-A'7B-14.0-14.5
15				NR		NO RECOVERY	
16	5	0.0	wet	SP		fine to coarse SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
17							
18							GAR-PDI-A'7B-18.0-18.5
19							
20	1	0.0					GAR-PDI-A'7B-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-A`8A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610770.426
Date Started Drilling: 11/10/2016 8:40:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683450.248
Date Finished Drilling: 11/10/2016 9:40:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.818 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 sidewalk	
			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
5	5	0.0	moist	FILL		fine to medium SAND, little fill debris, trace silt and wood, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	GAR-PDI-A'8A-6.0-6.5
							GAR-PDI-A'8A-7.5-8.0
8			moist	SM		fine silty SAND, little organics, (7.5YR 3/3) dark brown, medium dense, moist, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A'8A-8.0-8.5
10	5	0.0	wet	SM		fine silty SAND, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'8A-10.0-10.5
12							GAR-PDI-A'8A-12.0-12.5
			wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-A'8A-14.0-14.5
15	5	0.0					
16							GAR-PDI-A'8A-16.0-16.5
18							GAR-PDI-A'8A-18.0-18.5
20	1	0.0					GAR-PDI-A'8A-20.0-20.5
21							

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A`8B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610979.949
Date Started Drilling: 2/19/2017 11:15:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683876.395
Date Finished Drilling: 2/19/2017 12:15:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.565 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1	3.5		dry to moist	FILL		fine to coarse SAND, little fine to coarse gravel, (7.5YR 4/2) brown, loose, dry to moist, no odor, no staining.	GAR-PDI-A'8B-0.5-1.0
2			moist	FILL		fine to medium sandy SILT, little fine to medium gravel and fill debris, (7.5YR 3/2) dark brown, medium stiff, moist, no odor, no staining.	GAR-PDI-A'8B-1.0-1.5
3							GAR-PDI-A'8B-3.0-3.5
4				NR		NO RECOVERY	
5	4.5	0.0	moist to wet	FILL		fine to medium sandy SILT, little fill debris and seashells (7.5YR 3/2) dark brown, medium stiff, moist to wet, no odor, no staining, water at 6.0 feet.	GAR-PDI-A'8B-5.0-5.5
6							GAR-PDI-A'8B-6.5-7.0
7			wet	SM		fine SAND, little silt, trace fine gravel, (5Y 5/2) olive gray, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'8B-7.0-7.5
8			wet	SM		fine SAND, little silt, trace coarse gravel, (5YR 6/3) light reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
9							GAR-PDI-A'8B-9.0-9.5
10				NR		NO RECOVERY	
11	4	0.0	wet	SM		fine SAND, little silt, trace coarse gravel, (5YR 6/3) light reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
12			wet	SP		fine to medium SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'8B-11.0-11.5
13							GAR-PDI-A'8B-13.0-13.5
14				NR		NO RECOVERY	
15	5	0.0	wet	SP		fine to medium silty SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'8B-15.0-15.5
16							
17							GAR-PDI-A'8B-17.0-17.5
18							
19							GAR-PDI-A'8B-19.0-19.5
20	1	0.0					GAR-PDI-A'8B-20.0-20.5
21							

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

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

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30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A`9A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610754.846
Date Started Drilling: 11/10/2016 9:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683423.274
Date Finished Drilling: 11/10/2016 10:30:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.072 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	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	
1			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry, no odor, no staining.	
2							
3							
4							
5	3.5	0.0	wet	FILL		fine to medium silty SAND, little fine to medium gravel, trace fill debris, (7.5YR 4/2) brown, medium dense, wet, no odor, no staining, water at 6.0 feet.	
6							
7							
8							GAR-PDI-A'9A-8.0-8.5
9				NR		NO RECOVERY	
10	5	0.0	moist	FILL		fine sandy SILT, little organics, trace fill debris, (7.5YR 3/3) dark brown, soft, moist, no odor, no staining.	GAR-PDI-A'9A-10.0-10.5
11			wet	SM		fine silty SAND, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'9A-10.5-11.0
12							GAR-PDI-A'9A-12.0-12.5
13			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-A'9A-14.0-14.5
15	5	0.0	wet	SP		fine to medium SAND, little fine gravel, (7.5YR 3/3) dark brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-A'9A-16.0-16.5
17			wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
18							GAR-PDI-A'9A-18.0-18.5
19							
20	1	0.0					GAR-PDI-A'9A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A`9B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611009.357
Date Started Drilling: 2/12/2017 1:00:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683904.177
Date Finished Drilling: 2/12/2017 2:00:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.717 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1			dry to moist	FILL		fine to medium SAND, some fine to coarse gravel, little silt, (7.5YR 3/2) dark brown, medium dense, dry to moist, no odor, no staining.	
2	3.5		moist	FILL		fine to coarse SAND, some fine to coarse gravel, (7.5YR 5/4) brown, medium dense, moist, no odor, no staining.	
3			wet	FILL		fine to coarse silty SAND, little coarse gravel, (7.5YR 2.5/3) very dark brown, medium dense, wet, no odor, no staining, water at 3.0 feet.	
4				NR		NO RECOVERY	
5		0.0	wet	FILL		SILT, some fine to medium sand, little fine to coarse gravel, (7.5YR 2.5/2) very dark brown, medium stiff, wet, no odor, no staining.	GAR-PDI-A'9B-6.0-6.5
6			wet	SM		SILT, little seashells, trace fine sand, (7.5YR 3/2) dark brown, medium stiff, wet, slight organic odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'9B-6.5-7.0
7	3.5						
8							GAR-PDI-A'9B-8.0-8.5
9				NR		NO RECOVERY	
10		0.0	wet	SP		fine to coarse SAND, little fine to coarse gravel, (7.5YR 5/4) brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'9B-10.0-10.5
11			wet	SP		fine to medium SAND, little medium to coarse gravel, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
12	4.5						GAR-PDI-A'9B-12.0-12.5
13							
14							GAR-PDI-A'9B-14.0-14.5
15				NR		NO RECOVERY	
16		0.0	wet	SP		fine SAND, little coarse gravel, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'9B-16.0-16.5
17	5		wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 3/2) dark reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
18			wet	SM		fine SAND, little fine to coarse gravel, trace silt, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'9B-18.0-18.5
19							
20	1	0.0					GAR-PDI-A'9B-20.0-20.5
21							

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

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

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Boring ID: GAR-PDI-A`10A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610744.567
Date Started Drilling: 11/10/2016 10:40:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683395.283
Date Finished Drilling: 11/10/2016 11:15:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.288 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	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	
1			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry, no odor, no staining.	
2							
3							
4							
5	5	0.0					
6			moist	FILL		fine SAND, little silt, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining, water at 6.0 feet.	
7							
8			moist	FILL		fine to medium SAND, little organics, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	
9							
10							GAR-PDI-A'10A-9.5-10.0
11	5	0.0	moist	SM		fine sandy SILT, little organics, (7.5YR 3/3) dark brown, firm, moist, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A'10A-10.0-10.5
12			wet	SM		fine silty SAND, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'10A-12.0-12.5
13			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-A'10A-14.0-14.5
15	5	0.0					
16							GAR-PDI-A'10A-16.0-16.5
17							
18							GAR-PDI-A'10A-18.0-18.5
19			wet	SP		fine to medium SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-A'10A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A`11A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610729.203
Date Started Drilling: 11/10/2016 11:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683370.564
Date Finished Drilling: 11/10/2016 11:50:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.482 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	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	
1			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
2							
3							
4							
5	3.5	0.0	wet	FILL		fine to medium silty SAND, trace fill debris, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining.	GAR-PDI-A'11A-7.5-8.0
6							
7							
8			moist	SP		fine to medium SAND, little organics, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A'11A-8.0-8.5
9				NR		NO RECOVERY	
10	5	0.0	wet	SM		fine silty SAND, little organics, trace fine gravel, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A'11A-10.0-10.5
11							
12			moist	SP		fine to medium SAND, some fine to medium gravel, trace silt, (7.5YR 4/3) brown, dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'11A-12.0-12.5
13							
14							GAR-PDI-A'11A-14.0-14.5
15	5	0.0	wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-A'11A-16.0-16.5
17							
18							GAR-PDI-A'11A-18.0-18.5
19			wet	SP		fine to medium SAND, little silt and fine to medium gravel, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-A'11A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A`12A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610714.524
Date Started Drilling: 11/9/2016 9:10:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683344.057
Date Finished Drilling: 11/9/2016 10:30:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.159 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	3	0.0	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/2) brown, medium dense, dry, no odor, no staining.	
1			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to wet, no odor, no staining, water at 3.0 feet.	
2				NR		NO RECOVERY	
3							
4							
5	3.5	0.0	wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, wet, no odor, no staining.	GAR-PDI-A'12A-5.0-5.5
6			wet	FILL		fine to medium SAND, some fine to medium gravel, little brick, (5YR 4/3) reddish brown, medium dense, wet,no odor, no staining.	GAR-PDI-A'12A-6.0-6.5
7			wet	SM		fine silty SAND, (7.5YR 3/3) dark brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'12A-6.5-7.0
8							GAR-PDI-A'12A-8.0-8.5
9				NR		NO RECOVERY	
10	5	0.0	wet	SP		fine to medium silty SAND, some fine gravel, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'12A-10.0-10.5
11			wet	SP		fine to medium SAND, trace silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
12			wet	SM		fine SAND, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'12A-12.0-12.5
13			wet	SP		fine to medium SAND, trace silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-A'12A-14.0-14.5
15	5	0.0	wet	SP		fine to medium SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense to dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-A'12A-16.0-16.5
17							
18							GAR-PDI-A'12A-18.0-18.5
19							
20	1	0.0					GAR-PDI-A'12A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A`13A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610704.17
Date Started Drilling: 11/9/2016 10:35:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683323.773
Date Finished Drilling: 11/9/2016 11:30:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.049 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	3.5	0.0	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/3) brown, dry, no odor, no staining.	
1			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to wet, water at 3.5 feet.	
2							
3							
4				NR		NO RECOVERY	
5	4.5	0.0	wet	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, wet, no odor, no staining.	
6			wet	FILL		fine to medium SAND, little silt and ash, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining.	GAR-PDI-A'13A-5.5-6.0
7			wet	SM		fine silty SAND, (7.5YR 3/3) dark brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A'13A-6.0-6.5
8			wet	SM		fine silty SAND, some fine gravel, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
9							
10				NR		NO RECOVERY	
11	5	0.0	wet	SP		fine to medium SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense to dense, wet, no odor, no staining. Soils consistent with UNDno.	
12							GAR-PDI-A'13A-12.0-12.5
13							
14							
15	5	0.0					GAR-PDI-A'13A-14.5-15.0
16							
17							GAR-PDI-A'13A-16.5-17.0
18							GAR-PDI-A'13A-17.0-17.5
19							GAR-PDI-A'13A-17.5-18.0
20	1	0.0					GAR-PDI-A'13A-18.5-19.0
21							GAR-PDI-A'13A-19.5-20.0
							GAR-PDI-A'13A-20.0-20.5

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

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Boring ID: GAR-PDI-A0

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610903.388
Date Started Drilling: 11/21/2016 12:10:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683651.358
Date Finished Drilling: 11/21/2016 1:40:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.519 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0 - 5	5	0.0	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
5 - 8	5	0.0					
8 - 9			moist	FILL		fine silty SAND, little ash, trace brick, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	GAR-PDI-A0-8.0-8.5
9 - 10			moist	ML		SILT, (7.5YR 3/2) dark brown, soft, moist, no odor, no staining. Soils consistent with UNDno.	
10 - 13	5	0.0					
13 - 14			wet	SP		fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14 - 15			wet	SP		fine to medium SAND, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
15 - 20	5	0.0					
20 - 21	1	0.0					GAR-PDI-A0-20.0-20.5

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

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Boring ID: GAR-PDI-A1A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610888.266
Date Started Drilling: 11/17/2016 8:40:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683625.194
Date Finished Drilling: 11/17/2016 9:15:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.923 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		FILL		TRAP ROCK	
			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to moist, no odor, no staining, water at 5.0 feet.	
5	5	0.0					
7	5		moist	FILL		SILT, some to little fine sand, little fine gravel, (7.5YR 4/3) brown, soft, moist, no odor, no staining.	GAR-PDI-A1A-7.0-7.5
			moist	SM		Organic SILT, 90% organic silt, 10% organic fibers, (7.5YR 4/2) brown, soft, moist to wet, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A1A-7.5-8.0
10	5	0.0					
12	5		wet	SP		fine to medium SAND, (2.5Y 5/2) grayish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14	5		wet	SP		fine SAND, (5Y 5/1) gray, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
15	5	0.0	wet	SP		fine to coarse SAND, some fine to coarse gravel, (2.5Y 5/2) grayish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
17	5		wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A1A-17.0-17.5
18	5		wet	SP		fine to medium SAND, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A1A-17.5-18.0
20	1	0.0					GAR-PDI-A1A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A1B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610917.444
Date Started Drilling: 11/22/2016 7:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683678.148
Date Finished Drilling: 11/22/2016 9:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.994 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	dry	FILL		TRAP ROCK	
1				FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
2							
3							
4							
5	5	0.0					
6							
7							
8			wet	FILL		fine to medium silty SAND, little fine gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining.	GAR-PDI-A1B-7.5-8.0
9			moist	ML		SILT, (7.5YR 3/3) dark brown, soft, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A1B-8.0-8.5
10	5	0.0	wet	SM		fine silty SAND, little fine gravel, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
11							
12							GAR-PDI-A1B-12.0-12.5
13			wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-A1B-14.0-14.5
15	5	0.0					
16							GAR-PDI-A1B-16.0-16.5
17							
18							GAR-PDI-A1B-18.0-18.5
19							
20	1	0.0					GAR-PDI-A1B-20.0-20.5
21							

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-A2A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610873.824
Date Started Drilling: 11/17/2016 9:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683599.743
Date Finished Drilling: 11/17/2016 9:50:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 12.065 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	dry	FILL		TRAP ROCK	
				FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
5	3.5	0.0	wet	FILL		fine to medium SAND, little brick, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining.	GAR-PDI-A2A-7.5-8.0
8			wet	SP		fine to medium SAND, little to trace organics, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A2A-8.0-8.5
9				NR		NO RECOVERY	
10	2	0.0	wet	SM		fine silty SAND, (2.5Y 5/2) grayish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
12				NR		NO RECOVERY	
15	5	0.0	wet	SM		fine silty SAND, (5Y 5/1) gray, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16			wet	SP		fine to medium SAND, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A2A-16.0-16.5
18			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A2A-18.0-18.5
20	1	0.0					GAR-PDI-A2A-20.0-20.5
21							

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

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732.564.3200 office telephone

Boring ID: GAR-PDI-A2B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610932.132
Date Started Drilling: 11/22/2016 9:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683705.148
Date Finished Drilling: 11/22/2016 11:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.793 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	dry	FILL		TRAP ROCK	
				FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
5	5	5.5	moist	FILL		fine to medium SAND, little silt and brick, trace coal, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	
10	5	5.5	wet	SM		fine silty SAND, (2.5Y 4/2) dark grayish brown, medium dense, wet, strong organic odor, no staining. Soils consistent with UNDno.	
15	5	0.0	wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
			wet	SP		fine to medium SAND, some fine gravel, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	5		wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
	1	0.0					GAR-PDI-A2B-20.0-20.5

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

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Boring ID: GAR-PDI-A3A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610858.194
Date Started Drilling: 11/17/2016 10:50:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683573.297
Date Finished Drilling: 11/17/2016 11:40:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.990 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	dry	FILL		TRAP ROCK	
				FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
5	4	0.0	wet	FILL		fine to medium SAND, little silt, trace fine gravel, (7.5YR 4/2) brown, medium dense, wet, no odor, no staining.	GAR-PDI-A3A-7.5-8.0
8			wet	SM		fine sandy SILT, trace organics, (7.5YR 4/3) brown, soft, wet, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A3A-8.0-8.5
9				NR		NO RECOVERY	
10	5	0.0	wet	SM		fine SAND, little silt, (5Y 5/1) gray, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A3A-10.0-10.5
11							GAR-PDI-A3A-11.0-11.5
15	5	0.0	wet	SM		fine silty SAND, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A3A-15.0-15.5
16			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A3A-16.0-16.5
18							GAR-PDI-A3A-18.0-18.5
20	1	0.0					GAR-PDI-A3A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A3B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610946.617
Date Started Drilling: 11/22/2016 10:50:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683730.138
Date Finished Drilling: 11/22/2016 12:20:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.856 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	dry	FILL		TRAP ROCK	
				FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to wet, water at 6.0 feet.	
5	5	0.0					
7	5		moist	FILL		CINDERS, little ash, (5YR 2.5/1) black, loose, moist, no odor, no staining.	GAR-PDI-A3B-7.0-7.5
8							GAR-PDI-A3B-7.5-8.0
			wet	FILL		fine to medium SAND, some cinders, (10YR 3/2) very dark grayish brown, medium dense, wet, no odor, no staining.	GAR-PDI-A3B-8.0-8.5
9			wet	FILL		fine silty SAND, little fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with MM.	GAR-PDI-A3B-8.5-9.0
			moist	ML			
10	5	0.0	wet	SM		SILT, (7.5YR 2.5/3) very dark brown, soft, moist, no odor, no staining. Soils consistent with UNDno.	
11						fine silty SAND, little fine gravel, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
13			wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
15	5	0.0					
17							
20	1	0.0					GAR-PDI-A3B-20.0-20.5
21							

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

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Boring ID: GAR-PDI-A4B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610962.057
Date Started Drilling: 11/28/2016 9:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683755.566
Date Finished Drilling: 11/28/2016 10:30:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.140 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	4	0.0	moist	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	
4				NR		NO RECOVERY	
5	5	0.0	moist	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, moist to wet, no odor, no staining, water at 6.5 feet.	
8			wet	FILL		fine to medium silty SAND, little fill debris, (5YR 2.5/1) black, medium dense, wet, no odor, no staining.	GAR-PDI-A4B-8.0-8.5
8.5			wet	OL		organic SILT, 95% organic silt, 5% organic fibers, (5YR 2.5/1) black, soft, wet, slight organic odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A4B-8.5-9.0
10	5	0.0					GAR-PDI-A4B-11.0-11.5
13			moist	ML		SILT, trace fine sand and fine to medium gravel, (5YR 6/3) light reddish brown, firm, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A4B-13.0-13.5
14			moist	GW		fine to coarse GRAVEL, some fine to coarse sand, (5YR 3/2) dark reddish brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A4B-14.0-14.5
15	5	0.0	moist	SW		fine to coarse SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A4B-16.0-16.5
18							GAR-PDI-A4B-18.0-18.5
20	1	0.0					GAR-PDI-A4B-20.0-20.5
21							

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-A5B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610977.806
Date Started Drilling: 11/28/2016 10:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683781.507
Date Finished Drilling: 11/28/2016 11:40:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 7.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.004 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0 – 5	3	0.0	moist	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/2) brown, medium dense, moist no odor no staining	
3 – 5				NR		NO RECOVERY	
5 – 10	5	0.0	moist	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, moist, no odor, no staining.	
8 – 10			wet	FILL		fine to medium silty SAND, trace fill debris, (5YR 2.5/1) black, medium dense, wet, no odor, no staining, water at 7.5 feet.	
9 – 10			wet	FILL		SILT, trace fill debris, (7.5YR 2.5/3) very dark brown, firm, wet, no odor, no staining.	
10 – 15	4	0.0	wet	OL		organic SILT, 95% organic silt, 5% organic fibers, (5YR 2.5/1) black, soft, wet, slight organic odor, no staining. Soils consistent with UNDorg.	
11 – 12			wet	SM		fine to medium SAND, little silt, (5YR 2.5/1) black, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
12 – 14			wet	SW		fine to coarse SAND, trace fine gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14 – 15				NR		NO RECOVERY	
15 – 20	5	0.0	wet	SW		fine to medium SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A5B-18.0-18.5
20 – 21	1	0.0					GAR-PDI-A5B-20.0-20.5

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

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Boring ID: GAR-PDI-A6B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610991.939
Date Started Drilling: 11/29/2016 8:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683808.813
Date Finished Drilling: 11/29/2016 9:10:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.139 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	3.5		moist	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	
4				NR		NO RECOVERY	
5	5	0.0	moist	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, moist, no odor, no staining.	
6			wet	FILL		ASH, little cinders, (5YR 6/1) gray, loose, wet, no odor, no staining, water at 6.0 feet.	
7			moist	FILL		SILT, little fill debris, trace ash, (7.5YR 3/2) dark brown, soft, moist, no odor, no staining.	GAR-PDI-A6B-7.5-8.0
8			wet	ML		SILT, little fine sand, trace fine to coarse gravel, (5YR 6/3) light reddish brown, stiff, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A6B-8.0-8.5
10	5	0.0					GAR-PDI-A6B-10.0-10.5
12							GAR-PDI-A6B-12.0-12.5
13			wet	SM		fine to medium silty SAND, trace fine to coarse gravel, (5YR 5/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-A6B-14.0-14.5
15	5	0.0	wet	SM		fine to coarse silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-A6B-16.0-16.5
18							GAR-PDI-A6B-18.0-18.5
20	1	0.0					GAR-PDI-A6B-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:02

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30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-A8B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 611026.355
Date Started Drilling: 11/21/2016 9:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683856.04
Date Finished Drilling: 11/21/2016 10:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.333 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 sidewalk	
1–5			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/3) brown, medium dense, dry to wet, no odor, no staining, water at 6.0 feet.	
5	5	0.0					
6–8			moist	FILL		fine to medium SAND, little fill debris and fine to medium gravel, trace ash, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	GAR-PDI-A8B-8.0-8.5
10	5	0.0	moist	FILL		fine to medium SAND, trace ash, (7.5YR 3/3) dark brown, medium dense, moist, no odor, no staining.	GAR-PDI-A8B-10.0-10.5
12							GAR-PDI-A8B-12.0-12.5
13			wet	SP		fine to coarse SAND, some fine to medium gravel, trace silt, (5YR 6/3) light reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A8B-12.5-13.0
14							GAR-PDI-A8B-14.0-14.5
15	5	0.0					
16							GAR-PDI-A8B-16.0-16.5
17–18							GAR-PDI-A8B-18.0-18.5
19							
20	1	0.0	wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 3/3) dark reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A8B-20.0-20.5
21							

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A9B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611038.039
Date Started Drilling: 2/12/2017 9:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683884.987
Date Finished Drilling: 2/12/2017 10:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.114 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		Asphalt and gravel sub-base.	
1	4		dry to moist	FILL		fine to medium SAND, little coarse gravel, (7.5YR 2.5/2) very dark brown, loose, dry to moist, no odor, no staining.	GAR-PDI-A9B-0.5-1.0
2							GAR-PDI-A9B-1.5-2.0
3				CONCRETE		Concrete debris, green staining.	
4			moist	FILL		fine to medium SAND, little silt and fine to coarse gravel, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	GAR-PDI-A9B-3.5-4.0
5				NR		NO RECOVERY	
6	5	0.0	wet	FILL		fine to coarse SAND, some coarse gravel, little silt, trace fill debris and seashells, (7.5YR 3/2) dark brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	GAR-PDI-A9B-5.5-6.0
7							
8							GAR-PDI-A9B-7.5-8.0
9							
10							GAR-PDI-A9B-9.5-10.0
11	4.5	0.0	wet	FILL		fine to coarse SAND, little fine to coarse gravel, (5YR 4/2) dark reddish gray, medium dense, wet, no odor, no staining.	GAR-PDI-A9B-11.0-11.5
12			wet	SP		fine to coarse SAND, some coarse gravel, little cobbles, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A9B-11.5-12.0
13							
14							GAR-PDI-A9B-13.5-14.0
15				NR		NO RECOVERY	
16	5	0.0	wet	OL		SILT, (7.5YR 2.5/2) very dark brown, medium stiff, wet, moderate organic odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A9B-15.5-16.0
17			wet	SM		fine sandy SILT, little fine to coarse gravel, (7.5YR 3/2) dark brown, stiff, wet, no odor, no staining. Soils consistent with UNDno.	
18			wet	SP		fine to coarse SAND, little coarse gravel, trace silt, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A9B-17.5-18.0
19							
20	1	0.0					GAR-PDI-A9B-19.5-20.0
21							GAR-PDI-A9B-20.0-20.5

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A10B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611036.252
Date Started Drilling: 2/19/2017 9:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683924.239
Date Finished Drilling: 2/19/2017 10:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.845 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
			moist	FILL		fine to coarse SAND, little fine to coarse gravel, (5Y 5/2) olive gray, loose, moist ,no odor, no staining.	GAR-PDI-A10B-0.5-1.0
1			moist	FILL		fine sandy SILT, little coarse gravel and wood, (7.5YR 3/2) dark brown, medium stiff, moist, no odor, no staining.	GAR-PDI-A10B-1.0-1.5
2	3.5		moist	FILL		fine to medium silty SAND, some fill debris, (5YR 4/3) reddish brown, medium dense, moist, no odor, no staining.	
3							GAR-PDI-A10B-3.0-3.5
4				NR		NO RECOVERY	
5		0.0	moist	FILL		fine to coarse SAND, little ash, (7.5YR 4/1) dark gray, loose, moist, no odor, no staining.	GAR-PDI-A10B-5.0-5.5
6			wet	FILL		fine to medium sandy SILT, little coarse gravel, (7.5YR 3/2) dark brown, medium stiff, wet, no odor, no staining, water at 5.5 feet.	
7	4.5						GAR-PDI-A10B-7.0-7.5
8							GAR-PDI-A10B-7.5-8.0
			wet	ML		SILT, trace fine sand and fine to medium gravel, (7.5YR 2.5/2) very dark brown, medium stiff, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A10B-8.0-8.5
9							
10				NR		NO RECOVERY	
		0.0	wet	ML		SILT, trace fine sand, (7.5YR 2.5/2) very dark brown, medium stiff, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A10B-10.0-10.5
11			wet	ML		SILT, trace fine sand, (10Y 5/2) grayish olive, medium stiff, wet, no odor, green staining. Soils consistent with UNDno.	
12	4.5						GAR-PDI-A10B-12.0-12.5
13							
14			wet	SP		fine to coarse SAND, little fine to coarse gravel, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A10B-14.0-14.5
				NR		NO RECOVERY	
15		0.0	wet	SP		fine to coarse SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-A10B-16.0-16.5
17	5						
18			wet	SP		fine to coarse SAND, some medium to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A10B-18.0-18.5
19							
20	1	0.0					GAR-PDI-A10B-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-A11B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611057.994
Date Started Drilling: 2/12/2017 10:50:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683942.359
Date Finished Drilling: 2/12/2017 11:50:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.982 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1			dry	FILL		fine to coarse SAND, little fine to coarse gravel, (7.5YR 4/1) dark gray, loose, dry to moist, no odor, no staining.	GAR-PDI-A11B-0.5-1.0
2			moist	FILL		fine to medium SAND, little silt, trace coarse gravel, (7.5YR 3/2) dark brown, medium dense, moist, no odor, no staining.	
3	4.5		moist	FILL		fine silty SAND, little coarse gravel, (7.5YR 2.5/2) very dark brown, medium dense, moist, no odor, no staining.	GAR-PDI-A11B-2.0-2.5
4							GAR-PDI-A11B-4.0-4.5
5				NR		NO RECOVERY	
6		0.0	wet	FILL		fine to coarse SAND, some fine to coarse gravel, (7.5YR 4/2) brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	GAR-PDI-A11B-5.5-6.0
7	3.5		wet	OL		fine sandy SILT, little coarse gravel, (7.5YR 3/2) dark brown, medium stiff, wet, no odor, no staining. SILT, trace fine sand and organics, (7.5YR 4/2) brown, medium stiff, wet, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A11B-6.0-6.5
8							GAR-PDI-A11B-8.0-8.5
9				NR		NO RECOVERY	
10		0.0	wet	OL		SILT, trace fine sand and organics, (7.5YR 4/2) brown, medium stiff, wet, no odor, no staining. Soils consistent with UNDorg.	GAR-PDI-A11B-10.0-10.5
11			wet	ML		SILT, little coarse gravel, trace fine sand, (7.5YR 6/1) gray, medium stiff, wet, no odor, no staining. Soils consistent with UNDno.	
12	4.5		wet	SP		fine to medium SAND, some fine to coarse gravel, (7.5YR 5/1) gray, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A11B-12.0-12.5
13							
14			wet	SP		fine to coarse SAND, some fine to coarse gravel, (7.5YR 2.5/2) very dark brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A11B-14.0-14.5
15				NR		NO RECOVERY	
16		0.0	wet	SM		SILT, some fine to coarse gravel, (7.5YR 4/1) dark gray, soft, wet, no odor, no staining. Soils consistent with UNDno.	
17	5		wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-A11B-16.0-16.5
18							GAR-PDI-A11B-18.0-18.5
19							
20	1	0.0					GAR-PDI-A11B-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-B`0

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610856.369
Date Started Drilling: 1/15/2017 12:25:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683675.046
Date Finished Drilling: 1/15/2017 1:35:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.552 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	5		dry to moist	FILL		fine to medium silty SAND, little fill debris, (5YR 2.5/1) black, medium dense, dry to moist, no odor, no staining.	GAR-PDI-B'0-0.5-1.0
2			moist to wet	FILL		SILT, little fine to medium sand, trace fill debris, (7.5YR 4/2) brown, firm, moist to wet, no odor, no staining, water at 4.5 feet.	
3							GAR-PDI-B'0-2.5-3.0
4							
5	5	0.0					GAR-PDI-B'0-4.5-5.0
6							
7							GAR-PDI-B'0-6.5-7.0
8			wet	SM		fine to coarse silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'0-7.5-8.0 GAR-PDI-B'0-8.0-8.5
9							
10	5	0.0					GAR-PDI-B'0-10.0-10.5
11							
12							GAR-PDI-B'0-12.0-12.5
13							
14							GAR-PDI-B'0-14.0-14.5
15	5	0.0					
16							GAR-PDI-B'0-16.0-16.5
17							
18							GAR-PDI-B'0-18.0-18.5
19							
20	1	0.0					GAR-PDI-B'0-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-B`1A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610840.04
Date Started Drilling: 1/15/2017 11:15:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683650.307
Date Finished Drilling: 1/15/2017 12:20:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.393 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	5		dry	FILL		fine to medium silty SAND, little fill debris, trace coal, (7.5YR 3/3) dark brown, medium dense, dry to moist, no odor, no staining.	GAR-PDI-B'1A-0.5-1.0
2							
3			moist to wet	FILL		SILT, little fine sand, trace fill debris, (5YR 2.5/1) black, soft, moist to wet, no odor, no staining, water at 4.0 feet.	GAR-PDI-B'1A-2.5-3.0
4							
5							GAR-PDI-B'1A-4.5-5.0
6	5	0.0	wet	FILL		SILT, trace fine sand and fill debris, (5Y 2.5/1) black, soft, wet, no odor, no staining.	
7							GAR-PDI-B'1A-6.5-7.0
8							GAR-PDI-B'1A-7.5-8.0
9			wet	SW		fine to medium SAND, little silt, (5YR 4/3) reddish brown, loose, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'1A-8.0-8.5
10							
11	5	0.0	wet	SM		fine to coarse silty SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'1A-10.0-10.5
12							GAR-PDI-B'1A-12.0-12.5
13							
14							GAR-PDI-B'1A-14.0-14.5
15	5	0.0					
16							GAR-PDI-B'1A-16.0-16.5
17							
18							GAR-PDI-B'1A-18.0-18.5
19							
20	1	0.0					GAR-PDI-B'1A-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-B`1B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610876.645
Date Started Drilling: 1/15/2017 1:40:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683707.462
Date Finished Drilling: 1/15/2017 2:35:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.528 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	4.5	0.0		CONCRETE		Concrete sidewalk	
			dry to mosit	FILL		fine to medium SAND, trace ash, (5YR 2.5/1) black, medium dense, dry to moist, no odor, no staining.	
1				FILL		fine to medium silty SAND, trace fine gravel, (5YR 4/3) reddish brown, medium dense, moist, no odor, no staining.	
2			moist				
3							
4			moist to wet	FILL		SILT, trace fill debris, (5YR 2.5/1) black, soft, moist to wet, no odor, no staining, water at 4.0 feet.	
5				NR		NO RECOVERY	
	5	0.0	wet	FILL		SILT, trace fill debris, (5YR 2.5/1) black, soft, wet, no odor, no staining.	GAR-PDI-B'1B-5.0-5.5
6			wet	ML		SILT, trace fine sand, (5YR 6/3) light reddish brown, firm, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'1B-5.5-6.0
7			wet	SM		fine to coarse silty SAND, trace fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
8							GAR-PDI-B'1B-8.0-8.5
9							
10	5	0.0					GAR-PDI-B'1B-10.0-10.5
11							
12							GAR-PDI-B'1B-12.0-12.5
13							
14							GAR-PDI-B'1B-14.0-14.5
15	5	0.0					
16							GAR-PDI-B'1B-16.0-16.5
17							
18							GAR-PDI-B'1B-18.0-18.5
19							
20	1	0.0					GAR-PDI-B'1B-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-B`2A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610825.372
Date Started Drilling: 12/11/2016 11:35:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683625.87
Date Finished Drilling: 12/11/2016 12:35:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 20 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.319 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	slightly moist	CONCRETE / FILL		Concrete sidewalk fine to medium SAND, little ash and fine to medium gravel, (5YR 4/4) reddish brown, medium dense, slightly moist, no odor, no staining.	
1–4			moist	FILL		fine silty SAND, little brick, trace ash and coal, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	
4–5			moist	FILL		SILT, little concrete debris, trace fine gravel, ash and coal, (7.5YR 4/3) brown, soft, moist to wet, no odor, no staining, water at 5.0 feet.	
5–10	5	0.0	wet	SM		fine to medium silty SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'2A-6.0-6.5 GAR-PDI-B'2A-6.5-7.0 GAR-PDI-B'2A-7.0-7.5 GAR-PDI-B'2A-8.0-8.5
10–11	5	0.0	wet	ML		SILT, (7.5YR 4/3) brown, soft, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'2A-10.0-10.5
11–12			wet	SM		fine to medium silty SAND, little fine gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDorg.	
12–15			wet	SP		fine to coarse SAND, some fine to medium gravel, trace silt, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'2A-13.0-13.5 GAR-PDI-B'2A-15.0-15.5
15–18	5	0.0	wet	SM		fine silty SAND, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'2A-18.0-18.5
18–20							

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-B`2B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610886.772
Date Started Drilling: 1/22/2017 9:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683724.811
Date Finished Drilling: 1/22/2017 10:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.890 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	5		moist	FILL		fine to coarse SAND, some cinders, (5Y 2.5/2) black, medium dense, moist, no odor, no staining.	GAR-PDI-B'2B-0.5-1.0
2			moist	FILL		fine to medium SAND, little silt, trace ash, (5YR 4/4) reddish brown, medium dense, moist, no odor, no staining.	
3			slightly moist	FILL		fine to medium sandy SILT, little ash, (7.5YR 3/3) dark brown, firm, slightly moist, no odor, no staining.	GAR-PDI-B'2B-2.5-3.0
4							GAR-PDI-B'2B-4.0-4.5
5		0.0	wet	ML		fine sandy SILT, (2.5Y 5/1) gray, soft, wet, no odor, no staining, water at 5.0 feet. Soils consistent with UNDno.	GAR-PDI-B'2B-4.5-5.0
6	5		wet	SM		fine to medium silty SAND, little fine to medium gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
7							GAR-PDI-B'2B-6.5-7.0
8							
9			moist to wet	SM		fine to coarse silty SAND, some to little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, moist to wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'2B-8.5-9.0
10		0.0					
11	5						GAR-PDI-B'2B-10.5-11.0
12							
13							GAR-PDI-B'2B-12.5-13.0
14							
15		0.0					GAR-PDI-B'2B-14.5-15.0
16	5						
17							GAR-PDI-B'2B-16.5-17.0
18							
19							GAR-PDI-B'2B-18.5-19.0
20	1	0.0					GAR-PDI-B'2B-20.0-20.5
21							

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

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-B`3A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610814.856
Date Started Drilling: 12/11/2016 1:15:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683606.098
Date Finished Drilling: 12/11/2016 2:30:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.352 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	5		dry	FILL		fine to medium SAND, some ash, little fine gravel, (2.5Y 4/2) dark grayish brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'3A-0.5-1.0
2			dry	FILL		fine to medium SAND, some fine to medium gravel, little silt and ash, trace coal, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'3A-2.0-2.5
3							
4			moist	FILL		SILT, little brick, trace coal, (7.5YR 4/3) brown, soft, moist to wet, no odor, no staining, water at 5.0 ft bgs.	
5	5	0.0					
6							GAR-PDI-B'3A-6.5-7.0
7			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'3A-7.0-7.5
8							
9							
10	5	0.0					GAR-PDI-B'3A-10.0-10.5
11			wet	GW		fine to coarse GRAVEL, some fine to medium sand, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
12							GAR-PDI-B'3A-12.0-12.5
13							
14							GAR-PDI-B'3A-14.0-14.5
15	5	0.0					
16			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'3A-16.0-16.5
17							
18							GAR-PDI-B'3A-18.0-18.5
19							
20	1	0.0					GAR-PDI-B'3A-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:03

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Boring ID: GAR-PDI-B`3B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610902.605
Date Started Drilling: 1/22/2017 10:25:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683754.158
Date Finished Drilling: 1/22/2017 11:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.451 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1			dry	FILL		fine to coarse SAND, some fine to medium gravel, little coal, (2.5Y 5/2) grayish brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'3B-0.5-1.0
2	4.5		dry	FILL		fine to coarse SAND, some concrete debris, trace brick, (2.5Y 5/2) grayish brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'3B-2.0-2.5
3			moist	FILL		fine to medium sandy SILT, little ash, (7.5YR 2.5/3) very dark brown, soft, moist, no odor, no staining.	
4							GAR-PDI-B'3B-4.0-4.5
5				NR		NO RECOVERY	
		0.0	moist	FILL		fine to medium sandy SILT, little ash, (7.5YR 2.5/3) very dark brown, soft, moist, no odor, no staining.	GAR-PDI-B'3B-5.0-5.5
6			wet	ML		fine sandy SILT, (7.5YR 6/3) light brown, soft, wet, no odor, no staining, water at 5.5 feet. Soils consistent with UNDno.	GAR-PDI-B'3B-5.5-6.0
							GAR-PDI-B'3B-6.0-6.5
7	5		wet	SM		fine to medium silty SAND, little fine to medium gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
8							GAR-PDI-B'3B-8.0-8.5
9			wet	SP		fine to coarse SAND, some fine to medium gravel, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
10		0.0	wet	SP		fine to medium SAND, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'3B-10.0-10.5
11			wet	SM		fine to medium silty SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
12	5						GAR-PDI-B'3B-12.0-12.5
13							
14							GAR-PDI-B'3B-14.0-14.5
15		0.0					
16							GAR-PDI-B'3B-16.0-16.5
17	5						
18							GAR-PDI-B'3B-18.0-18.5
19			slightly moist	SP		fine to medium SAND, little silt, trace fine to medium gravel, (5YR 4/4) reddish brown, dense, slightly moist, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-B'3B-20.0-20.5
21							

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

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

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Boring ID: GAR-PDI-B`4A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610814.81
Date Started Drilling: 1/8/2017 9:35:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683557.229
Date Finished Drilling: 1/8/2017 10:25:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 8 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.082 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		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2							
3			dry	FILL		SILT, little fine to medium sand and fill debris, trace coal and wood, (7.5YR 4/2) brown, firm, dry to moist, no odor, no staining.	GAR-PDI-B'4A-3.0-3.5
4							
5	3	0.0					GAR-PDI-B'4A-5.0-5.5
6			moist	FILL		SILT, little fine to medium sand, ash and cinders, (7.5YR 3/4) dark brown, soft, moist to wet no odor no staining, water at 6.5 feet, refusal at 8.0 feet.	
7							GAR-PDI-B'4A-7.0-7.5
8							

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

Comments: 1) 3 attempts were made to obtain best recovery 2) No CCPW (COPR or GGM) present in any interval of this boring.

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Boring ID: GAR-PDI-B`4AR

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610794.453
Date Started Drilling: 2/5/2017 10:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683571.349
Date Finished Drilling: 2/5/2017 11:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.298 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	4.5		dry	FILL		fine to medium SAND, some brick and fill debris, (7.5YR 2.5/2) very dark brown, loose, dry to moist, no odor, no staining.	
			moist	FILL			
			moist	FILL			
2			moist	FILL		fine to medium silty SAND, little brick, (7.5YR 3/2) dark brown, medium dense, moist, no odor, no staining.	
						fine to medium SAND, (7.5YR 6/3) light brown, loose, moist, no odor, no staining.	
3						fine to medium silty SAND, little fine gravel, (7.5YR 3/2) dark brown, medium dense, moist, no odor, no staining.	
4			moist	FILL		SILT, little fine sand, trace brick and fill debris, (7.5YR 3/2) dark brown, medium stiff, moist, no odor, no staining.	
5				NR		NO RECOVERY	
6	4.5	0.0	wet	FILL		fine to medium silty SAND, some ash, little fine to coarse gravel, (7.5YR 4/1) dark gray, loose, wet, no odor, no staining, water at 5.0 feet.	
7			wet	FILL		fine to medium silty SAND, little fine to coarse gravel, (7.5YR 4/2) brown, medium dense, wet, no odor, no staining.	
8							GAR-PDI-B'4AR-8.0-8.5
9			wet	SM		fine to medium SAND, some fine to coarse gravel, little silt, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'4AR-8.5-9.0 GAR-PDI-B'4AR-9.0-9.5
10				NR		NO RECOVERY	
11	5	0.0	wet	SP		fine to medium SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'4AR-11.0-11.5
12							
13			wet	SP		fine to medium SAND, some fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'4AR-13.0-13.5
14							
15	5	0.0					GAR-PDI-B'4AR-15.0-15.5
16							
17			wet	SP		fine to medium SAND, little fine to medium gravel, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'4AR-17.0-17.5
18							
19							GAR-PDI-B'4AR-19.0-19.5
20	1	0.0					GAR-PDI-B'4AR-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

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Boring ID: GAR-PDI-B`4B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610918.538
Date Started Drilling: 1/29/2017 9:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683779.746
Date Finished Drilling: 1/29/2017 10:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.768 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1			dry	FILL		fine to medium SAND, little fine gravel, (7.5YR 4/2) brown, loose, dry, no odor, no staining.	GAR-PDI-B'4B-1.0-1.5
2	4.5		dry to moist	FILL		fine to medium SAND, little fine to medium gravel and silt, (7.5YR 4/2) brown, medium dense, dry to moist, no odor, no staining.	
3			moist	FILL		SILT, little fine sand, trace seashells, (7.5YR 2.5/2) very dark brown, medium stiff, moist, no odor, no staining.	GAR-PDI-B'4B-3.0-3.5
4			moist	FILL		SILT, trace fine sand, (7.5YR 4/2) brown, soft, moist, no odor, no staining.	
5				NR		NO RECOVERY	
		0.0	moist	FILL		SILT, little fine sand and gravel, (7.5YR 4/2) brown, medium stiff, moist, no odor, no staining.	GAR-PDI-B'4B-5.0-5.5
6			moist	SP		fine SAND, some silt, (7.5YR 6/3) light brown, medium dense, moist to wet, no odor, no staining, water at 6.0 feet. Soils consistent with UNDno.	GAR-PDI-B'4B-5.5-6.0
7	5		wet	SP		fine gravelly SAND, trace silt, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'4B-7.0-7.5
9							GAR-PDI-B'4B-9.0-9.5
10		0.0					
11							GAR-PDI-B'4B-11.0-11.5
12	4						
13							GAR-PDI-B'4B-13.0-13.5
14				NR		NO RECOVERY	
15		0.0	wet	SP		fine to medium SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'4B-15.0-15.5
16							
17	5						GAR-PDI-B'4B-17.0-17.5
18							
19							GAR-PDI-B'4B-19.0-19.5
20	1	0.0					GAR-PDI-B'4B-20.0-20.5
21							

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

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Boring ID: GAR-PDI-B`5A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610800.544
Date Started Drilling: 11/6/2016 8:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683534.266
Date Finished Drilling: 11/6/2016 9:30:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 7 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 7.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.014 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	4	0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2			dry	FILL		fine to medium SAND, some fine gravel, (5YR 4/4) reddish brown, dense, dry, no odor, no staining.	GAR-PDI-B'5A-1.5-2.0
3			moist	FILL		fine to medium SAND, some ash, (7.5YR 4/1) dark gray, medium dense, moist, no odor, no staining.	GAR-PDI-B'5A-3.5-4.0
4				NR		NO RECOVERY	
5	2	0.0	wet	FILL		fine silty SAND, little ash, (7.5YR 3/3) dark brown, medium dense, wet, no odor, no staining, water at 5.0 feet, refusal at 7.0 feet.	GAR-PDI-B'5A-5.0-5.5
6							GAR-PDI-B'5A-6.5-7.0
7							

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

Comments: 1) 3 attempts were made to obtain best recovery 2) No CCPW (COPR or GGM) present in any interval of this boring.

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Boring ID: GAR-PDI-B`5AR

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610780.537
Date Started Drilling: 2/5/2017 11:25:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683547.703
Date Finished Drilling: 2/5/2017 12:25:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.466 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 sidewalk	
1			dry to moist	FILL		fine to medium SAND, little fine to coarse gravel, trace silt, (7.5YR 3/2) dark brown, medium dense, dry to moist, no odor, no staining.	
2			moist	FILL		fine to medium SAND, little fine to medium gravel, trace silt, (7.5YR 2.5/2) very dark brown, loose, moist, no odor, no staining.	
3			moist	FILL		fine to medium SAND, some asphalt, little fine to medium gravel, (7.5YR 2.5/1) black, loose, moist, no odor, no staining.	
4			moist	FILL		fine to medium silty SAND, little fine to medium gravel, trace fill debris, (5YR 4/1) dark gray, medium dense, moist, no odor, no staining.	
5	5	0.0	moist to wet	FILL		SILT, trace fine sand and fill debris, (5YR 4/1) dark gray, soft, moist to wet, no odor, no staining, water at 6.0 feet.	
8							GAR-PDI-B'5AR-8.0-8.5
9			wet	SM		SILT, some fine gravel, little fine sand, (7.5YR 6/3) light brown, medium stiff, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'5AR-8.5-9.0
10	4.5	0.0	wet	SP		fine to medium SAND, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'5AR-10.0-10.5
12			wet	SP		fine SAND, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'5AR-12.0-12.5
14			wet	SP		fine to coarse SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'5AR-14.0-14.5
15	5	0.0		NR		NO RECOVERY	
15			wet	SP		fine to coarse SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'5AR-16.0-16.5
18							GAR-PDI-B'5AR-18.0-18.5
19			wet	SP		fine to medium SAND, some fine to coarse gravel, little cobbles, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-B'5AR-20.0-20.5
21							

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

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-B`5B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610933.475
Date Started Drilling: 1/22/2017 12:30:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683802.483
Date Finished Drilling: 1/22/2017 1:30:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.847 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1			dry	FILL		fine to coarse SAND, little concrete debris, (2.5Y 5/2) grayish brown, medium dense, dry, no odor, no staining.	
2	2.5		moist	FILL		SILT, some cinders, little fine to coarse gravel, (5YR 4/4) reddish brown, soft, moist, no odor, no staining.	
3				NR		NO RECOVERY	
4							
5		0.0	wet	FILL		SILT, trace ash and cobbles, (2.5Y 5/2) grayish brown, soft, wet, no odor, no staining, water at 5.0 feet.	
6							GAR-PDI-B'5B-6.0-6.5
7	5		wet	SM		fine to medium silty SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'5B-6.5-7.0
8							GAR-PDI-B'5B-8.0-8.5
9							
10		0.0					GAR-PDI-B'5B-10.0-10.5
11							
12	5						
13							
14							GAR-PDI-B'5B-14.0-14.5
15		0.0					
16			moist	SP		fine to coarse SAND, some fine to coarse gravel, little silt, (5YR 4/3) reddish brown, dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'5B-16.0-16.5
17	5						
18							GAR-PDI-B'5B-18.0-18.5
19							
20	1	0.0					GAR-PDI-B'5B-20.0-20.5
21							

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

Comments: 1) 3 attempts were made to obtain best recovery 2) No CCPW (COPR or GGM) present in any interval of this boring.

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Boring ID: GAR-PDI-B`6A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610785.222
Date Started Drilling: 11/6/2016 9:35:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683508.949
Date Finished Drilling: 11/6/2016 10:15:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.305 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	5		dry	FILL		fine to medium SAND, some fine gravel, trace brick, (5YR 4/4) reddish brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'6A-1.5-2.0
3			dry	FILL		fine to medium SAND, some ash, little silt, (7.5YR 3/3) dark brown, medium dense, dry to moist, no odor, no staining.	GAR-PDI-B'6A-3.5-4.0
4			wet	FILL		ASH, (5Y 5/1) gray, loose, wet, no odor, no staining, water at 4.0 feet.	
5	5	0.0	moist	FILL		fine to medium SAND, some ash, little fine gravel, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	
6			wet	FILL		fine silty SAND, little wood debris, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'6A-5.5-6.0
7							
8							GAR-PDI-B'6A-7.5-8.0
9							
10							GAR-PDI-B'6A-9.5-10.0
11	5	0.0					
12							GAR-PDI-B'6A-11.5-12.0
13							GAR-PDI-B'6A-13.0-13.5
14			wet	SP		fine to coarse SAND, some fine to medium gravel, trace silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'6A-13.5-14.0
15	5	0.0					GAR-PDI-B'6A-15.0-15.5
16							
17							GAR-PDI-B'6A-17.0-17.5
18			wet	SP		fine to medium SAND, little fine gravel and silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
19							GAR-PDI-B'6A-19.0-19.5
20	1	0.0					GAR-PDI-B'6A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B`6B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610950.257
Date Started Drilling: 1/29/2017 12:20:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683830.971
Date Finished Drilling: 1/29/2017 1:20:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.325 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	5		moist	FILL		fine to medium SAND, some fine gravel, (7.5YR 3/2) dark brown, medium dense, moist, no odor, no staining.	GAR-PDI-B'6B-1.0-1.5
2							
3			wet	FILL		fine SAND, little silt, trace seashells, (7.5YR 3/2) dark brown, medium dense, wet, no odor, no staining, water at 3.0 feet.	GAR-PDI-B'6B-3.0-3.5
4							
5	5	0.0	wet	FILL		SILT, little fine sand, trace fine gravel, (7.5YR 6/3) light brown, soft, wet, no odor, no staining.	GAR-PDI-B'6B-5.0-5.5
6							
7			wet	FILL		fine to medium SAND, little silt, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'6B-7.0-7.5
8				CONCRETE		Concrete slab	
9			wet	FILL		fine to medium SAND, little silt and fine to medium gravel, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'6B-9.0-9.5
10							GAR-PDI-B'6B-9.5-10.0
11	4	0.0	wet	SP		fine to medium SAND, little fine to medium gravel, trace cobbles, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'6B-10.0-10.5
12							GAR-PDI-B'6B-11.0-11.5
13							GAR-PDI-B'6B-13.0-13.5
14				NR		NO RECOVERY	
15	5	0.0	wet	SP		fine to medium SAND, little fine to coarse gravel, (5YR 5/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'6B-15.0-15.5
16							
17							GAR-PDI-B'6B-17.0-17.5
18							
19							GAR-PDI-B'6B-19.0-19.5
20	1	0.0					GAR-PDI-B'6B-20.0-20.5
21							

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

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

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Boring ID: GAR-PDI-B`7A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610769.589
Date Started Drilling: 11/6/2016 10:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683483.33
Date Finished Drilling: 11/6/2016 11:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.472 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	5		dry	FILL		fine to medium SAND, some fine gravel, trace brick and coal, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'7A-1.5-2.0
3			moist	FILL		fine to medium SAND, (2.5Y 5/2) grayish brown, medium dense, moist, no odor, no staining.	
			dry	FILL		fine to medium SAND, some ash, little coal, (7.5YR 4/2) brown, medium dense, dry, no odor, no staining.	
4			wet	FILL		ASH, (5Y 5/1) gray, loose, wet, no odor, no staining, water at 4.0 feet.	GAR-PDI-B'7A-3.5-4.0
5	5	0.0	dry	FILL		fine to medium SAND, some ash, little coal, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	
6			wet	FILL		fine silty SAND, little concrete debris, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'7A-5.5-6.0
7							
8			wet	FILL		fine silty SAND, trace ash, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'7A-7.5-8.0
9							
10							GAR-PDI-B'7A-9.5-10.0
11	5	0.0					
12							GAR-PDI-B'7A-11.5-12.0
							GAR-PDI-B'7A-12.0-12.5
13			wet	SP		fine to coarse SAND, some fine to medium gravel, trace silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'7A-12.5-13.0
14							GAR-PDI-B'7A-13.5-14.0
15	5	0.0					
16							GAR-PDI-B'7A-15.5-16.0
17			wet	SM		fine to medium silty SAND, some fine gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
18							GAR-PDI-B'7A-17.5-18.0
19							
20	1	0.0					GAR-PDI-B'7A-19.5-20.0
							GAR-PDI-B'7A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B`8A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610751.853
Date Started Drilling: 11/6/2016 11:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683456.963
Date Finished Drilling: 11/6/2016 12:30:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.620 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2			dry	FILL		fine to medium SAND, some fine gravel, little coal, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'8A-1.5-2.0
3	5		dry	FILL		fine to medium SAND, little fine gravel, trace brick, (5YR 4/4) reddish brown, medium dense, dry, no odor, no staining.	
4			dry	FILL		ASH, some fine to medium sand, (2.5Y 5/2) grayish brown, medium dense, dry to moist, no odor, no staining.	GAR-PDI-B'8A-3.5-4.0
5							GAR-PDI-B'8A-4.5-5.0
6		0.0	moist	FILL		fine to medium SAND, some fill debris, (7.5YR 3/3) dark brown, medium dense, moist, no odor, no staining.	
7	4		wet	FILL		fine silty SAND, little wood, trace brick, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining, water at 6.0 feet.	GAR-PDI-B'8A-6.5-7.0
8							
9				NR		NO RECOVERY	GAR-PDI-B'8A-8.5-9.0
10		0.0	wet	FILL		fine silty SAND, some wood, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining.	
11			wet	FILL		fine silty SAND, little fine gravel, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'8A-10.5-11.0
12	5						GAR-PDI-B'8A-12.0-12.5
13			wet	SP		fine to medium SAND, little fine gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'8A-12.5-13.0
14							
15		0.0	wet	SP		fine to coarse SAND, some fine to medium gravel, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'8A-14.5-15.0
16							
17	5						GAR-PDI-B'8A-16.5-17.0
18							
19							GAR-PDI-B'8A-18.5-19.0
20	1	0.0					GAR-PDI-B'8A-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:03

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Boring ID: GAR-PDI-B`9A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610737.491
Date Started Drilling: 11/20/2016 8:40:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683432.179
Date Finished Drilling: 11/20/2016 9:40:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.808 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1	5			FILL		fine to medium SAND, little SILT and coarse gravel, trace shell fragments and metal, (5YR 3/2) dark reddish brown, medium dense, moist, no odor, no staining.	GAR-PDI-B'9A-1.0-1.5
2							
3			moist	FILL		ASH, (10YR 5/1) gray, loose, moist, no odor, no staining.	GAR-PDI-B'9A-3.0-3.5
4							
5			moist	FILL		fine to medium SAND, little coarse gravel, (5YR 3/2) dark reddish brown, medium dense, moist, no odor, no staining.	
6	5	0.0	moist	FILL		fine silty SAND, little wood, trace fine gravel, (5YR 4/3) reddish brown, medium dense, moist to wet, no odor, no staining, water at 5.5 feet.	GAR-PDI-B'9A-5.0-5.5
7							GAR-PDI-B'9A-7.0-7.5
8							GAR-PDI-B'9A-7.5-8.0
9			wet	SM		fine SAND, trace silt and fine gravel, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'9A-8.0-8.5
10							
11	5	0.0					GAR-PDI-B'9A-10.0-10.5
12			wet	SP		fine SAND, trace coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'9A-12.0-12.5
13							
14							GAR-PDI-B'9A-14.0-14.5
15	5	0.0					
16							GAR-PDI-B'9A-16.0-16.5
17			wet	SP		fine to coarse SAND, some coarse gravel, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
18							GAR-PDI-B'9A-18.0-18.5
19							
20	1	0.0					GAR-PDI-B'9A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B`10A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610721.578
Date Started Drilling: 11/20/2016 10:15:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683406.246
Date Finished Drilling: 11/20/2016 11:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.990 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1			dry	FILL		fine to medium SAND, little fine to coarse gravel, (7.5YR 3/2) dark brown, loose, dry to moist, no odor, no staining.	GAR-PDI-B'10A-0.5-1.0
2	4.5		moist	FILL		ASH, little fine to medium sand, trace coal, (7.5YR 6/1) gray, medium dense, moist, no odor, no staining.	GAR-PDI-B'10A-2.0-2.5
3							
4			moist	FILL		fine to coarse SAND, some silt, little coarse gravel, (5YR 3/2) dark reddish brown, loose, moist, no odor, no staining.	GAR-PDI-B'10A-4.0-4.5
5				NR		NO RECOVERY	
6	5	0.0	wet	FILL		fine silty SAND, little coarse gravel, trace wood, (7.5YR 3/2) dark brown, loose, wet, no odor, no staining, water at 5.0 feet.	GAR-PDI-B'10A-6.0-6.5
7							
8							GAR-PDI-B'10A-8.0-8.5
9			wet	SP		fine SAND, little coarse gravel, trace silt, (7.5YR 6/3) light brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'10A-8.5-9.0 GAR-PDI-B'10A-9.0-9.5
10	5	0.0					GAR-PDI-B'10A-10.0-10.5
11							
12			wet	SP		fine SAND, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'10A-12.0-12.5
13							
14							GAR-PDI-B'10A-14.0-14.5
15	5	0.0	wet	SP		fine to coarse SAND, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-B'10A-16.0-16.5
17							
18							GAR-PDI-B'10A-18.0-18.5
19							
20	1	0.0					GAR-PDI-B'10A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B`11A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610711.285
Date Started Drilling: 11/20/2016 12:50:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683376.211
Date Finished Drilling: 11/20/2016 1:50:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.051 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1	5		dry	FILL		fine to medium SAND, some to little ash, trace brick and fine gravel, (7.5YR 4/3) brown, medium dense, dry to moist, no odor, no staining.	GAR-PDI-B'11A-0.5-1.0
2							GAR-PDI-B'11A-2.0-2.5
3							
4							GAR-PDI-B'11A-4.0-4.5
5	5	0.0	wet	FILL		fine to medium silty SAND, little fine to medium gravel, trace ash and wood, (2.5Y 5/2) grayish brown, medium dense, wet, no odor no staining, water at 5.5 feet.	
6							GAR-PDI-B'11A-6.0-6.5
7							
8							GAR-PDI-B'11A-8.0-8.5
9							
10	5	0.0	wet	FILL		fine to coarse SAND, little fine to medium gravel, trace wood, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'11A-10.0-10.5
11			wet	SP		fine to coarse SAND, little fine to coarse gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'11A-10.5-11.0
12							GAR-PDI-B'11A-12.0-12.5
13							
14							GAR-PDI-B'11A-14.0-14.5
15	5	0.0					
16							GAR-PDI-B'11A-16.0-16.5
17							
18							GAR-PDI-B'11A-18.0-18.5
19			wet	SP		fine to medium SAND, little silt, trace fine to medium gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-B'11A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B`12A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610692.098
Date Started Drilling: 11/13/2016 12:00:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683357.124
Date Finished Drilling: 11/13/2016 12:30:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.335 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		ASPHALT		ASPHALT	
1–5			dry	FILL		fine to medium SAND, little fill debris, trace ash and coal, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	
5–7	3.5	0.0	wet	FILL		fine to medium silty SAND, little fine gravel, trace wood, (2.5Y 5/2) grayish brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	GAR-PDI-B'12A-6.5-7.0
7–8			wet	SP		fine to medium SAND, some fine to medium gravel, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'12A-7.0-7.5
9				NR		NO RECOVERY	
10–15	5	0.0	wet	SP		fine to coarse SAND, some fine to coarse gravel, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
15–20	5	0.0					GAR-PDI-B'12A-18.0-18.5
20–21	1	0.0					GAR-PDI-B'12A-20.0-20.5

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

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Boring ID: GAR-PDI-B`12AR

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610693.955
Date Started Drilling: 2/19/2017 12:30:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683356.242
Date Finished Drilling: 2/19/2017 1:00:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 15 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.383 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	0.5	0.0		ASPHALT		ASPHALT	
				NR		NO RECOVERY	
5	2	0.0	moist	FILL		fine to medium SAND, little silt and fine to coarse gravel, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	
6			moist to wet	SP		fine to medium SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, moist to wet, no odor, no staining, water at 6.5 feet. Soils consistent with UNDno.	
7				NR		NO RECOVERY	
10	4.5	0.0	wet	SP		fine to medium SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'12AR-10.0-10.5
14							GAR-PDI-B'12AR-14.0-14.5
15				NR		NO RECOVERY	

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

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

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Boring ID: GAR-PDI-B`13A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610673.722
Date Started Drilling: 11/13/2016 11:10:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683327.209
Date Finished Drilling: 11/13/2016 11:30:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.563 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		ASPHALT		ASPHALT	
			dry	FILL		fine to medium SAND, trace coal and ash, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	
5	5	0.0	wet	FILL		fine silty SAND, little fill debris, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	GAR-PDI-B'13A-6.0-6.5
			wet	SP		fine to coarse SAND, some fine to medium gravel, little to trace silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'13A-6.5-7.0
10	5	0.0	wet	SM		fine to medium silty SAND, some fine gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'13A-8.0-8.5 GAR-PDI-B'13A-10.0-10.5
			wet	SP		fine to coarse SAND, some fine to medium gravel, little silt, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'13A-12.0-12.5
15	5	0.0	wet	SP		fine to coarse silty SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'13A-14.0-14.5
			wet	SP		fine to coarse SAND, some fine to medium gravel, trace silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'13A-16.0-16.5 GAR-PDI-B'13A-18.0-18.5
20	1	0.0					GAR-PDI-B'13A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B`14A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610672.235
Date Started Drilling: 11/13/2016 10:05:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683295.754
Date Finished Drilling: 11/13/2016 11:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.415 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
				CONCRETE		Concrete slab, no odor, no staining.	
1			dry	FILL		fine to medium SAND, some fine to medium gravel, little brick, (7.5YR 6/3) light brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'14A-1.0-1.5
2	4.5						GAR-PDI-B'14A-2.0-2.5
3							
4			dry	FILL		fine to medium SAND, little fine to medium gravel and silt, trace brick, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'14A-4.0-4.5
5				NR		NO RECOVERY	
6	5	0.0	wet	FILL		fine to medium silty SAND, some fine to medium gravel, little brick, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	GAR-PDI-B'14A-6.0-6.5
7							
8							GAR-PDI-B'14A-8.0-8.5
9							
10			wet	FILL		fine to medium silty SAND, some fine to medium gravel, trace fill debris, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining.	GAR-PDI-B'14A-9.5-10.0
11	5	0.0	wet	SM		fine to medium silty SAND, some fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'14A-10.0-10.5
12			wet	SP		fine to medium SAND, some fine gravel, little silt, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'14A-12.0-12.5
13							
14							GAR-PDI-B'14A-14.0-14.5
15	5	0.0	wet	SP		fine to coarse SAND, some fine to medium gravel, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-B'14A-16.0-16.5
17							
18							GAR-PDI-B'14A-18.0-18.5
19			wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-B'14A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B`15A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 610649.004
Date Started Drilling: 11/13/2016 9:15:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683266.306
Date Finished Drilling: 11/13/2016 10:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: ES	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.643 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		ASPHALT		ASPHALT	
				CONCRETE		Concrete slab, no odor, no staining.	
1			dry	FILL		fine to medium SAND, little brick and coarse gravel, (5YR 4/4) reddish brown, medium dense, dry, no odor, no staining.	GAR-PDI-B'15A-1.0-1.5
2							GAR-PDI-B'15A-2.0-2.5
3							
4							GAR-PDI-B'15A-4.0-4.5
5	5	0.0	wet	FILL		fine to medium silty SAND, some fine gravel, little fill debris, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	
6							GAR-PDI-B'15A-6.0-6.5
7							
8							GAR-PDI-B'15A-8.0-8.5
9							
10							GAR-PDI-B'15A-9.5-10.0
11	5	0.0	wet	SM		fine to medium silty SAND, little fine gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B'15A-10.0-10.5
12							GAR-PDI-B'15A-12.0-12.5
13			wet	SP		fine to coarse SAND, some fine to medium gravel, trace silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-B'15A-14.0-14.5
15	5	0.0					
16							GAR-PDI-B'15A-16.0-16.5
17							
18							GAR-PDI-B'15A-18.0-18.5
19			wet	GW		fine to coarse sandy GRAVEL, (5Y 5/1) gray, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-B'15A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-B9B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 611056.216
Date Started Drilling: 11/21/2016 10:25:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683879.935
Date Finished Drilling: 11/21/2016 11:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 10 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.595 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 sidewalk	
1–5			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/2) grayish brown, medium dense, dry to moist, no odor, no staining.	
5	3.5	0.0	wet	FILL		fine to medium SAND, some fine to medium gravel, (5YR 2.5/2) dark reddish brown, medium dense, wet, no odor, no staining, water at 6.0 feet.	GAR-PDI-B9B-6.0-6.5
6–7			wet	FILL		ASH, some fine sand, (2.5Y 5/1) gray, loose, wet, no odor, no staining.	
7–8			moist	FILL		fine to medium SAND, trace ash, (5YR 4/4) reddish brown, medium dense, moist, no odor, no staining.	GAR-PDI-B9B-8.0-8.5
8–10				NR		NO RECOVERY, Refusal at 8.5 feet.	

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

Comments: 1) 3 attempts were made to obtain best recovery 2) MM/UND confirmed to be 1 ft thick.

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Boring ID: GAR-PDI-B10B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 611076.525
Date Started Drilling: 12/2/2016 8:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683895.019
Date Finished Drilling: 12/8/2016 1:00:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.595 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	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (5Y 5/1) gray, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
5	4	0.0	wet	FILL		fine to coarse SAND, some brick, little cinders, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining.	
			wet	FILL		CINDERS, some coarse gravel, (5YR 2.5/1) black, loose, wet, no odor, no staining.	GAR-PDI-B10B-7.5-8.0
8			moist	SP		fine to medium SAND, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B10B-8.0-8.5
9				NR		NO RECOVERY, refusal at 9.0 feet.	
10	5	0.0	wet	SP		fine SAND, little wood, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining, green colored groundwater. Soils consistent with UNDno.	GAR-PDI-B10B-10.0-10.5
12							GAR-PDI-B10B-12.0-12.5
14			wet	SM		Organic SILT, 90% organic silt, 10% organic fibers, (7.5YR 2.5/3) very dark brown, soft, wet, strong organic odor, no staining. Soils consistent with UNDorg.	
			moist	ML		SILT, some fine to medium sand, little fine gravel, (2.5YR 4/2) weak red, soft, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B10B-14.0-14.5
15	5	0.0	wet	SM		fine silty SAND, little fine to medium gravel, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B10B-16.0-16.5
17			wet	SP		fine to coarse SAND, some fine to coarse gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B10B-18.0-18.5
20	1	0.0					GAR-PDI-B10B-20.0-20.5
21							

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

Comments: Groundwater 10-15 ft bgs has green staining

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Boring ID: GAR-PDI-B11B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611100.253
Date Started Drilling: 11/30/2016	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683913.901
Date Finished Drilling: 11/30/2016	**Core Size:** 3.0 in	**Boring Total Depth:** 15 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.944 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		ASPHALT		ASPHALT	
1			moist	FILL		fine to coarse silty SAND, some fill debris, (5YR 2.5/1) black, medium dense, moist, no odor, no staining.	
2			moist	FILL		ASH, some cinders and fill debris, trace wood, (5YR 6/1) gray, medium dense, moist to wet, no odor, no staining, water at 3.5 feet.	
3							
4							
5	5	0.0					
6							GAR-PDI-B11B-6.0-6.5
7			wet	FILL		SILT, little fill debris, (7.5YR 3/2) dark brown, firm, wet, no odor, no staining.	
8							GAR-PDI-B11B-8.0-8.5
9							
10				FILL		Concrete debris, no odor, green staining.	
11	5	0.0	wet	FILL		CINDERS, some ash, little fine to medium gravel, (5YR 2.5/1) black, loose, wet, no odor, no staining.	GAR-PDI-B11B-10.0-10.5
12			wet	FILL		ASH, trace fill debris, (5YR 2.5/1) black, medium dense, wet, no odor, no staining.	GAR-PDI-B11B-12.0-12.5
13							GAR-PDI-B11B-13.0-13.5
14			moist	ML		SILT, (7.5YR 3/2) dark brown, stiff, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-B11B-13.5-14.0
15			wet	OL		organic SILT, 95% organic silt, 5% organic fibers, (5YR 2.5/1) black, firm, wet, moderate organic odor, no staining, sampler refusal at 15.0 feet. Soils consistent with UNDorg.	GAR-PDI-B11B-14.5-15.0

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
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Boring ID: GAR-PDI-C`7A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610748.272
Date Started Drilling: 1/8/2017 11:10:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683497.664
Date Finished Drilling: 1/8/2017 12:45:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 7.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.744 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	5		dry to moist	FILL		fine to medium SAND, trace fill debris, (7.5YR 2.5/1) black, medium dense, dry to moist, no odor, no staining.	GAR-PDI-C'7A-0.5-1.0
2			moist	FILL		fine to medium silty SAND, (5YR 4/3) reddish brown, medium dense, moist, no odor, no staining.	
3							GAR-PDI-C'7A-2.5-3.0
4			moist	FILL		SILT, trace fill debris, (7.5YR 2.5/1) black, firm, moist, no odor, no staining.	
5	5	0.0					GAR-PDI-C'7A-4.5-5.0
6							GAR-PDI-C'7A-6.0-6.5
7	5		moist to wet	ML		SILT, little fine to medium sand, (5YR 6/3) light reddish brown, soft, moist to wet, no odor, no staining, water at 7.5 feet. Soils consistent with UNDno.	GAR-PDI-C'7A-6.5-7.0
8							
9			wet	SW		fine to coarse SAND, little fine to medium gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C'7A-8.5-9.0
10	5	0.0					
11							GAR-PDI-C'7A-10.5-11.0
12							
13							GAR-PDI-C'7A-12.5-13.0
14							
15	5	0.0	wet	SM		fine to medium silty SAND, little fine to coarse gravel, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C'7A-14.5-15.0
16							
17							GAR-PDI-C'7A-16.5-17.0
18							
19							GAR-PDI-C'7A-18.5-19.0
20	1	0.0					GAR-PDI-C'7A-20.0-20.5
21							

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

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

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Boring ID: GAR-PDI-C`8A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610730.532
Date Started Drilling: 1/8/2017 1:00:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683468.738
Date Finished Drilling: 1/8/2017 2:50:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 7.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.874 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	4.5		dry to moist	FILL		SILT, little fine to medium sand and fill debris, (7.5YR 2.5/1) black, firm, dry to moist, no odor, no staining.	GAR-PDI-C'8A-0.5-1.0
2							GAR-PDI-C'8A-1.5-2.0
2			moist	ML		SILT, trace fine sand, (5YR 6/3) light reddish brown, stiff, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C'8A-2.0-2.5
3							
4							GAR-PDI-C'8A-4.0-4.5
5				NR		NO RECOVERY	
5	5	0.0	moist	ML		SILT, little fine to medium sand, (5YR 6/3) light reddish brown, firm, moist, no odor, no staining. Soils consistent with UNDno.	
6			moist to wet	SM		fine to medium silty SAND, (5YR 6/3) light reddish brown, medium dense, moist to wet, no odor, no staining, water at 7.0 feet. Soils consistent with UNDno.	GAR-PDI-C'8A-6.0-6.5
7							
8							GAR-PDI-C'8A-8.0-8.5
9			wet	SM		fine to coarse silty SAND, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
10	5	0.0					GAR-PDI-C'8A-10.0-10.5
11							
12							GAR-PDI-C'8A-12.0-12.5
13							
14							GAR-PDI-C'8A-14.0-14.5
15	5	0.0					
16							GAR-PDI-C'8A-16.0-16.5
17							
18							GAR-PDI-C'8A-18.0-18.5
19							
20	1	0.0					GAR-PDI-C'8A-20.0-20.5
21							

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

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

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Boring ID: GAR-PDI-C`9A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610715.218
Date Started Drilling: 12/4/2016 2:30:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683444.096
Date Finished Drilling: 12/4/2016	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 10.732 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	4.5		moist	FILL		SILT, some ash, cinders and fill debris, (5YR 4/3) reddish brown, firm, moist, no odor, no staining.	GAR-PDI-C'9A-1.0-1.5
2							GAR-PDI-C'9A-2.0-2.5
3			moist	ML		fine sandy SILT, (5YR 4/3) reddish brown, soft, moist to wet, no odor, no staining, water at 4.0 feet. Soils consistent with UNDno.	GAR-PDI-C'9A-2.5-3.0
4							GAR-PDI-C'9A-4.0-4.5
5				NR		NO RECOVERY	
6	5	0.0	wet	ML		fine to medium sandy SILT, trace fine to medium gravel, (7.5YR 4/2) brown, firm, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C'9A-6.0-6.5
7			wet	GW		fine to coarse GRAVEL, little fine to coarse sand, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
8							GAR-PDI-C'9A-8.0-8.5
9			wet	SM		fine to coarse silty SAND, little fine to coarse gravel, (5YR 4/4) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
10	5	0.0					GAR-PDI-C'9A-10.0-10.5
11							
12							GAR-PDI-C'9A-12.0-12.5
13							
14							GAR-PDI-C'9A-14.0-14.5
15	5	0.0					
16							GAR-PDI-C'9A-16.0-16.5
17							
18							GAR-PDI-C'9A-18.0-18.5
19							
20	1	0.0					GAR-PDI-C'9A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-C`10A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610698.579
Date Started Drilling: 12/4/2016 1:00:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683415.997
Date Finished Drilling: 12/4/2016 2:20:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.090 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1	4.5		moist	FILL		ASH, little cinders, (5YR 2.5/1) black, medium dense, moist, no odor, no staining.	GAR-PDI-C'10A-0.5-1.0
2			moist	FILL		SILT, trace cinders and fine sand, (5YR 4/3) reddish brown, soft, moist, no odor, no staining.	GAR-PDI-C'10A-2.0-2.5
3							GAR-PDI-C'10A-3.0-3.5
4			moist	ML		SILT, little fine to medium sand, (5YR 4/3) reddish brown, soft, moist to wet, no odor, no staining, water at 4.0 feet. Soils consistent with UNDno.	GAR-PDI-C'10A-3.5-4.0 GAR-PDI-C'10A-4.0-4.5
5				NR		NO RECOVERY	
6	5	0.0	wet	ML		SILT, little fine to medium sand, (5YR 4/3) reddish brown, firm, wet, no odor, no staining. Soils consistent with UNDno.	
7			wet	SM		fine to coarse silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C'10A-6.0-6.5
8							GAR-PDI-C'10A-8.0-8.5
9							
10	5	0.0					GAR-PDI-C'10A-10.0-10.5
11							
12							GAR-PDI-C'10A-12.0-12.5
13							
14			wet	SW		fine to medium SAND, trace fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C'10A-14.0-14.5
15	5	0.0					
16							GAR-PDI-C'10A-16.0-16.5
17							
18							GAR-PDI-C'10A-18.0-18.5
19							
20	1	0.0					GAR-PDI-C'10A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-C`12A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610668.07
Date Started Drilling: 12/4/2016 11:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683366.607
Date Finished Drilling: 12/4/2016 12:00:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.647 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
			moist	FILL		fine to coarse SAND, some cinders, (5YR 2.5/1) black, medium dense, moist, no odor, no staining.	GAR-PDI-C'12A-0.3-0.8
1			moist	FILL		fine to medium SAND, little silt and brick, (5YR 4/4) reddish brown, medium dense, moist, no odor, no staining.	
2	5		wet	FILL		ASH, (2.5Y 5/1) gray, loose, wet, no odor, no staining.	GAR-PDI-C'12A-2.0-2.5
			moist	SM		fine to medium silty SAND, (7.5YR 4/3) brown, medium dense, moist to wet, no odor, no staining, water at 4.0 feet. Soils consistent with UNDno.	GAR-PDI-C'12A-2.5-3.0
3							
4							GAR-PDI-C'12A-4.0-4.5
5		0.0					
6							GAR-PDI-C'12A-6.0-6.5
7	5		wet	SP		fine to coarse SAND, some fine to medium gravel, little silt, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
8							GAR-PDI-C'12A-8.0-8.5
9							
10		0.0					GAR-PDI-C'12A-10.0-10.5
11							
12	5						GAR-PDI-C'12A-12.0-12.5
13							
14							GAR-PDI-C'12A-14.0-14.5
15		0.0					
16							GAR-PDI-C'12A-16.0-16.5
17	5						
18							GAR-PDI-C'12A-18.0-18.5
19			wet	SW		fine to coarse SAND, some coarse gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
20	1	0.0					GAR-PDI-C'12A-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:03

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Boring ID: GAR-PDI-C`13A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 610652.855
Date Started Drilling: 11/20/2016 2:00:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683340.155
Date Finished Drilling: 11/20/2016 3:00:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: TI	**Project Manager:** Scott Mikaelian	**Depth to Water:** 6.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.696 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		CONCRETE		Concrete sidewalk	
1			moist	FILL		fine silty SAND, little coarse gravel, (7.5YR 3/2) dark brown, medium dense, moist, no odor, no staining.	GAR-PDI-C'13A-0.3-0.8
			moist	FILL		ASH, (2.5Y 5/1) gray, loose, moist, no odor, no staining.	
2	4.5		moist	FILL		fine silty SAND, trace brick, (7.5YR 6/3) light brown, medium dense, moist, no odor, no staining.	GAR-PDI-C'13A-2.0-2.5
3							
4							GAR-PDI-C'13A-4.0-4.5
5				NR		NO RECOVERY	
6	5	0.0	moist	FILL		fine silty SAND, little coarse gravel, (7.5YR 6/3) light brown, medium dense, moist to wet, no odor, no staining, water at 6.0 feet.	GAR-PDI-C'13A-6.0-6.5
							GAR-PDI-C'13A-6.5-7.0
7			wet	SM		fine silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C'13A-7.0-7.5
8							GAR-PDI-C'13A-8.0-8.5
9							
10		0.0					GAR-PDI-C'13A-10.0-10.5
11							
12	5						GAR-PDI-C'13A-12.0-12.5
13			wet	SM		fine to medium silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-C'13A-14.0-14.5
15		0.0	wet	SP		fine to medium SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	
16							GAR-PDI-C'13A-16.0-16.5
17	5						
18							GAR-PDI-C'13A-18.0-18.5
19							
20	1	0.0					GAR-PDI-C'13A-20.0-20.5
21							

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

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Boring ID: GAR-PDI-C11B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 611107.27
Date Started Drilling: 12/2/2016 10:25:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683924.662
Date Finished Drilling: 12/8/2016 11:05:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 11.987 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	5	0.0	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (2.5Y 5/1) gray, medium dense, dry to wet, no odor, no staining, water at 5.0 feet.	
5–6	5	0.0	moist	FILL		fine to medium SAND, some ash, little cinders, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	
7–8			wet	FILL		fine to medium SAND, some cinders, little coarse gravel, (5YR 3/3) dark reddish brown, medium dense, wet, no odor, no staining.	
8–9			moist	FILL		fine to medium SAND, little cinders, (7.5YR 4/3) brown, medium dense, moist, no odor, no staining.	GAR-PDI-C11B-9.0-9.5
9–10			wet	SP		fine to coarse SAND, some fine to medium gravel, (5YR 3/3) dark reddish brown, dense, wet, no odor, green staining, green colored groundwater. Soils consistent with UNDno.	
10–12	5	0.0					
12–13			moist	SP		fine to medium SAND, little fine to medium gravel, (7.5YR 4/3) brown, medium dense, moist, no odor no staining. Soils consistent with UNDno.	
13–14			moist	SC		SILT, little fine sand and clay, trace organics, (7.5YR 3/3) dark brown, stiff, moist, no odor, no staining, sampler lodged in boring at 15 feet. Soils consistent with UNDorg.	
14–15			wet	SP		fine to medium SAND, little silt, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining, green colored groundwater. Soils consistent with UNDno.	GAR-PDI-C11B-16.0-16.5
15–16	5	0.0	wet	ML		SILT, (7.5YR 4/3) brown, soft, wet, no odor, no staining. Soils consistent with UNDno.	
16–17			wet	SM		fine to medium silty SAND, little fine to medium gravel, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C11B-18.0-18.5
17–18							
18–19							
19–20							
20–21	5	0.0	dry	SP		fine to medium SAND, little fine to medium gravel, (2.5YR 4/2) weak red, dense, dry, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C11B-20.0-20.5

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

Comments: 1) 4 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.

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Boring ID: GAR-PDI-C12B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 611130.197
Date Started Drilling: 2/15/2017	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683937.53
Date Finished Drilling: 2/15/2017	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: E. Acs	**Project Manager:** Scott Mikaelian	**Depth to Water:** 7.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 12.292 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0 - 5	5	0.0	dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 4/3) brown, medium dense, dry, no odor, no staining.	
5 - 6	5	0.0	moist	FILL		fine SAND, trace fine to medium gravel, (7.5YR 2.5/1) black, medium dense, moist, no odor, no staining.	GAR-PDI-C12B-6.5-7.0
6 - 8	5	0.0	moist to wet	FILL		fine to medium SAND, little silt, trace brick, (7.5YR 4/2) brown, dense, moist to wet, no odor, no staining, water at 7.5 feet.	GAR-PDI-C12B-8.5-9.0
8 - 10	5	0.0	moist	SP		fine SAND, trace fine to medium gravel, (7.5YR 6/3) light brown, dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C12B-9.0-9.5 GAR-PDI-C12B-10.5-11.0
10 - 12	5	0.0	moist	OL		Organic SILT, 95% organic silt, 5% organic fibers, (7.5YR 2.5/1) black, soft, moist, moderate organic odor, no staining. Soils consistent with UNDorg.	GAR-PDI-C12B-14.0-14.5
12 - 15	5	0.0	moist	SP		fine SAND, trace fine to medium gravel, (5YR 4/3) reddish brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C12B-16.0-16.5 GAR-PDI-C12B-18.0-18.5
15 - 20	5	0.0	moist	SP		fine SAND, trace fine to medium gravel, (5YR 4/3) reddish brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C12B-20.0-20.5
20 - 21	1	0.0	moist	SP		fine SAND, trace fine to medium gravel, (5YR 4/3) reddish brown, medium dense, moist, no odor, no staining. Soils consistent with UNDno.	

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/19/17 12:05

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-C13B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611144.3
Date Started Drilling: 12/18/2016 9:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683957.33
Date Finished Drilling: 12/18/2016	**Core Size:** 3.0 in	**Boring Total Depth:** 25 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 3.5
Physical Location: Actual - GA PDI		**Surface Elevation:** 12.05 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	5		moist	FILL		CINDERS, little ash, (5YR 2.5/1) black, loose, moist, no odor, no staining.	GAR-PDI-C13B-2.0-2.5
3			wet	FILL		fine to coarse GRAVEL, little cobbles, (5YR 2.5/1) black, dense, wet, no odor, no staining, water at 3.5 feet.	
4			wet	FILL		SILT, trace wood and fill debris, (5YR 2.5/1) black, soft, wet, no odor, no staining.	GAR-PDI-C13B-4.0-4.5
5		0.0	wet	FILL		SILT, little ash, trace fill debris, (5YR 2.5/1) black, soft, wet, no odor, no staining.	
6							GAR-PDI-C13B-6.0-6.5
7	4		wet	FILL		fine to medium SAND, little fill debris, trace ash, (5YR 2.5/2) dark reddish brown, medium dense, wet, no odor, no staining.	
8							GAR-PDI-C13B-8.0-8.5
9			wet	SW		fine to coarse SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C13B-8.5-9.0
10				NR		NO RECOVERY	
11	4.5	0.0	wet	SM		fine to coarse silty SAND, little fine to coarse gravel, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C13B-10.0-10.5
12			wet	OL		Organic SILT, 90% organic silt, 10% organic fibers, (7.5YR 3/2) dark brown, firm, wet, slight organic odor, no staining. Soils consistent with UNDorg.	GAR-PDI-C13B-12.0-12.5
13			wet	SM		fine silty SAND, (10G 7/1) light greenish gray, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	
14							GAR-PDI-C13B-14.0-14.5
15				NR		NO RECOVERY	
16	5	0.0	wet	SM		fine to coarse silty SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C13B-16.0-16.5
17							
18							GAR-PDI-C13B-18.0-18.5
19							
20	5	0.0					GAR-PDI-C13B-20.0-20.5
21							
22							
23							
24							
25							

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

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-C14B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Direct Push	**Coordinates (NJSPNAD83) x:** 611148.399
Date Started Drilling: 10/30/2016 9:15:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683986.489
Date Finished Drilling: 10/30/2016 10:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 21 ft
Logged By: Kyle Willis	**Project Manager:** Scott Mikaelian	**Depth to Water:** 4.0
Physical Location: Actual- GA PDI		**Surface Elevation:** 12.539 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0		0.0		ASPHALT		ASPHALT	
1				CONCRETE		Concrete slab	
2	4.5		moist	FILL		fine to medium silty SAND, little fill debris, trace ash and coal, (7.5YR 2.5/2) very dark brown, dense, moist, no odor, no staining.	GAR-PDI-C14B-2.0-2.5
3							
4			wet	FILL		fine SAND, little cinders and ash, (7.5YR 3/2) dark brown, medium dense, wet, no odor, no staining, water at 4.0 feet	GAR-PDI-C14B-4.0-4.5
5				NR		NO RECOVERY	
6	3.5	0.0	wet	FILL		fine to medium silty SAND, little fill debris, (7.5YR 4/2) brown, medium dense, wet, no odor, no staining.	
7			wet	FILL		CINDERS, some ash, (5YR 6/1) gray, loose, wet, no odor, no staining.	GAR-PDI-C14B-6.0-6.5
8			wet	FILL		fine to coarse silty SAND, little fill debris, (5YR 3/2) dark reddish brown, medium dense, wet, no odor, no staining.	GAR-PDI-C14B-8.0-8.5
9				NR		NO RECOVERY	
10	4.5	0.0	wet	FILL		SILT, some shells, (5YR 2.5/1) black, loose, wet, no odor, no staining.	GAR-PDI-C14B-10.0-10.5
11			wet	ML		SILT, some fine sand, (5YR 6/3) light reddish brown, firm, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C14B-10.5-11.0 GAR-PDI-C14B-11.0-11.5
12							GAR-PDI-C14B-12.0-12.5
13							
14			wet	SW		fine to coarse SAND, trace fine to coarse gravel, (5YR 3/4) dark reddish brown, medium dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C14B-14.0-14.5
15	5	0.0		NR		NO RECOVERY	
16			wet	SW		fine to coarse SAND, little fine to coarse gravel, (5YR 4/3) reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C14B-16.0-16.5
17							
18			wet	GW		fine to coarse GRAVEL, trace fine sand, (5YR 6/3) light reddish brown, dense, wet, no odor, no staining. Soils consistent with UNDno.	GAR-PDI-C14B-18.0-18.5
19							
20	1	0.0					GAR-PDI-C14B-20.0-20.5
21							

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 4/7/17 12:03

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GAR-PDI-D14B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** direct push	**Coordinates (NJSPNAD83) x:** 611173.388
Date Started Drilling: 12/11/2016 9:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683976.164
Date Finished Drilling: 12/11/2016 11:20:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 9.5 ft
Logged By: Eric Stone	**Project Manager:** Scott Mikaelian	**Depth to Water:** 5.0
Physical Location: Actual - GA PDI		**Surface Elevation:** 12.891 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 sidewalk	
			dry	FILL		DGA, fine to coarse SAND, little asphalt, (2.5Y 5/2) grayish brown, loose, dry, no odor, no staining.	
1			dry	FILL		DGA, fine to coarse SAND, some fine to medium gravel, (7.5YR 6/4) light brown, medium dense, dry, no odor, no staining.	
2							
3							
4							
5	4.5	0.0	wet	FILL		fine to coarse SAND, some fine to coarse gravel, (7.5YR 4/3) brown, medium dense, wet, no odor, no staining, water at 5.0 feet.	GAR-PDI-D14B-5.0-5.5
6							
7			wet	FILL		ASH, some fine to coarse sand, little fill debris, (2.5Y 5/2) grayish brown, medium dense, wet, no odor, no staining.	GAR-PDI-D14B-7.0-7.5
8							GAR-PDI-D14B-8.5-9.0
9			wet	GW		fine to coarse GRAVEL, some fine to medium sand, (5YR 4/4) reddish brown, medium dense, wet, no odor, no staining, refusal at 9.5 feet. Soils consistent with UNDno.	GAR-PDI-D14B-9.0-9.5

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

Comments: 1) 3 attempts were made to obtain best recovery 2) No CCPW (COPR or GGM) present in any interval of this boring.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: GB

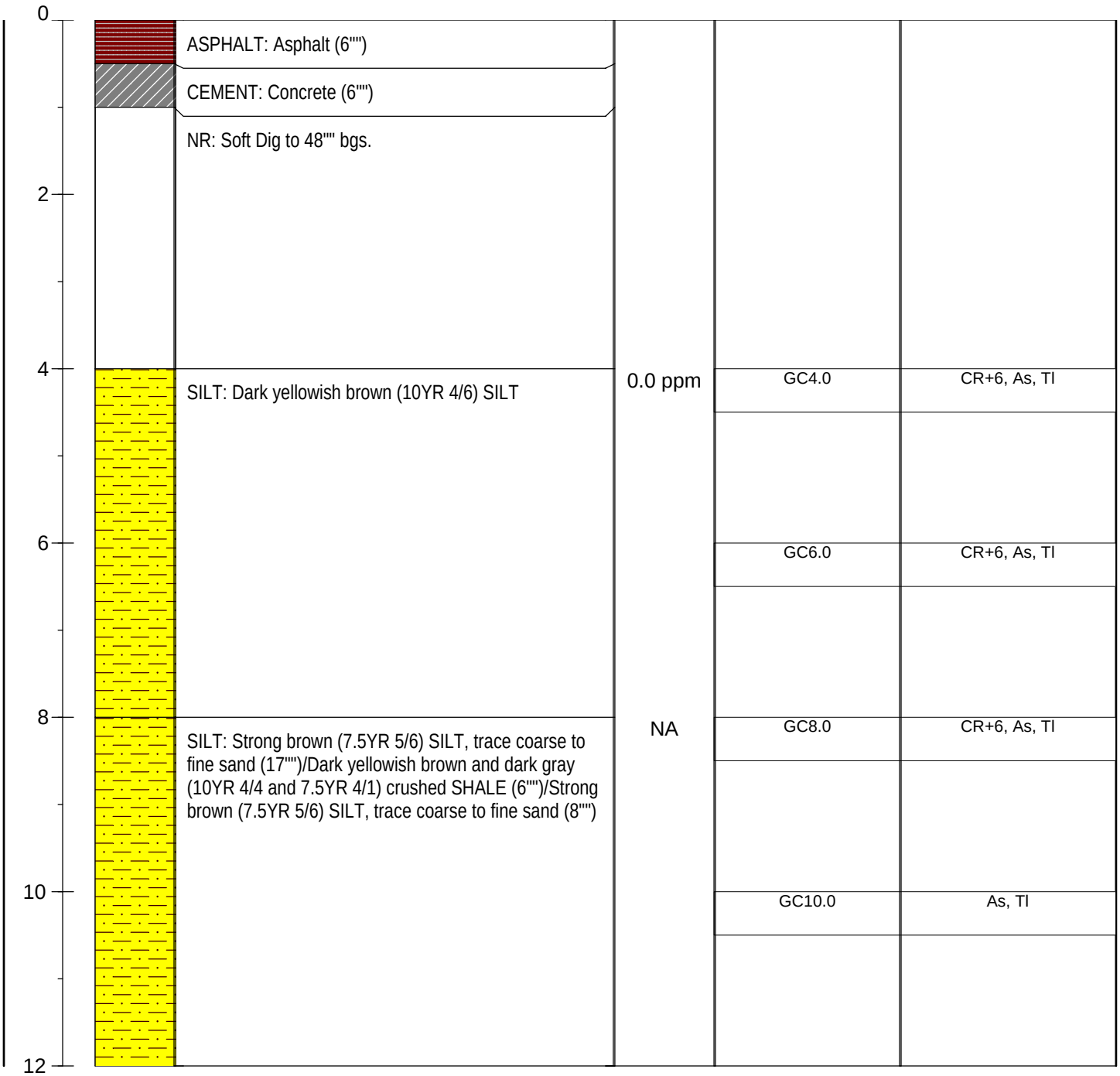
Project Name: PPG Garfield Ave	**Drilling Company:** Advanced Drilling Inc.	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610777.75
Date Started Drilling: 3/14/2004	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683466.4
Date Finished Drilling: 3/14/2004	**Core Size:** 1.25 inches	**Boring Total Depth:** 12 ft
Logged By: R. Feinberg	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location:		**Surface Elevation:** 10.2 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
		0.3		CEMENT		Concrete (5")	
1			moist	FILL		Black and red (GLEY1 2.5/N and 2.5YR 3/3) coarse to fine SAND, trace coarse to fine gravel, trace coal.	GB0.4-0.9
2						Gray (5YR 6/1) coarse to fine SAND, little crushed gravel, trace silt.	GB1.5-2
3						Reddish brown (5YR 4/4) SILT and CLAY, trace coarse to fine sand and gravel.	
4		0	wet to moist	FILL		Black and weak red (GLEY1 2.5/N and 10R 4/2) mottled coarse to fine SAND and SILT, little coal/coal ash,	GB4-4.5
5							
6		0				Brown (10YR 5/3) coarse to fine SAND and SILT, trace clay.	GB6.0-6.5-727916
7							
8		0	wet	FILL		Brown, dark grayish brown and black (7.5YR 4/2, 10YR 5/4 and GLEY1 2.5/N) SILT, some clay.	GB8.0-8.5-727917
9							
10							GB10.0-10.5-727918
11							
12						End of Boring	

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

Comments: 1) Recovery data not available 2) No CCPW (COPR or GGM) present in any interval of this boring.

ENSR | AECOM	Client: PPG	BORING ID: GC
	Site: PPG - Jersey City, NJ	
Start Date: 3/16/2004	Project: Site Investigation	Page: 1 of 2
	Coordinates: X-610826.34 Y-683596.44	Depth of Boring: 12.00
End Date: 3/16/2004	Elevation: 6.93	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		ASPHALT: Asphalt (6"")			
		CEMENT: Concrete (6"")			
		NR: Soft Dig to 48"" bgs.			
4		SILT: Dark yellowish brown (10YR 4/6) SILT	0.0 ppm	GC4.0	CR+6, As, Tl
6				GC6.0	CR+6, As, Tl
8		SILT: Strong brown (7.5YR 5/6) SILT, trace coarse to fine sand (17"")/Dark yellowish brown and dark gray (10YR 4/4 and 7.5YR 4/1) crushed SHALE (6"")/Strong brown (7.5YR 5/6) SILT, trace coarse to fine sand (8"")	NA	GC8.0	CR+6, As, Tl
10				GC10.0	As, Tl
12					

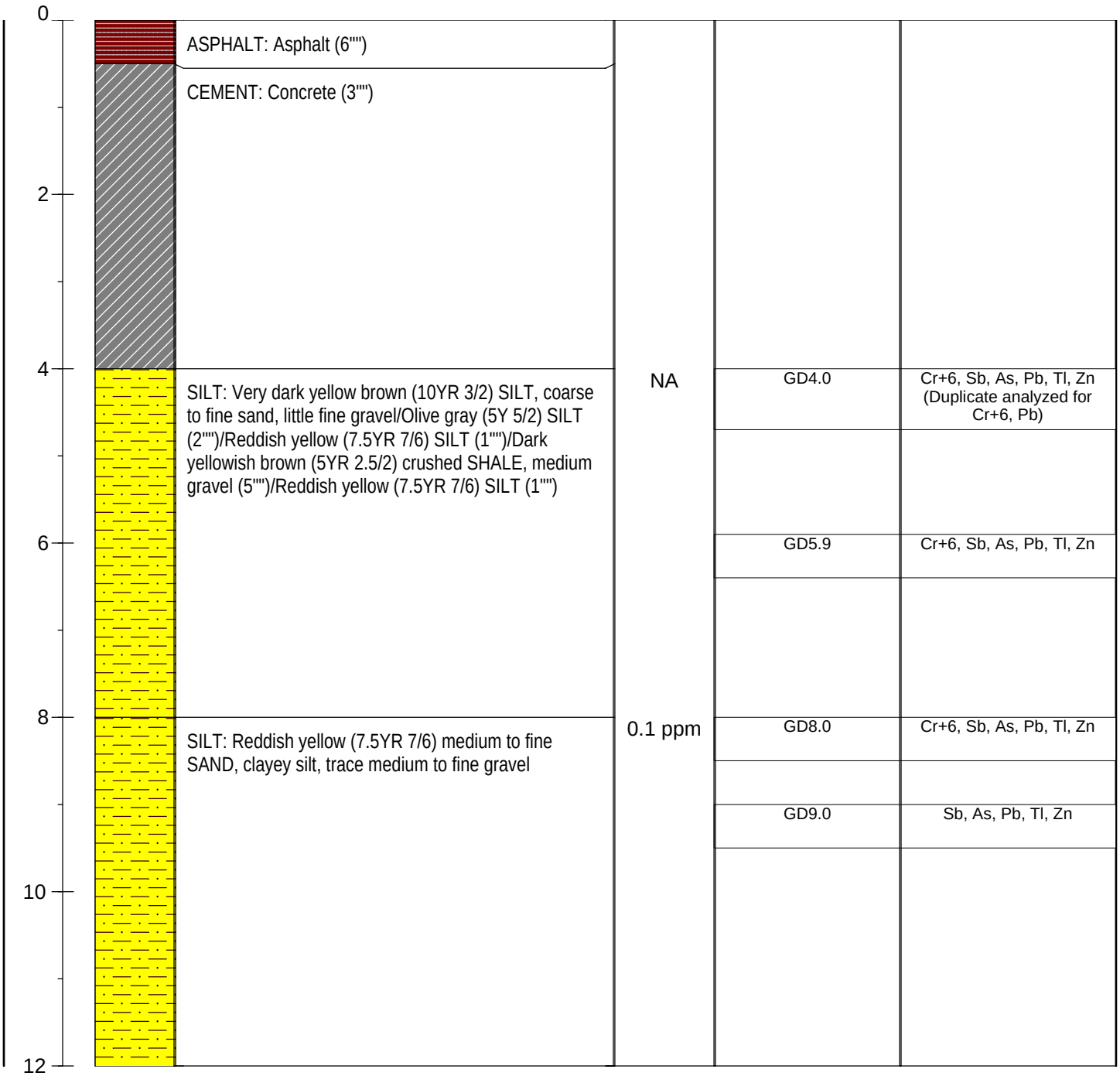
NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **GC**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/16/2004	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610826.34 Y-683596.44	Depth of Boring: 12.00
End Date: 3/16/2004	Elevation: 6.93	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12		NULL: End of Boring at 12 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **GD**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/16/2004	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610901.24 Y-683725.55	Depth of Boring: 12.00
End Date: 3/16/2004	Elevation: 11.39	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Description	PID	Sample ID	Sample Parameters
0	ASPHALT: Asphalt (6"")			
	CEMENT: Concrete (3"")			
4	SILT: Very dark yellow brown (10YR 3/2) SILT, coarse to fine sand, little fine gravel/Olive gray (5Y 5/2) SILT (2"")/Reddish yellow (7.5YR 7/6) SILT (1"")/Dark yellowish brown (5YR 2.5/2) crushed SHALE, medium gravel (5"")/Reddish yellow (7.5YR 7/6) SILT (1"")	NA	GD4.0	Cr+6, Sb, As, Pb, Tl, Zn (Duplicate analyzed for Cr+6, Pb)
6			GD5.9	Cr+6, Sb, As, Pb, Tl, Zn
8	SILT: Reddish yellow (7.5YR 7/6) medium to fine SAND, clayey silt, trace medium to fine gravel	0.1 ppm	GD8.0	Cr+6, Sb, As, Pb, Tl, Zn
			GD9.0	Sb, As, Pb, Tl, Zn
10				
12				

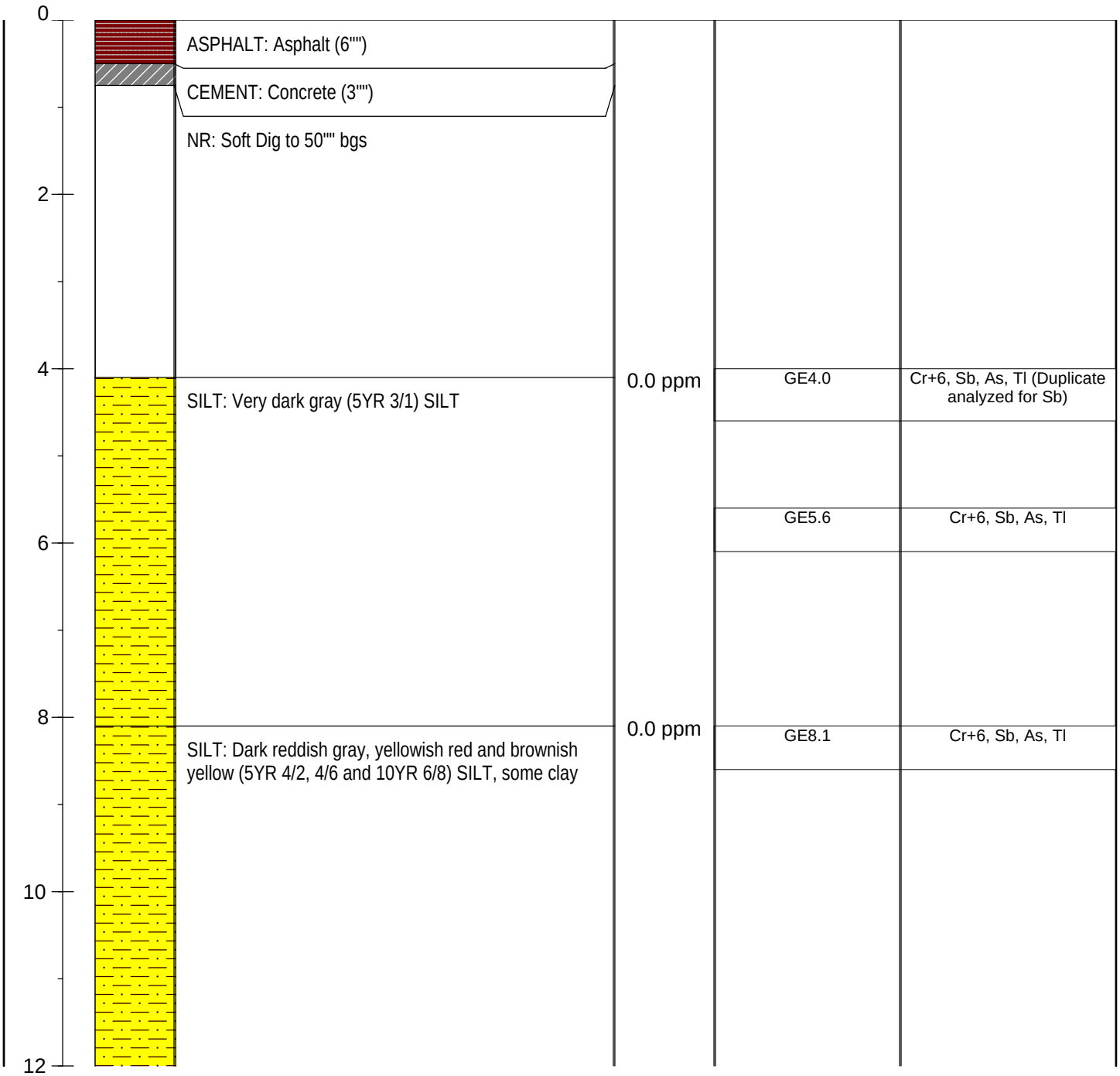
NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **GD**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/16/2004	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610901.24 Y-683725.55	Depth of Boring: 12.00
End Date: 3/16/2004	Elevation: 11.39	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12		NULL: End of Boring at 12 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG	BORING ID: GE
	Site: PPG - Jersey City, NJ	
Start Date: 3/16/2004	Project: Site Investigation	Page: 1 of 3
	Coordinates: X-610972.35 Y-683842.15	Depth of Boring: 27.00
End Date: 3/16/2004	Elevation: 12.46	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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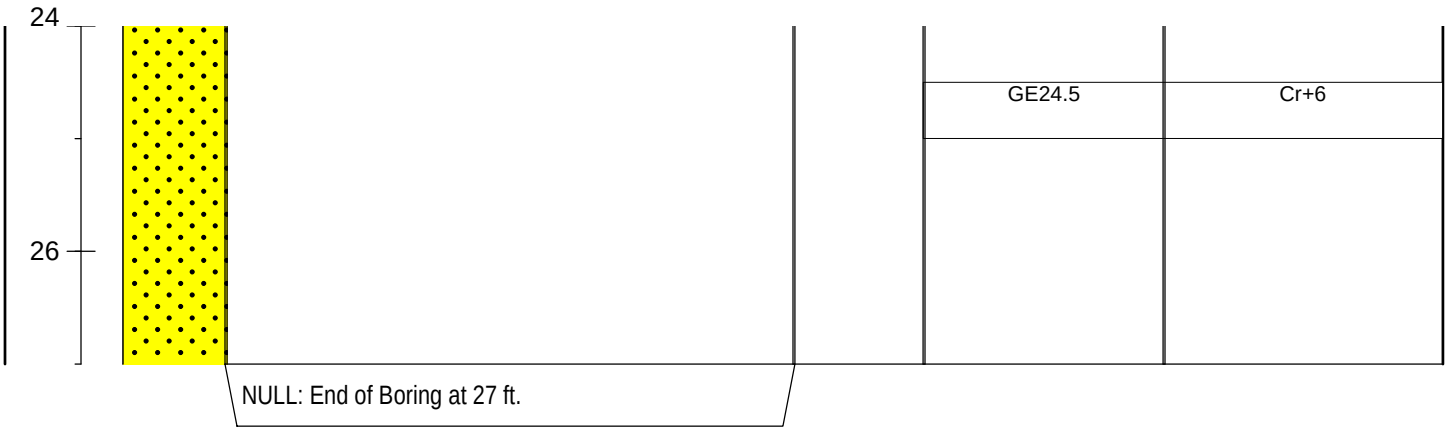
ENSR | AECOM	Client: PPG	BORING ID: GE
	Site: PPG - Jersey City, NJ	
Start Date: 3/16/2004	Project: Site Investigation	Page: 2 of 3
	Coordinates: X-610972.35 Y-683842.15	Depth of Boring: 27.00
End Date: 3/16/2004	Elevation: 12.46	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12		SAND: Yellowish red (5YR 4/6) coarse to fine SAND, little silt, little coarse to fine gravel (10"")/Yellowish red (5YR 4/6) SILT and fine SAND, trace fine gravel	0.0 ppm	GE12.1	Cr+6, Sb, As, Tl
14					
16		SAND: Reddish brown (2.5YR 4/4) coarse to fine SAND and CLAYEY SILT, trace coarse to fine gravel	0.0 ppm	GE16.1	Cr+6, Sb, As, Tl
18					
20			0.0 ppm	GE20.5	Cr+6, Sb, As, Tl
		SAND: Reddish brown (2.5YR 4/4) coarse to fine SAND and CLAYEY SILT, trace coarse to fine gravel		GE21.0	Sb, As, Tl
22					
24					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **GE**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/16/2004	Project: **Site Investigation**	Page: 3 of 3
	Coordinates: X-610972.35 Y-683842.15	Depth of Boring: 27.00
End Date: 3/16/2004	Elevation: 12.46	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

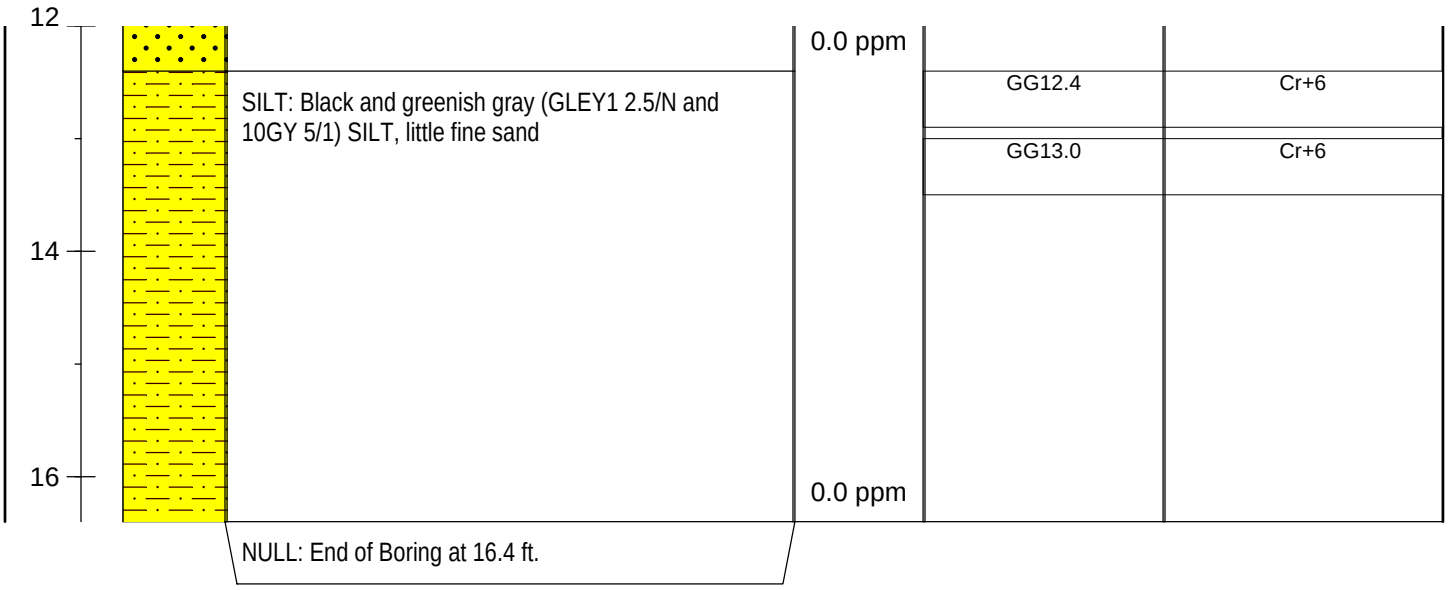
ENSR | AECOM	Client: **PPG**	BORING ID: **GG**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/16/2004	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-611104.59 Y-683959.43	Depth of Boring: 16.40
End Date: 3/16/2004	Elevation: 12.30	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		ASPHALT: Asphalt			
		FILL: Soft dig to 53"" bgs			
2					
4					
		FILL: Very dark grayish brown (10YR 3/2) fine SAND and SILT/Brown (7.5YR 4/3) coarse to fine SAND, little coarse to fine gravel		GG4.4	Cr+6, As (Duplicate analyzed for As)
				GG5.5	Cr+6, As
6					
8			0.0 ppm		
		SAND: Brown (7.5YR 4/3) fine SAND and SILT		GG8.4	Cr+6, As
10					
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

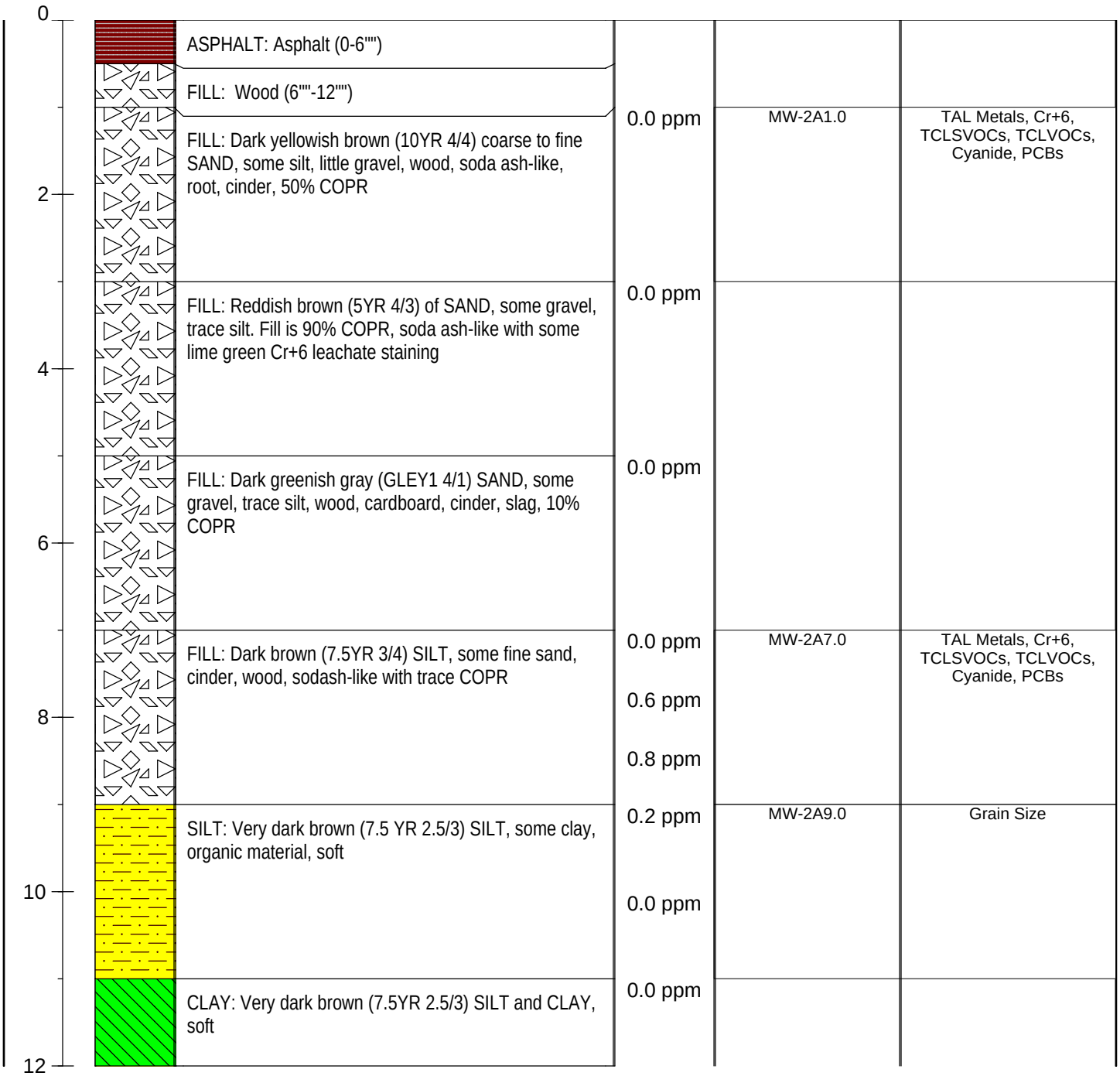
ENSR | AECOM	Client: **PPG**	BORING ID: **GG**
	Site: **PPG - Jersey City, NJ**	
Start Date: 3/16/2004	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-611104.59 Y-683959.43	Depth of Boring: 16.40
End Date: 3/16/2004	Elevation: 12.30	Geologist: R. Firely
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **MW2A**
	Site: **PPG - Jersey City, NJ**	
Start Date: 11/14/2003	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610960.36 Y-683738.97	Depth of Boring: 13.00
End Date: 11/14/2003	Elevation: 13.54	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		ASPHALT: Asphalt (0-6"")			
		FILL: Wood (6""-12"")			
		FILL: Dark yellowish brown (10YR 4/4) coarse to fine SAND, some silt, little gravel, wood, soda ash-like, root, cinder, 50% COPR	0.0 ppm	MW-2A1.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs
2		FILL: Reddish brown (5YR 4/3) of SAND, some gravel, trace silt. Fill is 90% COPR, soda ash-like with some lime green Cr+6 leachate staining	0.0 ppm		
4		FILL: Dark greenish gray (GLEY1 4/1) SAND, some gravel, trace silt, wood, cardboard, cinder, slag, 10% COPR	0.0 ppm		
6		FILL: Dark brown (7.5YR 3/4) SILT, some fine sand, cinder, wood, sodash-like with trace COPR	0.0 ppm 0.6 ppm 0.8 ppm	MW-2A7.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs
8		SILT: Very dark brown (7.5 YR 2.5/3) SILT, some clay, organic material, soft	0.2 ppm 0.0 ppm	MW-2A9.0	Grain Size
10		CLAY: Very dark brown (7.5YR 2.5/3) SILT and CLAY, soft	0.0 ppm		
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **MW2A**
	Site: **PPG - Jersey City, NJ**	
Start Date: 11/14/2003	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610960.36 Y-683738.97	Depth of Boring: 13.00
End Date: 11/14/2003	Elevation: 13.54	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12		SAND: Strong brown (7.5YR 5/6) coarse to fine SAND, some gravel, little cobble			
		NULL: End of Boring at 13 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **MW2AV**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/6/2005	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610959.18 Y-683748.42	Depth of Boring: 23.00
End Date: 10/6/2005	Elevation: 13.00	Geologist: McCray, Scott
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		UNKNOWN: Not Logged (Obstruction at 2.0' which driller got past)			
2					
4					
6					
8					
10					
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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ENSR | AECOM	Client: PPG	BORING ID: MW2AV
	Site: PPG - Jersey City, NJ	
Start Date: 10/6/2005	Project: Site Investigation	Page: 2 of 2
	Coordinates: X-610959.18 Y-683748.42	Depth of Boring: 23.00
End Date: 10/6/2005	Elevation: 13.00	Geologist: McCray, Scott
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12		SAND: Dusky Red (10R 3/2) medium-fine SAND, some Silt, saturated	0.0 ppm	MW2AVA12	Cr+6, Sb
14		NR: No Recovery			
16		SAND: Dusky Red (10R 3/2) medium-fine SAND, some Silt, little coarse angular to subrounded Gravel, saturated	0.0 ppm	MW2AVB16	Cr+6, Sb
18		NR: No Recovery			
20		SAND: Dusky Red (10R 3/4) medium-fine SAND, some Silt, trace angular to subrounded Gravel, saturated	0.0 ppm	MW2AVC20	Cr+6, Sb
22		NR: No Recovery			
		NULL: Refusal at 23' bgs.			

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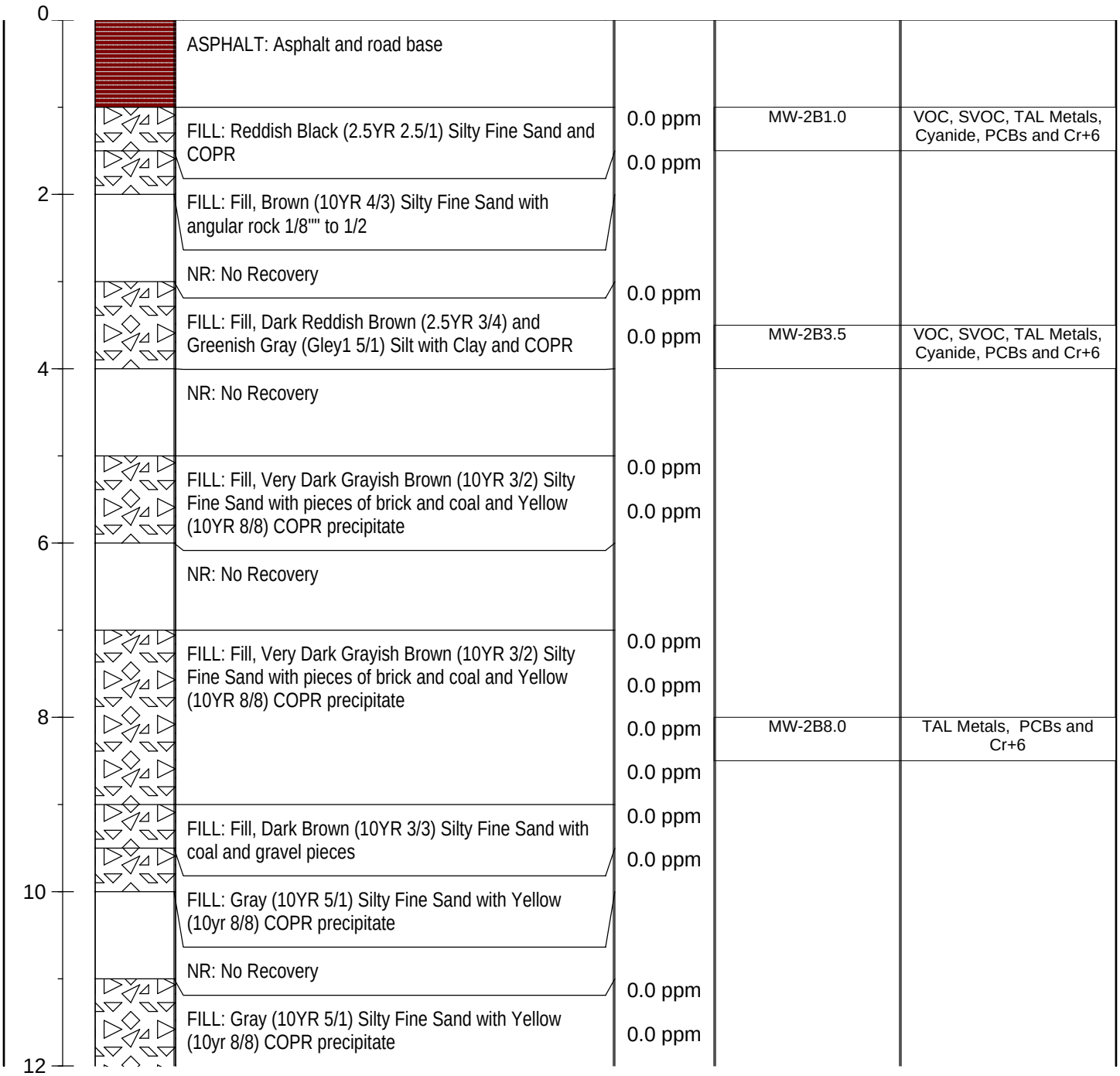
ENSR | AECOM	Client: **PPG**	BORING ID: **MW2B**
	Site: **PPG - Jersey City, NJ**	
Start Date: 8/6/2003	Project: **Site Investigation**	Page: 1 of 4
	Coordinates: X-610963.92 Y-683743.79	Depth of Boring: 46.00
End Date: 8/6/2003	Elevation: 11.03	Geologist: T. Rymar
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		ASPHALT: Asphalt and road base			
		FILL: Reddish Black (2.5YR 2.5/1) Silty Fine Sand and COPR	0.0 ppm	MW-2B1.0	VOC, SVOC, TAL Metals, Cyanide, PCBs and Cr+6
			0.0 ppm		
2		FILL: Fill, Brown (10YR 4/3) Silty Fine Sand with angular rock 1/8"" to 1/2			
		NR: No Recovery	0.0 ppm		
		FILL: Fill, Dark Reddish Brown (2.5YR 3/4) and Greenish Gray (Gley1 5/1) Silt with Clay and COPR	0.0 ppm	MW-2B3.5	VOC, SVOC, TAL Metals, Cyanide, PCBs and Cr+6
4		NR: No Recovery			
		FILL: Fill, Very Dark Grayish Brown (10YR 3/2) Silty Fine Sand with pieces of brick and coal and Yellow (10YR 8/8) COPR precipitate	0.0 ppm		
			0.0 ppm		
6		NR: No Recovery			
		FILL: Fill, Very Dark Grayish Brown (10YR 3/2) Silty Fine Sand with pieces of brick and coal and Yellow (10YR 8/8) COPR precipitate	0.0 ppm		
			0.0 ppm		
8			0.0 ppm	MW-2B8.0	TAL Metals, PCBs and Cr+6
			0.0 ppm		
		FILL: Fill, Dark Brown (10YR 3/3) Silty Fine Sand with coal and gravel pieces	0.0 ppm		
			0.0 ppm		
10		FILL: Gray (10YR 5/1) Silty Fine Sand with Yellow (10yr 8/8) COPR precipitate			
		NR: No Recovery	0.0 ppm		
		FILL: Gray (10YR 5/1) Silty Fine Sand with Yellow (10yr 8/8) COPR precipitate	0.0 ppm		
12					

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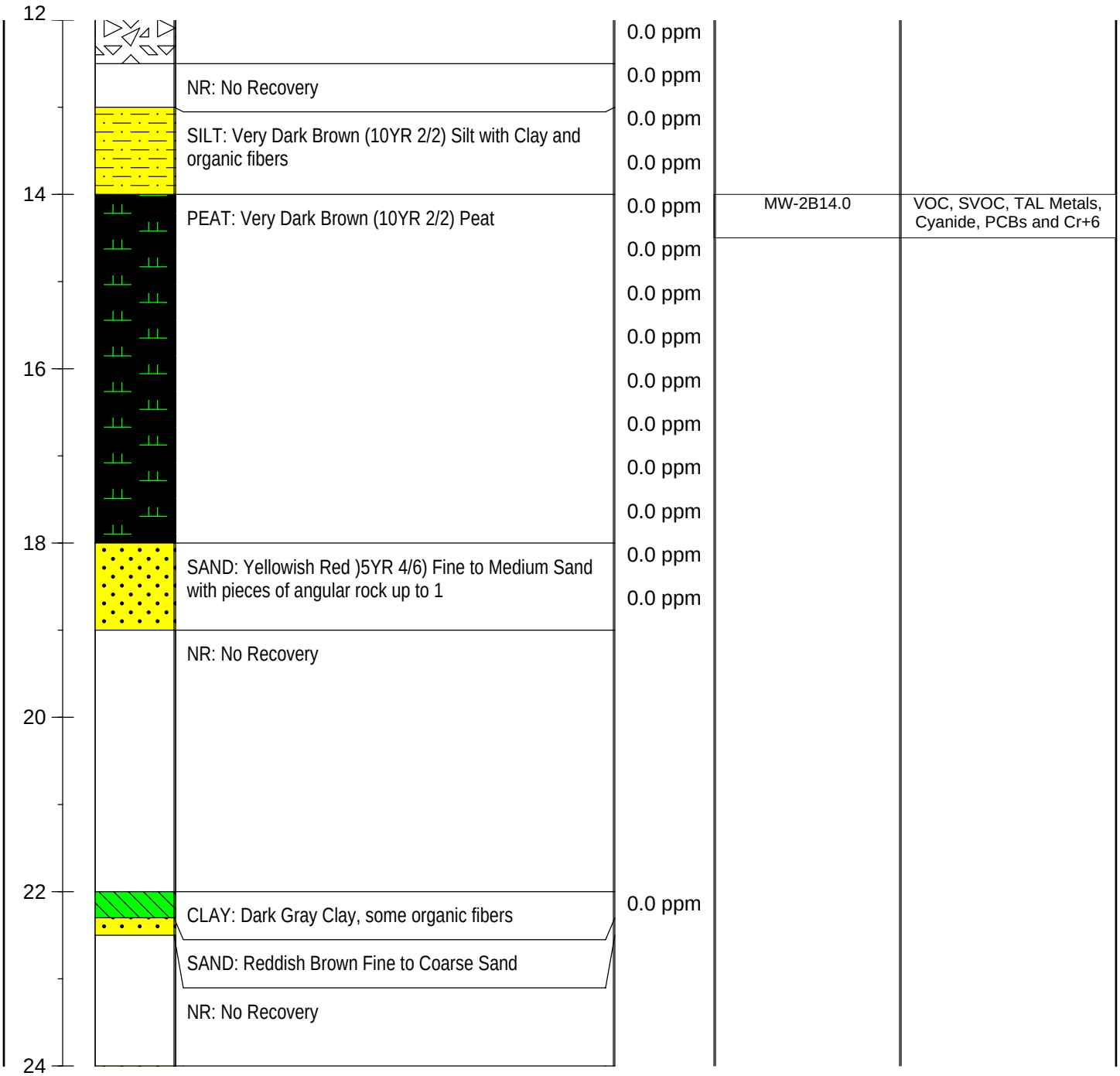
ENSR | AECOM	Client: PPG	BORING ID: MW2B
	Site: PPG - Jersey City, NJ	
Start Date: 8/6/2003	Project: Site Investigation	Page: 2 of 4
	Coordinates: X-610963.92 Y-683743.79	Depth of Boring: 46.00
End Date: 8/6/2003	Elevation: 11.03	Geologist: T. Rymar
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

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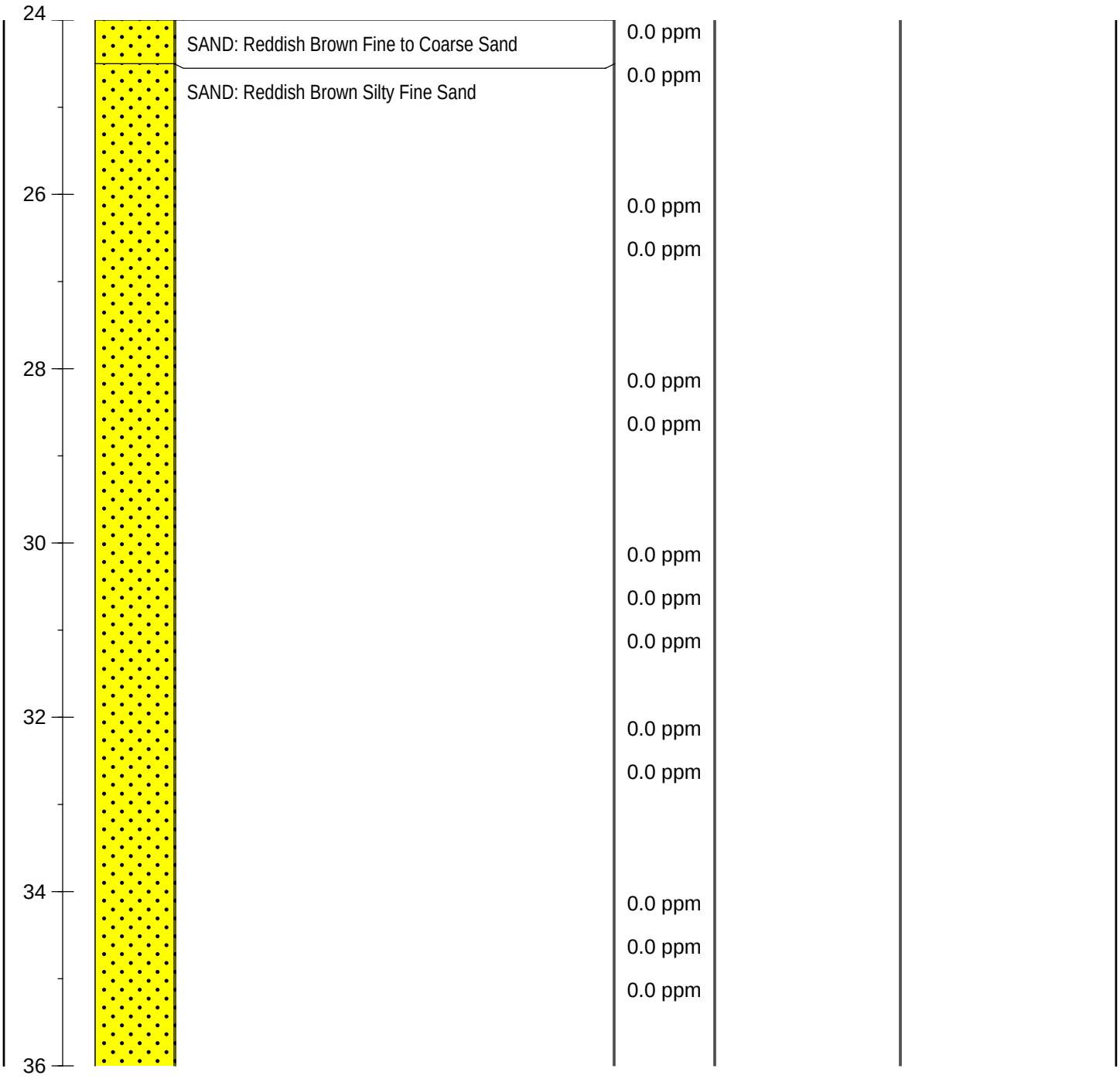
ENSR | AECOM	Client: PPG	BORING ID: MW2B
	Site: PPG - Jersey City, NJ	
Start Date: 8/6/2003	Project: Site Investigation	Page: 3 of 4
	Coordinates: X-610963.92 Y-683743.79	Depth of Boring: 46.00
End Date: 8/6/2003	Elevation: 11.03	Geologist: T. Rymar
	Drill Subcontractor: ADI	Driller:



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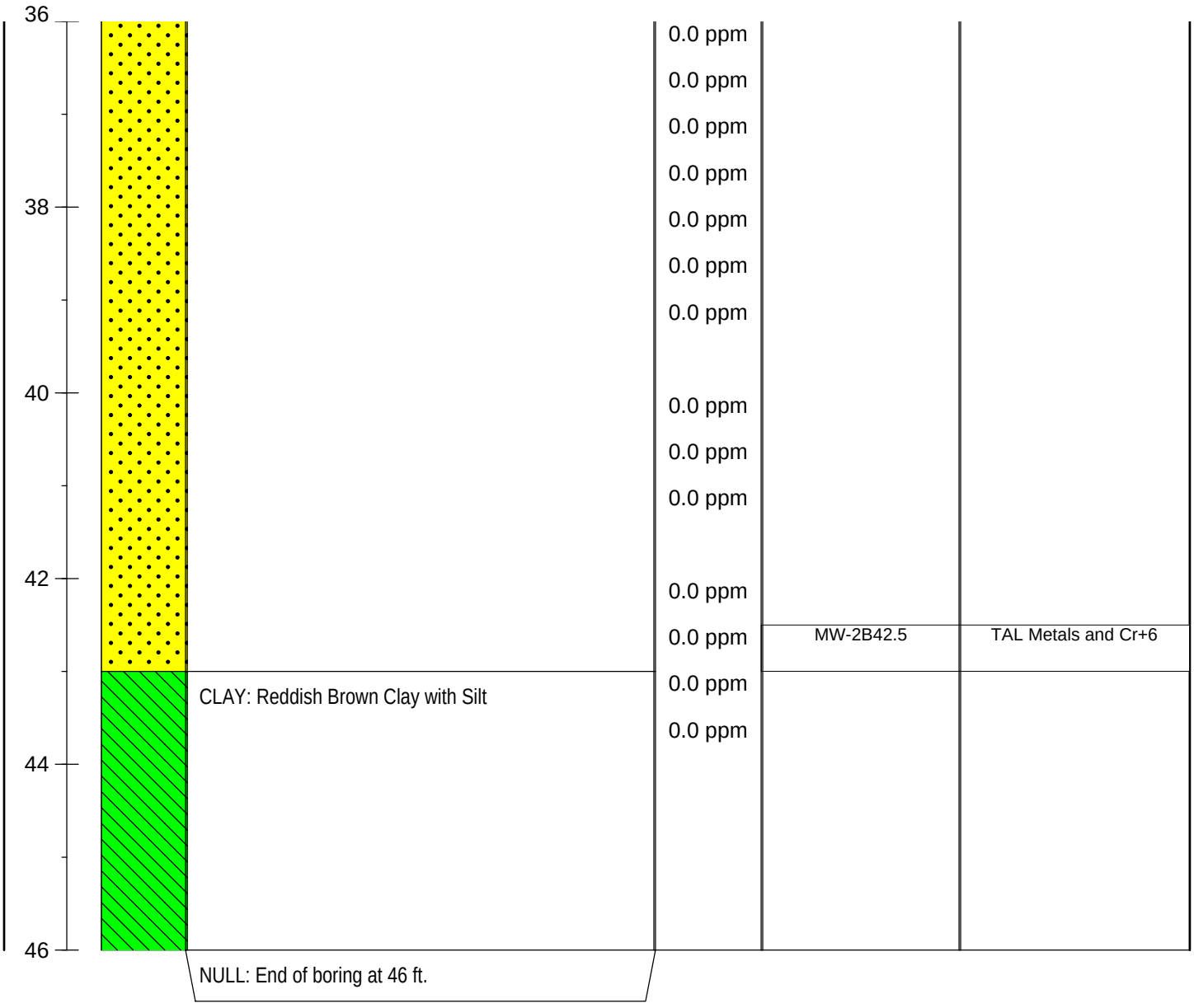
ENSR | AECOM	Client: PPG	BORING ID: MW2B
	Site: PPG - Jersey City, NJ	
Start Date: 8/6/2003	Project: Site Investigation	Page: 4 of 4
	Coordinates: X-610963.92 Y-683743.79	Depth of Boring: 46.00
End Date: 8/6/2003	Elevation: 11.03	Geologist: T. Rymar
	Drill Subcontractor: ADI	Driller:



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ENSR | AECOM	Client: **PPG**	BORING ID: **MW3A**
	Site: **PPG - Jersey City, NJ**	
Start Date: 11/17/2003	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-611154.46 Y-683927.6	Depth of Boring: 14.00
End Date: 11/17/2003	Elevation: 17.48	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		FILL: Black (7.5YR 2.5/1) coarse to fine SAND, some gravel, cinder, glass, brick, slag			
2		FILL: Very dark brown (7.5YR 2.5/3) SILT and fine SAND, some gravel, litttle clay, clinker, brick, wood, ash	0.0 ppm	MW-3A2.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs, Pesticides
4		FILL: Light gray (7.5YR 7/1) coarse to fine SAND, some gravel, little silt, clinker, wood, slag, cinder, 20% COPR	0.0 ppm	MW-3A4.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs, Pesticides
6		SILT: Reddish brown (5YR 5/4) SILT, some clay, mottling, native material	0.0 ppm		
8		SILT: Reddish brown (5YR 4/3) SILT, some clay, mottling, shells, native material	0.0 ppm		
10		SILT: Black (5YR 2.5/1) SILT, some clay, trace fine sand	0.0 ppm		
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **MW3A**
	Site: **PPG - Jersey City, NJ**	
Start Date: 11/17/2003	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-611154.46 Y-683927.6	Depth of Boring: 14.00
End Date: 11/17/2003	Elevation: 17.48	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
12			0.0 ppm		
			0.0 ppm	MW-3A13.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs, Pesticides
14		NULL: End of Boring at 14 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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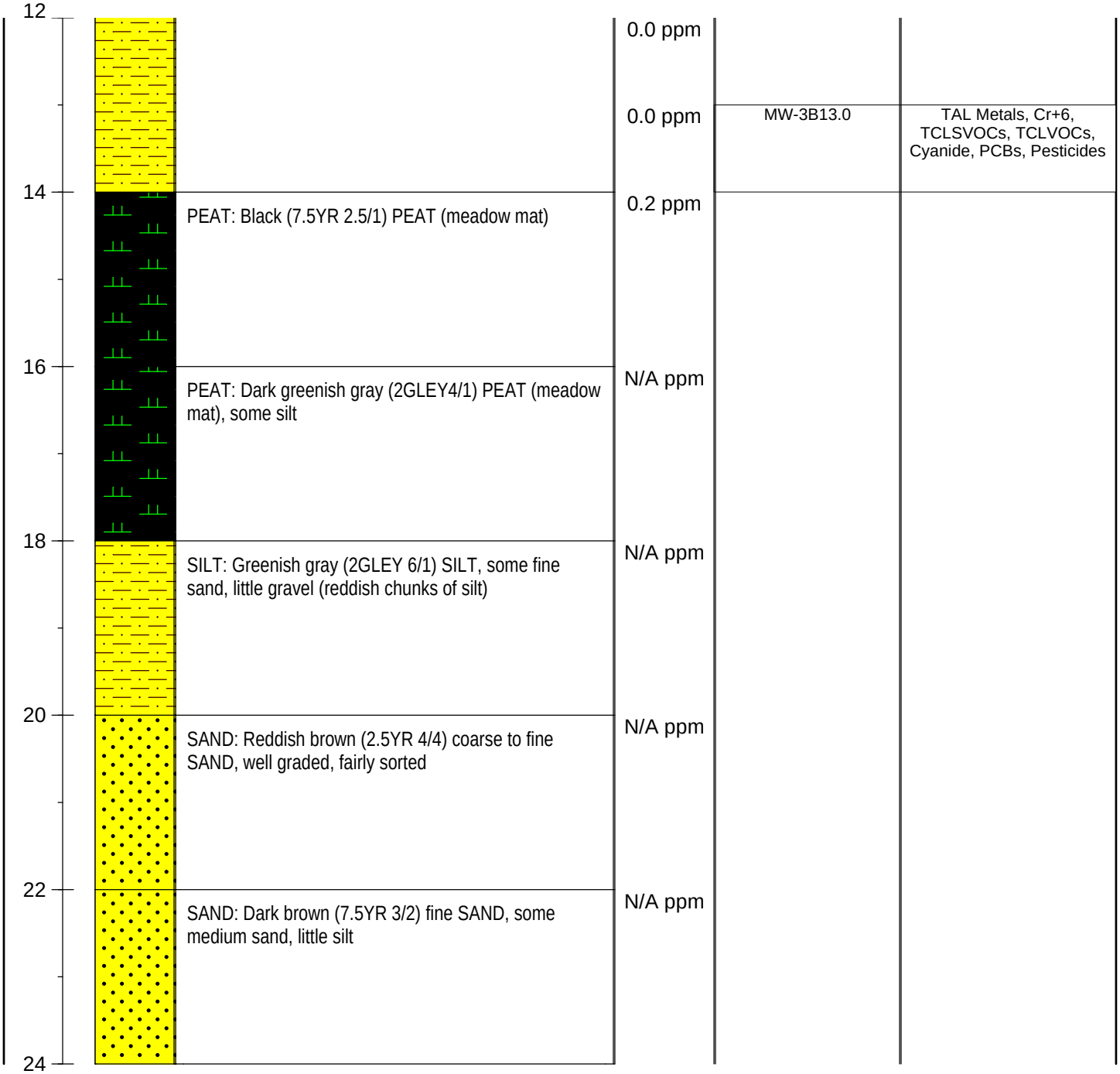
ENSR | AECOM	Client: **PPG**	BORING ID: **MW3B**
	Site: **PPG - Jersey City, NJ**	
Start Date: 11/17/2003	Project: **Site Investigation**	Page: 1 of 5
	Coordinates: X-611160.67 Y-683929.35	Depth of Boring: 50.00
End Date: 11/17/2003	Elevation: 18.72	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		FILL: Black (7.5YR 2.5/1) coarse to fine SAND, some gravel, cinder glass, brick, slag			
2		FILL: Very dark brown (7.5YR 2.5/3) SILT and fine SAND, some gravel, litttle clay, clinker, brick, wood, ash	0.0 ppm	MW-3B2.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs, Pesticides
4		FILL: Light gray (7.5YR 7/1) coarse to fine SAND, some gravel, little silt, clinker, wood, slag, cinder, 20% COPR	0.0 ppm	MW-3B4.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs, Pesticides
6		SILT: Reddish brown (5YR 5/4) SILT, some clay, mottling, native material	0.0 ppm		
8		SILT: Reddish brown (5YR 4/3) SILT, some clay, mottling, shells, native material	0.0 ppm		
10		SILT: Black (5YR 2.5/1) SILT, some clay, trace fine sand	0.0 ppm		
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

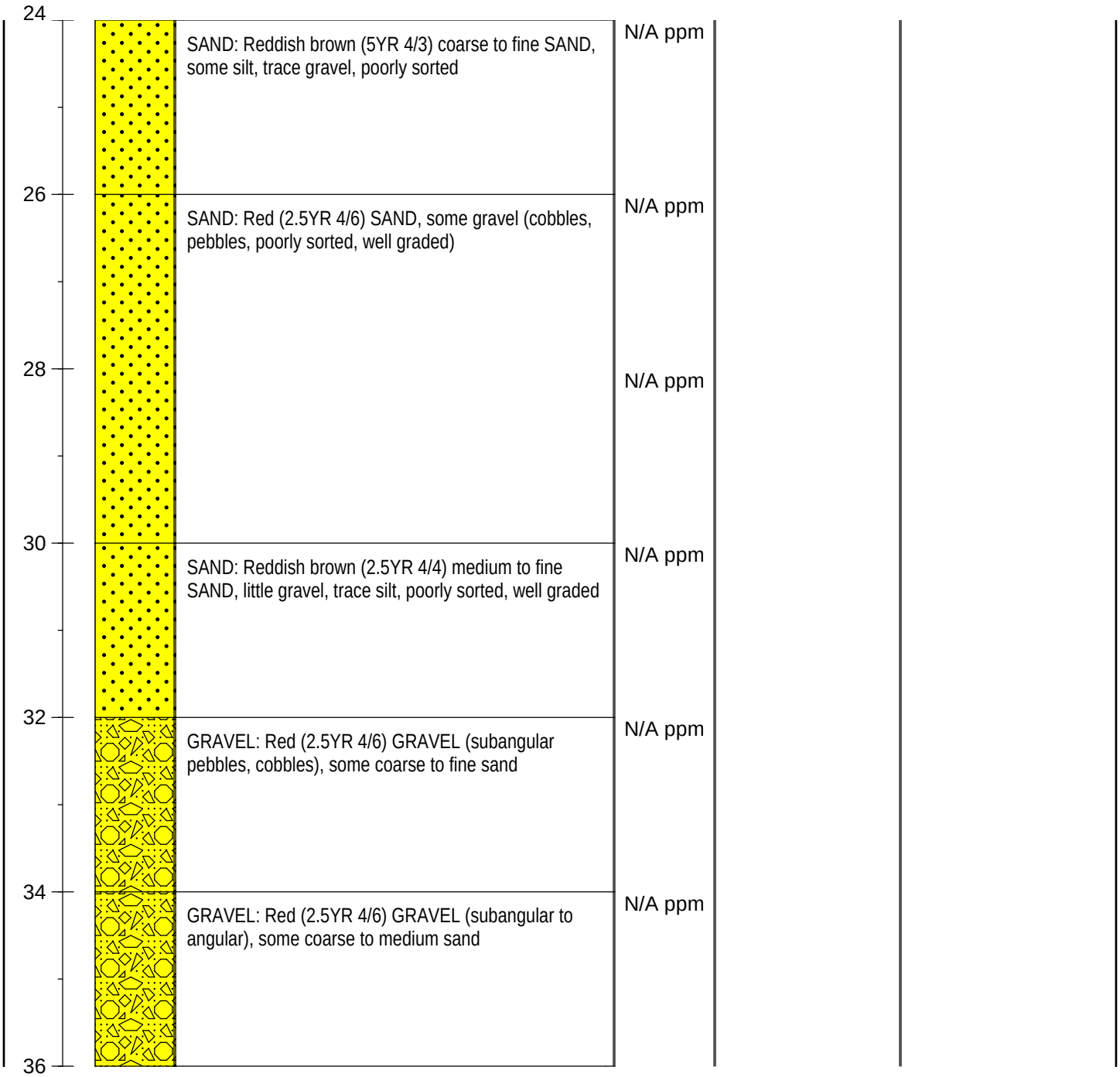
ENSR | AECOM	Client: PPG	BORING ID: MW3B
	Site: PPG - Jersey City, NJ	
Start Date: 11/17/2003	Project: Site Investigation	Page: 2 of 5
	Coordinates: X-611160.67 Y-683929.35	Depth of Boring: 50.00
End Date: 11/17/2003	Elevation: 18.72	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Description	PID	Sample ID	Sample Parameters
		0.0 ppm		
		0.0 ppm	MW-3B13.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs, Pesticides
14	PEAT: Black (7.5YR 2.5/1) PEAT (meadow mat)	0.2 ppm		
16	PEAT: Dark greenish gray (2GLEY4/1) PEAT (meadow mat), some silt	N/A ppm		
18	SILT: Greenish gray (2GLEY 6/1) SILT, some fine sand, little gravel (reddish chunks of silt)	N/A ppm		
20	SAND: Reddish brown (2.5YR 4/4) coarse to fine SAND, well graded, fairly sorted	N/A ppm		
22	SAND: Dark brown (7.5YR 3/2) fine SAND, some medium sand, little silt	N/A ppm		
24				

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

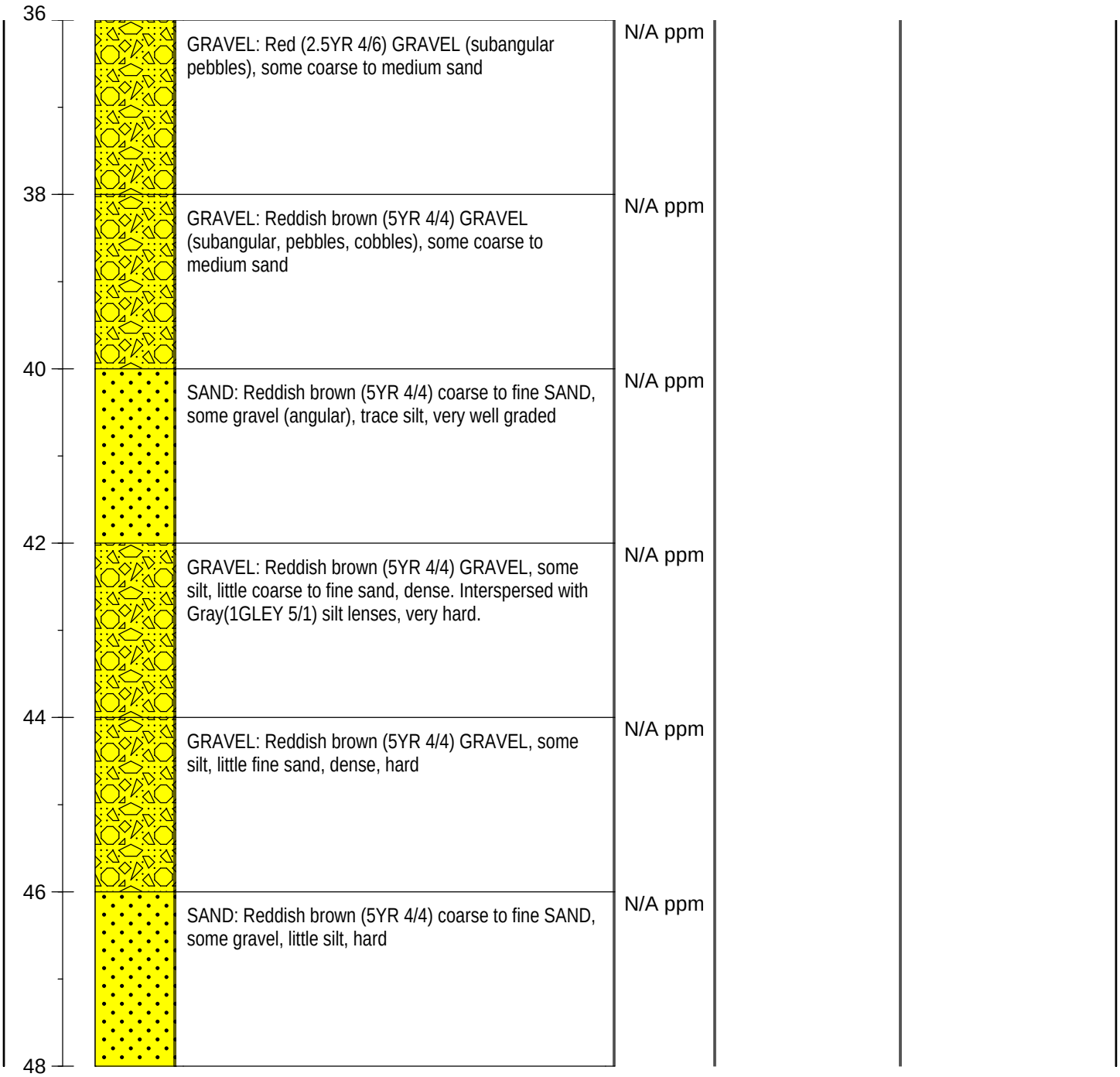
ENSR | AECOM	Client: PPG	BORING ID: MW3B
	Site: PPG - Jersey City, NJ	
Start Date: 11/17/2003	Project: Site Investigation	Page: 3 of 5
	Coordinates: X-611160.67 Y-683929.35	Depth of Boring: 50.00
End Date: 11/17/2003	Elevation: 18.72	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG	BORING ID: MW3B
	Site: PPG - Jersey City, NJ	
Start Date: 11/17/2003	Project: Site Investigation	Page: 4 of 5
	Coordinates: X-611160.67 Y-683929.35	Depth of Boring: 50.00
End Date: 11/17/2003	Elevation: 18.72	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **MW3B**
	Site: **PPG - Jersey City, NJ**	
Start Date: 11/17/2003	Project: **Site Investigation**	Page: 5 of 5
	Coordinates: X-611160.67 Y-683929.35	Depth of Boring: 50.00
End Date: 11/17/2003	Elevation: 18.72	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
48		SAND: Reddish brown (5YR 4/4) coarse to fine SAND, some gravel, trace silt, hard	N/A ppm		
50		NULL: End of Boring at 50 ft.			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **MW5AV**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/4/2005	Project: **Site Investigation**	Page: 1 of 3
	Coordinates: X-610713 Y-683316	Depth of Boring: 24.00
End Date: 10/4/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		FILL: No Sleeves Collected.			
2					
4					
6					
8					
10					
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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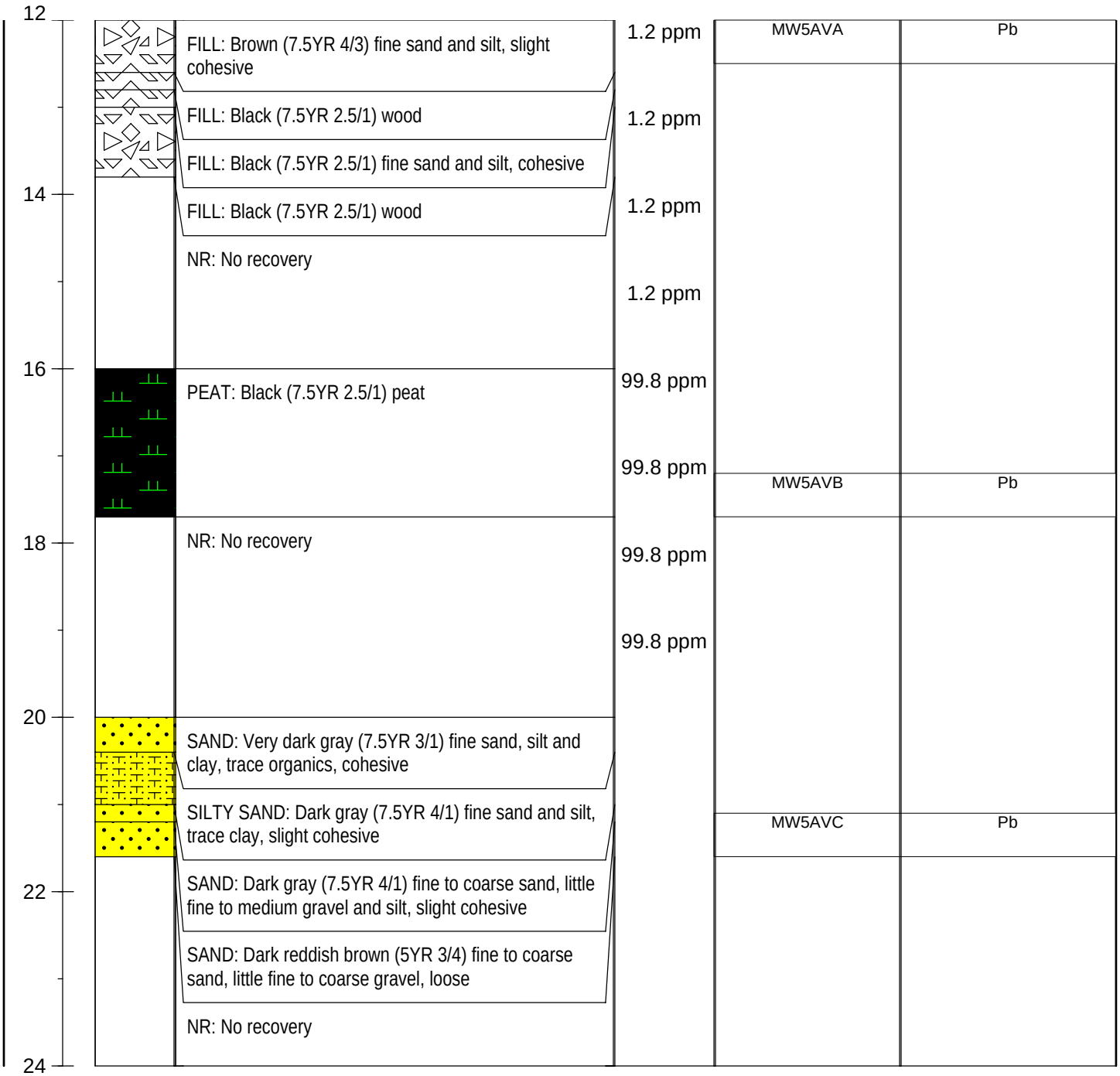
ENSR | AECOM	Client: PPG	BORING ID: MW5AV
	Site: PPG - Jersey City, NJ	
Start Date: 10/4/2005	Project: Site Investigation	Page: 2 of 3
	Coordinates: X-610713 Y-683316	Depth of Boring: 24.00
End Date: 10/4/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:



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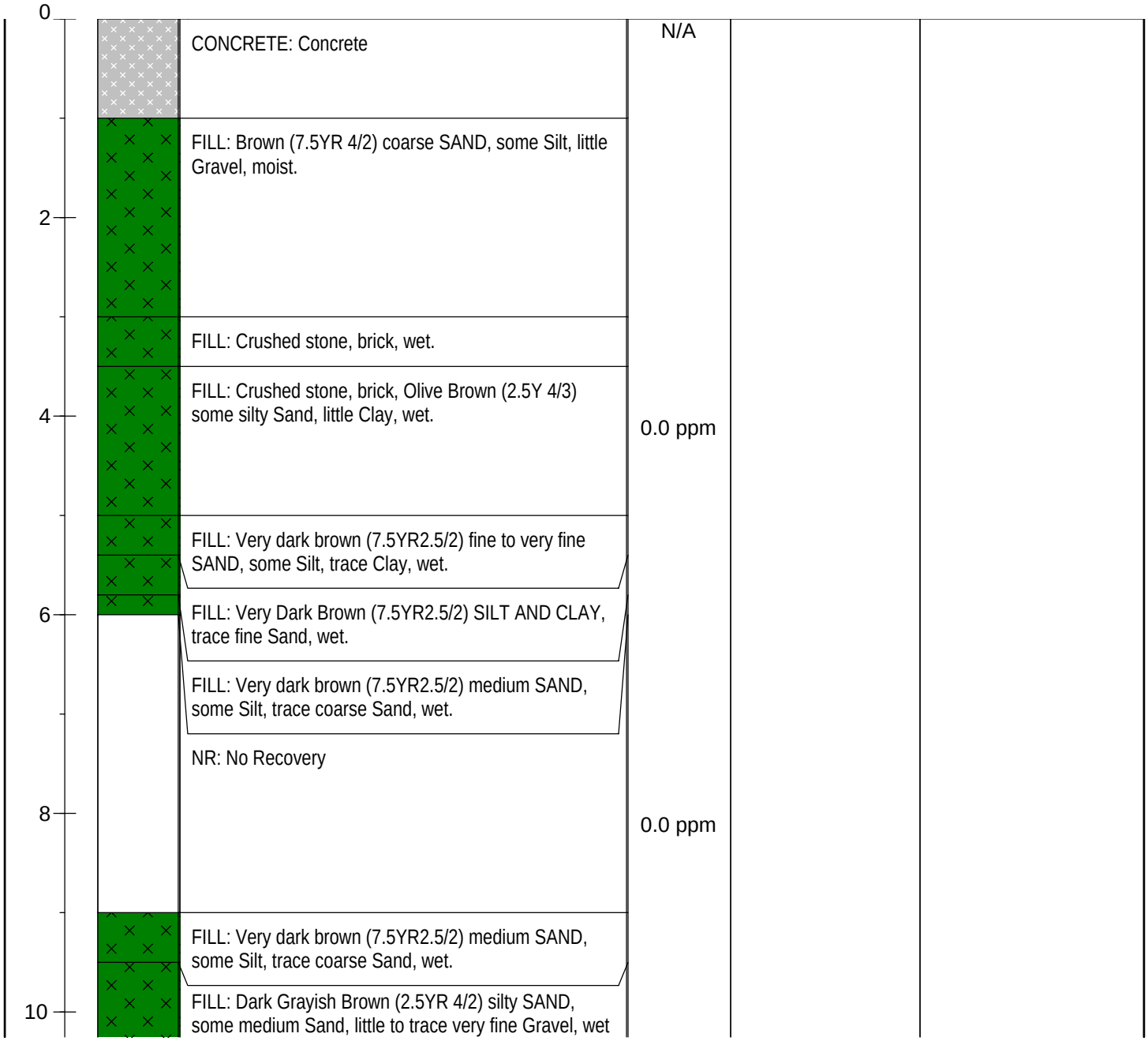
ENSR | AECOM	Client: **PPG**	BORING ID: **MW5AV**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/4/2005	Project: **Site Investigation**	Page: 3 of 3
	Coordinates: X-610713 Y-683316	Depth of Boring: 24.00
End Date: 10/4/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
24		NULL: End of Boring at 24'			

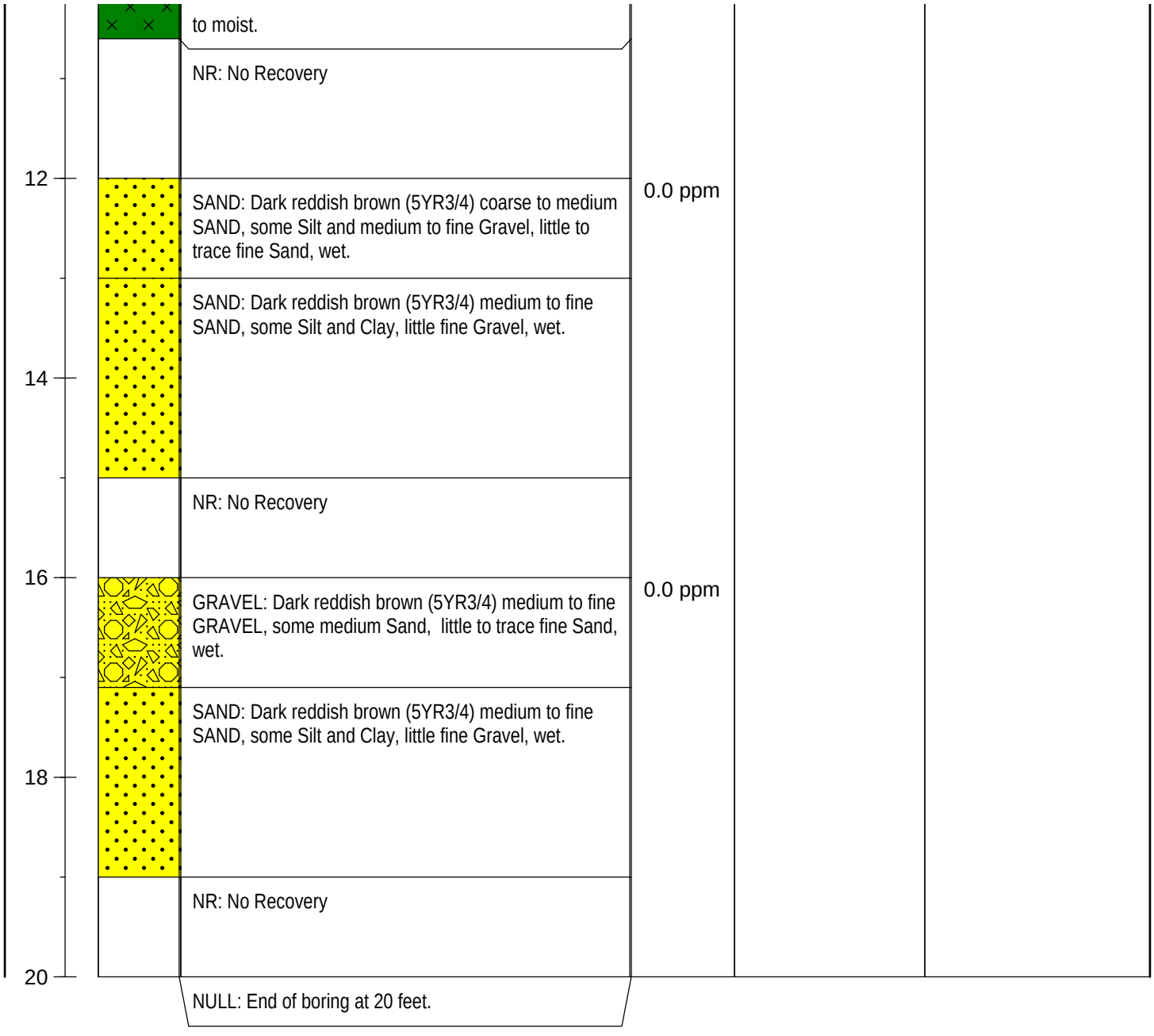
NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-1**
	Site: Site OSB	
Start Date: 9/6/2006	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-611000.9 Y-683897.7	Depth of Boring: 20.00
End Date: 9/7/2006	Elevation: 12.83	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-1**
	Site: Site OSB	
Start Date: 9/6/2006	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-611000.9 Y-683897.7	Depth of Boring: 20.00
End Date: 9/7/2006	Elevation: 12.83	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:



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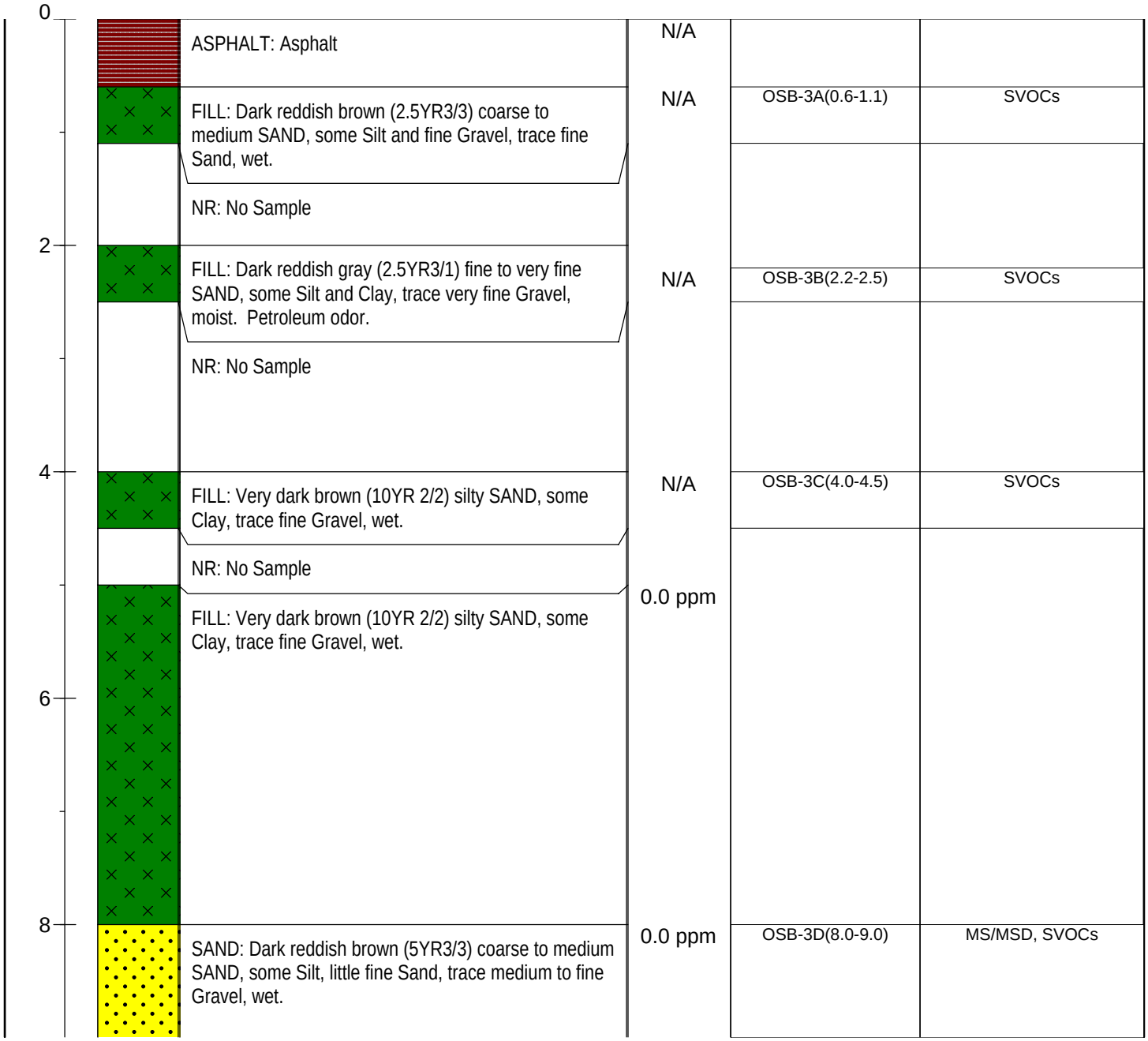
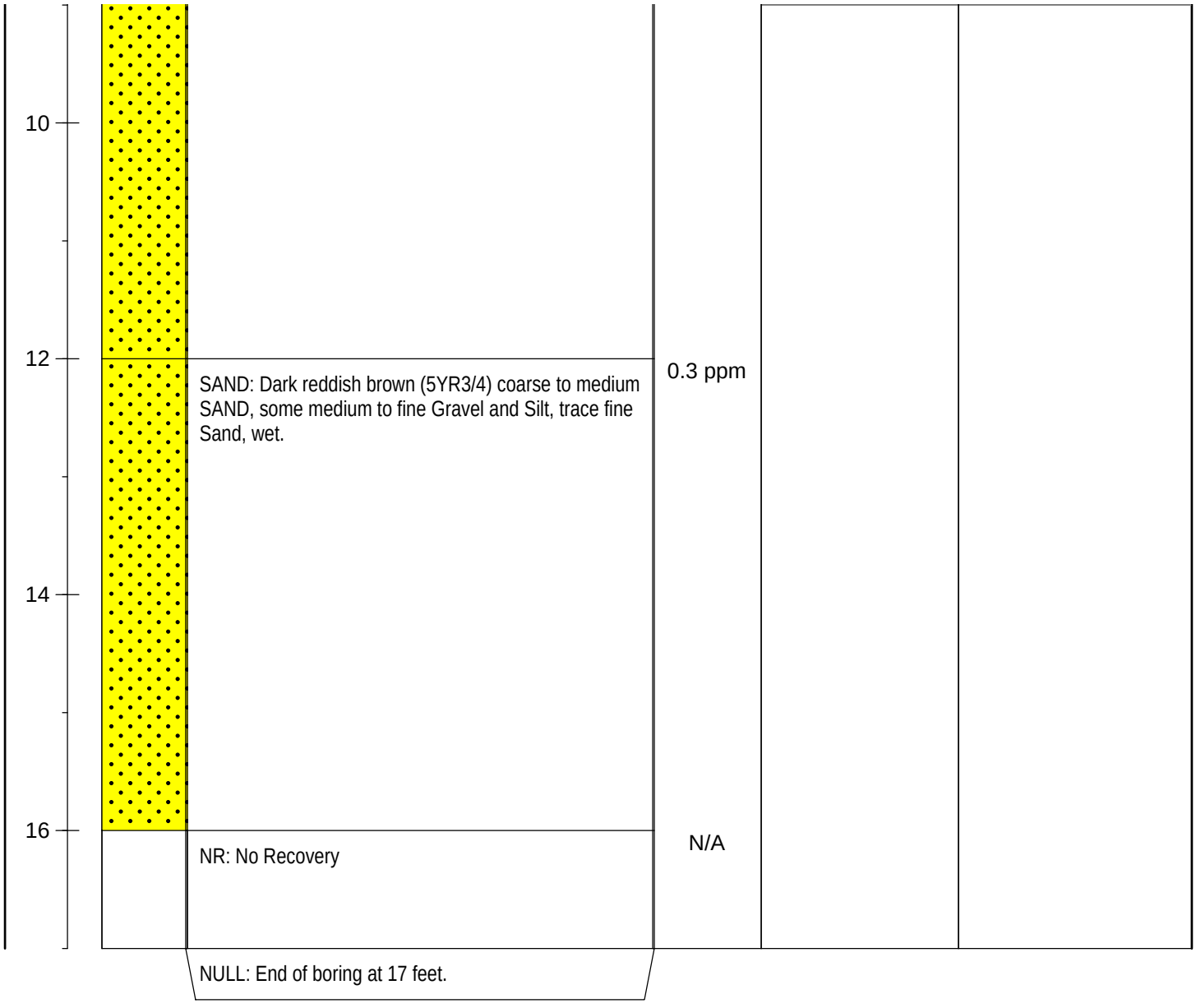
ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-3**
	Site: Site OSB	
Start Date: 9/6/2006	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610885.3 Y-683719.7	Depth of Boring: 17.00
End Date: 9/19/2006	Elevation: 11.77	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		ASPHALT: Asphalt	N/A		
		FILL: Dark reddish brown (2.5YR3/3) coarse to medium SAND, some Silt and fine Gravel, trace fine Sand, wet.	N/A	OSB-3A(0.6-1.1)	SVOCs
		NR: No Sample			
2		FILL: Dark reddish gray (2.5YR3/1) fine to very fine SAND, some Silt and Clay, trace very fine Gravel, moist. Petroleum odor.	N/A	OSB-3B(2.2-2.5)	SVOCs
		NR: No Sample			
4		FILL: Very dark brown (10YR 2/2) silty SAND, some Clay, trace fine Gravel, wet.	N/A	OSB-3C(4.0-4.5)	SVOCs
		NR: No Sample			
		FILL: Very dark brown (10YR 2/2) silty SAND, some Clay, trace fine Gravel, wet.	0.0 ppm		
6					
8		SAND: Dark reddish brown (5YR3/3) coarse to medium SAND, some Silt, little fine Sand, trace medium to fine Gravel, wet.	0.0 ppm	OSB-3D(8.0-9.0)	MS/MSD, SVOCs

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-3**
	Site: Site OSB	
Start Date: 9/6/2006	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610885.3 Y-683719.7	Depth of Boring: 17.00
End Date: 9/19/2006	Elevation: 11.77	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:



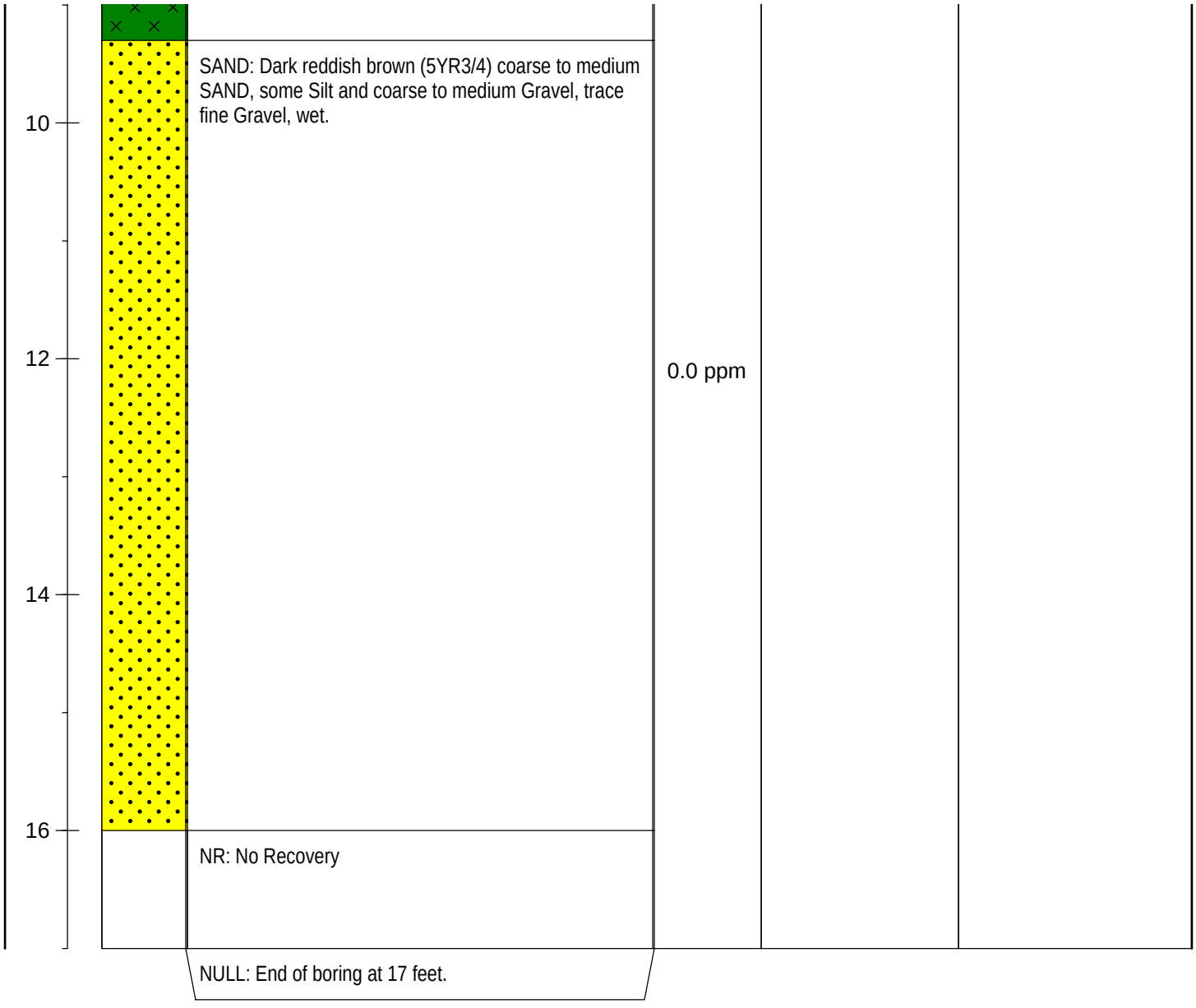
NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-4**
	Site: Site OSB	
Start Date: 9/6/2006	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610824.2 Y-683619.9	Depth of Boring: 17.00
End Date: 9/19/2006	Elevation: 11.49	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		CONCRETE: Concrete	N/A		
2		FILL: Brown (7.5YR4/2) coarse SAND, some Silt, little coarse to medium Gravel, moist.			
4		FILL: Very dark brown (10YR 2/2) silty SAND, some Clay, trace fine Gravel, wet.	0.0 ppm		
6					
8			0.0 ppm		

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-4**
	Site: Site OSB	
Start Date: 9/6/2006	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610824.2 Y-683619.9	Depth of Boring: 17.00
End Date: 9/19/2006	Elevation: 11.49	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-5**
	Site: Site OSB	
Start Date: 9/18/2006	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610773.1 Y-683535.2	Depth of Boring: 18.00
End Date: 9/19/2006	Elevation: 11.71	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		CONCRETE: Concrete	0.0 ppm		
		FILL: Black (10YR2/1) coarse to fine SAND and coarse to fine GRAVEL, some to little Silt, trace Clay, moist.	0.0 ppm	OSB-5A(0.4-1.4)	MS/MSD, SVOCs
		NR: No Sample			
2		FILL: Strong brown (7.5YR5/8) medium to fine SAND, little to trace Silt and coarse to fine Gravel, moist.	0.0 ppm	OSB-5B(2.0-2.5) OSB-5BD(2.0-2.5)	SVOCs SVOCs
		NR: No Sample			
4			0.0 ppm		
		FILL: Strong brown (7.5YR5/8) medium to fine SAND, little to trace Silt and coarse to fine Gravel, moist.	0.0 ppm	OSB-5C(5.0-5.5)	SVOCs
6					
8			0.0 ppm		

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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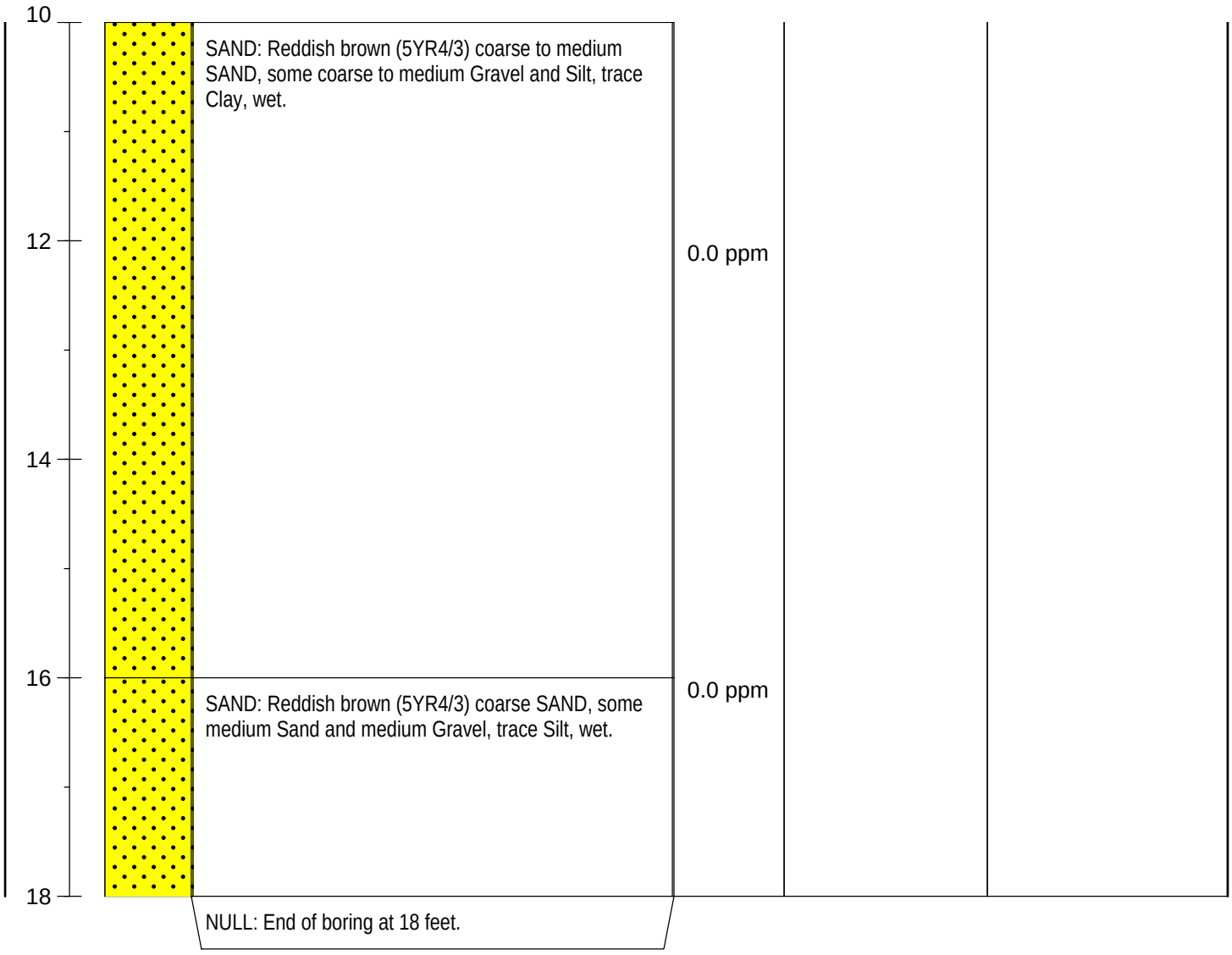
ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-5**
	Site: Site OSB	
Start Date: 9/18/2006	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610773.1 Y-683535.2	Depth of Boring: 18.00
End Date: 9/19/2006	Elevation: 11.71	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-7**
	Site: Site OSB	
Start Date: 9/18/2006	Project: **Site Investigation**	Page: 1 of 2
	Coordinates: X-610674.9 Y-683371.9	Depth of Boring: 16.00
End Date: 9/20/2006	Elevation: 12.78	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		CONCRETE: Concrete	N/A		
		FILL: Reddish brown (5YR5/3) coarse to fine SAND, some coarse to fine Gravel, trace Silt and Clay, moist.	N/A	OSB-7A(0.4-0.9)	SVOCs
		NR: No Sample			
2		FILL: Reddish Brown (5YR4/3) clayey SILT, some fine Sand, trace medium Sand, wet.	N/A	OSB-7B(2.0-2.5)	SVOCs
		NR: No Sample			
4		FILL: Reddish brown (2.5YR4/3) fine to very fine SAND, some Silt, little Clay, moist.	N/A	OSB-7C(4.0-4.5)	SVOCs
		NR: No Sample			
		FILL: Reddish brown (2.5YR4/3) fine to very fine SAND, some Silt, little Clay, wet.	0.0 ppm		
6		SAND: Reddish brown (2.5YR4/3) coarse to medium SAND, some medium to fine Gravel, little Silt, trace fine Sand, wet.			
		NR: No Recovery			
8		SAND: Reddish brown (2.5YR4/3) coarse to medium SAND, some medium to fine Gravel, little Silt, trace fine	0.0 ppm	OSB-7D(8.0-8.5)	BNs

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

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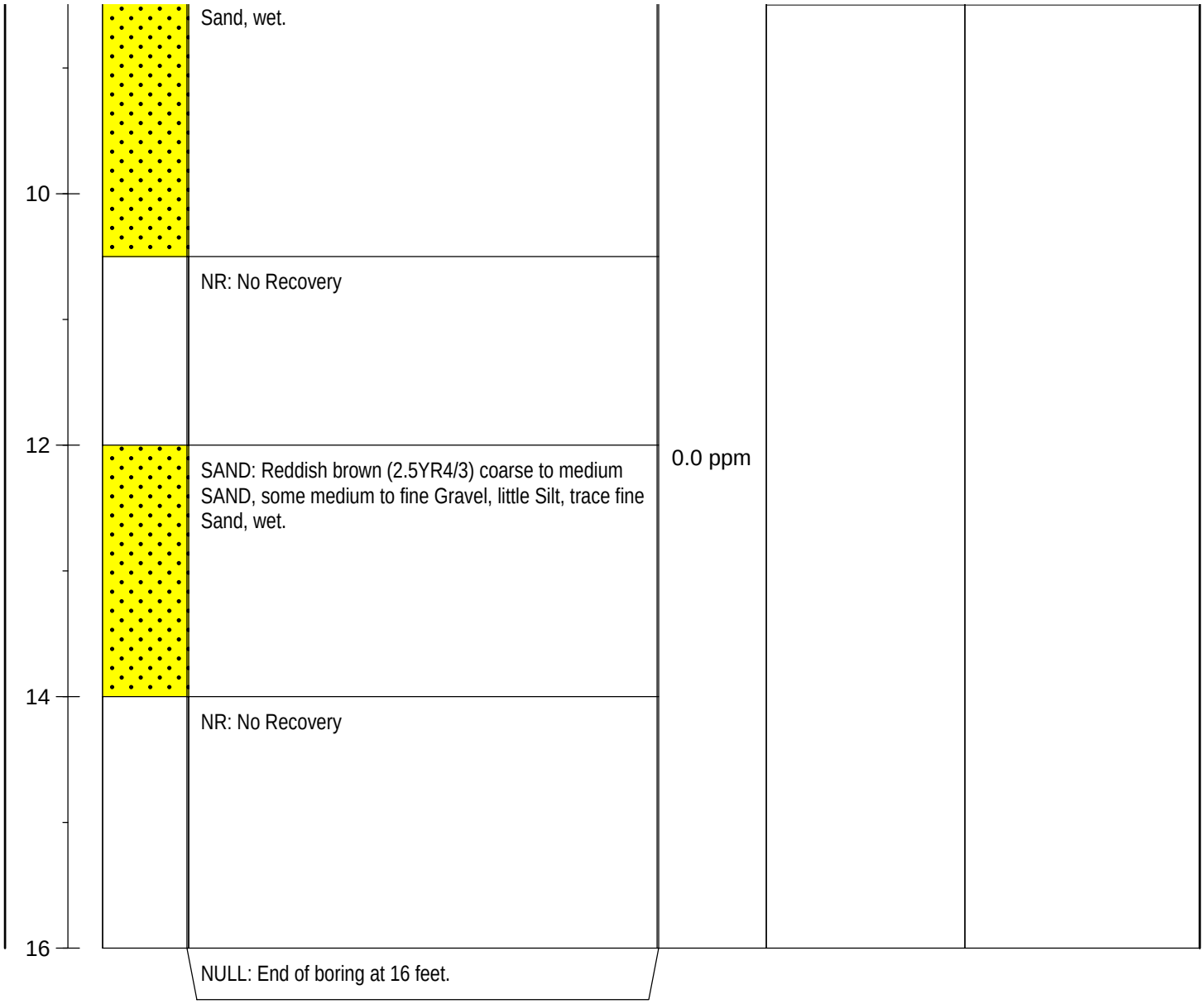
ENSR | AECOM	Client: PPG Industries	BORING ID: **OSB-7**
	Site: Site OSB	
Start Date: 9/18/2006	Project: **Site Investigation**	Page: 2 of 2
	Coordinates: X-610674.9 Y-683371.9	Depth of Boring: 16.00
End Date: 9/20/2006	Elevation: 12.78	Geologist: M. Abdelaziz
	Drill Subcontractor: ADI	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-A`14A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610701
Date Started Drilling: 3/10/2014 11:20:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683297
Date Finished Drilling: 3/10/2014 11:50:00 AM	**Core Size:** 2 in	**Boring Total Depth:** 25 ft
Logged By: MI & FM	**Project Manager:** Chris Martell	**Depth to Water:** NA
Physical Location: A`14A- Carteret Ave.		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0-5	0			NR	NR		Boring advanced directly to 5 ft bgs.	
5-7	2	0.0	moist	3	FILL		fine to medium silty SAND, trace cinders, (7.5YR 4/6) strong brown, dense, moist, no odor, no staining.	
7-10	2			NR	NR		NO RECOVERY	
10			moist	3	FILL		fine to medium silty SAND, trace cinders, (7.5YR 4/6) strong brown, dense, moist, no odor, no staining.	P4-A`14A-9.5-10.0
10-11	5	0.0	moist	10	SM		UNDno SILT, with fine sand, trace coarse gravel, (10YR 5/8) yellowish brown, dense to soft, moist, no odor, no staining. Soils consistent with UNDno.	P4-A`14A-10.0-10.5
11-15	5	0.0	moist to wet	10	SP-SM		UNDno fine to coarse SAND, with fine to coarse gravel, trace silt, (2.5YR 4/8) red, loose to hard, moist to wet, no odor, no staining. Soils consistent with UNDno.	P4-A`14A-12.0-12.5 P4-A`14A-14.0-14.5
15-20	5	0.0	moist to wet	10	SP-SM		UNDno fine to coarse SAND, with fine to coarse gravel, trace silt, (2.5YR 4/8) red, loose to hard, moist to wet, no odor, no staining. Soils consistent with UNDno.	P4-A`14A-16.0-16.5 P4-A`14A-18.0-18.5
20-25	5	0.0	moist to wet	10	SP-SM		UNDno fine to coarse SAND, with fine to coarse gravel, trace silt, (2.5YR 4/8) red, loose to hard, moist to wet, no odor, no staining. Soils consistent with UNDno.	P4-A`14A-20.0-20.5

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A`0

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610898.4
Date Started Drilling: 8/20/2014 9:41:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683663.7
Date Finished Drilling: 9/5/2014 10:58:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 16 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 9.873 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	5	0.0	dry	FILL		fine to coarse sandy DGA, (10YR 5/1) gray, non plastic, medium dense, dry, no odor.	
5–6	5	0.0	dry	FILL		fine to coarse sandy DGA, (10R 5/1) reddish gray, (10YR 5/1) gray, non plastic, medium dense, dry, no odor.	
6–7	5	0.0	moist	FILL		CLAY, some wood fragments, little silt, trace fine sand, (10YR 2/2) very dark brown, medium plasticity, medium stiff, moist, slight ammonia odor.	114-GA-A`0-6.0-6.5
8–9	5	0.0	wet	FILL		SILT, some fine to coarse gravel, little fine to medium sand, trace cobbles, (10YR 4/2) dark grayish brown, non plastic, loose, wet.	114-GA-A`0-8.0-8.5
10	5	0.0	wet	FILL		SILT, little fine to medium sand, little fine to coarse gravel, trace brick, (10YR 4/6) dark yellowish brown, non plastic, loose, wet, iron oxide staining.	114-GA-A`0-10.0-10.5
11–12	5	0.0	wet to saturated	SW		fine to medium SAND, some fine to coarse gravel, little silt, trace cobbles, (2.5YR 4/3) reddish brown, non plastic, wet to saturated. Soils consistent with UNDno.	114-GA-A`0-10.5-11.0 114-GA-A`0-12.0-12.5
14	5						114-GA-A`0-14.0-14.5
15–16	1	0.0	wet to saturated	SW		fine to medium SAND, some fine to coarse gravel, little silt, (2.5YR 4/3) reddish brown, non plastic, medium dense, wet to saturated. Soils consistent with UNDno. Refusal at 16.0 ft.	114-GA-A`0-16.0-16.5

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A`1A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610877.9
Date Started Drilling: 8/20/2014 8:15:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683621.4
Date Finished Drilling: 8/22/2014 9:40:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 20.5 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 9.289 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	dry	FILL		fine to coarse sandy DGA, (10YR 5/1) gray, non plastic, medium dense, dry, no odor.	
5	5	0.0	dry to moist	FILL		fine to coarse sandy DGA, (10YR 5/1) gray, non plastic, medium dense, dry to moist, no odor.	
6		0.0	moist	FILL		fine to medium sandy SILT, trace gravel, trace cinders, trace clay, (10YR 3/1) very dark gray, low plasticity, soft, moist, no odor.	114-GA-A`1A-6.0-6.5
8							114-GA-A`1A-8.0-8.5
10	5	0.0		FILL		fine to medium sandy SILT, trace cinders, trace organics, (10YR 3/1) very dark gray, low plasticity, medium dense.	114-GA-A`1A-10.0-10.5
11		0.0	moist	FILL		fine to medium silty SAND, trace cinders, trace gravel, (10YR 5/1) gray, non plastic, dense, moist, no odor, iron oxide staining.	
12							114-GA-A`1A-12.0-12.5
13							114-GA-A`1A-12.5-13.0
13		0.0	moist	SW		fine to medium SAND, (2.5YR 4/4) reddish brown, non plastic, medium dense to dense, moist, no odor.	114-GA-A`1A-13.0-13.5
14							114-GA-A`1A-14.0-14.5
15	5.5	0.0	moist to wet	SW		fine to medium SAND, (2.5YR 4/4) reddish brown, non plastic, medium dense, moist to wet, no odor.	
16							114-GA-A`1A-16.0-16.5
18							114-GA-A`1A-18.0-18.5
20							114-GA-A`1A-20.0-20.5

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

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A`2A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610869.5
Date Started Drilling: 8/19/2014 10:45:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683608.3
Date Finished Drilling: 8/19/2014 11:40:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 20.5 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 9.002 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	moist	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, very dense, moist.	
5	5	0.0	moist	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, dense to very dense, moist.	
6	5	0.0	moist	FILL		SILT, little clay, (10YR 4/2) dark grayish brown, low plasticity, medium soft, moist.	114-GA-A`2A-6.0-6.5
8							114-GA-A`2A-8.0-8.5
9							114-GA-A`2A-9.0-9.5
10	5	0.0	moist	PT		PEAT (degraded vegetated material), 80% organic silt, 20% organic fibers, (10YR 3/3) dark brown, low plasticity, moist. Soils consistent with MM.	114-GA-A`2A-9.5-10.0
		0.0	moist	PT		PEAT (degraded vegetated material), 80% organic silt, 20% organic fibers, (10YR 4/2) dark grayish brown, low plasticity, medium stiff, moist, slight sulfur odor. Soils consistent with MM.	114-GA-A`2A-10.5-11.0
11		0.0	wet	ML		SILT, little coarse gravel, trace fine gravel, (10YR 4/2) dark grayish brown, non plastic, loose, wet. Soils consistent with UNDno.	
12		0.0	sl moist to moist	SW		fine silty SAND, some fine gravel, little coarse gravel, little coarse sand, (2.5YR 3/3) dark reddish brown, non plastic, very dense, slightly moist to moist. Soils consistent with UNDno.	114-GA-A`2A-12.5-13.0
13		0.0	moist to wet	SW		fine to medium SAND, little fine gravel, little coarse sand, trace coarse gravel, (10YR 6/6) brownish yellow, non plastic, dense, moist to wet. Soils consistent with UNDno.	114-GA-A`2A-14.5-15.0
14		0.0	sl moist to moist wet	SW		fine to medium silty SAND, some fine gravel, trace coarse sand, trace coarse gravel, (2.5YR 3/3) dark reddish brown, non plastic, dense to very dense, slightly moist to moist. Soils consistent with UNDno.	114-GA-A`2A-16.5-17.0
15							
16							
17	5.5					fine GRAVEL, and fine to medium sand, little silt, trace coarse gravel, (2.5YR 3/3) dark reddish brown, non plastic, very dense, wet. Soils consistent with UNDno.	114-GA-A`2A-18.5-19.0
18							
19							114-GA-A`2A-19.5-20.0
20							

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

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A`3A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610849.09
Date Started Drilling: 8/19/2014 9:10:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683578.1
Date Finished Drilling: 8/19/2014 10:35:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 18 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 8.673 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	5	0.0	dry to moist	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, loose, dry to moist, no odor.	
5–7	5	0.0	dry	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, loose, dry, no odor.	
		0.0	moist	FILL		fine SILT, (10YR 4/2) dark grayish brown, low plasticity, soft, moist, no odor.	114-GA-A`3A-5.5-6.0
							114-GA-A`3A-6.5-7.0
7–8		0.0	moist	OL		fine organic SILT, and wood fragments, (10YR 4/2) dark grayish brown, non plastic, soft, moist, no odor.	114-GA-A`3A-7.0-7.5
		0.0	moist	OL		fine organic SILT, (10YR 4/2) dark grayish brown, low plasticity, soft, moist, no odor. Soils consistent with UNDorg.	114-GA-A`3A-7.5-8.0
8–10		0.0	moist	SM		fine to medium silty SAND, (10YR 4/2) dark grayish brown, low plasticity, medium dense, moist, no odor.	114-GA-A`3A-9.5-10.0
10–13	5	0.0	moist to wet	SM		fine to medium silty SAND, (10YR 6/2) light brownish gray, low plasticity, medium dense, moist to wet, no odor, iron oxide staining. Soils consistent with UNDno.	114-GA-A`3A-11.5-12.0
13–14		0.0	dry	SP		medium to coarse SAND, trace cobbles, (5YR 3/3) dark reddish brown, non plastic, loose, dry, no odor. Soils consistent with UNDno.	114-GA-A`3A-13.5-14.0
14–16	3	0.0	moist	SP		medium to coarse SAND, little coarse gravel, (10R 5/1) reddish gray, non plastic, loose, moist, no odor. Refusal at 18 ft. Soils consistent with UNDno.	114-GA-A`3A-15.5-16.0
16–18							114-GA-A`3A-17.5-18.0

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

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A`4A

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610843.6
Date Started Drilling: 8/19/2014 8:15:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683554.3
Date Finished Drilling: 8/19/2014 9:00:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 20.5 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 8.506 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	5		moist to wet	FILL		DGA, (10YR 4/2) dark grayish brown, non plastic, moist to wet.	
5–6	5	0.0		FILL		DGA, (10YR 4/2) dark grayish brown, non plastic.	
5–6		0.0	wet	FILL		SILT, trace fine sand, (10YR 4/2) dark grayish brown, low plasticity, wet.	
6–7		0.0	wet	FILL		SILT, trace fine sand, (10YR 4/2) dark grayish brown, low plasticity, medium stiff, wet.	114-GA-A`4A-6.0-6.5
7–8							
8–10							114-GA-A`4A-8.0-8.5
10–11	5	0.0	moist to wet	FILL		fine to medium silty SAND, (10YR 4/2) dark grayish brown, non plastic, dense to medium dense, moist to wet, iron oxide staining.	114-GA-A`4A-10.0-10.5
11–12							
12–13		0.0	wet	SP		medium SAND, little fine sand, (2.5YR 3/3) dark reddish brown, non plastic, dense, wet. Soils consistent with UNDno.	114-GA-A`4A-12.0-12.5 114-A`4A-12.5-13.0
13–14							
14–15							114-GA-A`4A-14.0-14.5
15–16	5.5	0.0	saturated	GP		fine to coarse GRAVEL, (5YR 3/3) dark reddish brown, non plastic, medium dense, saturated. Soils consistent with UNDno.	
16–17		0.0	wet	SP		fine to medium SAND, some fine gravel, little silt, trace cobbles, (2.5YR 3/3) dark reddish brown, non plastic, dense to very dense, wet, dark gray (10YR 4/1), sand film at 18 ft. Soils consistent with UNDno.	114-GA-A`4A-16.0-16.5
17–18							
18–19							114-GA-A`4A-18.0-18.5
19–20							
20							114-GA-A`4A-20.0-20.5

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

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

PPG - 2012-09 RA PPG_LOGS_A.GDT - 6/13/17 11:43

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A2B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610924.5
Date Started Drilling: 8/20/2014 11:06:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683702.3
Date Finished Drilling: 8/22/2014 11:06:00 AM	**Core Size:** 3 in	**Boring Total Depth:** 18.5 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 9.412 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0 – 5	5	0.0	dry	FILL		fine to coarse sandy DGA, (10YR 5/1) gray, non plastic, medium dense, dry, no odor.	
5 – 6	5	0.0	dry to moist	FILL		fine to coarse sandy DGA, (10YR 5/1) gray, non plastic, medium dense, dry to moist, no odor.	
6 – 10	5	0.9	dry to moist	FILL		fine to medium sandy SILT, trace gravel with rock fragments, (10YR 3/2) very dark grayish brown, low plasticity, medium dense to dense, dry to moist, slight ammonia odor.	114-GA-A2B-6.0-6.5 114-GA-A2B-8.0-8.5
10 – 12	5	5.7	moist	FILL		fine to coarse SAND, some gravel with rock fragments, (10YR 2/1) black, non plastic, medium dense, moist, strong ammonia odor.	114-GA-A2B-10.0-10.5 114-GA-A2B-11.5-12.0
12 – 15	5	0.4	moist	SP		fine to medium silty SAND, trace gravel with rock fragments, (2.5YR 4/6) red, low plasticity, medium dense, moist, no odor. Soils consistent with UNDno.	114-GA-A2B-12.0-12.5 114-GA-A2B-14.0-14.5
15 – 18	3.5	0.4	moist to wet	SP		fine to medium GRAVEL, trace silt, trace cobbles, (2.5YR 4/6) red, non plastic, medium dense, moist to wet, no odor. Refusal at 18.5 ft. Soils consistent with UNDno.	114-GA-A2B-16.0-16.5 114-GA-A2B-18.0-18.5

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

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A3B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610942
Date Started Drilling: 8/21/2014 9:02:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683731
Date Finished Drilling: 8/21/2014 10:00:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 19 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0	5	0.0	dry	3	FILL		sandy DGA, (10YR 4/1) dark gray, non plastic, medium dense, dry, no odor.	114-GA-A3B-0.0-0.5
5	5	0.0	dry	3	FILL		sandy DGA, (10YR 4/1) dark gray, non plastic, medium dense, dry, no odor.	
6		1.0	dry to moist	3	FILL		SILT, some fine to medium sand, trace ash, trace gravel, non plastic, medium dense, dry to moist, slight ammonia odor.	114-GA-A3B-6.0-6.5
7		0.0	moist	3	FILL		SILT, trace gravel, trace sand, (10YR 5/2) grayish brown, low plasticity, soft, moist, no odor.	
8								114-GA-A3B-8.0-8.5
9		0.0	dry to moist	8	SM		UNDno sandy SILT, trace gravel with rock fragments, (10YR 4/2) dark grayish brown, non plastic, medium dense, dry to moist, no odor, iron oxide staining. Soils consistent with UNDno.	114-GA-A3B-8.5-9.0
10	5	0.0	moist to wet	8	SM		UNDno sandy SILT, trace gravel with rock fragments, (10YR 4/2) dark grayish brown, non plastic, medium dense, moist to wet, no odor, no staining. Soils consistent with UNDno.	114-GA-A3B-10.5-11.0
11		0.0	moist to dry	10	SP		UNDno fine to coarse SAND, little gravel with rock fragments, trace silt, (10YR 4/6) dark yellowish brown, non plastic, medium dense, moist to dry, no odor. Soils consistent with UNDno.	114-GA-A3B-12.5-13.0
12								
13								
14								114-GA-A3B-14.5-15.0
15	4	0.0	moist to wet	10	SP		UNDno fine to coarse silty SAND, trace gravel with rock fragments, (2.5YR 4/6) red, non plastic, medium dense to dense, moist to wet, no odor, refusal at 19.0 ft. Soils consistent with UNDno.	114-GA-A3B-16.5-17.0
16								
17								
18								114-GA-A3B-18.5-19.0
19								

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A5B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 610978.5
Date Started Drilling: 8/21/2014 10:30:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683787.8
Date Finished Drilling: 8/21/2014 12:00:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 18 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 9.505 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	dry	FILL		DGA, (10YR 4/1) dark gray, non plastic, dense, dry, no odor.	114-GA-A5B-0.0-0.5
5	5	0.0	slightly moist	FILL		DGA, (10YR 4/1) dark gray, non plastic, dense to very dense, slightly moist.	114-GA-A5B-5.5-6.0
6	5	0.0	moist	FILL		SILT, little coarse sand, little ash, (10YR 3/1) very dark gray, low plasticity, stiff, moist.	114-GA-A5B-9.5-10.0
10	5	0.0	saturated	FILL		SILT, little ash, trace cobbles, (10YR 3/2) very dark grayish brown, low plasticity, very loose to medium dense, saturated.	114-GA-A5B-10.5-11.0
11	5	0.0	saturated	ML		UNDno SILT, some fine to coarse gravel, little coarse sand, (10YR 4/4) dark yellowish brown, non plastic, very loose to medium soft, saturated. Soils consistent with UNDno.	114-GA-A5B-11.0-11.5
12	5	0.0	wet	SP		UNDno SAND, some fine to coarse gravel, trace silt, trace cobbles, (2.5YR 4/3) reddish brown, non plastic, dense, wet. Soils consistent with UNDno.	114-GA-A5B-13.0-13.5
15	3	0.0	wet	SP-SM		UNDno fine silty SAND, little fine gravel, trace cobbles, (10YR 4/3) brown, non plastic, very dense, wet. Soils consistent with UNDno.	114-GA-A5B-15.0-15.5
17							114-GA-A5B-17.0-17.5
18							

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

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

AECOM
30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-A7B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 611001
Date Started Drilling: 8/22/2014 10:00:00 AM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683829
Date Finished Drilling: 8/22/2014 10:35:00 AM	**Core Size:** 3.0 in	**Boring Total Depth:** 20.5 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1–5	5	0.0	slightly moist	3	FILL		DGA, (10YR 4/3) brown, non plastic, very dense, slightly moist.	
5–6	5	0.0	slightly moist	3	FILL		DGA, (10YR 4/3) brown, high plasticity, dense, slightly moist.	114-GA-A7B-5.5-6.0
6–7	5	0.0	slightly moist	8	SP-SM		fine silty SAND, trace ash, (10YR 4/2) dark grayish brown, non plastic, dense, slightly moist.	114-GA-A7B-6.0-6.5
7–8	5	0.0	slightly moist	8	SP-SM		fine silty SAND, little fine gravel, trace shells, (10YR 3/2) very dark grayish brown, non plastic, very dense, slightly moist, coarse gravel lense @ 8.0 ft. Soils consistent with UNDno.	114-GA-A7B-8.0-8.5
9–10	5	0.0	moist	9	ML		SILT, (10YR 5/4) yellowish brown, low plasticity, medium stiff, moist. Soils consistent with UNDno.	
10–12	5	0.0	saturated	9	ML		SILT, trace fine to coarse gravel, (10YR 5/4) yellowish brown, low plasticity, medium stiff, saturated. Soils consistent with UNDno.	114-GA-A7B-10.0-10.5
12–15	5	0.0	wet to saturated	10	SM		fine to coarse SAND, some fine to coarse gravel, trace cobbles, (5YR 4/3) reddish brown, non plastic, dense, wet to saturated. Soils consistent with UNDno.	114-GA-A7B-12.0-12.5 114-GA-A7B-14.0-14.5
15–20	5.5	0.0	moist to wet	10	SW-SM		fine to medium silty SAND, little fine to coarse gravel, trace cobbles, (5YR 4/3) reddish brown, non plastic, very dense, moist to wet. Soils consistent with UNDno.	114-GA-A7B-16.0-16.5 114-GA-A7B-18.0-18.5 114-GA-A7B-20.0-20.5

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

AECOM

30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: P4-GA-D14B

Project Name: PPG Garfield Ave	**Drilling Company:** SGS North America	
Project Number: 60240739	**Drilling Method:** Geoprobe	**Coordinates (NJSPNAD83) x:** 611158.3
Date Started Drilling: 8/22/2014 12:00:00 PM	**Rig Type:**	**Coordinates (NJSPNAD83) y:** 683968.4
Date Finished Drilling: 8/22/2014 12:30:00 PM	**Core Size:** 3.0 in	**Boring Total Depth:** 4 ft
Logged By: AG	**Project Manager:** Scott Mikaelian	**Depth to Water:** NA
Physical Location: GA Sidewalk		**Surface Elevation:** 12.876 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1 2 3 4	4	0.0	moist	FILL		fine to medium silty SAND, some fine to coarse gravel, (10YR 3/2) very dark grayish brown, non plastic, loose, moist. Refusal at 4 ft.	114-D14B-0.0-0.5

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

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

A12A

AECOM

Project Number:

Site: PPG-114

Geoprobe Sampling
Jersey City, NJ

Boring ID: PPG #1

Sheet: 1 of 1

Drilling Method: DPP

Ground Elev.:

Depth of Boring: 5

Water Level:

Logged By: C. Mayfield

Reviewed By: E. Weiss

Date Started: 5 July

Drilling Co.: SGS

Driller: SGS Dr

Date Completed: 5 July

Depth Feet	Recovery Feet	Blow Counts	Lab Sample ID	Sample Depth Feet	Headspace ppm	PID ppm	USCS	Classification of Material: USCS, Modified Burmeister
0								< 5% - COPR
5								Fill material
								EOB @ 5' bgs.

A7A

A1A

AECOM

Project Number: PPG-114	Jersey City, NJ Clean Earth Samples	Boring ID: PPG #5	
Project Manager: D. Martell	Logged By: A. Potts	Date Started: 5/14	Sheet: 1 of 1
Drilling Co.: SGS	Driller: D. Latham	Date Completed: 5/14	

Interval From (Feet)	Interval To (Feet)	Sample Number	Blow Counts per 6 inches	Recovery (Feet)	PID (ppm)	Odor	USCS Modified Description
0	5		114	2.7'/5.0			0-5 - Sand + Gravel F-M Material 1.0-1.3' COPR >25%
5	7'		114-A7A 6.0-6.5 Comp				6-10 F-M - Sand + Gravel Fill Material.
			114-A7A 6.5-7.0 Comp				EOH @ 7'

XRF
6/14
785

A3A

AECOM

Site: PPG-114

Jersey City, NJ

Clean Soil Sampling

Boring ID: PPG #7

Sheet: 1 of 1

Drilling Method: DPP

Ground Elev.:

Project Manager: C. Mayfield

Logged By: A. Poffis

Date Started: 5/14

Drilling Co.: 365

Inspector: P. Lutman

Date Finished: 5/14

Water Level Feet	Sample Interval Feet	Sample Number	Sample Recovery (ft)	Blow Counts Feet	Soil Vapor (ppm)	PID ppm	USCS	Visual Description of Material — USCS, Modified Brunswick
	0-5							0.0-5.0 - F-M Silty Sand + Gravel - Fill material ND contamination obs.
								EOB @ 5' bgs

AIA

A-0

AECOM

Site: PPG-114 Jersey City, NJ

Clean Earth Sample

Boring ID: PPG #8

Sheet: 1 of 1

Drilling Method: DPT

Ground Elev.:

Depth to Bedrock:

Water Level:

Start Depth Feet	End Depth Feet	Sample Recovery Feet	Soil Description Including USCS Modified Brown Color	Sample Depth Feet	PID ppm	Blow Counts
0	2.8'	2.8'	0-0.5 + Fill with sand and gravel	0		
			EOB @ 5' bgs.			

TPA

No Test Pit/Boring Log Available

TPB

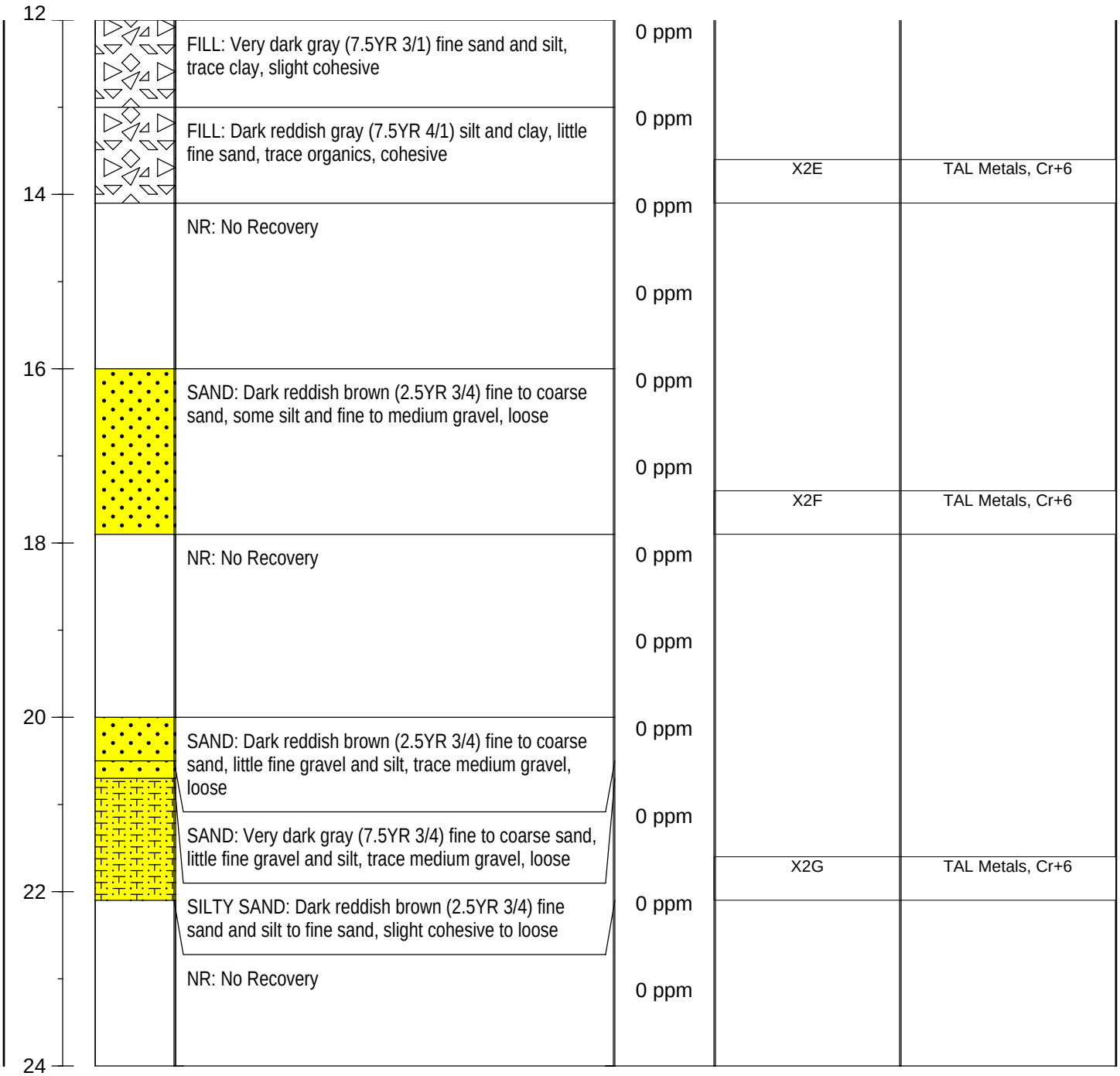
No Test Pit/Boring Log Available

ENSR | AECOM	Client: **PPG**	BORING ID: **X2**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/4/2005	Project: **Site Investigation**	Page: 1 of 3
	Coordinates: X-610866 Y-683564	Depth of Boring: 24.00
End Date: 10/4/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		FILL: Very dark gray (7.5YR 3/1) fine sand and silt, some fine to coarse gravel, trace coal fragments, brick and organics, slgiht cohesive	0 ppm	X2A	TAL Metals, Cr+6
2		FILL: Dark reddish brown (2.5YR 3/4) medium to coarse gravel, loose	0 ppm	X2B; X2BD	TAL Metals, Cr+6
		FILL: Very dark gray (7.5YR 3/1) medium and coarse sand, some fine to coarse gravel, little fine sand, loose	0 ppm		
		NR: No Recovery			
4		FILL: Very dark gray (7.5YR 3/1) fine to medium sand and silt, little fine gravel, slight cohesive	0 ppm	X2C	TAL Metals, Cr+6
		NR: No Recovery	0 ppm		
6			0 ppm		
			0 ppm		
8		FILL: Very dark gray (7.5YR 3/1) silt, trace fine gravel and fine sand, cohesive	0 ppm	X2D	TAL Metals, Cr+6
		NR: No Recovery	0 ppm		
10			0 ppm		
			0 ppm		
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG	BORING ID: X2
	Site: PPG - Jersey City, NJ	
Start Date: 10/4/2005	Project: Site Investigation	Page: 2 of 3
	Coordinates: X-610866 Y-683564	Depth of Boring: 24.00
End Date: 10/4/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:



Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **X2**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/4/2005	Project: **Site Investigation**	Page: 3 of 3
	Coordinates: X-610866 Y-683564	Depth of Boring: 24.00
End Date: 10/4/2005	Elevation: 13.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
24		NULL: End of Boring at 24'			

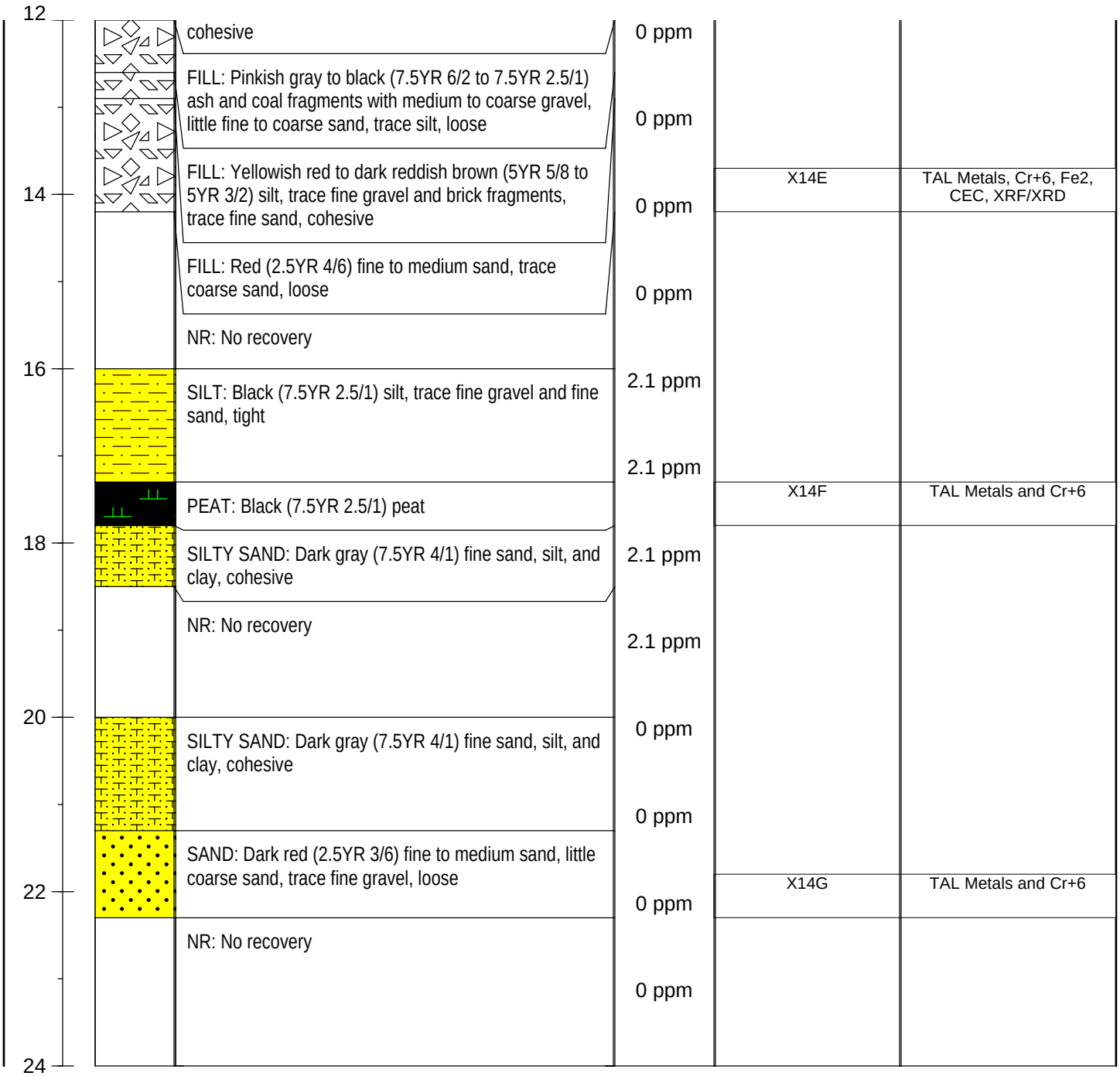
NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: **PPG**	BORING ID: **X14**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/6/2005	Project: **Site Investigation**	Page: 1 of 3
	Coordinates: X-611073 Y-683865	Depth of Boring: 24.00
End Date: 10/6/2005	Elevation: 14.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
0		FILL: Reddish brown (2.5YR 4/3) fine to medium sand, little coarse sand and fine gravel, loose			
				X14A	TAL Metals, Cr+6, Fe2, CEC, XRF/XRD
		FILL: Black (7.5YR 2.5/1) medium to coarse sand, and fine to medium gravel, ash, loose	0 ppm	X14B	TAL Metals and Cr+6
2		NR: No recovery	0 ppm		
			0 ppm		
4		FILL: Strong brown (7.5YR 4/6) silt, little fine sand and fine to medium gravel, trace wood and trace clay, slight cohesive	0 ppm		
		FILL: Light gray to brown (7.5YR 7/1 to 7.5YR 5/2) 100% waste mud, waste ash, trace coal fragments and brick with medium to coarse gravel, little silt and fine to coarse sand, loose	0 ppm		
6			0 ppm	X14C	TAL Metals, Cr+6, Fe2, CEC
		NR: No recovery	0 ppm		
8		FILL: Light gray to brown (7.5YR 7/1 to 7.5YR 5/2) 100% waste mud, medium to coarse gravel, little silt and fine to coarse sand, with waste ash and coal fragments at 8.9 to 9.1 feet, loose	0 ppm		
			0 ppm		
		FILL: Dark brown (7.5YR 3/2) fine to coarse sand, little silt, trace fine to medium gravel, slight cohesive			
10			0 ppm	X14D	TAL Metals and Cr+6
		FILL: Light gray to brown (7.5YR 7/1 to 7.5YR 5/2) medium to coarse gravel, little silt and fine to coarse sand, trace organics, loose	0 ppm		
		FILL: Brown (7.5YR 5/2) fine sand, silt and fine to medium gravel, little medium to coarse sand, slight			
12					

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

ENSR | AECOM	Client: PPG	BORING ID: X14
	Site: PPG - Jersey City, NJ	
Start Date: 10/6/2005	Project: Site Investigation	Page: 2 of 3
	Coordinates: X-611073 Y-683865	Depth of Boring: 24.00
End Date: 10/6/2005	Elevation: 14.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:



NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

ENSR | AECOM	Client: **PPG**	BORING ID: **X14**
	Site: **PPG - Jersey City, NJ**	
Start Date: 10/6/2005	Project: **Site Investigation**	Page: 3 of 3
	Coordinates: X-611073 Y-683865	Depth of Boring: 24.00
End Date: 10/6/2005	Elevation: 14.00	Geologist: Richard Firely
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
24		NULL: End of Boring at 24'			

NOTES: Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

Attachment B

Laboratory Analytical Reports

(Provided Separately)

Attachment C

Data Validation Reports

(Provided Separately)

Appendix C

Laboratory Analytical Reports and Data Validation Reports for CCPW Metals

(Provided Separately)

Appendix D

Draft Notice in Lieu of Deed Notice

Return Address:
Dorothy Laguzza, Esq., LeClairRyan
One Riverfront Plaza
1037 Raymond Boulevard, Sixteenth Floor
Newark, New Jersey 07102

NOTICE IN LIEU OF DEED NOTICE

THIS DOCUMENT SHALL BE DISTRIBUTED TO THE ENTITIES IDENTIIFED IN ACCORDANCE WITH N.J.A.C 7:26C-7.2(b)2.

Prepared by: _____
[Signature]

_____
[Print name below signature]

This Notice in Lieu of Deed Notice is made as of the _____ day of _____, ____, by the City of Jersey City, New Jersey, 280 Grove Street, Jersey City, New Jersey 07302 (Owner).

1. THE PROPERTY. The City of Jersey City is the owner in fee simple of certain real property designated as Garfield Avenue. This Notice in Lieu of Deed Notice is for the portion of Garfield Avenue between Carteret Avenue and the Hudson-Bergen Light Rail on the tax map of the City of Jersey City, Hudson County (the Property). The New Jersey Department of Environmental Protection (NJDEP) Program Interest Number (Preferred ID) for the contaminated site, part of which includes the Property, is G000005480. The Property is more particularly described in Exhibit A, which is attached hereto and made a part hereof.

2. REMEDIATION.

i. NJDEP has approved this Notice in Lieu of Deed Notice as an institutional control for the Property, which is part of the remediation of the Property. The Property is subject to a Partial Consent Judgment Concerning PPG Sites entered into by NJDEP, the Owner and PPG and approved by the Superior Court of New Jersey on June 26, 2019 (Superior Court of New Jersey, Chancery Division-Hudson County, Docket No. C-77-05 ("Consent Judgment")).

ii. N.J.A.C. 7:26C-7 requires the Owner, among other persons, to obtain a soil remedial action permit for the soil remedial action at the Property. That permit will contain the monitoring, maintenance and biennial certification requirements that apply to the Property.

3. SOIL CONTAMINATION. PPG is responsible for remediation of the Property to address Chromate Chemical Production Waste (CCPW). PPG has remediated contaminated soil at the Property, such that soil contamination remains at certain areas of the Property that contains contaminants in concentrations that do not allow for the unrestricted use of the Property. Such soil contamination is described, including the type, concentration and specific location of such contamination, and the existing engineering controls on the site are described, in Exhibit B, which is attached hereto and made a part hereof. As a result, there is a statutory requirement for

this Notice in Lieu of Deed Notice and engineering controls in accordance with N.J.S.A. 58:10B-13.

4. CONSIDERATION. In accordance with the remedial action for the site that includes the Property, and in consideration of the terms and conditions of that remedial action, and other good and valuable consideration, the Owner has agreed to subject the Property to certain statutory and regulatory requirements that impose restrictions upon the use of the Property, to restrict certain uses of the Property, and to provide notice to subsequent owners, lessors, lessees and operators of the Property of the restrictions and the monitoring, maintenance, and biennial certification requirements outlined in this Notice in Lieu of Deed Notice and required by law, as set forth herein.

5A. RESTRICTED AREAS. Due to the presence of contamination remaining at concentrations that do not allow for unrestricted use, the Owner has agreed, as part of the remedial action for the Property, to restrict the use of certain parts of the Property (the Restricted Areas); a narrative description of these restrictions is provided in Exhibit C, which is attached hereto and made a part hereof. The Owner has also agreed to maintain a list of these restrictions on site for inspection by governmental officials.

5B. RESTRICTED LAND USES. The following statutory land use restrictions apply to the Restricted Areas:

i. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(10), prohibits the conversion of a contaminated site, remediated to non-residential soil remediation standards that require the maintenance of engineering or institutional controls, to a child care facility, or public, private, or charter school without the Department's prior written approval, unless a presumptive remedy is implemented; and

ii. The Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12.g(12), prohibits the conversion of a landfill, with gas venting systems and or leachate collection systems, to a single family residence or a child care facility.

5C. ENGINEERING CONTROLS. Due to the presence and concentration of these contaminants, the Owner has also agreed, as part of the remedial action for the Property, to the placement of certain engineering controls on the Property; a narrative description of these engineering controls is provided in Exhibit C.

5D. WORKER TRAINING MANUAL/STANDARD OPERATING PROCEDURE. A Worker Training Manual has been prepared for use by the owner, lessee, and/or operators for the protection of works who may be potentially exposed to chromium-impacted soils or groundwater in conjunction with utility or other ground intrusive work on the Property. The Worker Training Manual identifies health and safety requirements for the protection of personnel and contractors who may perform ground intrusive activities (e.g., digging, drilling, excavation) that may disturb existing engineering controls and informs workers of potential hazards associated with chromium-impacted media. Owner shall make the Worker Training Manual available to operators, tenants, contractors, and/or utility workers intending to conduct invasive work within

the Restricted Area to prevent unauthorized disturbance of engineering controls and potential exposure to contaminants. The Jersey City Municipal Utilities Authority (JCMUA) and/or PPG will make the Worker Training Manual available to owners/operators, tenants, contractors, and/or utility workers in the event that the JCMUA and/or PPG are notified of invasive work by owners/operators, tenants, contractors and/or utility workers. PPG has prepared a Standard Operating Procedure (SOP) which addresses the identification, notification, and coordination of work between PPG and the JCMUA related to the utilities located within the restricted area.

6A. CHANGE IN OWNERSHIP AND REZONING.

i. The Owner and the subsequent owners, lessors, and lessees, shall cause all leases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring all holders thereof to take the Property subject to the restrictions contained herein and to comply with all, and not to violate any of the conditions of this Notice in Lieu of Deed Notice. Nothing contained in this Paragraph shall be construed as limiting any obligation of any person to provide any notice required by any law, regulation, or order of any governmental authority.

ii. The Owner and the subsequent owners shall provide written notice to NJDEP on a form provided by NJDEP and available at www.nj.gov/srp/forms within 30 calendar days after the effective date of any conveyance, grant, gift, or other transfer, in whole or in part, of the Owner's or subsequent owner's interest in the Restricted Area.

iii. The Owner and the subsequent owners shall provide written notice to the Department, on a form available from the Department at www.nj.gov/srp/forms, within thirty (30) calendar days after the owner's petition for or filing of any document initiating a rezoning of the Property to residential.

6B. SUCCESSORS AND ASSIGNS. This Notice in Lieu of Deed Notice shall be binding upon Owner and upon Owner's successors and assigns, and subsequent owners, lessors, lessees and operators while each is an owner, lessor, lessee, or operator of the Property.

7A. ALTERATIONS, IMPROVEMENTS, AND DISTURBANCES.

i. The Owner and all subsequent owners, lessors, and lessees shall notify any person, including, without limitation, tenants, employees of tenants, and contractors, intending to conduct invasive work or excavate within the Restricted Areas, of the nature and location of contamination in the Restricted Areas, and, of the precautions necessary to minimize potential human exposure to contaminants.

ii. Except as provided in Paragraph 7B, below, no person shall make, or allow to be made, any alteration, improvement, or disturbance in, to, or about the Property which disturbs any engineering control at the Property without first retaining a licensed site remediation professional. Nothing herein shall constitute a waiver of the obligation of any person to comply with all applicable laws and regulations including, without limitation, the applicable rules of the Occupational Safety and Health Administration.

iii. A soil remedial action permit modification is required for any permanent alteration, improvement, or disturbance and the owner, lessor, lessee or operator shall submit the following within 30 days after the occurrence of the permanent alteration, improvement, or disturbance:

(A) A Remedial Action Workplan or Linear Construction Project notification and Final Report Form, whichever is applicable;

(B) A Remedial Action Report and Termination of a Notice in Lieu of Deed Notice Form; and

(C) A revised recorded Notice in Lieu of Deed Notice with revised Exhibits, and Remedial Action Permit Modification or Remedial Action Permit Termination form and Remedial Action Report.

iv. No owner, lessor, lessee or operator shall be required to obtain a Remedial Action Permit Modification for any temporary alteration, improvement, or disturbance, provided that the site is restored to the condition described in the Exhibits to this Notice in Lieu of Deed Notice, and the owner, lessee, or operator complies with the following:

(A) Restores any disturbance of an engineering control to pre-disturbance conditions within 60 calendar days after the initiation of the alteration, improvement or disturbance;

(B) Ensures that all applicable worker health and safety laws and regulations are followed during the alteration, improvement, or disturbance, and during the restoration;

(C) Ensures that human exposure to contamination in excess of the remediation standards does not occur; and

(D) Describes, in the next biennial certification, the nature of the temporary alteration, improvement, or disturbance, the dates and duration of the temporary alteration, improvement, or disturbance, the name of key individuals and their affiliations conducting the temporary alteration, improvement, or disturbance, and the notice the Owner gave to those persons prior to the disturbance.

7B. EMERGENCIES. In the event of an emergency that presents, or may present, an unacceptable risk to the public health and safety, or to the environment, or an immediate environmental concern, see N.J.S.A. 58:10C-2, any person may temporarily breach an engineering control provided that that person complies with each of the following:

i. Immediately notifies NJDEP of the emergency, by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337;

ii. Hires a Licensed Site Remediation Professional (unless the Restricted Areas includes an unregulated heating oil tank) to respond to the emergency;

iii. Limits both the actual disturbance and the time needed for the disturbance to the minimum reasonably necessary to adequately respond to the emergency;

iv. Implements all measures necessary to limit actual or potential, present or future risk of exposure to humans or the environment to the contamination;

v. Notifies NJDEP when the emergency or immediate environmental concern has ended by calling the DEP Hotline at 1-877-WARNDEP or 1-877-927-6337; and

vi. Restores the engineering control to the pre-emergency conditions as soon as possible; and

vii. Submits to NJDEP within 60 calendar days after completion of the restoration of the engineering control, a report including: (a) the nature and likely cause of the emergency; (b) the measures that have been taken to mitigate the effects of the emergency on human health and the environment; (c) the measures completed or implemented to restore the engineering control; and (d) any changes to the engineering control or site operation and maintenance plan to prevent reoccurrence of such conditions in the future.

8. TERMINATION OF NOTICE IN LIEU OF DEED NOTICE.

i. This Notice in Lieu of Deed Notice may be terminated only upon recording a NJDEP-approved Termination of a Notice in Lieu of Deed Notice, available at N.J.A.C. 7:26C Appendix C, with the Affected Parties as identified in N.J.A.C. 7:26C-7.2(b)2, expressly terminating this Notice in Lieu of Deed Notice.

ii. Within 30 calendar days after recording a NJDEP-approved Termination of a Notice in Lieu of Deed Notice, the owner of the property should apply to NJDEP for termination of the soil remedial action permit pursuant to N.J.A.C. 7:26C-7.

9. ACCESS. The Owner, and the subsequent owners, lessors, lessees, and operators agree to allow NJDEP, its agents and representatives access to the Property to inspect and evaluate the continued protectiveness of the remedial action that includes this Notice in Lieu of Deed Notice and to conduct additional remediation to ensure the protection of the public health and safety and of the environment if the subsequent owners, lessors, lessees, and operators, during their ownership, tenancy, or operation, and the Owner fail to conduct such remediation pursuant to this Notice in Lieu of Deed Notice as required by law. The Owner, and the subsequent owners, lessors, and lessees, shall also cause all leases, subleases, grants, and other written transfers of an interest in the Restricted Areas to contain a provision expressly requiring that all holders thereof provide such access to NJDEP.

10. ENFORCEMENT OF VIOLATIONS.

i. This Notice in Lieu of Deed Notice itself is not intended to create any interest in real estate in favor of NJDEP, nor to create a lien against the Property, but merely is intended to

provide notice of certain conditions and restrictions on the Property and to reflect the regulatory and statutory obligations imposed as a conditional remedial action for this site.

ii. The restrictions provided herein may be enforceable solely by NJDEP against any person who violates this Notice in Lieu of Deed Notice. To enforce violations of this Notice in Lieu of Deed Notice, NJDEP may initiate one or more enforcement actions pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C, and require additional remediation and assess damages pursuant to N.J.S.A. 58:10-23.11, and N.J.S.A. 58:10C.

11. SEVERABILITY. If any court of competent jurisdiction determines that any provision of this Notice in Lieu of Deed Notice requires modification, such provision shall be deemed to have been modified automatically to conform to such requirements. If a court of competent jurisdiction determines that any provision of this Notice in Lieu of Deed Notice is invalid or unenforceable and the provision is of such a nature that it cannot be modified, the provision shall be deemed deleted from this instrument as though the provision had never been included herein. In either case, the remaining provisions of this Notice in Lieu of Deed Notice shall remain in full force and effect.

12A. EXHIBIT A. Exhibit A includes the following maps of the Property and the vicinity:

i. Exhibit A-1: Vicinity Map - A map that identifies by name the roads, and other important geographical features in the vicinity of the Property (for example, USGS Quad map, Hagstrom County Maps);

ii. Exhibit A-2: Metes and Bounds Description - A tax map of lots and blocks as wells as metes and bounds description of the restricted area within the Property, including references to tax lot and block numbers for the properties adjacent to the Property and distances from nearby intersections;

iii. Exhibit A-3: Property Map - A scaled map of the Property, scaled at one inch to 200 feet or less, and if more than one map is submitted, the maps shall be presented as overlays, keyed to a base map; and the Property Map shall include diagrams of major surface topographical features such as buildings, roads, and parking lots.

12B. EXHIBIT B. Exhibit B includes the following descriptions of the Restricted Areas:

i. Exhibit B-1: Restricted Area Map -- A separate map for each restricted area that includes:

(A) As-built diagrams of each engineering control, including caps, fences, slurry walls, (and, if any) ground water monitoring wells, extent of the ground water classification exception area, pumping and treatment systems that may be required as part of a ground water engineering control in addition to the Notice in Lieu of Deed Notice;

(B) As-built diagrams of any buildings, roads, parking lots and other structures that function as engineering controls; and

(C) Designation of all soil and all upland sediment sample locations within the restricted areas that exceed any soil standard that are keyed into one of the tables described in the following paragraph.

ii. Exhibit B-2: Restricted Area Data Table - A separate table for each restricted area that includes either (A) or (B) through (F):

(A) Only for historic fill extending over the entire site or a portion of the site and for which analytical data are limited or do not exist, a narrative that states that historic fill is present at the site, a description of the fill material (e.g., ash, cinders, brick, dredge material), and a statement that such material may include, but is not limited to, contaminants such as PAHs and metals;

(B) Sample location designation from the Restricted Area map (Exhibit B-1);

(C) Sample elevation based upon mean sea level;

(D) Name and chemical abstract service registry number of each contaminant with a concentration that exceeds the unrestricted use standard;

(E) The restricted and unrestricted use standards for each contaminant in the table; and

(F) The remaining concentration of each contaminant at each sample location at each elevation.

12C. EXHIBIT C. Exhibit C includes narrative descriptions of the institutional controls and engineering controls as follows:

i. Exhibit C-1: Notice in Lieu of Deed Notice as Institutional Control: Exhibit C-1 includes a narrative description of the restriction and obligations of this Notice in Lieu of Deed Notice that are in addition to those described above, as follows:

(A) Description and estimated size in square feet of the Restricted Areas as described above;

(B) Description of the restrictions on the Property by operation of this Notice in Lieu of Deed Notice; and

(C) The objective of the restrictions.

ii. Exhibit C-2: Restricted Area A Engineering Control - Asphalt Cap: Exhibit C-2 includes a narrative description of Asphalt Cap Engineering Control as follows:

(A) Description of the engineering control;

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

(B) The objective of the engineering control; and

(C) How the engineering control is intended to function.

13. SIGNATURES. IN WITNESS WHEREOF, Owner has executed this Deed Notice as of the date first written above.

[If Owner is a corporation]

ATTEST: [Name of corporation]

_____ By_____

_____ _____
[Print name and title] [Signature]

STATE OF [State where document is executed] SS.:
COUNTY OF [County where document is executed]

I certify that on _____, 20__, [Name of person executing document on behalf of Owner] personally came before me, and this person acknowledged under oath, to my satisfaction, that:

(a) this person is the [secretary/assistant secretary] of [Owner], the corporation named in this document;

(b) this person is the attesting witness to the signing of this document by the proper corporate officer who is the [president/vice president] of the corporation;

(c) this document was signed and delivered by the corporation as its voluntary act and was duly authorized;

(d) this person knows the proper seal of the corporation which was affixed to this document; and

(e) this person signed this proof to attest to the truth of these facts.

_____
[Signature]

_____
[Print name and title of attesting witness]

Signed and sworn before me on _____, 20__

_____, Notary Public

_____
[Print name and title]

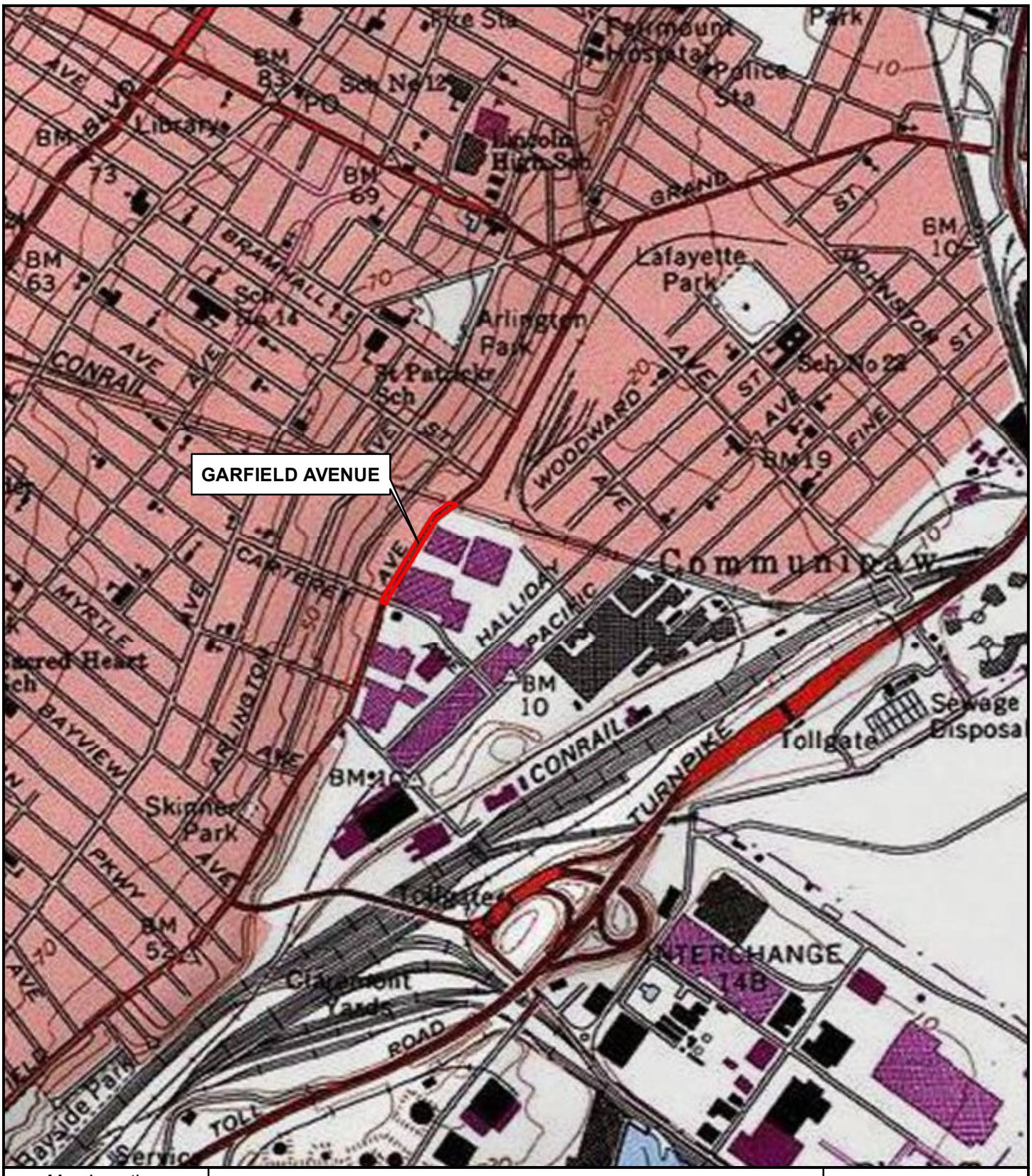
EXHIBIT A

Maps of the Property and Vicinity

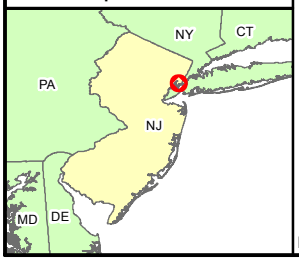
Exhibit A-1: Vicinity Map

Exhibit A-2: Metes and Bounds Description

Exhibit A-3: Property Map



Map Location



VICINITY MAP

GARFIELD AVENUE
JERSEY CITY, HUDSON COUNTY, NEW JERSEY
NOTICE IN LIEU OF DEED NOTICE

0 250 500 1,000 1,500 2,000 2,500 3,000 Feet

0 50 100 200 300 400 500 600 700 800 Meters

Image Source: USGS Topographic Quadrangle: Jersey City, NJ.

Scale: 1:12,000

AECOM

Exhibit A-1

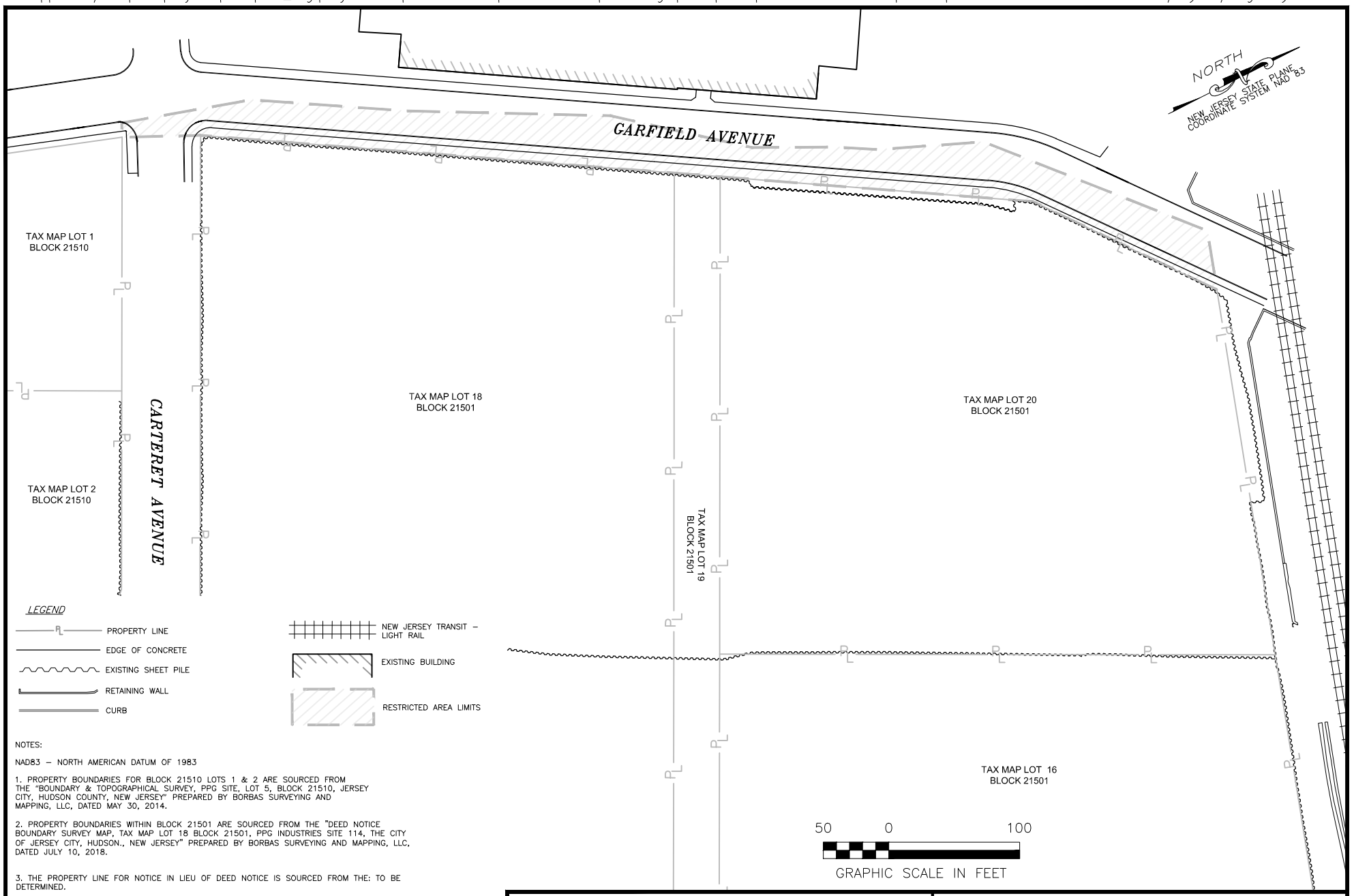
Date: 06/26/2018

Project #: 60580814

EXHIBIT A-2 Metes & Bounds Description

To be provided as part of the Final Notice in Lieu of Deed Notice

File: \\uschl1fp001\Data\Projects\Jobs\Rem_Eng\Project Files\PPG Industries\Garfield Avenue\30% Design\CADD\DWGS\Garfield Avenue RAWP\NILODN\20190328-Garfield Exhibit A-3 Property Map.dwg Layout: A-3 User:



NOTES:

NAD83 – NORTH AMERICAN DATUM OF 1983

1. PROPERTY BOUNDARIES FOR BLOCK 21510 LOTS 1 & 2 ARE SOURCED FROM THE "BOUNDARY & TOPOGRAPHICAL SURVEY, PPG SITE, LOT 5, BLOCK 21510, JERSEY CITY, HUDSON COUNTY, NEW JERSEY" PREPARED BY BORBAS SURVEYING AND MAPPING, LLC, DATED MAY 30, 2014.

2. PROPERTY BOUNDARIES WITHIN BLOCK 21501 ARE SOURCED FROM THE "DEED NOTICE BOUNDARY SURVEY MAP, TAX MAP LOT 18 BLOCK 21501, PPG INDUSTRIES SITE 114, THE CITY OF JERSEY CITY, HUDSON., NEW JERSEY" PREPARED BY BORBAS SURVEYING AND MAPPING, LLC, DATED JULY 10, 2018.

3. THE PROPERTY LINE FOR NOTICE IN LIEU OF DEED NOTICE IS SOURCED FROM THE: TO BE DETERMINED.

4. THE PROPERTY REFERENCED IN THE NOTICE IN LIEU OF DEED NOTICE IS GARFIELD AVENUE.

AECOM

GARFIELD AVENUE
NJDEP PROGRAM INTEREST NUMBER: G000005480
JERSEY CITY, HUDSON COUNTY, NEW JERSEY

PROPERTY MAP

DATE: 03/28/2019 | DRWN: SAP, ALC

EXHIBIT A-3

EXHIBIT B

Description of Restricted Area

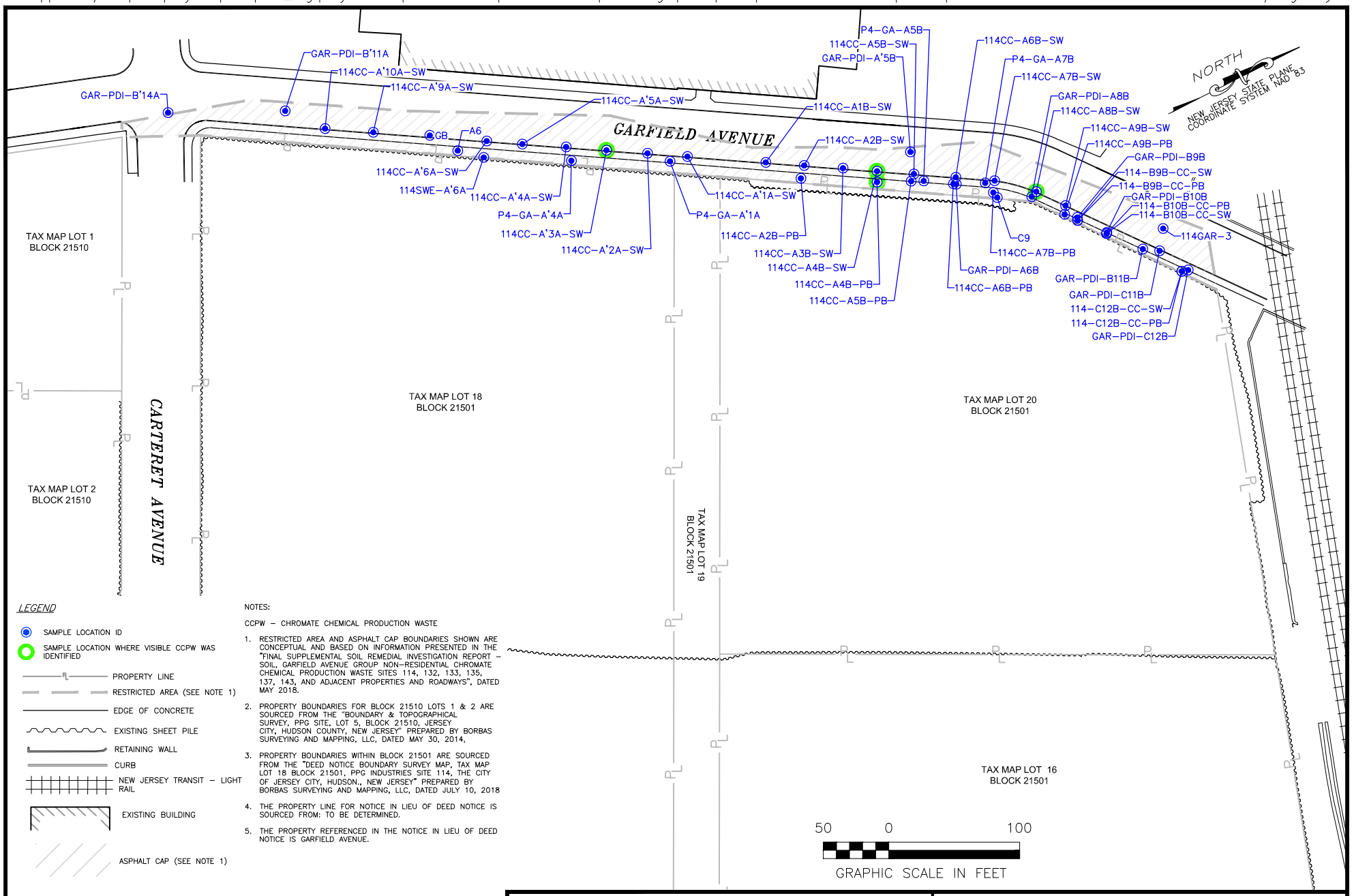
Exhibit B-1A: Restricted Area Map – Asphalt Cap

Exhibit B-1B: Engineering Control – As-Built Typical Section – Asphalt Cap

Exhibit B-1C: CEA Location Map

Exhibit B-2: Restricted Area Data Table – Asphalt Cap

File: \\uschl1fp001\Data\Projects\Jobs\Rem_Eng\Project Files\PPG Industries\Garfield Avenue\30% Design\CADD\DWGS\Garfield Avenue RAWP\NILODN\20190328-Garfield Exhibit B-1 Restricted Area Map.dwg Layout: B-1A



LEGEND

- SAMPLE LOCATION ID
- SAMPLE LOCATION WHERE VISIBLE CCPW WAS IDENTIFIED
- PROPERTY LINE
- RESTRICTED AREA (SEE NOTE 1)
- EDGE OF CONCRETE
- EXISTING SHEET PILE
- RETAINING WALL
- CURB
- NEW JERSEY TRANSIT – LIGHT RAIL
- EXISTING BUILDING
- ASPHALT CAP (SEE NOTE 1)

NOTES:

CCPW – CHROMATE CHEMICAL PRODUCTION WASTE

1. RESTRICTED AREA AND ASPHALT CAP BOUNDARIES SHOWN ARE CONCEPTUAL AND BASED ON INFORMATION PRESENTED IN THE "FINAL SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION REPORT – SOIL, GARFIELD AVENUE GROUP NON-RESIDENTIAL CHROMATE CHEMICAL PRODUCTION WASTE SITES 114, 132, 133, 135, 137, 143, AND ADJACENT PROPERTIES AND ROADWAYS", DATED MAY 2018.
2. PROPERTY BOUNDARIES FOR BLOCK 21510 LOTS 1 & 2 ARE SOURCED FROM THE "BOUNDARY & TOPOGRAPHICAL SURVEY, PPG SITE, LOT 5, BLOCK 21510, JERSEY CITY, HUDSON COUNTY, NEW JERSEY" PREPARED BY BORBAS SURVEYING AND MAPPING, LLC, DATED MAY 30, 2014,
3. PROPERTY BOUNDARIES WITHIN BLOCK 21501 ARE SOURCED FROM THE "DEED NOTICE BOUNDARY SURVEY MAP, TAX MAP LOT 18 BLOCK 21501, PPG INDUSTRIES SITE 114, THE CITY OF JERSEY CITY, HUDSON., NEW JERSEY" PREPARED BY BORBAS SURVEYING AND MAPPING, LLC, DATED JULY 10, 2018
4. THE PROPERTY LINE FOR NOTICE IN LIEU OF DEED NOTICE IS SOURCED FROM: TO BE DETERMINED.
5. THE PROPERTY REFERENCED IN THE NOTICE IN LIEU OF DEED NOTICE IS GARFIELD AVENUE.

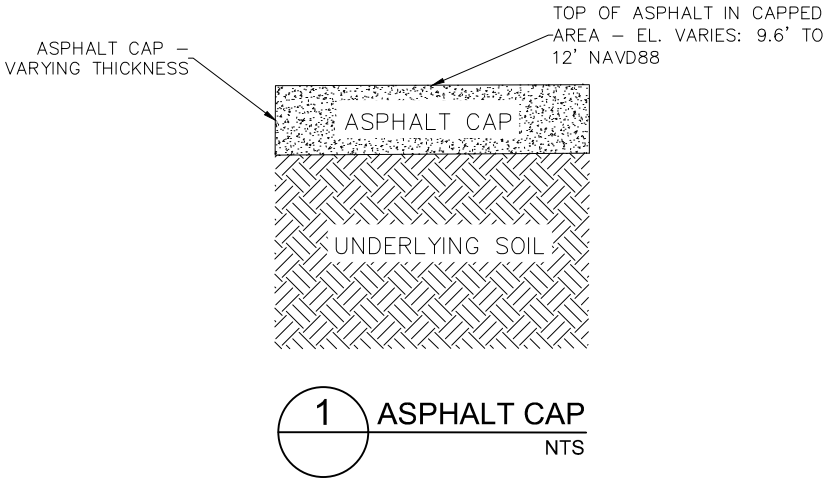
AECOM

GARFIELD AVENUE
NJDEP PROGRAM INTEREST NUMBER: G000005480
JERSEY CITY, HUDSON COUNTY, NEW JERSEY

RESTRICTED AREA MAP
ASPHALT CAP

DATE: 03/28/2019 | DRWN: SAP, ALC

EXHIBIT B-1A

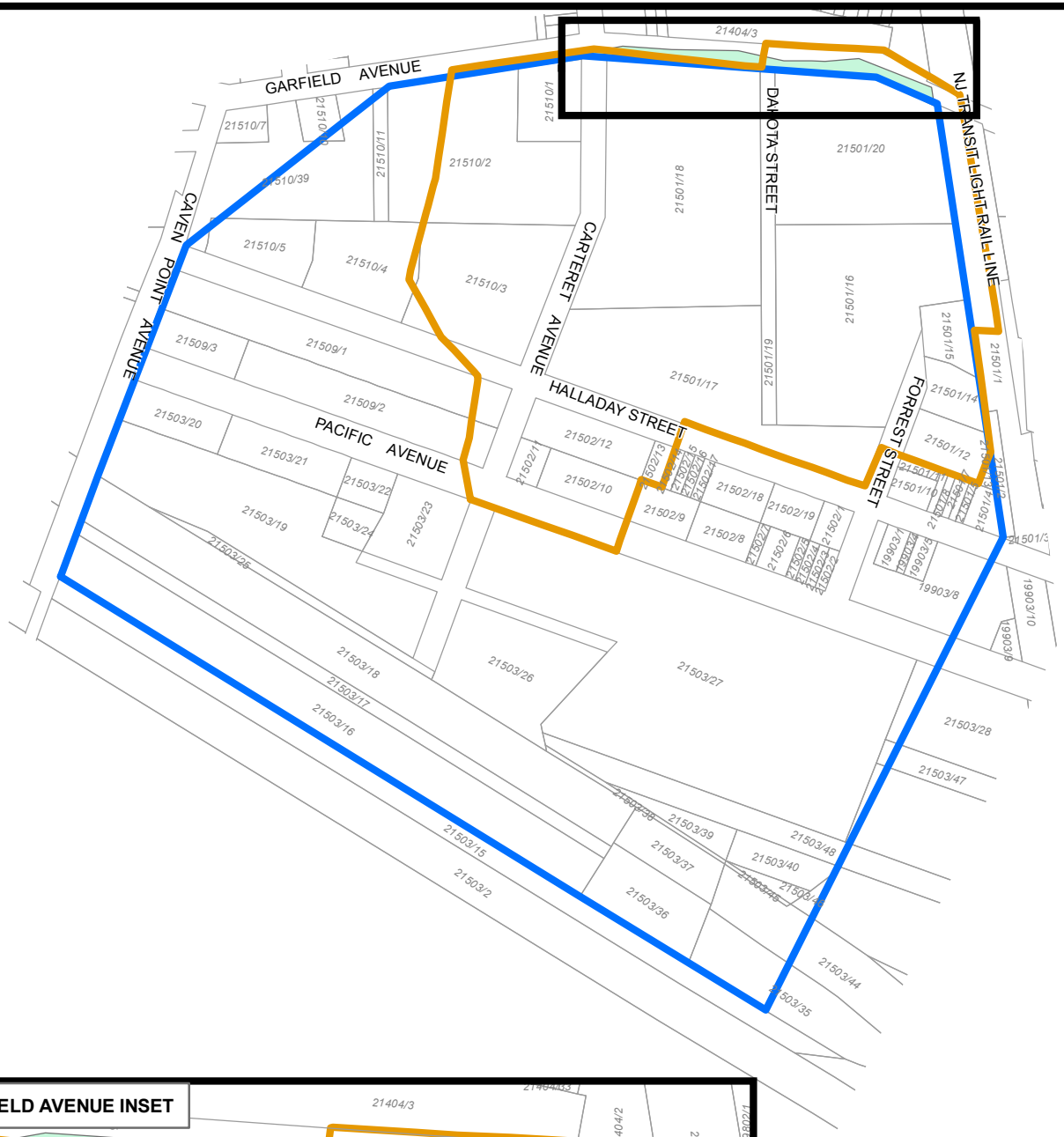


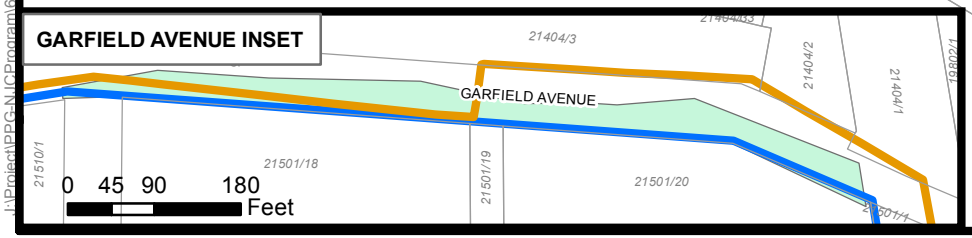
NOTES:

EL. – ELEVATION
NAVD88 – NORTH AMERICAN VERTICAL DATUM OF 1988
NTS – NOT TO SCALE

AECOM

GARFIELD AVENUE NJDEP PROGRAM INTEREST NUMBER: G000005480 JERSEY CITY, HUDSON COUNTY, NEW JERSEY			**ENGINEERING CONTROL** **ASPHALT AS-BUILT TYPICAL SECTION** **ASPHALT CAP**
DATE: 03/28/2019	DRWN: SAP, ALC		**EXHIBIT B-1B**





0 120 240 480
Feet

Notes:
1. The parcel boundaries source is the "NJ Composite of Parcels Data with Joined MOD-IV Attributes 2017" dataset from New Jersey Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS), Trenton, New Jersey, July 20, 2017. The parcel boundaries provided by this source are not surveyed data.
2. As of March 2019, there are no active monitoring well locations within the Restricted Area.

CEA - Classification Exception Area
NJ - New Jersey
PI - Program Interest
PSEG - Public Service Electric and Gas Company

Legend

- CEA BOUNDARY ASSOCIATED WITH THE PSEG FORMER HALLADAY STREET GAS WORKS MANUFACTURED GAS PLANT (TRACKED UNDER PI # G00005480, LSR120001)
- CEA BOUNDARY ASSOCIATED WITH THE PPG HUDSON COUNTY CHROMATE SITE 114 (TRACKED UNDER PI # G00005480, RPC0000051)
- RESTRICTED AREA - ASPHALT
- Block/Lot PARCEL BOUNDARY

AECOM

GARFIELD AVENUE PI NUMBER G000005480	CEA LOCATION MAP
DATE: 3/27/2019	EXHIBIT B-1C

I:\Project\PPG-NJCP\Program\6-Project Input\6.4-GIS\MXD\GAGroup\Garfield RAWP\GarfieldAvenue_CEA_Extents.mxd

Exhibit B-2
Restricted Area Data Table - Asphalt Cap
Garfield Avenue
Jersey City, Hudson County, New Jersey

					Analyte	CHROMIUM (HEXAVALENT)		ANTIMONY	
					CAS RN	18540-29-9		7440-36-0	
					Units	mg/kg		mg/kg	
					CrSCC	20		N/A	
					RDCSRS	N/A		31	
					NRDCSRS	N/A		450	
Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Date Collected	Result	Qualifier	Result	Qualifier
114-B9B-CC-PB	114-B9B-SW-6.0-6.5	6.0 - 6.5	5.5	5.0	09/18/2014	**484**			
114-B9B-CC-SW	114-B9B-SW-2.0-2.5	2.0 - 2.5	9.5	9.0	09/18/2014	**305**			
114-B9B-CC-SW	114-B9B-SW-4.0-4.5	4.0 - 4.5	7.5	7.0	09/18/2014	**921**			
114-B9B-CC-SW	114-B9B-SW-4.0-4.5X	4.0 - 4.5	7.5	7.0	09/18/2014	**1020**		**38.0**	**J**
114-B9B-CC-SW	114-B9B-SW-5.5-6.0	5.5 - 6.0	6.0	5.5	09/18/2014	**379**		**52.5**	**J**
114-B10B-CC-PB	114-B10B-PB-6.0-6.5	6.0 - 6.5	5.6	5.1	09/19/2014	**348**			
114-B10B-CC-SW	114-B10B-SW-2.0-2.5	2.0 - 2.5	9.6	9.1	09/19/2014	**284**			
114-B10B-CC-SW	114-B10B-SW-4.0-4.5	4.0 - 4.5	7.6	7.1	09/19/2014	**509**			
114-B10B-CC-SW	114-B10B-SW-5.5-6.0	5.5 - 6.0	6.1	5.6	09/19/2014	**487**		**35.9**	
114-C12B-CC-PB	114-C12B-PB-6.0-6.5	6.0 - 6.5	5.3	4.8	09/24/2014	**195**	**J**		
114-C12B-CC-SW	114-C12B-SW-2.0-2.5	2.0 - 2.5	9.3	8.8	09/24/2014	**85.0**	**J**		
114-C12B-CC-SW	114-C12B-SW-4.0-4.5	4.0 - 4.5	7.3	6.8	09/24/2014	**110**	**J**		
114-C12B-CC-SW	114-C12B-SW-5.5-6.0	5.5 - 6.0	5.8	5.3	09/24/2014	**206**	**J**		
114CC-A`10A-SW	114-A'10A-0.5-1.0-SW	0.5 - 1.0	10.2	9.7	06/19/2012	**33.9**	**J**		
114CC-A`1A-SW	114-A'1A-0.5-1.0-SW	0.5 - 1.0	9.6	9.1	07/09/2012	**51.0**	**J**		
114CC-A`2A-SW	114-A'2A-0.5-1.0-SW	0.5 - 1.0	9.2	8.7	07/05/2012	**42.2**	**J**		
114CC-A`2A-SW	114-A'2A-2.5-3.0-SW	2.5 - 3.0	7.2	6.7	07/05/2012	**67.5**	**J**		
114CC-A`3A-SW	114-A'3A-2.5-3.0-SW	2.5 - 3.0	7.0	6.5	07/02/2012	**39.6**	**J**		
114CC-A`4A-SW	114-A'4A-0.5-1.0-SW	0.5 - 1.0	9.0	8.5	06/28/2012	**1260**	**J**		
114CC-A`4A-SW	114-A'4A-2.5-3.0-SW	2.5 - 3.0	7.0	6.5	06/28/2012	**21.5**	**J**		
114CC-A`5A-SW	114-A'5A-0.5-1.0-SW	0.5 - 1.0	9.3	8.8	06/27/2012	**96.6**	**J**		
114CC-A`5A-SW	114-A'5A-2.5-3.0-SW	2.5 - 3.0	7.3	6.8	06/27/2012	**42.3**	**J**		
114CC-A`5A-SW	114-A'5A-4.5-5.0-SW	4.5 - 5.0	5.3	4.8	06/27/2012	**47.4**	**J**		
114CC-A`6A-SW	114-A'6A-0.5-1.0-SW	0.5 - 1.0	9.4	8.9	06/25/2012	**138**	**J**		
114CC-A`9A-SW	114-A'9A-0.5-1.0-SW	0.5 - 1.0	9.9	9.4	06/20/2012	**26.3**	**J**		
114CC-A1B-SW	114-A1B-0.5-1.0-SW	0.5 - 1.0	9.4	8.9	07/16/2012	**103**	**J**		
114CC-A1B-SW	114-A1B-2.5-3.0-SW	2.5 - 3.0	7.4	6.9	07/16/2012	**22.2**	**J**		
114CC-A2B-PB	114-A2B-6.0-6.5-PB	6.0 - 6.5	4.8	4.3	07/18/2012	**504**	**J**		
114CC-A2B-SW	114-A2B-0.5-1.0-SW	0.5 - 1.0	9.7	9.2	07/18/2012	**55.3**	**J**		
114CC-A2B-SW	114-A2B-4.5-5.0-SW	4.5 - 5.0	5.7	5.2	07/18/2012	**41.3**	**J**		
114CC-A3B-SW	114-A3B-2.5-3.0-SW	2.5 - 3.0	7.8	7.3	07/19/2012	**44.4**	**J**		
114CC-A4B-PB	114-A4B-6.0-6.5-PB	6.0 - 6.5	4.9	4.4	07/23/2012	**24.0**	**J**		
114CC-A4B-SW	114-A4B-1.2-1.7-SW	1.2 - 1.7	9.3	8.8	07/23/2012	**188**	**J**		
114CC-A5B-PB	114-A5B-6.0-6.5-PB	6.0 - 6.5	5.0	4.5	07/24/2012	**864**	**J**		
114CC-A5B-SW	114-A5B-1.0-1.5-SW	1.0 - 1.5	9.7	9.2	07/24/2012	**169**	**J**		
114CC-A5B-SW	114-A5B-2.5-3.0-SW	2.5 - 3.0	8.2	7.7	07/24/2012	**91.4**	**J**		
114CC-A6B-PB	114-A6B-6.0-6.5-PB	6.0 - 6.5	5.1	4.6	07/26/2012	**374**	**J**		
114CC-A6B-SW	114-A6B-0.5-1.0-SW	0.5 - 1.0	10.3	9.8	07/26/2012	**49.3**	**J**		

Exhibit B-2
Restricted Area Data Table - Asphalt Cap
Garfield Avenue
Jersey City, Hudson County, New Jersey

					Analyte	CHROMIUM (HEXAVALENT)		ANTIMONY	
					CAS RN	18540-29-9		7440-36-0	
					Units	mg/kg		mg/kg	
					CrSCC	20		N/A	
					RDCSRS	N/A		31	
					NRDCSRS	N/A		450	
Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Date Collected	Result	Qualifier	Result	Qualifier
114CC-A6B-SW	114-A6B-2.5-3.0-SW	2.5 - 3.0	8.3	7.8	07/26/2012	**75.6**	**J**		
114CC-A6B-SW	114-A6B-2.5-3.0-SWX	2.5 - 3.0	8.3	7.8	07/26/2012	**59.4**	**J**		
114CC-A6B-SW	114-A6B-4.5-5.0-SW	4.5 - 5.0	6.3	5.8	07/26/2012	**101**	**J**		
114CC-A7B-PB	114-A7B-6.0-6.5-PB	6.0 - 6.5	5.4	4.9	07/27/2012	**1530**	**J**		
114CC-A7B-SW	114-A7B-2.5-3.0-SW	2.5 - 3.0	8.2	7.7	07/27/2012	**156**	**J**		
114CC-A7B-SW	114-A7B-4.5-5.0-SW	4.5 - 5.0	6.2	5.7	07/27/2012	**92.7**	**J**		
114CC-A8B-SW	114-A8B-0.5-1.0-SW	0.5 - 1.0	10.3	9.8	07/30/2012	**102**	**J**		
114CC-A8B-SW	114-A8B-2.5-3.0-SW	2.5 - 3.0	8.3	7.8	07/30/2012	**213**	**J**		
114CC-A8B-SW	114-A8B-4.5-5.0-SW	4.5 - 5.0	6.3	5.8	07/30/2012	**941**	**J**		
114CC-A9B-PB	114-A9B-6.0-6.5-PB	6.0 - 6.5	5.5	5.0	07/31/2012	**2220**	**J**		
114CC-A9B-SW	114-A9B-0.5-1.0-SW	0.5 - 1.0	10.4	9.9	07/31/2012	**242**	**J**		
114CC-A9B-SW	114-A9B-2.5-3.0-SW	2.5 - 3.0	8.4	7.9	07/31/2012	**95.5**	**J**		
114GAR-3	114TP-3GAR-0.5-1.0	0.5 - 1.0	11.0	10.5	09/05/2012	**692**			
114GAR-3	114TP-3GAR-1.5-2.0	1.5 - 2.0	10.0	9.5	09/06/2012	**126**	**J**		
114GAR-3	114TP-3GAR-4.0-4.5	4.0 - 4.5	7.5	7.0	09/06/2012	**293**	**J**		
114GAR-3	114TP-3GAR-5.5-6.0	5.5 - 6.0	6.0	5.5	09/06/2012	**405**	**J**		
114SWE-A`6A	114-A'6A-6.5-7.0	6.5 - 7.0	4.2	3.7	07/31/2012			**69.7**	
A6	A6S0-.5	0.0 - 0.5	10.5	10.0	09/02/2003	**36.4**	**J**		
A6	A6S6.5-7	6.5 - 7.0	4.0	3.5	09/02/2003			**43.2**	**J**
A6	A6S8.5-9	8.5 - 9.0	2.0	1.5	09/02/2003			**37.2**	**J**
C9	C9S7-7.5	7.0 - 7.5	4.5	4.0	09/03/2003	**4840**	**J**		
GAR-PDI-A'5B	GAR-PDI-A'5B-3.5-4.0	3.5 - 4.0	7.2	6.7	10/23/2016	**50.9**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-7.5-8.0	7.5 - 8.0	3.6	3.1	11/29/2016	**209**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-7.5-8.0X	7.5 - 8.0	3.6	3.1	11/29/2016	**168**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-8.0-8.5	8.0 - 8.5	3.1	2.6	11/29/2016	**154**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-10.0-10.5	10.0 - 10.5	1.1	0.6	11/29/2016	**131**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-12.0-12.5	12.0 - 12.5	-0.9	-1.4	11/29/2016	**114**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-14.0-14.5	14.0 - 14.5	-2.9	-3.4	11/29/2016	**153**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-16.0-16.5	16.0 - 16.5	-4.9	-5.4	11/29/2016	**101**	**J**		
GAR-PDI-A6B	GAR-PDI-A6B-18.0-18.5	18.0 - 18.5	-6.9	-7.4	11/29/2016	**110**	**J**		
GAR-PDI-A8B	GAR-PDI-A8B-8.0-8.5	8.0 - 8.5	3.3	2.8	11/21/2016	**1820**			
GAR-PDI-A8B	GAR-PDI-A8B-8.0-8.5X	8.0 - 8.5	3.3	2.8	11/21/2016	**1640**			
GAR-PDI-A8B	GAR-PDI-A8B-10.0-10.5	10.0 - 10.5	1.3	0.8	11/21/2016	**861**			
GAR-PDI-A8B	GAR-PDI-A8B-12.0-12.5	12.0 - 12.5	-0.7	-1.2	11/21/2016	**30.8**			
GAR-PDI-A8B	GAR-PDI-A8B-12.5-13.0	12.5 - 13.0	-1.2	-1.7	11/21/2016	**115**			
GAR-PDI-A8B	GAR-PDI-A8B-14.0-14.5	14.0 - 14.5	-2.7	-3.2	11/21/2016	**56.1**			
GAR-PDI-A8B	GAR-PDI-A8B-16.0-16.5	16.0 - 16.5	-4.7	-5.2	11/21/2016	**40.1**			
GAR-PDI-A8B	GAR-PDI-A8B-18.0-18.5	18.0 - 18.5	-6.7	-7.2	11/21/2016	**64.6**			

Exhibit B-2
Restricted Area Data Table - Asphalt Cap
Garfield Avenue
Jersey City, Hudson County, New Jersey

					Analyte	CHROMIUM (HEXAVALENT)		ANTIMONY	
					CAS RN	18540-29-9		7440-36-0	
					Units	mg/kg		mg/kg	
					CrSCC	20		N/A	
					RDCSRS	N/A		31	
					NRDCSRS	N/A		450	
Location ID	Sample ID	Sample Depth Interval (ft bgs)	Sample Start Elevation (ft NAVD88)	Sample End Elevation (ft NAVD88)	Date Collected	Result	Qualifier	Result	Qualifier
GAR-PDI-B'11A	GAR-PDI-B'11A-10.0-10.5	10.0 - 10.5	1.1	0.6	11/20/2016	**127**	**J**		
GAR-PDI-B'11A	GAR-PDI-B'11A-10.5-11.0	10.5 - 11.0	0.6	0.1	11/20/2016	**116**	**J**		
GAR-PDI-B'14A	GAR-PDI-B'14A-8.0-8.5	8.0 - 8.5	3.4	2.9	11/13/2016	**82.7**	**J**		
GAR-PDI-B'14A	GAR-PDI-B'14A-9.5-10.0	9.5 - 10.0	1.9	1.4	11/13/2016	**92.0**	**J**		
GAR-PDI-B'14A	GAR-PDI-B'14A-10.0-10.5	10.0 - 10.5	1.4	0.9	11/13/2016	**25.9**	**J**		
GAR-PDI-B10B	GAR-PDI-B10B-7.5-8.0	7.5 - 8.0	4.1	3.6	12/02/2016	**3550**	**J**		
GAR-PDI-B10B	GAR-PDI-B10B-8.0-8.5	8.0 - 8.5	3.6	3.1	12/02/2016	**3870**	**J**		
GAR-PDI-B10B	GAR-PDI-B10B-10.0-10.5	10.0 - 10.5	1.6	1.1	12/08/2016	**3490**	**J**		
GAR-PDI-B10B	GAR-PDI-B10B-10.0-10.5X	10.0 - 10.5	1.6	1.1	12/08/2016	**3340**	**J**		
GAR-PDI-B10B	GAR-PDI-B10B-12.0-12.5	12.0 - 12.5	-0.4	-0.9	12/08/2016	**2290**	**J**		
GAR-PDI-B11B	GAR-PDI-B11B-8.0-8.5	8.0 - 8.5	3.9	3.4	11/30/2016	**1790**	**J**		
GAR-PDI-B11B	GAR-PDI-B11B-13.5-14.0	13.5 - 14.0	-1.6	-2.1	11/30/2016	**1450**	**J**		
GAR-PDI-C11B	GAR-PDI-C11B-9.0-9.5	9.0 - 9.5	3.0	2.5	12/02/2016	**4470**	**J**		
GAR-PDI-C11B	GAR-PDI-C11B-9.0-9.5X	9.0 - 9.5	3.0	2.5	12/02/2016	**3360**	**J**		
GAR-PDI-C12B	GAR-PDI-C12B-8.5-9.0	8.5 - 9.0	3.8	3.3	02/15/2017	**1870**	**J**		
GAR-PDI-C12B	GAR-PDI-C12B-9.0-9.5	9.0 - 9.5	3.3	2.8	02/15/2017	**1450**	**J**		
GAR-PDI-C12B	GAR-PDI-C12B-10.5-11.0	10.5 - 11.0	1.8	1.3	02/15/2017	**1500**	**J**		
GAR-PDI-B9B	GAR-PDI-B9B-6.0-6.5	6.0 - 6.5	5.6	5.1	11/21/2016	**601**			
GAR-PDI-B9B	GAR-PDI-B9B-8.0-8.5	8.0 - 8.5	3.6	3.1	11/21/2016	**1240**			
GB	GB0.4-0.9	0.4 - 0.9	9.8	9.3	03/15/2004	**20.6**			
GB	GB1.5-2	1.5 - 2.0	8.7	8.2	03/15/2004	**48.4**			
P4-GA-A`1A	114-GA-A`1A-6.0-6.5X	6.0 - 6.5	3.3	2.8	08/20/2014	**355**	**J**		
P4-GA-A5B	114-GA-A5B-5.5-6.0	5.5 - 6.0	4.0	3.5	08/21/2014	**143**	**J**		
P4-GA-A5B	114-GA-A5B-7.5-8.0	5.5 - 6.0	4.0	3.5	08/21/2014	**120**	**J**		
P4-GA-A5B	114-GA-A5B-9.5-10.0	9.5 - 10.0	0.0	-0.5	08/21/2014	**21.4**	**J**		
P4-GA-A5B	114-GA-A5B-10.5-11.0	10.5 - 11.0	-1.0	-1.5	08/21/2014	**99.8**	**J**		
P4-GA-A5B	114-GA-A5B-11.0-11.5	11.0 - 11.5	-1.5	-2.0	08/21/2014	**78.9**	**J**		
P4-GA-A5B	114-GA-A5B-13.0-13.5	13.0 - 13.5	-3.5	-4.0	08/21/2014	**82.4**	**J**		
P4-GA-A5B	114-GA-A5B-15.0-15.5	15.0 - 15.5	-5.5	-6.0	08/21/2014	**140**	**J**		
P4-GA-A7B	114-GA-A7B-5.5-6.0	5.5 - 6.0	3.9	3.4	08/22/2014	**868**			
P4-GA-A7B	114-GA-A7B-5.5-6.0X	5.5 - 6.0	3.9	3.4	08/22/2014	**723**			
P4-GA-A7B	114-GA-A7B-6.0-6.5	6.0 - 6.5	3.4	2.9	08/22/2014	**668**			
P4-GA-A7B	114-GA-A7B-8.0-8.5	8.0 - 8.5	1.4	0.9	08/22/2014	**28.7**			
P4-GA-A7B	114-GA-A7B-10.0-10.5	10.0 - 10.5	-0.6	-1.1	08/22/2014	**664**			
P4-GA-A7B	114-GA-A7B-12.0-12.5	12.0 - 12.5	-2.6	-3.1	08/22/2014	**199**			
P4-GA-A7B	114-GA-A7B-14.0-14.5	14.0 - 14.5	-4.6	-5.1	08/22/2014	**148**			
P4-GA-A7B	114-GA-A7B-16.0-16.5	16.0 - 16.5	-6.6	-7.1	08/22/2014	**64.5**			

Exhibit B-2
Restricted Area Data Table - Asphalt Cap
Garfield Avenue
Jersey City, Hudson County, New Jersey

Notes:
CCPW was observed in the clean corridor excavation at the following locations: adjacent to 114CC-A`3A-SW from El. 8.5 to 8.0 ft NAVD88 and El. 7.0 to 6.5 ft NAVD88, adjacent to 114CC-A4B-PB from El. 4.9 to 4.4 ft NAVD88, adjacent to 114CC-A4B-SW from El. 10.5 to 8.8 ft NAVD88, and adjacent to 114CC-A8B-SW from El. 10.8 to 5.8 ft NAVD88 and El. 5.6 to 5.1 ft NAVD88.

J - Indicates the result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.
bgs - below ground surface
CAS RN - Chemical Abstracts Service Registry Number
CCPW - Chromate Chemical Production Waste
CrSCC - NJDEP Interim Chromium Soil Cleanup Criteria
El. - elevation
ft - feet or foot
mg/kg - milligrams per kilogram
N/A - not applicable
NAVD88 - North American Vertical Datum of 1988
NJDEP - New Jersey Department of Environmental Protection
NRDCSRS - NJDEP Non-Residential Direct Contact Soil Remediation Standard
RDCSRS - NJDEP Residential Direct Contact Soil Remediation Standard
"X" at the end of the Sample ID indicates field duplicate sample.

Blank result indicates that the analyte did not exceed the CrSCC, RDCSRS, and/or NRDCSRS.
Bold result indicates a hexavelent chromium result that exceeded the CrSCC or an antimony result that exceeded the RDCSRS.

EXHIBIT C

Narrative descriptions of the institutional controls and engineering controls

Exhibit C-1: Notice in Lieu of Deed Notice as an Institutional Control

Exhibit C-2: Narrative Description of Asphalt Cap Engineering Control

EXHIBIT C

Narrative descriptions of the institutional and engineering controls

Exhibit C-1: Notice in Lieu of Deed Notice as Institutional Control

(A) Description and estimated size of the Restricted Areas:

This Notice in Lieu of Deed Notice is for soil (Soil Restricted Area), located within the right-of-way of Garfield Avenue in Jersey City, New Jersey, as depicted on **Exhibit B-1A**. The contaminants of concern at the Property are visible Chromate Chemical Production Waste (CCPW), hexavalent chromium (Cr^{+6}), and antimony (Sb). The estimated size of the Soil Restricted Area is 26,558 square feet (ft^2) (0.61 acres). Note that the Sb concentrations remaining in the Garfield Avenue Soil Restricted Area do not exceed the Non-Residential Direct Contact Soil Remediation Standard (NRDCSRS) and the concentrations of antimony in the unsaturated zone do not exceed the Impact to Groundwater Soil Remediation Standard – Garfield Avenue Group (IGWSRS-GAG); therefore, these contaminants are not restricted for the current roadway use. However, antimony is listed in this Notice in Lieu of Deed Notice, in case of future rezoning, because there are antimony concentrations remaining in the roadway that are greater than the Residential Direct Contact Soil Remediation Standard (RDCSRS).

(B) Descriptions of the restrictions on the Property by operation of this Notice in Lieu of Deed Notice:

The restrictions in this Notice in Lieu of Deed Notice minimize exposure to the contaminants of concern identified above in **Exhibit C-1** (**A**), which exceed the unrestricted use standards in the Soil Restricted Area of Garfield Avenue. Through the use of this Notice in Lieu of Deed Notice and implementation of engineering controls, exposure to humans and the potential impact to the environment are reduced.

(C) Objective of the restrictions:

The objective of the restrictions in this Notice in Lieu of Deed Notice is to permit continued use of the Property while reducing the exposure of humans to, and the potential impact to the environment from visible CCPW and Cr^{+6} in soil at concentrations greater than the unrestricted use standards.

Exhibit C-2: Narrative Description of the Asphalt Cap Engineering Control

(A) Description of the engineering control:

Asphalt (i.e., Asphalt Cap Engineering Control) is present within the Soil Restricted area at varying thicknesses as an engineering control to restrict access to soils with visible CCPW and Cr^{+6} at concentrations greater than the unrestricted use standards. The extent of the

Asphalt Cap Engineering Control is depicted on **Exhibits B-1A.** An as-built typical section of the Asphalt Cap Engineering Control is shown on **Exhibit B-1B**.

(B) The objective of the engineering control:

The objective of the Asphalt Cap Engineering Control is to protect human health and the environment by restricting access and eliminating exposure to soil underlying the Asphalt Cap that has visible CCPW and Cr^{+6} at concentrations greater than the unrestricted use standards.

(C) How the engineering control is intended to function:

The Asphalt Cap Engineering Control is intended to function as a barrier that prevents direct contact with and incidental exposure to the underlying soil containing visible CCPW and Cr^{+6} at concentrations greater than the unrestricted use standards.

Appendix E

Procedure for Coordinating Utility Work within Chromium Soil Areas

PROCEDURE FOR COORDINATING UTILITY WORK WITHIN CHROMIUM SOIL AREAS

HONEYWELL SITES
JERSEY CITY, NEW JERSEY

Prepared by
Amec Foster Wheeler Environment & Infrastructure, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

DECEMBER 2014;
UPDATED JANUARY 2017

Approved by:

Jersey City Municipal Utilities Authority – Senior Engineer

Honeywell – Global Remediation Director

TABLE OF CONTENTS

ILLUSTRATIONS

APPENDICES

1.0 INTRODUCTION AND SCOPE

Honeywell has developed this Standard Operating Procedure (SOP) to assist the Jersey City Municipal Utilities Authority (JCMUA) in safely and protectively executing sewer repair or replacement work at sites containing chromium-impacted fill soils in Jersey City (referred to herein as "sites" or "sewer sites").

Utility workers will follow this SOP when they have to repair or otherwise maintain pipelines and any associated equipment that have been constructed in areas where chromium-contaminated soils or chromium fill (also referred as chromium ore processing residue [COPR]) is located. The SOP helps protect utility workers who may encounter chromium-contaminated soils or fill during the course of their work. Chromium-contaminated soils (also referred to as "chromium soils") refers to soils containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]).

This SOP addresses sewer repair or replacement performed either as part of planned maintenance work, or required as a result of an emergency situation at the sites. The procedure meets the requirements of the Consent Judgment between the New Jersey Department of Environmental Protection (NJDEP) et al. and Honeywell et al., dated September 7, 2011 ("Consent Judgment"). Pursuant to the Consent Judgment, Honeywell has responsibility for investigation and remediation of designated sewer sites in accordance with a NJDEP approved Sewer Protocol. The Sewer Protocol includes requirements for developing procedures to allow utility workers to safely repair or replace sewer lines at these sites. In the event of any planned maintenance or emergency repair of its sewer pipeline(s) at the sites that will involve disturbance of chromium soils or remedial measures, the JCMUA agrees to follow the steps identified in this procedure.

Currently, JCMUA employees may perform sewer maintenance and repair work to depths of approximately 20 feet below grade. For emergency sewer work and excavation to depths greater than 20 feet, work is typically performed by JCMUA contractors (the current contractor is J. Fletcher Creamer & Son, Inc. [Creamer]). Additionally, the JCMUA has entered into a long-term agreement with United Water for operation and maintenance of its water systems. Accordingly, any reference to the JCMUA in terms of operation and maintenance of its water system

shall be interpreted as including United Water, its contractors and employees. Similarly, Honeywell uses remediation contractors and consultants and where this SOP references Honeywell, it should be understood that this includes its consultants and contractors.

The SOP describes a series of steps to be taken before and during times when utility work is to be conducted by the JCMUA at the sites. These steps detail requirements of Honeywell after JCMUA notifies them that work is pending on the part of JCMUA. The procedures contained in this document address the excavation of chromium-impacted material and safe handling methods in the event that JCMUA workers and/or contractors are required to work in the area of chromium-contaminated fill. Worker safety and training requirements are discussed in Section 5 and addressed in an accompanying Worker Training Manual prepared by Honeywell for use by the JCMUA and included as **Appendix C**.

The first step in this procedure is the determination by the JCMUA supervisory personnel (or JCMUA representatives) that sewer utility work is going to be implemented at one of the designated site(s) listed in **Appendix B**. Following this internal identification and acknowledgement, JCMUA notifies Honeywell using the Telephone Response System established by Honeywell (Chromium Response Hotline), indicating that work will be taking place at the specific site (including NJDEP Site number and site address) and the timing for that work. These steps initiate the SOP process. A process flowchart for the SOP and information on key personnel are provided in **Appendix A**. Site information and maps for the Honeywell-assigned (PPG has shared responsibility for certain sites) sewer sites in Jersey City are included in **Appendix B**.

Once the JCMUA notifies Honeywell through the Chromium Response Hotline that work is required at the site(s), Honeywell will provide technical assistance and coordination of field work with JCMUA. For emergency utility work, JCMUA will use an OSHA 40-hour trained contractor (Occupational Safety and Health Administration [OSHA] 40-Hour Hazardous Waste Operations and Emergency Response [HAZWOPER] training). This requirement is necessary because the time typically available does not allow for a case-by-case evaluation of whether the work is in an area of chromium soils, and therefore using an OSHA 40-hour trained contractor is prudent. Honeywell will cooperate with the JCMUA to provide field support, as needed, relating to the presence of chromium.

In a non-emergency situation, following notification of pending work, Honeywell personnel will evaluate the specific area of planned work against existing site data, and determine whether the area where the work will be conducted contains chromium-contaminated fill, and therefore, requires OSHA 40-hour trained personnel. In some cases, it may be necessary for Honeywell to collect samples to determine whether or not chromium impacts are present. Honeywell will communicate its conclusions to JCMUA. If the work is in a chromium containing area, Honeywell will provide technical assistance, field oversight and support, as needed, during the implementation of the sewer utility work and, if applicable, the restoration of any engineering controls.

JCMUA contractors will perform the excavation of material generated during sewer work (with the exception of longer term, planned sewer upgrade work which will be evaluated on a case-by-case basis). JCMUA works with designated contractors who can provide properly trained personnel, as needed, to work in areas with chromium contamination. Honeywell will provide information on specific licensed facilities to be used for the disposal of chromium-contaminated materials and on the restoration of engineering controls, if applicable in connection with sewer work. Financial issues and cost reimbursement are discussed in Section 3.4.

In non-emergency cases, the work would follow a schedule established between Honeywell and the JCMUA following initial notification. For a non-emergency or planned sewer project, the JCMUA would typically retain a contractor for sewer work through a public bidding process. For emergency related sewer work, the JCMUA has a designated emergency services contractor and these services are subject to periodic bidding. Honeywell will provide specifications for excavation, management and disposal of chromium-contaminated materials to the JCMUA for inclusion as part of its contractor bidding process for sewer work. The JCMUA will retain properly trained contractor(s) to perform sewer work in areas of chromium-contaminated fill.

Honeywell will retain an emergency response contractor with capability to respond within an approximately three (3) hour timeframe (which JCMUA has indicated is an acceptable timeframe for response action) if needed in the event that JCMUA's contractor is unable to perform the excavation and disposal of chromium-contaminated soils.

In addition to being subject to the requirements identified in this SOP, some sites may be the subject of an existing institutional control (deed notice) which includes certain provisions pertaining to disturbance and restoration of engineering controls (capping), as well as notification and reporting requirements. Because areas subject to capping and deed notice must maintain their integrity to function as they were intended, work activity in such areas will require restoration of the engineering control to its pre-disturbance condition. If work is occurring in an area subject to a deed notice and will involve disturbance of engineering controls, NJDEP notification and reporting requirements will apply in addition to the process described in this SOP.

This SOP will be followed in all applicable cases; however, this SOP cannot account for all site specific conditions and field-driven modifications to this procedure can be made upon agreement of both Honeywell and JCMUA.

This SOP is organized in the following sections:

2.0 Regulatory and Legal Section: Provides background information on the regulatory and legal basis for the development of this SOP.

3.0 Notification and Response Procedure: Describes the function of the proposed system.

3.1 Telephone Answering Service (Chromium Response Hotline): Describes the function of the "Hotline".

3.2 Honeywell Response Team: Describes the function of Honeywell's staff.

3.3 Emergency Response Contractors: Describes the function of Emergency Response Contractors.

3.4 Responsibilities: Describes roles and responsibilities of the various parties.

4.0 Identification of Chromium Soil Areas: Describes the sites where this SOP applies.

5.0 Hazard Evaluation and Worker Training: Provides information regarding the health hazards that may be encountered and worker training.

2.0 REGULATORY AND LEGAL SECTION

Chromium-contaminated fill was historically used as construction fill at various sites in Hudson County, New Jersey, including portions of sewer pipelines in Jersey City. Regulatory requirements for sewer sites containing chromium fill include the Sewer Protocol, which specifies remedial action requirements that take into consideration of:

- protection of the utility;
- depth of contaminated soils; and
- land use such as the presence of public streets or highways.

For these types of utility sites (linear site containing a utility line), with subsurface contamination at depths greater than 3 feet, or sites situated beneath city streets or highways, capping and institutional controls in the form of a deed notice constitute the prescribed remedy. For sites (or part of sites) with shallow contamination (less than 3 feet), the prescribed remedy is either installation of an engineered capping system or removal of the top 3 feet of contaminated soils and replacement with 3 feet of clean soil underlain by a demarcation layer.

The Sewer Protocol provides protective remedial measures while minimizing invasive excavation work that could disturb or damage sewer pipelines or other utilities. The Sewer Protocol requires excavation and removal of chromium-contaminated soils if it is necessary to affect the repair or replacement of the sewer pipeline. Coordinating soil removal with sewer repair or replacement allows for removal under more controlled conditions to reduce the likelihood of incidental damage to the sewer line or disruption of sewer service.

NJDEP regulations include requirements for engineering controls (capping) and institutional controls (deed notice) as part of remedial actions. These controls are established to communicate the presence of contaminated soils and control disturbance of these soils and potential exposure to them.

Capping systems are implemented in conjunction with a deed notice to protect and prevent unauthorized disturbance of the cap. For remedial actions where residual groundwater contaminants may remain at concentrations above the NJDEP

groundwater quality standards, an institutional control for groundwater (referred to as a Classification Exception Area) is required in order to communicate the presence of, and restrict the use of contaminated groundwater.

Under the Consent Judgment, Honeywell has responsibility for investigation and remediation of designated sewer sites in accordance with the Sewer Protocol. Honeywell also must develop procedures to identify when sewer sites are scheduled for repair, address emergency utility work at sewer sites, and provide for training of utility workers on recognition of chromium materials and appropriate steps for worker protection.

The Worker Training Manual addresses worker protection requirements including training of workers for protection from exposure to chromium-contaminated media during utility or other work performed at the sites. Further information regarding the Worker Training Manual is included in Section 5. A copy of the Worker Training Manual is included as **Appendix C**.

This SOP provides details for coordination of work between Honeywell and the JCMUA. The notification and response procedure, coordination of work, key personnel and responsibilities for SOP implementation are described in the following section.

3.0 NOTIFICATION AND RESPONSE PROCEDURE

The following procedure guides work that will take place on JCMUA utilities at designated sites in Jersey City (refer to **Appendix B** for site information and maps). Fundamental to the process is the obligation that JCMUA notify Honeywell if pending work is to be conducted at one of the specified sewer sites so that Honeywell can take appropriate actions that will enable the JCMUA to conduct its work in a safe manner. The notification and response procedures described in this document involve collaborative work between Honeywell, JCMUA and their respective representatives, and requires specific actions to be taken by each party. The success of this procedure will depend on the collaboration and full understanding of the procedure. A detailed activity flow process is presented in **Appendix A**: **Notification and Response System Flow Chart**. A simplified process flow illustration follows:

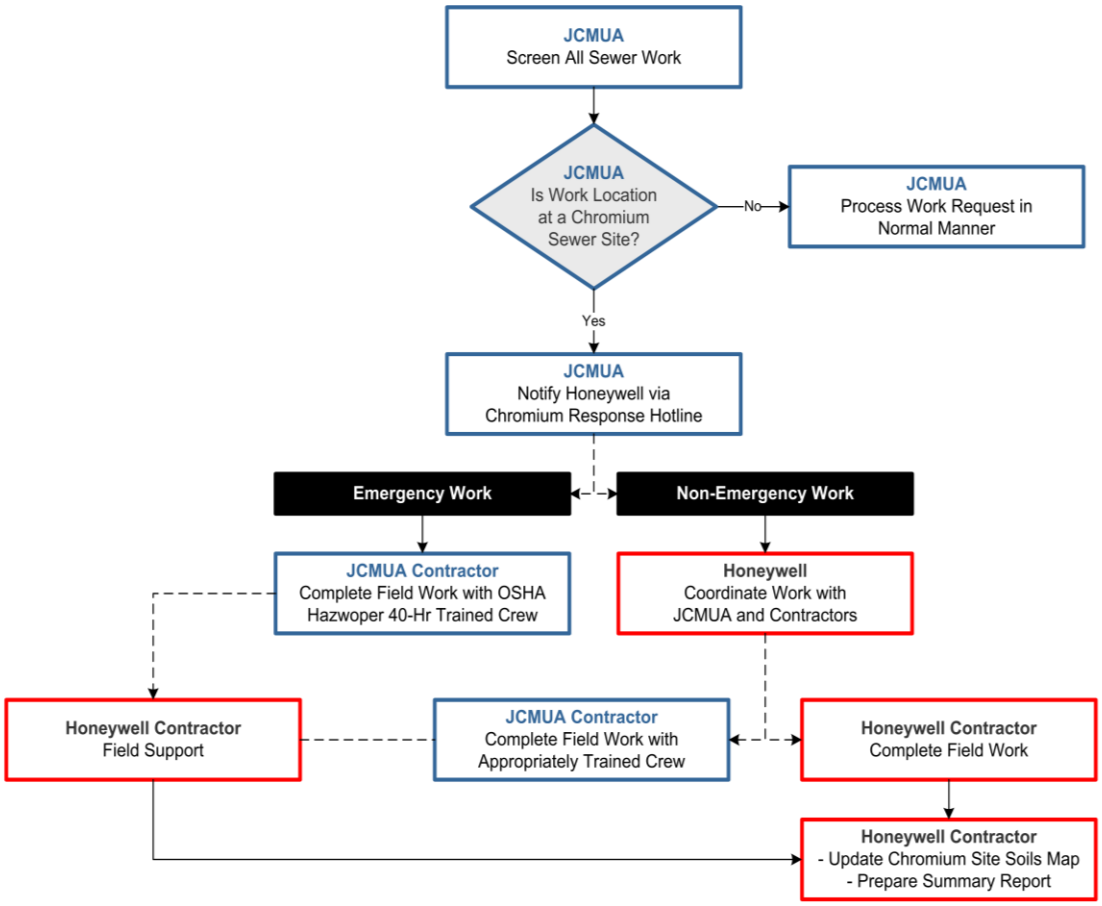


Illustration 1 SOP General Process Flow Summary

JCMUA has established a checkpoint in its work order process that enables it to identify when work will occur on the subject sites. The procedure described in this section is initiated by the JCMUA supervisor or JCMUA's designated representative. Initiation of the process starts with a call to Honeywell's telephone answering service ("Chromium Response Hotline" or "Hotline") for Honeywell to respond. The Hotline is the single point of notification through which pending work will be reported. A detailed activity flow process is presented in **Appendix A-1** (Notification and Response System Flow Chart) and contains details regarding work identification, notification, coordination, and reporting requirements. The location of the work area can be made by a JCMUA responsible individual by referring to the site information and figures in **Appendix B.**

The Chromium Response Hotline operates in a manner similar to the New Jersey One-Call utility mark-out notification. Following determination that work will be performed at the site(s), the JCMUA will contact the Chromium Response Hotline to report that work will be undertaken, specify the location, identify whether the work is emergency or routine maintenance, and provide information regarding the caller and pertinent contact information. For scheduled maintenance work, it will be necessary to indicate the projected timeframe for conducting the work. Based on the reported information, the Chromium Response Hotline will generate a report using appropriate templates for emergency or non-emergency situations, and will proceed to make notifications to designated Honeywell individuals (Honeywell Response Team list included in **Appendix A-2**). If JCMUA is contacted by other parties regarding work at the sites, JCMUA will notify Honeywell for coordination of work with other parties.

The process for emergency and non-emergency work is further described below.

Emergency Work

For emergency sewer work at the sites, the JCMUA will be required to use OSHA 40-hour personnel as the timing typically will not allow for a determination as to whether the work location is in a chromium-impacted area. Therefore, for this procedure, and subject to an agreement between Honeywell and the JCMUA, all emergency work will be conducted in this manner. Honeywell will provide technical assistance and field support as needed in cooperation with the JCMUA. Honeywell will target having its emergency response contractor respond onsite within an

approximate three (3) hour timeframe (to be coordinated in consultation with the JCMUA).

Non-Emergency Work

For non-emergency work, after determining that it will conduct work on the site(s), JCMUA must identify the type of work, specific location, and timing of the planned work. The determination on whether the area may have chromium contamination will be made by Honeywell after JCMUA notification to the Chromium Response Hotline. Any utility work at or adjacent to the site(s) should be identified even if the work is not within the defined site property boundary. In some situations it may be necessary for Honeywell to go to the work area and make a visual inspection or collect samples to determine whether or not chromium impacts are present. If Honeywell determines that the work will occur in a chromium impacted area, it will notify the JCMUA that the work will require properly trained contractor(s). The JCMUA will then proceed with the work using properly trained contractors.

Honeywell and JCMUA have agreed that the JCMUA's contractor will perform excavation and disposal of materials generated during sewer work, backfilling and site restoration (with the exception of possibly longer term, planned sewer upgrade work). If work is in a chromium-impacted area, Honeywell will provide technical assistance, field oversight and support, as needed, during the sewer utility work and, if applicable, soil disposal and restoration of engineering controls. Backfilling and site restoration will require the placement of clean fill in accordance with JCMUA specifications as well as NJDEP requirements (including the NJDEP Fill Guidance; last updated April 2015).

If the area is subject to a deed notice, restoration of the area will involve replacement in kind of the pre-existing engineering control(s) which may include clean fill, geotextile liner, landscaping and/or paving. Site backfill and restoration work may also include measures (e.g., placement of geotextile liner along the sides of excavation zone) to prevent recontamination of new fill from surrounding contaminated fill, to the extent practicable and allowable by the JCMUA.

In some cases, it is possible that Honeywell's contactor may take the lead on field work or a portion of the field work, to be determined on a case by case basis in cooperation with the JCMUA. For example, possible situations where Honeywell's contractor may take the lead on field work would be an emergency situation where

JCMUA's emergency services contractor could not provide properly trained workers in a timely manner for some unforeseen reason, or a non-emergency planned project where there is a mutual agreement between Honeywell and the JCMUA for Honeywell's contractor to take the lead on the field work or a specific portion of the field work (e.g., Honeywell's contractor completes excavation/disposal of chromium materials and/or replacement of engineering controls while JCMUA's contractor completes sewer-related repair or replacement work).

It is possible that removal of COPR and/or chromium-impacted soils beyond the initial identified sewer repair work area may be performed, to be determined on a case-by-case basis and coordinated between Honeywell and the JCMUA. Such additional remediation may be performed to complete the work under permits and/or other measures (i.e., traffic control) obtained as part of the sewer repair project.

As a last step in the process, Honeywell will update the chromium soil area site map by incorporating the changed conditions of the area subject to the work.

Key components of the notification and response system are described in the following sections. Additional activities and administrative controls include periodic site inspections by Honeywell and periodic communications via calls or meetings with the JCMUA regarding any upcoming work at the sites.

3.1 TELEPHONE ANSWERING SERVICE ("CHROMIUM RESPONSE HOTLINE")

Honeywell has established a contracted telephone answering service (Chromium Response Hotline: **855-727-2658**) to provide 24-hour coverage of notifications received from the JCMUA. The answering service will record and relay to Honeywell the name of the person initiating the call on behalf of the JCMUA, contact information, planned excavation location(s), expected start date, and the nature of the work (emergency or non-emergency). The Hotline has appropriate scripts and templates for the answering service personnel, so that incoming calls can be addressed appropriately. In addition, Honeywell has provided and will maintain a list of contacts, chain-of-command and telephone-chain so that incoming notifications can be routed to appropriate personnel for response in a timely manner.

After receiving a report through the Chromium Response Hotline, the answering service will contact the designated Honeywell representatives via email, text, and telephone.

3.2 HONEYWELL RESPONSE TEAM

Honeywell will provide qualified personnel to respond to the JCMUA notifications. As necessary, the person(s) responding to the notification of pending JCMUA work will assess existing information to determine whether the proposed work is in an area of known or suspected chromium-contamination. The person responding will coordinate as necessary with other Honeywell staff, the JCMUA and appropriate contractor staff to implement the work in accordance with procedures contained in this document. The Honeywell representative will visit the proposed work location and assess visually whether there is an indication of chromium impacted fill or collect samples, if necessary.

As part of the program, a Health and Safety Plan (HASP) will be implemented during field work activities. Existing HASP documents have been developed by Honeywell's contractors for site investigation and remedial action field work involving chromium-contaminated fill and include provisions for worker safety, community health and safety, and emergency response procedures.

3.3 EMERGENCY RESPONSE CONTRACTORS

The JCMUA will retain an emergency response contractor with properly trained workers and equipment necessary to perform sewer work in areas of chromium-contaminated fill. Honeywell will provide specifications for excavation, management and disposal of chromium-contaminated materials to the JCMUA for inclusion as part of its contractor bidding process for sewer work. Draft specifications and a list of specific licensed facilities for disposal of chromium-contaminated materials are provided for reference in **Appendix D**.

Honeywell will also retain one or more emergency response contractors that have the labor and equipment necessary to respond promptly in the case of an emergency if needed and in situations where the JCMUA contractor may not be able to respond. The contractor(s) will have 24-hour response capability. Based on input from the JCMUA and for the purposes of this SOP, an emergency is considered to be an

unforeseen sewer-related problem that requires action including onsite response within three (3) hours of notification to Honeywell by the JCMUA.

In the case of an emergency notification by JCMUA where it is requested that Honeywell's emergency response contractor is needed to perform field work or other technical support, Honeywell will contact its emergency services contractor and make provisions to have the contractor onsite within three (3) hours of the call. The Honeywell contractor will contact JCMUA and provide appropriate contact information and a time estimate for arrival of the emergency response contractor.

The contractor will be responsible for excavating in areas where JCMUA needs to implement its work and will make appropriate arrangements for the disposal of chromium-contaminated material. The contractor will also be responsible for providing clean fill and restoring engineering controls. For emergency response cases, JCMUA's contractor will take the lead in completing the field work activities including excavation and disposal of materials generated during sewer work, backfilling and site restoration. In some cases, Honeywell's contractor may take the lead in performing field work or a portion of the field work (e.g., transportation and disposal of chromium-contaminated materials, restoration of engineering controls), to be determined on a case by case basis in coordination with the JCMUA.

3.4 RESPONSIBILITIES

Telephone Answering Service (Chromium Response Hotline): Will receive all notifications from the JCMUA and/or its designated contractor informing Honeywell of expected work at the sites subject to this procedure. The answering service will obtain information from the calling party regarding work location, timing of work, whether the work is emergency or non-emergency, and the identity of the JCMUA representative and contact information. The service will contact a responsible individual within the Honeywell Response Team.

Honeywell Remediation Director (or assigned personnel): Responsible for supporting the overall function of the system; and will have final approval authority for the development and revision of the SOP and its application to the JCMUA utilities at the sites.

Honeywell Remediation Manager: Responsible for implementation of procedures in accordance with the SOP including retaining contracted services and communicating with project personnel for proper coordination and documentation of work.

Honeywell Project Personnel: Responsible for the implementation of all SOP requirements, including providing an assessment to the entities submitting notice of intent to perform work at the site(s), that chromium-contaminated fill is or is not present at the work site. Project personnel will provide field support and technical assistance as needed prior to and during the proposed work, and after completion of the work and document all information in a field log book. Project personnel will also be responsible for updating the chromium soils site maps and preparing summary reports following completion of field work.

Honeywell Emergency Response Contractor: Responsible for responding to emergency situations when requested by Honeywell in consultation with the JCMUA. As part of the response, the contractor will be prepared to address all chromium-contaminated media including offsite transportation and disposal, and coordinate work with JCMUA's project personnel and contractor as may be required for sewer work. In addition, the emergency response contractor will be responsible for developing a Health and Safety Plan (including emergency response procedures) for its workers. Non-emergency type work may also be conducted by the emergency contractor (or another contractor), to be determined by Honeywell based on the projected schedule and consultation with JCMUA project personnel.

JCMUA Supervisor/Superintendent: Responsible for retaining appropriate contracted services as indicated in the SOP, checking the proposed sewer work location on the chromium soils site maps, and providing notification to Honeywell in the event of any sewer utility work at the sites, including notification to the Chromium Response Hotline.

JCMUA Project Personnel/Contractors: Responsible for coordinating sewer work with Honeywell's project personnel and contractor, as applicable. JCMUA's employees (designated supervisory and field staff) will be required to have appropriate training as indicated in Section 5 and specified in the Worker Training Manual. In most cases, JCMUA personnel are not expected to conduct ground-intrusive work (e.g., digging, drilling, and excavation) in areas of chromium soils. It

is expected that, in the majority of cases, JCMUA's contractor(s) will perform field work involving removal and disposal of chromium-contaminated soils and site restoration in conjunction with sewer repair or replacement work. JCMUA's employees and/or its contractors performing field work will be required to have applicable health and safety training as indicated in the Worker Training Manual.

JCMUA Rules and Regulations: All sewer-related work must comply with JCMUA's Rules and Regulations, which include standard material specifications including backfill and restoration requirements. Backfill requirements include providing clean fill certification, laboratory analysis reports, and specific requirements for compaction. A copy of JCMUA's Rules and Regulations pertaining to site work, excavation and backfill are provided for reference in **Appendix E**.

The SOP notification and response system flow chart and Honeywell Response Team key personnel and contact information (phone numbers, email addresses) are included in **Appendix A**.

Cost Reimbursement: Financial issues and cost reimbursement details will be addressed in a cooperative manner between Honeywell and the JCMUA. Honeywell will reimburse the JCMUA for the need to employ OSHA 40-hour trained personnel as required by this SOP. Honeywell will also pay for costs associated with transportation and disposal of chromium soils. Currently, it is anticipated that cost reimbursement would be accomplished by JCMUA submittal of copies of invoices to Honeywell for additional costs associated with use of OSHA-trained workers and transportation and disposal of chromium soils, as applicable on a project specific basis. Cost reimbursement, including the responsibilities of Honeywell and JCMUA for costs arising from the presence of chromium soils co-located with soils containing other hazardous constituents, will be addressed in a separate agreement between Honeywell and the JCMUA, if needed.

4.0 IDENTIFICATION OF CHROMIUM SOIL AREAS

This document applies to Honeywell-assigned sewer sites as designated in the Consent Judgment between Honeywell and the NJDEP.

Site maps and a summary table with information on ownership, address, and tax parcel information are provided in **Appendix B**. Site maps were provided by Honeywell to the JCMUA in May 2013. The sites include 27 sewer sites in Jersey City as specified in the Consent Judgment including 10 sites with shared responsibility between Honeywell and PPG. For the shared sites, Honeywell is taking the lead on remediation, and, therefore, Honeywell should be contacted for any work expected to be performed by the JCMUA at those sites. Honeywell will also provide survey coordinates for the sites for use by the JCMUA and incorporation into existing Geographical Information System (GIS) sewer mapping system.

The presence of chromium impacted soil or fill may be indicated as gray-black granular material, yellow-green colored staining, reddish-brown nodules in soils, gray-green mud, or extremely hard layers of dark brown soil. Chromium-impacted groundwater may be indicated by yellow-green colored water. Fill soils may also contain other contaminants that are commonly associated with historic fill and unrelated to COPR fill, such as polycyclic aromatic hydrocarbons (PAHs) and metals. This SOP does not address potential risk of exposure to these other contaminants.

Site 153 (Former Morris Canal Site) is the location of a force main sewer pipeline operated by the Bayonne Municipal Utility Authority (BMUA) along the eastern side of Route 440 between Carbon Place and Danforth Avenue in Jersey City. The sewer pipeline conveys sewage from the City of Bayonne to the Passaic Valley Sewerage Commission. Remedial actions were completed at Site 153 in 2009 and 2011 including engineering controls (placement of 3 feet of clean fill, pavement and/or vegetative cover) and establishment of institutional controls (Deed Notice). A separate SOP has been prepared for coordination of work between Honeywell and the BMUA at Site 153 Former Morris Canal.

JCMUA also has sewer utilities at or adjacent to portions of the Morris Canal Site along the east side of Route 440. Coordination of work between Honeywell and JCMUA relative to its sewer utilities at or near the Morris Canal Site will be addressed in this SOP for coordinating utility work at sewer sites in Jersey City. Such work may also likely require notification and/or coordination with the BMUA, in the event that JCMUA's utility work is proximate to or has any impact on BMUA's force main sewer pipeline which is located within the Morris Canal.

5.0 HAZARD EVALUATION AND WORKER TRAINING

This SOP is intended to provide information and procedures for protection of utility workers and contractors who may be performing work at sites containing chromium-contaminated soils or groundwater.

Potential chemical exposure pathways are:

- Inhalation of airborne dusts and mists that may contain contaminated particulates
- Skin and eye contact and absorption due to direct contact with contaminated soil, sediment, and/or liquids
- Incidental ingestion of contaminated soils, liquids, and/or particulates

Contact with known or suspected chromium-contaminated media must be avoided. Potential exposure to chromium contamination could occur by utility workers performing ground intrusive activities (e.g. drilling, digging, and excavation). Only properly trained and equipped personnel should be allowed to perform tasks that may involve the handling of known or suspected chromium-contaminated media.

As stated in previous sections, it is anticipated that, in most cases, JCMUA personnel will not conduct activities such as excavation, material handling, and disposal of chromium-contaminated materials. Such activities will be implemented by JCMUA contractors or Honeywell designated contractors whether on an emergency or non-emergency basis. However, JCMUA personnel must be knowledgeable and trained on the potential hazards and safety procedures to be followed when work is conducted in areas of chromium fill, as well as on the safety procedures that should be followed if exposure to chromium fill occurs during normal operation and maintenance of the sewer pipeline. Accordingly, Honeywell has developed a Worker Training Manual as discussed below.

Worker Training Manual

Honeywell has prepared a Worker Training Manual which addresses training of workers who potentially may be exposed to COPR or chromium-impacted soils or groundwater in conjunction with utility or other subsurface work. The Worker Training Manual contains details regarding worker training requirements and

pertinent reference information including fact sheets with information on chromium and potential health hazards. Honeywell will provide training support to the JCMUA as deemed appropriate, and the JCMUA will develop and implement a permanent worker training plan based on the requirements outlined in the Worker Training Manual.

Honeywell in consultation with the JCMUA has identified the following training needs for JCMUA employees that would be provided by Honeywell (or its designated contractor):

- Chromium Awareness Training - initial and periodic training (approximately every 3 years): estimated 1 to 2 hours duration and includes JCMUA staff with responsibility for performing field work.

- HAZWOPER 40-hour training and annual 8-hour refresher training: estimated to include two JCMUA supervisory employees.

It is expected that Honeywell will pay for the cost of the training program and the JCMUA would cover the cost for the time for its employees to attend the training.

JCMUA's employees or contractors performing field work involving disturbance of engineering controls and potential for exposure to chromium soils will be required to have applicable health and safety training as indicated in the Worker Training Manual. Health and safety training requirements for JCMUA contractors will be specified as part of JCMUA's bidding process for sewer work and that contractors will be required to demonstrate appropriate training documentation to the JCMUA prior to performing field work at the sites.

APPENDIX A

SOP PROCESS FLOW CHART/
HONEYWELL RESPONSE TEAM KEY PERSONNEL

APPENDIX A-1

NOTIFICATION AND RESPONSE SYSTEM FLOW CHART

Figure 1 Notification and Response System Flow Chart
Response Actions and Responsibilities for JCMUA Projects in Areas of Chromium Sites

JCMUA Sewer Work Order

JCMUA Supervisor/Engineer
Determine if work location is at a chromium site

No → **JCMUA Supervisor/Engineer**
Proceed with Work in Normal Manner

Yes

Is it Emergency Work?

No →
JCMUA Supervisor/Engineer
- Notify Honeywell via Chromium Response Hotline or normal communication with Honeywell Remediation Manager
- Provide Scope/Schedule to Honeywell

→ **Honeywell Remediation Manager**
- Evaluate scope of work and existing data
- Evaluate if work area affected by Deed Notice and/or Engineering Controls[1]
- Sample (if necessary)
- Notify NJDEP Case Manager and/or NJDEP Hotline as applicable per Deed Notice or regulatory requirements
- Coordinate work with JCMUA
  - ▲ Work Plan for Chromium Soils Management

Yes

JCMUA Supervisor/Engineer
Notify Honeywell via Chromium Response Hotline (855-727-2658)

JCMUA Contractor
Completes field work using OSHA HAZWOPER 40-hour trained crew

Honeywell Contractor
Field support as needed (to be determined in cooperation with JCMUA[2])

Honeywell Remediation Manager
- Evaluate if work area affected by Deed Notice and/or Engineering Controls[1]
- Notify NJDEP Case Manager and/or NJDEP Hotline as applicable per Deed Notice or regulatory requirements

JCMUA Contractor
Completes field work with appropriately trained crew

Honeywell Contractor
Completes field work (to be determined in cooperation with JCMUA[2])

Honeywell Remediation Manager
- Update Master Chromium Site Map
- Compile manifests, volumes, map, daily construction report
  - ▲ Response Action Report for project file
  - ▲ Summary Report to NJDEP and other relevant parties per Deed Notice or other reporting requirements (as applicable)

Legend

- JCMUA or JCMUA Contractor
- Honeywell or Honeywell Contractor
- ▲ Document/Report to Project File/Agency

1 See Deed Notice For Notification/Reporting Requirements

2 Refer to SOP for details on coordination and requirements for excavation and disposal of chromium soils, backfill, and site restoration. Honeywell reimbursement of JCMUA for the portion of work associated with OSHA 40-hour trained crew and transportation/disposal of chromium soils

Points Of Contact:
Chromium Response Hotline: 855-727-2658 (24/7 answering service)
Honeywell Remediation Manager: Maria Kaouris 973-455-3302 (office); 862-579-8453 (cell)
JCMUA Main Office Number: 201-432-1150
JCMUA Senior Engineer: Rich Haytas 201-954-8463 (cell)

10/10/14

APPENDIX A-2

HONEYWELL RESPONSE TEAM KEY PERSONNEL

Table 1: Notification System Key Personnel
JCMUA / Honeywell SOP for Coordination of Work at Sewer Sites

ORGANIZATION	KEY PERSONNEL	PHONE NUMBERS	EMAIL	MAILING ADDRESS
Honeywell Emergency Response Contractor (ERTS)	Nathan Walden, VP Operations Zane Gloer, Director	**Honeywell Response #** **855-727-2658** **[rings to ERTS 24/7 #** **800-924-6804]**	nwalden@ertsonline.com zgloer@ertsonline.com	6001 Cochran Road Solon, OH 44139
Honeywell	John Morris, Remediation Director Bill Hague, Remediation Design & Construction Director Maria Kaouris, Remediation Manager John Mojka, Engineering & Construction Manager George Pfeiffer, Remediation Construction Manager	973-455-3003 (973-727-6573 cell) 973-455-2175 (973-896-9366 cell) 973-455-3302 (862-579-8453 cell) 973-455-4252 (973-615-3782 cell) 973-455-2019 (908-797-0897 cell)	john.morris@honeywell.com william.hague@honeywell.com maria.kaouris@honeywell.com john.mojka@honeywell.com george.pfeiffer@honeywell.com	Honeywell 115 Tabor Road Morris Plains, NJ 07950
Honeywell Project Personnel / Consultant - Amec	Joe Clifford, Principal Engineer Ed Gaven, Principal Scientist Peg Bonaker, Project Manager Telly Giouzelis, Field Services Andrew Shust, H&S Coordinator Other Project Personnel TBD	973-455-4163 (610-505-9315 cell) 609-631-2905 (609-865-6959 cell) 609-689-6777 (484-880-0772 cell) 609-631-2906 (609-865-3592 cell) 609-631-2921 (609-638-3598 cell)	joseph.clifford@amecfw.com ed.gaven@amecfw.com margaret.bonaker@amecfw.com aristotelis.giouzelis@amecfw.com andrew.shust@amecfw.com	Amec Foster Wheeler Environment & Infrastructure, Inc. 200 American Metro Blvd., Suite 113 Hamilton, NJ 08619 609-689-2829 (main office) Hamilton, NJ 08619
JCMUA	Daniel Becht, Executive Director Bill Golden, Chief of Operations Rich Haytas, Senior Engineer	201-432-1150 (main office) 201-954-8466 (cell) 201-954-8463 (cell)	d.becht@jcmua.com w.golden@jcmua.com r.haytas@jcmua.com	Jersey City MUA 555 Route 440 Jersey City, NJ 07305
JCMUA Field Personnel	[To be provided by JCMUA]	[To be provided by JCMUA]	[To be provided by JCMUA]	[To be provided by JCMUA]
JCMUA Contractors(s)	[To be provided by JCMUA]	[To be provided by JCMUA]	[To be provided by JCMUA]	[To be provided by JCMUA]
United Water Jersey City Operations	Michael Leahy, Manager, System Maintenance T&D Operations	201-239-1108 (201-538-0225 cell)	michael.leahy@unitedwater.com	United Water 233 Coles Street Jersey City, NJ 07310

APPENDIX B

SITE INFORMATION/MAPS

APPENDIX B-1

SITES OVERVIEW MAP

Site Number	Site Name
007	NJ Turnpike at Communipaw
019	Phillip Street
067	Chapel Avenue (part sewer)
068	Clendenny Outfall (part sewer)
069	Clendenny Avenue (part sewer)
091	NE Interceptor #1
092	NE Interceptor #2
093	NE Interceptor #3
094	18th Street
097	NW Interceptor #1
098	NW Interceptor #2
099	Recycling Specialists (part sewer)
100	Richard Street (part sewer)
101	Stockton Avenue (part sewer)
153	Former Morris Canal
172	Warren Street
180A	Eastern Oil Sewer*
183	Sludge Line #1
187	Route 440 Median Strip*
188	Sussex Street*
189	Henderson Street*
196	POTW Outfall Line*
197	Grand Street Sewer*
198	Hartz Mountain*
199	Sludge Line #2*
200	Sludge Line #3*
205	Urban Redevelopment Partners*

Except for Site 153 Former Morris Canal, sites listed on the table and shown on the figure include Honeywell-assigned sewer sites in the Consent Judgment with NJDEP dated 9/7/11. Site 153 was identified in the Administrative Consent Order with NJDEP dated June 17, 1993.

* Indicates shared Honeywell and PPG sites.

Legend

Sewer Site Boundary

Municipality Boundary

2,000 1,000 0 2,000

SCALE IN FEET

Source:
Bing Maps Aerial Imagery Web Mapping Service; ESRI Map Service; Microsoft; 2013.

REV.	DATE	STATUS	Prepared By	Checked By

Amec Project No.
3480120316

Prepared/Date
WSL 03/06/2013

Checked/Date

amec
ENVIRONMENT & INFRASTRUCTURE
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

DRAFT

Sewer Sites
Jersey City, New Jersey

APPENDIX B-2

SITES SUMMARY TABLE

SITES SUMMARY TABLE

Site ID[1]	NJDEP Program Interest Number	Site Location	Block/Lot[2]	Current Property Owner	Property Class[2]	Current Land Use[3]	Zoning District[4]
Site 007 New Jersey Turnpike at Communipaw (sewer)	PI#G000008635	Jersey City Boulevard (County Rte 612) and I-78/NJ Turnpike	NJ Turnpike and Jersey City Boulevard ROWs	NJ Turnpike Authority City of Jersey City	N/A	NJ Turnpike and municipal street ROWs	Morris Canal Redevelopment Area - Roadway Liberty Harbor Redevelopment Area - Roadway
Site 019 Phillip Street (sewer)	PI#G000008647	Caven Point Avenue; east of Site 100	Block 21503, Lot 2	Consolidated Rail	5A - Class I Railroad	Railroad lines	Canal Crossing Redevelopment Area - Rail transportation
			Block 21503, Lot 4		5A - Class I Railroad	Railroad lines	
			Block 21503, Lot 6		1 - Vacant	Railroad lines and vacant land	
			Block 21503, Lot 3	NJ Transit	15C - Exempt Public	Vacant land	
			Block 21503, Lot 13		15C - Exempt Public	Vacant land	
			Block 21503, Lot 14		15C - Exempt Public	Vacant land	
			Block 21503, Lot 5	City of Jersey City	15C - Exempt Public	Vacant land	
			NJ Turnpike and Caven Point Avenue ROWs	NJ Turnpike Authority City of Jersey City	N/A	NJ Turnpike and municipal street ROWs	
Site 067 Chapel Avenue (part sewer)	PI#G000008695	Access road between Chapel and Linden Avenue [Lot 41 is 143 Chapel Ave and Lot 43 is 20 Linden Ave East in database]	Block 27401, Lot 40	Simsmetal East LLC	4B - Industrial	Scrap metal yard - bus, railcar, trailers	Danforth Transit Village Redevelopment Area - Residential, offices, hotels, parks
			Block 27401, Lot 41	Hudson Maine Urban Renewal LLC	1 - Vacant	Vacant; temporary storage yard	Chapel Avenue Industrial Park - Industrial
			Block 27401, Lot 42	Greenberg Prop. LLC c/o Commercial RLT	4B - Industrial	Industrial facility	Chapel Avenue Industrial Park - Industrial
			Block 27401, Lot 43	American Self Storage Liberte, LLC	4B - Industrial	Commercial	Danforth Transit Village Redevelopment Area - Residential, offices, hotels, parks
Site 068 Clendenny Outfall (part sewer)	PI#G000008696	Clendenny Avenue	Block 16001, Lot 2	City of Jersey City	15C - Exempt Public	Vacant land	Western Gateway Redevelopment Area - Commercial (incl. day care) and public park/open space Marine Industrial Redevelopment Area - Industrial
		355 Clendenny Avenue	Block 18004, Lot 3	Hudson Milestones, Inc.	15D - Exempt Charitable	Commercial	Waterfront Planned Development - Mixed use
		777-785 Route 440	Block 18004, Lot 4	Joseph Scibetta	4A - Commercial	Commercial	Waterfront Planned Development - Mixed use
		Clendenny Avenue	Clendenny Avenue ROW	City of Jersey City	N/A	Utility ROW	Western Gateway Redevelopment Area - Commercial (incl. day care) and public park/open space Marine Industrial Redevelopment Area - Industrial Waterfront Planned Development - Mixed use

SITES SUMMARY TABLE

Site ID[1]	NJDEP Program Interest Number	Site Location	Block/Lot[2]	Current Property Owner	Property Class[2]	Current Land Use[3]	Zoning District[4]
Site 069 Clendenny Avenue (part sewer)	PI#G000008697	Hackensack River and Clendenny Avenue	Block 16001, Lot 2	City of Jersey City	15C - Exempt Public	Vacant land	Marine Industrial Redevelopment Area - Industrial
Site 070 Colony Diner	PI#G000008698	1033 Communipaw Ave	Block 18001, Lot 4	Hudson County	15C - Exempt Public	Vacant land	Western Gateway Redevelopment Area - Commercial (incl. day care) and public park/open space
		400 Clendenny Ave	Block 18001, Lot 5		15C - Exempt Public	Vacant land	
Site 091 Northeast Interceptor 1 (sewer)	PI#G000008714	41 Aetna St	Block 15801, Lot 77	City of Jersey City	15C - Exempt Public	Vacant land; CSO regulating chamber on Mill Creek	Grand Jersey Redevelopment Area - Mixed use (residential, offices, hotels, government, schools, retail, open space, medical buildings/offices)
		Aetna St	Block 15801, Lot 78		15C - Exempt Public		
		246 Johnston Ave	Block 15801, Lot 76	Johnston View Owner, LLC c/o Argent, LLC	4B - Industrial		
Site 092 Northeast Interceptor 2 (sewer)	PI#G000008715	52 Aetna Street	Block 15801, Lot 3	Jersey City Redevelopment Agency	15C - Exempt Public	Vacant land	Grand Jersey Redevelopment Area - Mixed use (residential, offices, hotels, government, schools, retail, open space, medical buildings/offices)
		Part of sewer easement	Block 15801, Lot 4		15C - Exempt Public	Vacant land	
		Part of sewer easement	Block 15801, Lot 70	City of Jersey City	15C - Exempt Public	Light rail	Grand Jersey Redevelopment Area - Light rail (majority)
		Part of sewer easement	Block 15801, Lot 66	Aetna Lot 66, LLC. c/o Frenkel, H. & S.	4B - Industrial	Industrial facility	Grand Jersey Redevelopment Area - Mixed use (residential, offices, hotels, government, schools, retail, open space, medical buildings/offices)
		Between NJ Turnpike and Lot 3	Mill Creek ROW	City of Jersey City (unverified)	N/A	Creek filled in for I-78 extension	
Site 093 Northeast Interceptor 3 (sewer)	PI#250059	215 Communipaw Ave	Block 21504, Lot 4	Jersey City Sewerage Authority	15C - Exempt Public	Sewage treatment pumping station	Liberty Harbor Redevelopment Area - Multi-purpose district (residential, retail, public and semi-public uses, hotels, recreation, television transmission tower with public observation deck, utilities [not natural gas])
		101 Phillip Street	Block 21504, Lot 5		15C - Exempt Public	Vacant; police car pound (not Site 093)	
		Jersey City Boulevard (Communipaw Ave on older maps)	Block 21504, Lot 7		15C - Exempt Public	Vacant land	
Site 094 Eighteeth Street Sewer (sewer)	PI#244883	Eighteenth Street (between Coles Street and Jersey Avenue)	Eighteenth Street ROW	City of Jersey City	N/A	Municipal Street ROW	Jersey Ave Park Redevelopment Area - Roadway

SITES SUMMARY TABLE

Site ID[1]	NJDEP Program Interest Number	Site Location	Block/Lot[2]	Current Property Owner	Property Class[2]	Current Land Use[3]	Zoning District[4]
Site 097 Northwest Interceptor 1 (sewer)	PI#G000008720	Rail corridor between Secaucus Road and County Road; south of USPS Bulk Mailing Facility	Block 101, Lot 6	United States of America	15C - Exempt Public	Vacant	Highway Commercial - Government, retail, offices, auto sales, restaurants, theatres, service stations, day care New Jersey Meadowlands Commission - Roads, railroads
			Block 101, Lot 8		15C - Exempt Public	Vacant	
			Block 101, Lot 9		15C - Exempt Public	Vacant	
			Block 1001, Lot 11		15C - Exempt Public	Vacant	
			Block 1001, Lot 12		15C - Exempt Public	Vacant	
			Block 1001, Lot 13		15C - Exempt Public	Vacant	
			Block 1001, Lot 17		15C - Exempt Public	U.S. Post Office Bulk Sorting Center	
			Block 101, Lot 7	City of Jersey City	15C - Exempt Public	Vacant land	
			Block 1001, Lot 14	Consolidated Rail	5A - Class I Railroad	Railroad lines	
			Block 1001, Lot 16		5A - Class I Railroad	Vacant land	
Site 098 Northwest Interceptor 2 (sewer)	PI#G000008721	75 County Road (tax records show as New County Road; address listings show County Road)	Block 1002, Lot 6	Norfolk Southern Railway Company	4B - Industrial	Freight terminal	Majority zoned as Highway Commercial; western edge in New Jersey Meadowlands Commission - Intermodal, railroads
			Block 1002, Lot 7		5B - Class II Railroad	Railroad	
			Block 3101, Lot 9	Consolidated Rail	1 - Vacant	Vacant land	
			Block 3101, Lot 10		1 - Vacant	Vacant land	
			Block 3101, Lot 11		5A - Class I Railroad	Vacant land	
			Block 3101, Lot 13		5A - Class I Railroad	Vacant land	
			Block 3101, Lot 14		5A - Class I Railroad	Vacant land	
Site 099 Recycling Specialists (part sewer)	PI#G000008722	375 Route 1&9	Block 11702, Lot 2	375 1 & 9 Associates, L.P.	4B - Industrial	Recycling center	Majority zoned as Industrial; western corner overlaps with Hackensack River Edge Redevelopment Area
			NJDOT ROW	NJDOT	N/A	NJDOT ROW	
Site 100 Richard Street (sewer)	PI#G000008723	Between Chapel Avenue and Caven Point Road; east of Site 067 and west of Site 100	Block 24303, Lot 1	Consolidated Rail	1 - Vacant	Railroad	Claremont Industrial Redevelopment Area - Industrial
			Block 27402, Lot 2		5A - Class I Railroad	Railroad	Claremont Industrial Redevelopment Area - Residential Claremont Industrial Redevelopment Area - Industrial
			Block 27402, Lot 3		5A - Class I Railroad	Railroad	Claremont Industrial Redevelopment Area - Residential
			Block 27402, Lot 7		5A - Class I Railroad	Railroad	Claremont Industrial Redevelopment Area - Industrial
			Block 24302, Lot 1	Jersey City Redevelopment Agency	15C - Exempt Public	Vacant land	Claremont Industrial Redevelopment Area - Residential
			Block 27402, Lot 4		15C - Exempt Public	Vacant land	Claremont Industrial Redevelopment Area - Residential
			Block 27402, Lot 6		15C - Exempt Public	Vacant land	Claremont Industrial Redevelopment Area - Industrial
			Block 27402, Lot 2.02	Black Bear Hollow, LLC. c/o Tempesta	1 - Vacant	Vacant land	Claremont Industrial Redevelopment Area - Residential
			Block 27402, Lot 5		1 - Vacant	Vacant land (crossed by railroad)	Claremont Industrial Redevelopment Area - Residential

SITES SUMMARY TABLE

Site ID[1]	NJDEP Program Interest Number	Site Location	Block/Lot[2]	Current Property Owner	Property Class[2]	Current Land Use[3]	Zoning District[4]
Site 101 Stockton Avenue (part sewer)	PI#G000008724	255 Route 1&9	Block 11706, Lot 3 - combined in tax database with 11707, Lot 3 for billing	AMB Pulaski Distribution Center LLC	4B - Industrial	Warehouse facility with park areas	Hackensack River Edge Redevelopment Area - Open Space and High-Cube Overlay (Warehouse)
		235 Stockton Avenue	Block 11706, Lot 4	G. & A. Equipment Corp.	4A - Commercial	Truck sales and repair	Hackensack River Edge Redevelopment Area - Open Space and Industrial Overlay (Truck sales)
Site 119 Droyers Point Groundwater (GW requirements only)	PI#G000008896	Society Hill at Droyers Point	Block 26102, Lots 14, 15, 18 and 20 subdivided into units for Society Hill development.	Residential: See PA/SI Non-residential: Society Hill at Droyers Point Condo	2 - Residential; 15F - Exempt Miscellaneous; 1 -Vacant	Condominiums	Droyers Point Redevelopment Area - Residential, professional home offices, real estate offices
			Block 26102, Lot 13	Society Hill at Jersey City II	1 - Vacant	Vacant land	
			Block 26102, Lot 16 - Not listed in tax database	N/A	N/A	Walkway	
			Block 26102, Lot 17	Society Hill at Droyers P.C.ASC, Inc	1 - Vacant	Walkway	
			Block 26102, Lot 19		1 - Vacant	Walkway	
			Block 26102, Lot 21	Jersey City Redevelopment Agency	15C - Exempt Public	Walkway	
Site 130 Communipaw 5	PI#G000008747	1115 Communipaw Ave	Block 18001, Lot 3	City of Jersey City	15C - Exempt Public	Vacant land	Jersey City Recreation & Open Space Master Plan - Park Western Gateway Redevelopment Area - Commercial (incl. day care) and public park/open space
Site 153 Former Morris Canal	PI#G000008767	Along Route 440 between Danforth Ave. & Carbon Place, Jersey City	Block 21902, Lot 1	Honeywell subsidiary (425/445 Route 440 Property LLC)	1 - Vacant	Sewer Easement along Route 440	NJCU West Campus Redevelopment Area and Highway Commercial - Roadway
	PI#G000008767	457 Danforth Avenue	Block 26704, Lot 5	Listed as Bayonne MUA in tax database but should be Honeywell subsidiary	15C - Exempt Public	Sewer Easement	Highway Commercial - Roadway
Site 165 Tempesta & Sons Inc. (DEP Lead)	PI#G000008779	7-33 Aetna Street	Block 15801, Lot 80	One Harbor Owner, LLC	4B - Industrial	Inactive solid waste sorting facility	Grand Jersey Redevelopment Area - Mixed use (residential, offices, hotels, government, schools, retail, open space, medical buildings/offices)
			Block 15801, Lot 73	City of Jersey City	15C - Exempt Public	Vacant land	Grand Jersey Redevelopment Area - Mixed use (see above) and public park
Site 172 Warren Street (sewer)	PI#G000008786	Warren Street between First Street and Steuben Street	Warren Street ROW	City of Jersey City	N/A	Municipal streets	Powerhouse Arts District Redevelopment Area - Roadway
Site 178 Cabana Club	PI#G000011469	185 Theodore Conrad Drive	Block 24304, Lot 1	State of NJ Dept of Env Protection	15C - Exempt Public	Park maintenance facility	Liberty Harbor Redevelopment Area - Industrial

SITES SUMMARY TABLE

Site ID[1]	NJDEP Program Interest Number	Site Location	Block/Lot[2]	Current Property Owner	Property Class[2]	Current Land Use[3]	Zoning District[4]
Site 180A Eastern Oil Sewer	PI#G000011471	Duffield Avenue	Block 7402, Lot 4	City of Jersey City	15C - Exempt Public	Vacant Land	New Jersey Meadowlands Commission
			Block 7402, Lot 5	State of NJ Dept of Transportation	15C - Exempt Public	Vacant Land	
			Block 7402, Lot 7		15C - Exempt Public	Vacant Land	
			Block 7402, Lot 8		15C - Exempt Public	Vacant Land	
			Block 7402, Lot 9		15C - Exempt Public	Vacant Land	
			Block 7402, Lot 6 - Not listed in tax database	N/A	N/A	Vacant Land	
Site 183 Sludge Line 1 (sewer)	PI#G000011475	207 Randolph Ave (Light rail corridor between Randolph Ave and Arlington Ave)	Block 21404, Lot 1	Jersey City Sewerage Authority	15C - Exempt Public	Sewer corridor	R-1 One and Two Family Housing - Rail corridor
			NJ Transit ROW	NJ Transit	N/A	Light rail	
Site 185 Allied Stockpile	PI#G000011476	Aetna Street and Jersey Avenue	Block 15801, Lot 5	Jersey City Medical Center	15C - Exempt Public	Medical facility - parking area	Grand Jersey Redevelopment Area - Mixed use (residential, offices, hotels, government, schools, retail, open space, medical buildings/offices)
			Block 15801, Lot 6	Jersey City Medical Center	4A - Commercial	Medical facility	
			Block 15801, Lot 66	Aetna Lot 66, LLC. c/o Frenkel, H. & S.	4B - Industrial	Industrial facility	
			Block 15801, Lot 67	Summit Metals Co Inc.	4B - Industrial	Industrial facility	
			Block 15801, Lot 68	Aetna Street, LLC	1 - Vacant	Vacant land	
			Block 15801, Lot 69	Aetna Street, LLC	1 - Vacant	Vacant land	
			Block 15801, Lot 4	City of Jersey City	15C - Exempt Public	Vacant land	
			Block 15801, Lot 70		15C - Exempt Public	Light rail	Grand Jersey Redevelopment Area - Light rail (majority)
			Block 15801, Lot 71		15C - Exempt Public	Light rail	Grand Jersey Redevelopment Area - Light rail/park
Site 187 Route 440 Median Strip (sewer)	PI#G000011679	Route 440 median strip between Danforth Avenue and Carbon Place	NJDOT ROW	State of NJ Dept of Transportation	N/A	Median within state highway	Waterfront Planned Development, Highway Commercial, Droyers Point, Bayfront, and New Jersey City University West Campus Redevelopment Areas- Rt. 440 Roadway Median
Site 188 Sussex Street (sewer)	PI#G000011680	Sussex Street between Van Vorst Street and Warren Street	Sussex Street ROW	City of Jersey City	N/A	Municipal street	Historic District and Tidewater Redevelopment Area (western corner) - Roadway
Site 189 Henderson Street (sewer)	PI#G000026751	Second Street and Marin Boulevard	Henderson Street ROW	City of Jersey City	N/A	Municipal street	At junction of Henderson Street South, Harsimus Cove Station, Luis Munoz Marin, and Powerhouse Arts District Redevelopment Areas - Roadway

SITES SUMMARY TABLE

Site ID[1]	NJDEP Program Interest Number	Site Location	Block/Lot[2]	Current Property Owner	Property Class[2]	Current Land Use[3]	Zoning District[4]
Site 196 POTW Outfall Line (sewer)	PI#G000044578	Liberty State Park at Phillip Street	Block 21505 Lot 1	State of NJ Dept of Env Protection	15C - Exempt Public	Sewer corridor within public park	Liberty Harbor Redevelopment Area - Park
			Block 21601, Lot 5		15C - Exempt Public		
			Block 21601, Lot 6		15C - Exempt Public		
			Block 15802, Lot 13		15C - Exempt Public		
			Block 15802, Lot 15		15C - Exempt Public		
Site 197 Grand Street (sewer)	PI#G000044586	Grand Street between Washington Street and Warren Street	Grand Street ROW	City of Jersey City	N/A	Municipal street	Historic District
Site 198 Hartz Mountain (sewer)	PI#G000044580	95 Caven Point Road	Block 27402, Lot 8	Caven Point Urban Ren. Ass. LLC	4B - Industrial	Commercial warehouse and access road	Claremont Industrial Redevelopment Area - Industrial
Site 199 Sludge Line 2 (sewer)	PI#G000044581	Light rail corridor between Garfield Avenue and Halladay Street	Block 21501, Lot 1.01 (combined former Lots 1, 2 and 3 [not listed])	Jersey City Sewerage Authority	15C - Exempt Public	NJ Transit light rail and sewer corridor	Morris Canal Redevelopment Area - Rail transportation Canal Crossing Redevelopment Area - Rail transportation
			NJ Transit ROW	NJ Transit	N/A		
Site 200 Sludge Line 3 (sewer)	PI#G000044582	Light rail corridor between Arlington Avenue and West Side Avenue	Block 21305, Lot 25	Jersey City Sewerage Authority	15C - Exempt Public	Sewer corridor	Intersection of Martin Luther King Jr. Drive and Green Villa Redevelopment Areas - NJ Transit Hudson Bergen Light Rail
			NJ Transit ROW	NJ Transit	N/A	NJ Transit ROW	
Site 205 Urban Redevelopment Partners (sewer)	PI#G000044587	108 First Street	Block 11603, Lot 41	"A" Condominium Association, Inc.	15C - Exempt Public	Public Park	Power House Arts District Redevelopment Areas - Park
Site 206 Polarome International	PI#G000008288	200 Theodore Conrad Drive	Block 21508, Lot 5	ADAR 12, LLC	4B - Industrial	Commercial facility	Liberty Harbor Redevelopment Area - Industrial
			Block 21508, Lot 5.T01		4A - Commercial	T01 qualifier for cellular ant.; not observed	

Notes:

1) Honeywell assigned sites as indicated in Appendix A of Consent Judgment dated 9/7/11.

2) Sources include Jersey City tax maps, revised 2010-2017, and State of New Jersey Division of Taxation MOD-IV database

3) Information provided in Preliminary Assessment/Site Investigation (PA/SI) Reports prepared by AMEC and by subsequent site visits

4) As designated by City of Jersey City Zoning Map (amended June 16, 2016) and redevelopment plans made available on Jersey City Planning Board website

Site 165 Tempesta: Site 165 Tempesta: DEP Lead (Honeywell financial obligation only).

Indicates Shared Site Shared Site - Honeywell and PPG Industries

APPENDIX B-3

INDIVIDUAL SITE MAPS
(on compact disk)

APPENDIX C

WORKER TRAINING PLAN MANUAL
(Separate Document)

APPENDIX D

DRAFT SPECIFICATIONS FOR CHROMIUM MATERIALS EXCAVATION AND MANAGEMENT

DRAFT SPECIFICATIONS

FOR

CHROMIUM MATERIALS EXCAVATION AND MANAGEMENT

Prepared by:

AMEC Environment & Infrastructure, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

DECEMBER 2014

Table of Contents

ATTACHMENTS

SECTION 01000 CHROMIUM-IMPACTED MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. These specifications were prepared by Honeywell for use by the Jersey City Municipal Utilities Authority (JCMUA) and its Contractors to address excavation, handling and transportation/disposal of chromium-impacted materials that may be encountered during sewer maintenance; repair and/or replacement work at designated sites in Jersey City. Chromium-impacted material refers to soil, fill or other materials such as concrete debris containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]). Chromium-impacted groundwater refers to groundwater containing chromium above the NJDEP groundwater quality standards, currently 70 micrograms per liter (µg/L or parts per billion [ppb] based on total chromium).

B. This specification consists of the following sections.

Section 01001 Excavation of Chromium-Impacted Materials
Section 01002 Handling and Management of Chromium-Impacted Materials
Section 01003 Waste Transportation and Disposal of Chromium-Impacted Materials

C. These specifications apply to excavation, management and disposal of chromium-impacted materials that may be generated during sewer work. For JCMUA specifications applicable to sewer construction work, refer to the JCMUA Rules and Regulations Governing the Operation of the Jersey City Sewer System.

D. During work execution, the JCMUA will be the contracting authority and will direct all work being conducted. However, coordination and consultation between the JCMUA and Honeywell may be needed on how best to manage chromium-impacted materials on a case by case basis. Honeywell may observe or provide oversight of work involving excavation and handling of chromium-impacted materials. In such cases, Honeywell will provide a designated representative ("Honeywell Representative") to provide guidance on the handling of these materials.

E. These specifications are included as an attachment to the Standard Operating Procedure (SOP) for Coordinating Work within Chromium Soil Areas. The SOP addresses coordination of work between Honeywell and the JCMUA during sewer repair or replacement performed either as part of planned maintenance work, or required as a result of an emergency situation in areas of chromium-impacted soils. The SOP specifies that JCMUA's contractor will take the lead in performing work associated with excavation, material handling, and transportation/disposal of materials generated during sewer work. Honeywell and/or its designated representative will assist the JCMUA in determining whether or not the work location is in an area of chromium soils and provide technical assistance, field oversight and support as needed during soil excavation and site restoration. In some cases, Honeywell's contractor may take the lead on excavation and/or transportation/disposal of chromium contaminated materials, to be determined on a case by case basis in consultation with the JCMUA.

1.02 REFERENCES

A. The Contractor shall perform all work in accordance with all applicable, Federal, State and local regulations and guidance documents.

B. Worker Training Manual: Prepared by Honeywell for use by the JCMUA and addresses health and safety requirements for JCMUA personnel and contractors who may be implementing sewer pipeline maintenance, repair and/or replacement work or other ground intrusive activities (e.g., digging, drilling, excavation) in areas of chromium-impacted fill.

C. JCMUA Rules and Regulations Governing the Operation of the Jersey City Sewer System.

D. NJDEP Guidance for the Characterization of Concrete and Clean Material Certification for Recycling.

1.03 SUBMITTALS

A. The Contractor shall submit to the JCMUA's designated representative for approval (unless otherwise specified) the following:

1. Materials Management Plan: The plan shall include the identified chromium-impacted materials requiring management, the type of containers to be utilized, procedures for management of chromium-impacted materials, equipment to be utilized, and the proposed means/methods of coordinating the work including transportation/disposal of chromium-impacted materials at a Honeywell approved waste facility.
2. Health and Safety Plan (HASP): The HASP shall comply with all provisions of OSHA which are relevant to the excavation, handling and management of chromium-impacted materials. At a minimum, the plan shall cover OSHA personnel training requirements for work being performed, provisions for prevention of contaminant migration during work, emergency and contingency planning, and work zone monitoring, and perimeter air-monitoring (if required). It shall be prepared in conformance with all applicable Health and Safety laws and regulations including but not limited to OSHA 1910.120.
3. Hazardous Waste Contingency Plan: The plan shall address preparedness and prevention, emergency procedures and evacuation plan, if required in accordance with 40 CFR 262.34 and 264.52. This plan may overlap with and be included as part of the HASP.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

- END OF SECTION -

SECTION 01001: EXCAVATION OF CHROMIUM-IMPACTED MATERIALS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. The work under this section shall consist of furnishing all labor, equipment and materials for performing all operations for excavation of chromium-impacted materials.

1.2 QUALITY ASSURANCE

A. The Contractor shall be responsible for contacting Honeywell approved waste facility to determine waste classification sampling and analytical requirements and obtain acceptance of the material for treatment/disposal.

B. Confirmatory/post-excavation sampling or testing may be required for excavation bottom and sidewall(s), to be determined on a case by case basis in consultation with JCMUA and Honeywell. Contractor shall cooperate with JCMUA and/or Honeywell's designated representative and provide access for sampling if needed.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 EXCAVATION

The Contractor shall prepare and submit as part of the Materials Management Plan, a section describing excavation activities for chromium-impacted areas to the JCMUA for review and approval. The excavation section of the Plan shall include a description of the work required in this specification section, work sequencing and scheduling including: excavation methods; plans for decontamination; dust control measures; any proposed temporary staging areas; handling and management of excavated materials; and any permit requirements. The excavation section of the Plan shall also include copies of required notifications and permits obtained by the Contractor and a list of all subcontractors proposed with copies of their current, valid permits or licenses to perform the work. All work shall be conducted in accordance with all OSHA requirements. Work shall not begin until approval is received from JCMUA's designated representative.

3.2 REMOVAL OF CONTAMINATED SOIL

A. The Contractor shall excavate contaminated soil/material as needed to complete sewer work as required by the JCMUA.

B. The Contractor shall provide means to suppress dust as needed during excavation and while the excavation is open and/or stockpiles are in place.

C. The Contractor shall manage and dispose of contaminated soil/material in accordance with Specification – Material Handling and Management.

D. The Contractor shall coordinate access to the excavation(s) with JCMUA's and/or Honeywell's designated representative as deemed necessary for inspection and collection of soil samples.

E. The Contractor shall maintain a Record Drawing documenting the daily cumulative horizontal and vertical extent of the excavation in each area of concern including

estimated quantities. The Record Drawing shall be updated daily, provided to the JCMUA's designated representative and shall be posted in the Contractor's trailer.

F. Any subsurface structures, or portions thereof, or debris located within the limits of the chromium-impacted area being excavated shall be removed and decontaminated where practicable, and segregated for characterization prior to off-site disposal. Material shall be characterized in accordance with current NJDEP guidance and disposal facility requirements. Debris may be reduced in size to meet specific disposal facility requirements. Size reduction will be accomplished in coordination with and the concurrence of the JCMUA's designated representative and be performed in compliance with all applicable state and local regulation.

G. Any utilities and associated structures encountered within the excavation shall be addressed on a case by case basis by the Contractor in consultation with JCMUA's designated representative and other utility owners (if encountered).

H. Excavation in close proximity to active utilities or aboveground structures shall be done in a manner protective of the utility or structure. The Contractor shall protect all existing structures to remain and active utilities.

I. All earthwork equipment and tools used for excavation of contaminated soil/material shall be decontaminated in accordance with the HASP, and these specifications, prior to being used elsewhere on site or before leaving the site.

3.3 EXCAVATION AREA

A. The chromium-impacted areas to be excavated will be defined in the field by JCMUA's and/or Honeywell's representative.

B. Excavation activities include the excavation and removal of soil/material from designated chromium-impacted area(s).

C. The activities shall be performed in accordance with OSHA requirements for excavation. Work shall be completed by OSHA trained individuals. Refer to the Worker Training Plan for guidance on applicable training requirements.

D. The Contractor shall not backfill the excavation until the final limits of excavation are reviewed and approved by the JCMUA's designated representative. Backfill can begin immediately upon approval of the JCMUA's designated representative.

E. The excavation shall be kept dry by the implementation of construction dewatering operations, if groundwater or storm water is encountered during construction. Evacuated water shall be characterized and disposed in accordance with all applicable Federal, State and local requirements.

F. Once loaded, the Contractor shall cover the truck prior to leaving the work area. Filled trucks shall then exit the work area and proceed to the decontamination pad. Refer to Section 01002 (Handling and Management of Chromium-Impacted Materials) and Section 01003 (Waste Transportation/Disposal of Chromium-Impacted Materials) for requirements regarding truck liners, loading and transportation.

G. The Contractor shall provide all labor, equipment and materials for road closures, as needed, based on the operation.

- END OF SECTION -

SECTION 01002: HANDLING AND MANAGEMENT OF CHROMIUM-IMPACTED MATERIAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall furnish all labor, equipment, and materials necessary to provide for the proper on-site handling and management of chromium-impacted materials including but not limited to: excavated indigenous soils, borrow soils, fill materials (including materials identified as chromium-impacted solid waste); excavated chromium-impacted concrete/masonry, metal, and all other debris; excavated non-chromium impacted soils/materials; asphalt pavement; miscellaneous construction debris (vegetation, trees, wood, etc.); liquid waste (decontamination water, construction dewatering, etc.); and remediation waste (disposable PPE, plastic sheeting, sampling equipment, etc.).

B. The Contractor is responsible to perform all work in compliance with applicable Federal, State, and local regulations and requirements.

C. The Contractor is required to provide a Site Specific Health and Safety Plan, Materials Management Plan, and Hazardous Waste Contingency Plan.

D. The Contractor shall be responsible for coordinating the work/schedule with Honeywell approved waste facilities (see list of approved facilities in Attachment A).

E. Non-chromium impacted soils removed from excavation areas shall be stockpiled temporarily in a designated stockpile area, as approved by JCMUA's designated representative.

F. For chromium-impacted soils, the preferred soil management method is direct loading and offsite transportation of soils removed from excavation area. If direct loading is not possible, then soils may be stockpiled temporarily in a designated Waste Staging and Storage Area as approved by JCMUA's and/or Honeywell's designated representative.

G. Asphalt and/or concrete materials removed from excavation areas shall be inspected for potential chromium impacts, characterized in accordance with current NJDEP guidance and properly disposed off-site. NJDEP Guidance for Characterization of Concrete and Clean Material Certification for Recycling may be applicable.

H. Oversize material removed from excavation areas, shall be properly disposed off-site in accordance with local, State and Federal disposal requirements.

I. The Contractor shall provide a system to weigh loaded trucks before they leave the site to confirm the maximum weight restriction is not exceeded. The system can include trucks equipped with load cells, or portable truck scale or similar device approved by JCMUA and Honeywell's Representative.

1.02 WASTE CONTAINERS

A. The Contractor shall provide as applicable:
   1. Plastic bags for disposable personnel protection equipment. Plastic bags shall have a minimum thickness of six (6) mils.
   2. Containers (e.g., roll-off containers) for non-hazardous municipal trash and debris.
   3. DOT-approved, steel drums (55-gallon capacity) and/or roll-off containers for storage of residual impacted material and/or water, if needed.
   4. Portable temporary storage tanks (FRAC tanks, etc.) for the storage, treatment and/or disposal of any collected liquids, such as pumped groundwater from excavation dewatering, decontamination fluids. The Contractor is responsible for transportation/disposal of collected liquids at an approved facility including any chromium-impacted groundwater. If water is discharged to local sanitary sewer system, Contractor is responsible for obtaining any approvals/permits, meeting local sewer utility discharge criteria and satisfying all other conditions and requirements of the local sewer utility, including sampling/analysis/reporting and compliance with NJDEP Treatment Works Approval for the construction and operation of on-site treatment system.

1.03 ON-SITE MANAGEMENT AND STORAGE OF MATERIALS

A. The Contractor shall be responsible for proper on-site management of wastes generated in compliance with all Federal, State, and Local regulations and requirements.

B. The Contractor shall load non-hazardous municipal trash and debris into appropriate containers for subsequent removal from the site in a timely manner.

C. The Contractor shall load cleared vegetation and other non-impacted debris into appropriate containers for subsequent removal from the site in a timely manner.

   1. Temporary on-site stockpiles of cleared material may be allowed, as approved by JCMUA's designated representative, to facilitate the progress of the work.

D. The Contractor shall be responsible for loading all waste containers, trucks, etc. with non-hazardous and hazardous solid waste materials removed from the work areas.

E. The Contractor shall be responsible for movement/direction of the containers, trucks, etc. into positions required for proper loading and management of material.

F. The Contractor shall be responsible for the on-site management of roll-off containers, storage of trash and debris from site preparation, and final site cleanup activities.

G. The Contractor shall be responsible for coordinating the schedule for delivery and pick-up of supplied waste containers. The Contractor shall also be responsible for movement and storage of containers within the site to allow the progress of the work.

H. The Contractor shall provide a base for any temporary stockpiles using at a minimum 6 mil polyethylene sheeting to prevent direct contact and cross-contamination of the underlying soil/asphalt. The plastic sheeting shall be properly overlapped to protect against direct soil/asphalt contact.

I. The Contractor shall cover any temporary stockpiles with at a minimum 6 mil polyethylene sheeting to prevent erosion of the stockpiles or uncontrolled runoff while promoting runoff of precipitation. The plastic sheeting shall be weighted down appropriately for expected weather conditions.

1. Temporary stockpiles shall be located in designated Stockpile Area, as approved by the JCMUA's designated representative. The base of all stockpiles shall be contained by a siltation fence reinforced with staked straw bales. In addition to the above, asphalt berms and/or sand bags may be used to divert surface water runoff from the stockpile areas. In all cases contractor shall maintain conformance with standard methods for NJ Soil and Erosion Control and/or a Soil and Erosion Control Plan Certification.

1.04 ANALYTICAL TESTING AND CLASSIFICATION OF WASTE MATERIALS

A. No testing requirements are expected for the following non-impacted wastes:

1. Cleared vegetation; and

2. General trash and rubbish from outside the exclusion zone.

B. Contractor shall be responsible for waste classification testing of excavated soils and other debris destined for offsite disposal as required in accordance with applicable regulations and guidance; obtaining acceptance of waste material as needed from disposal facilities; and making arrangements for waste transportation and disposal including the use of Honeywell approved waste facilities for chromium-impacted materials.

C. For non-chromium impacted soils, Contractor shall provide for waste classification sampling and transportation/disposal/reuse as appropriate in consultation with JCMUA's designated representative. Excavated materials identified/characterized as non-chromium impacted soil shall be stockpiled temporarily in the designated Stockpile Area, as approved by JCMUA's designated representative.

D. For chromium-impacted soils, Contractor shall provide for waste classification testing of chromium-impacted materials as needed and direct-loading (where possible) into trucks/containers for transportation to a Honeywell approved waste facility. If direct loading is not possible, then soils shall be stockpiled temporarily in a designated stockpile area (separate from non-chromium impacted soils). Direct loading and transportation/disposal of chromium-impacted soils is preferred whenever possible. When used, stockpiles of chromium-impacted soil shall be constructed and protected in a manner that will ensure the integrity of the stockpile is maintained and the potential for migration of chromium-impacted soil or water in contact with chromium-impacted soil is mitigated.

1.05 LOADING OF WASTES

A. The Contractor shall furnish all labor, equipment, and materials necessary to provide for the proper loading of all materials generated during the execution of the work. Refer to Section 01003 for requirements for lining of trucks.

B. The Contractor shall be responsible for coordinating the work/schedule with Honeywell approved Waste Facilities.

C. The Contractor shall be responsible for any demurrage charges associated with delays in the timely loading the waste materials.

D. Materials that contain excess water shall be mixed with a sufficient quantity of absorbent to prevent free water from developing in containers during transport to the disposal facility.

E. Absorbents shall be approved by the disposal facility and JCMUA's designated representative as needed to allow effective transport of materials to designated disposal facility.

1.06 TRANSPORTATION OF WASTES

A. The Contractor shall arrange for the proper transportation and disposal of non-impacted waste (e.g., cleared vegetation, general trash and rubbish) in accordance with applicable local, state and federal regulations.

B. The Contractor shall arrange for the proper transportation of non-hazardous waste materials and chromium-impacted hazardous waste materials (if applicable) to appropriate licensed/permitted disposal facilities, in accordance with applicable local, state and federal regulations.

C. The Contractor shall be responsible for coordinating with Honeywell (or its designated contractor) and scheduling transporters for offsite transportation and disposal of chromium-impacted materials generated during execution of the work at Honeywell approved waste facilities. Honeywell (or its designated contractor) may take the lead in coordinating offsite transportation and disposal of chromium-contaminated materials, to be determined on a case-by-case basis.

D. The Contractor shall require that the transporters arriving at the site for loading do not cause undue congestion to local streets, and shall stage trucks either within the perimeter of the site or at an off-site staging area.

1.07 DISPOSAL OF WASTES

A. The Contractor shall be responsible for coordinating with Honeywell approved waste facilities, scheduling transporters and arranging for off-site transportation and disposal of chromium-impacted materials. Honeywell's contractor may take the lead in coordinating offsite transportation and disposal of chromium-contaminated materials at an approved waste facility, to be determined on a case-by-case basis.

B. The Contractor shall provide for offsite transportation and disposal of non-chromium impacted waste materials in accordance with in accordance with applicable local, state and federal regulations.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

--END OF SECTION--

SECTION 01003: WASTE TRANSPORTATION AND DISPOSAL OF CHROMIUM-IMPACTED MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the Contractor's minimum responsibilities for and requirements for Waste Transportation/Disposal of chromium-impacted materials, including coordination with Honeywell approved waste facilities.

B. Contractor's work includes determining the recipient of the waste, loading wastes into trucks and containers for shipment off site, providing temporary haul roads for trucks and traffic control as needed, and coordination and scheduling with Transportation Contractor and Disposal Facility to ensure timely arrival and departure of trucks.

C. All work related to the management of chromium-impacted materials shall be done in conformance with a Health and Safety Plan (HASP), and in accordance with OSHA 1910.120. All personnel that may become exposed to impacted materials at levels above NJDEP criteria must be OSHA trained in accordance with OSHA requirements. The HASP will be reviewed by JCMUA. Refer to the Worker Training Manual for applicable training requirements.

1.02 SUBMITTALS

A. Prepare and submit a comprehensive detailed Materials Management Plan. This comprehensive plan shall address all waste categories: Rubbish and Construction Debris, Non-Hazardous Waste and Hazardous Waste.

B. If required by JCMUA, prepare and submit a Traffic Control and Transportation Plan at least 30 days prior to the excavation. The Traffic Control and Transportation Plan shall include, as a minimum: a proposed truck route from the on-site loading staging area to the disposal facility, traffic control, and alternate traffic patterns. The route(s) to and from the disposal facility shall be in accordance with the disposal facility requirements and Federal, State and local regulations, laws, and ordinances. The Contractor shall specify the weight limitations on all sections of the route(s) and indicate the maximum truck load/weight that will be maintained in accordance with route weight limits and any other applicable Federal, State and local regulations. In addition, the plan should outline the procedures that will be followed to comply with all applicable traffic and transportation regulations.

C. Submit resume for Contractor's proposed Transportation and Disposal Coordinator.

D. Submit technical data for the specified truck liner material and installation procedures.

1.03 QUALITY ASSURANCE

A. JCMUA in coordination with Honeywell will monitor the Contractor's activities associated with the work of this Section. This monitoring may include but not be limited to:
   1. Verifying Contractor conformance with requirements for on-site management of excavated chromium-impacted materials;
   2. Reviewing requests from Contractor for off-site reuse, recycling, treatment, and disposal facilities, associated chemical testing and documentation of chromium-impacted waste materials acceptance by receiving facilities; and
   3. Verifying the appropriate Contractor-prepared paperwork accompanies each load of excavated soil and material that is transported from the site and verifying receipt of Contractor's submittal of paperwork for off-site facility receipt and processing of site materials.

PART 2 - PRODUCTS

2.01 GENERAL

Not applicable.

PART 3 - EXECUTION

3.01 GENERAL

A. Transportation and Disposal Coordinator (TDC). The Contractor shall designate, by position and title, one person to act as the Transportation and Disposal Coordinator. The TDC shall be on-site full time. The TDC shall serve as the single point of contact for all environmental regulatory matters, and shall have overall responsibility for environmental compliance at the site including, but not limited to, accurate identification and classification of hazardous waste and hazardous materials, determination of proper shipping names, identification of marking, labeling, packaging and placarding requirements, completion of waste profiles, hazardous waste manifests, bills of lading, exception and discrepancy reports, and ail other environmental documentation. In addition, the TDC responsibilities shall include maintaining any hazardous waste being stored in compliance with all applicable regulations (i.e. proper stockpiling) prior to shipment off-site. The TDC shall have, at a minimum, five-years of specialized experience in the management and transportation of hazardous waste. The TDC shall have appropriate DOT, OSHA and EPA training.

3.02 HAUL ROADS

A. The Contractor shall construct and maintain temporary haul roads onsite from the site entrance to the locations of active excavation, stockpiles, weigh scales and truck washing facility, as needed to complete the work. Haul roads shall be maintained to permit efficient travel of fully loaded trucks. Contractor shall provide traffic control, such as signs and flaggers.

B. Contractor shall prepare contingency plans for handling disabled vehicles, providing designated areas for queuing trucks, snow removal, lighting and any other facilities necessary to provide for efficient travel of trucks on-site.

3.03 COORDINATING WASTE SHIPMENTS

A. Contractor will obtain letters of acceptance/commitment from waste haulers and from the TSDFs agreeing to handle and dispose wastes. Letters shall specifically state what types and quantities of waste the facility will accept. A copy of each letter shall be maintained in the Contractor's file.

B. Contractor shall coordinate shipment of waste to a Honeywell approved waste facility, for each class of waste. Contractor shall be responsible for determining the disposal facility's testing requirements and other acceptance requirements, and complying with those requirements for each shipment of waste.

C. Contractor shall prepare daily and weekly schedules for shipment of waste to each disposal facility, identifying the quantities and dates of shipments.

D. Contractor shall coordinate the supply of trucks necessary for shipment of waste from the site to the TSDF. Contractor shall coordinate the number of trucks in service to meet Contractor's schedule. The Contractor shall coordinate the schedule for vehicle arrival and material deliveries at the construction site to meet the approved project schedule. The schedule shall be compatible with the availability of equipment and personnel for material handling operations and ensure that the excavation schedule is maintained.

3.04 SHIPPING DOCUMENTS AND PACKAGING CERTIFICATION

A. The Contractor shall be responsible for obtaining all permits and shipping documents (from the TSDF or regulatory authorities) to ship hazardous wastes off site, either within the USA or outside of the USA.

B. The Contractor shall use manifests for transporting hazardous wastes as required by 40 CFR 263. Transportation shall comply with all requirements in the Department of Transportation referenced regulations in the 49 CFR series. The Contractor shall prepare manifests in accordance with the hierarchy established in 40 CFR 262, Section 21.

C. The Contractor shall prepare hazardous waste manifests for each shipment of hazardous waste shipped off site. Manifests shall be completed using instructions in 40 CFR 262, Subpart B and any applicable state or local law or regulation. Manifests and waste profiles shall be submitted to JCMUA and Honeywell for review and approval. The Contractor shall prepare land disposal restriction notifications as required by 40 CFR 268 or any applicable state or local law or regulation for each shipment of hazardous waste. Notifications shall be submitted with the manifest to JCMUA and Honeywell for review and approval.

D. The Contractor shall verify that each truck and-or container complies with applicable permitting.

3.05 LOADING TRUCKS

A. Chromium impacted waste shall be loaded into trucks or containers within the exclusion area. Trucks will include liners. When loading is complete, the liner flaps shall be placed over the top of the chromium impacted waste prior to covering the waste in a manner to prevent contact adjacent to the loading area with the road tarp.

B. Contractor shall provide liners for trucks used to transport hazardous chromium-impacted waste materials. Contractor shall assume and use trucks and truck liners with a truck capacity of 18-cubic yards (loose). **Liners shall consist of a 7.4-oz Woven Polypropylene outer layer to provide strength, and a 3 mil Polyethylene inner layer as manufactured by PACTEC. Contractor shall be advised that these liners are heavy duty liners, and will require specialized scaffolding or other techniques to install. Normally 2 to 4 workers are required to line each truck prior to filling, and to zip closed once filling is complete. At no time will a worker enter the truck bed.**

C. When truck loading is complete, the truck shall be decontaminated.

D. Each loaded truck shall be weighed on-site.

E. Each truck shall have a proper manifest and placard prior to leaving the site.

F. Each truck entering and exiting the site shall be recorded and entered into the Disposal Manifest and Management system.

3.06 WEIGH SCALE

A. The Contractor shall provide a system to weigh loaded trucks before they leave the site to confirm the maximum weight restriction for anticipated travel route is not exceeded. The system can include trucks equipped with load cells or a portable truck scale or similar device approved by JCMUA and Honeywell's Representative.

3.07 HAULING BY TRUCK

A. The Contractor shall insure that the vehicle is properly decontaminated, weighed and has the proper manifests and placards before the truck leaves the site.

B. The Contractor shall respond and remedy situations involving material spilled in transit or mud and dust tracked off-site, within a distance of one mile from the site.

C. The Contractor shall protect trucks against contamination by properly covering and lining them with compatible material or by decontaminating them prior to any use other than hauling contaminated materials. The Contractor is responsible for inspection of transportation vehicles prior to leaving the site, to verify no material adheres to the wheels, undercarriage, tailgates, covers or other areas of transport vehicles.

D. The Contractor shall utilize truck tarps on all trucks entering and exiting the site.

--END OF SECTION--

ATTACHMENT A

LIST OF HONEYWELL APPROVED WASTE FACILITIES

(To be provided by Honeywell)

APPENDIX E

REFERENCE JCMUA RULES AND REGULATIONS FOR SITE WORK, EXCAVATION AND BACKFILL

THE JERSEY CITY MUNICIPAL UTILITIES AUTHORITY
JCMUA

RULES AND REGULATIONS
GOVERNING THE OPERATION OF THE JERSEY CITY SEWER SYSTEM

The Jersey City Municipal Utilities Authority (hereinafter the "*JCMUA*"), created pursuant to the Municipal Utilities Law, N.J.S.A. 40:14B-1, et seq., being charged with the duty and obligation of improving conditions affecting public health by maintaining in operation a sewerage system for the proper collection and conveyance of sanitary sewage originated in Jersey City and in cities with which the *JCMUA* has conveyance agreements with, **HEREBY ADOPTS** the following rules and regulations to govern the operation of the system, facilities and processes of The *JCMUA*.

ADOPTED BY RESOLUTION No. _____
Dated:

TABLE OF CONTENTS

ARTICLE I. INTRODUCTION

SECTION 1.01 HISTORY OF THE *JCMUA*

The *JCMUA* is the successor of the Jersey City Sewerage Authority (*JCSA*) which was created in 1949. The *JCSA* built two sewage treatment plants for treating wastewater prior to discharging into the rivers. These treatment plants served the residents of Jersey City until 1990, when more stringent rules required the treatment system to be upgraded. With a $2I million grant from the United States Environmental Protection Agency, the *JCSA* converted its two treatment plants to pumping stations, constructed a transmission line and began pumping wastewater under the Newark Bay to the Passaic Valley Sewerage Commissioners (PVSC) wastewater treatment plant in Newark.

The *JCSA* was reorganized into the *JCMUA* in 1998. The *JCMUA* took over the responsibility of the Jersey City Water System under a franchise agreement with the City. Previously, a department within the City had operated or been responsible for operation of the Water System. The 2005 Amended and Restated Franchise Agreement provides for *JCMUA* operation of the Water System through December 31, 2027 and mandates that *JCMUA* adopt its own regulations for operation of the Water System during the term of the franchise. The *JCMUA* has contracted the operation of the Water System to a private entity. The City continues to own the Water System.

SECTION 1.02 MISSION STATEMENT OF THE *JCMUA*

The *JCMUA* pledges to operate and maintain its sewerage system and the City's water facilities in a fashion that will protect the public health and environment of all its constituents. The *JCMUA* will always strive to accomplish this goal in the most competent, economical and compassionate manner possible.

SECTION 1.03 OFFICE HOURS AND LOCATION

The office of the Jersey City Municipal Utilities Authority is located at 555 Route 440 in Jersey City, New Jersey 07305, and is open for business Monday through Friday from 8:30 a.m. to 4:30 p.m. Regular meetings of the *JCMUA* are ordinarily held the last Thursday of each month at 5:00 p.m. at the *JCMUA* offices. Special meetings can be called by the Chairperson. All meetings are conducted in accordance with the provisions of the Open Public Meetings Act, N.J.S.A. 10:4-6 et seq.

SECTION 1.04 APPLICABILITY OF RULES AND REGULATIONS

The following sets forth the rates, procedural rules, standard terms and conditions of service, standards technical specifications and other regulations under which sewage service will be supplied by the *JCMUA* to its customers. It establishes regulations for the use of public and private sewers and drains, for the installation, rehabilitation and

connection of building sewers and for the discharge of waters and wastes into the public sewer system in compliance with the regulations of the New Jersey Department of Environmental Protection (NJDEP) and the United States Environmental Protection Agency (EPA). It also provides for a system of charges to customers to compensate the *JCMUA* for the use of its sewer system.

The *JCMUA* reserves the right to change or amend, from time to time, these Rules & Regulations, and the rates for sewer use by resolution of the Board of Commissioners as necessary.

ARTICLE II. DEFINITIONS

As used in these Rules & Regulations, unless a different meaning clearly appears from the context, the following words shall have the following meanings:

AASHTO: American Association of State and Highway Transportation Officials.

ACI: American Concrete Institute

ACOE: Army Corp of Engineers

AISC: American Institute of Steel Construction

ANSI: American National Standards Institute

ASCE: American Society of Civil Engineers

ASTM: American Standard of Tests and Measures

AWS: American Welding Society

AWWA: American Water Works Association

Applicant: A developer, property owner or property owners who have filed an application with the *JCMUA* pursuant to these Rules & Regulations for permission to connect to the sewer system.

Application for Service: An application prepared and completed by an Applicant, Customer, or Owner in accordance with the requirements of the *JCMUA*.

Authority: The Jersey City Municipal Utilities Authority (*JCMUA*).

Block: An area delineated as such on the Tax Map of the City of Jersey City.

BMP: Best Management Practices, as defined by the NJDEP for storm water management under Clean Water Rules.

City: The City of Jersey City.

Chief Engineer: The *JCMUA's* Professional Engineering representative acting either directly or through assistants under him.

Cleanout: Shall mean an access point constructed on a lateral installed at 1-ft. behind the curb or property line.

Combined Sewer System (CSS): A sewer system which conveys both sanitary and storm flow through the same sewer mains.

CMP: Corrugated Metal Pipe shall not be used for sanitary sewer, storm sewer or combined sewer without the expressed written permission of the Chief Engineer.

Connection: Any operational or physical change to the sewer collection system or to the plumbing or piping of any building, facility or structure either proposed or existing, which connects directly or indirectly to any portion of the *JCMUA* facilities.

Deflection: The allowable amount of pipe shape change of 5% as allowed for Plastic Pipe in N.J.A.C. 7:14A-23 et al.

Developer: The legal or beneficial owner or owners of a lot or of any land proposed to be included in a development including the holder of an option to purchase or other person having an enforceable propriety interest in such land.

Development: The division of a parcel of land into two or more parcels; the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or other structure; or any change in use of any building or structure.

DIP: Ductile Iron Pipe, unless otherwise directed, shall be cement lined with an asphalt coating complying with AWWA standards for water mains and minimum class 52.

EPA: United States Environmental Protection Agency.

Easement: The right to use the land of another for a specific purpose not inconsistent with the general property rights of the owner.

Equivalent Dwelling Unit (EDU): Equal to a residential user using 225 gallons of service per day.

F.E.M.A.: Federal Emergency Management Agency, responsible for preparation of flood mapping, disaster mitigation, preparedness, response, and recovery planning.

Handhole: Shall mean an 24" diameter access point on a sewer lateral or main. It shall be constructed of material as directed by the Chief Engineer with a frame and cover clear mark "JCMUA".
HDPE: High Density Polyethylene Pipe, for gravity applications shall be corrugated double wall smooth interior pipe with couplings or bell and spigot connections, for force mains it shall be SDR 21 minimum heat fused joint.

House Service Connection: The pipe and appurtenances between *JCMUA's* sewer main and the individual building cleanout.

JCMUA: Jersey City Municipal Utilities Authority.

Lateral: Shall mean a pipe of a size smaller than the sewer to convey flow from the building to the sewer main by City of Jersey City Ordinance and *JCMUA* Rules is owned by the property owner from the main to the building.

Large Development: Site and/or building footprint improvements in excess of 10,000 sq. ft.

Lot: A tract or parcel of land intended for separate use, development or transfer of ownership.

Main: ALL *JCMUA*-owned or controlled piping and appurtenances used for the collection of storm water and/or sewerage.

Manhole: Shall mean a concrete structure to access a sewer main of adequate size to allow a person to enter safely with a *JCMUA* approved frame and cover.

Mandrel: A device to be pulled through pipe to measure the deflection.

NJMC: New Jersey Meadowlands Commission.

NJDEP: New Jersey Department of Environmental Protection.

NJDOT: New Jersey Department of Transportation.

OSHA: United States Occupational Safety and Health Administration.

Professional Engineer: A person licensed to practice professional engineering in the State of New Jersey.

Professional Land Surveyor: A person licensed to practice land surveying in the state of New Jersey.

PVC Pipe: Polyvinylchloride pipe for use in conveyance of sanitary waste, stormwater, and/or combined sewage.

PVSC: Passaic Valley Sewerage Commission.

Plat: A map of a development.

RCP: Reinforced concrete pipe.

Right-of-Way (ROW): Land subject to use as a street, alley, or for drainage or other public purposes.

Sanitary Sewer: All facilities collect and convey appurtenances to domestic, commercial, and industrial waste, but not stormwater or groundwater.

Sewer Main: The part of the sewage collection system which is located within the public Right-Of-Way or within a sanitary sewer easement and which is designed to convey the sewage from one or more customers.

Sewer System: All facilities and appurtenances connected with the collection system, trunk system and laterals.

Sketch plan: The sketch map of a development of sufficient crosswalk accuracy to be used for the purpose of discussion and classification and meeting the requirements of these Rules and Regulations.

Small Development: Site and/or building footprint improvements less than 10,000 sq. ft.

Stormwater: Runoff generated by a precipitation event or the melting of frozen precipitation.

Street: Any street, avenue, boulevard, road, land viaduct, bridge, alley or other way which is an existing state, county or municipal roadway, including the land between the street lines whether improved or unimproved, and may compromise pavement, shoulders, gutters, sidewalks, parking areas and other areas within the street lines.

TSS: Total suspended solids, as defined by the NJDEP Best Practices Manual for Stormwater Management.

TWA: NJDEP Treatment Works Approval Permit for the construction of combined or sanitary sewer systems and related structures.

Uni Bell: Plastic Pipe Manufacturers Association

ARTICLE III. CONDITIONS REQUIRING JCMUA APPROVAL

The *JCMUA* shall review and approve all site plans or building plans for developments or building change of use that introduce sanitary and/or storm flow and/or groundwater to the Jersey City Sewer System. These developments include, but are not limited to the following:

a) New Construction
b) Sewer Main Installation
c) Parking Lot Construction
d) Temporary Parking Lot Construction
e) Park Construction
f) Athletic Field Construction
g) Storm Water Construction
h) Roadway Construction
i) Construction site dewatering
j) Site Remediation dewatering

JCMUA shall review and approval is also required when any change in flow (increase or decrease) that may be introduced into the system. Such situations include, but are not limited to the following:

a) Additions
b) Change of Use
c) Renovations
d) Rehabilitations

ARTICLE IV. SEWER CONNECTION APPLICATIONS

All applications for sewer connections must be submitted to the *JCMUA* for review and approval. The following sections detail the application requirements for various types of developments. The applications for sewer connection can be found in Appendix I of these Rules and Regulations. They must be submitted with a bank or certified check as payment. Connection and Application fee amounts are outlined in Schedule I of these Rules and Regulations. Connection Fee Rules can be found in Schedule III of these Rules and Regulations.

SECTION 4.00 DRAWING REQUIREMENTS

1) Two (2) sets of drawings shall be submitted. These drawings shall be signed and bear the raised seal of a NJ Licensed Professional Engineer or Registered Architect.
2) Drawings shall be 24-inches by 36-inches or larger. All drawings shall be to scale of adequate size for easy reading and include a north arrow. Details shall be clear and of appropriate scale.
   a. All drawings shall show lot and block lines and numbers

b. North arrow.
c. Existing utilities including:
    i. Size
    ii. Type of utility (gas, electric, telecom, etc.).
    iii. Direction of flow.
    iv. Inverts.
    v. Valves, hydrants, vents, etc.
    vi. Inlet, manholes, vaults, etc.
d. Street names with traffic striping
e. Existing topography at one (1) foot intervals.
f. Proposed topography at one (1) foot intervals.
g. Proposed and existing structures.
h. Scale: 1 inch = 30 feet minimum.
i. Proposed stormwater detention facilities.
j. Proposed sanitary sewers.
k. Proposed water mains.
l. Proposed roads.
m. All other existing or proposed site conditions.
n. Show all *JCMUA* applicable standard details.
o. Show all *JCMUA* notes.

3) ALL connection details must be included on the drawings and shall be in conformance with *JCMUA's* standard specifications which can be found in Appendix II.
4) The size and type of pipe of all proposed service laterals as well as the sewer main to which connection is proposed must be indicated.
5) a. All connections of surface parking lot drainage system shall comply with the Jersey City, *JCMUA*, and NJDEP requirements.
    b. ALL connections of parking garage drainage systems must comply with the National Standard Plumbing Code and the requirements of the Jersey City Building Department.
    c. For parking garages oil and water separator shall be included and sized to handle surface loading of garage and easy access for cleaning and maintenance.

6) A separate and distinct connection shall be provided for every building and premise, unless otherwise approved by the *JCMUA*.
7) No new sanitary fixtures shall be installed in a building at an elevation lower than the front curb elevation or street centerline elevation or below 100 year flood elevation (whichever is higher) unless special precautions are incorporated into the building connection to prevent the backup of sewerage because of high flows or a blockage. See Appendix II. In any event, the *JCMUA* will NOT be responsible for any backups or surcharges into fixtures or structures, below the above-mentioned elevations.
8) ALL elevations on site plans must use vertical datum NAVD 1988 and horizontal datum NAD 1983. All plans shall indicate the 100 year flood elevation as per the latest FEMA mapping.

9) The drawings must comply with *JCMUA's* "Standard Requirements for New Sanitary and Storm Sewers and Service Laterals," current revision, which can be found in Appendix III.
10) The drawings must comply with *JCMUA's* "Requirements for Site Plan Applications," current revision, which can be found in Appendix IV. A signed copy of these requirements must be submitted with the application.
11) The developer shall provide proposed surface conditions utilizing NRCS – TR55, CN values with areas for each condition, such that data can be inserted in XPSWMM model for the city to determine development impact on combined sewer system. This shall apply to developments over 10,000 sq. ft. or 8,000 gpd.

SECTION 4.01 GENERAL

1) The *JCMUA* will not review or consider any application for service until the Applicant has paid ALL charges required for review of plans and/or permit applications.
2) The accepted application shall oblige the Applicant to pay all other fees (CCTV inspection or others) to the *JCMUA*, as revised from time to time, and to comply with its Rules and Regulations.
3) ALL completed applications for sewer permits/approvals shall be approved on a first-come first-served basis. The obligation of the *JCMUA* to approve completed applications is contingent upon the availability of capacity of the physical facilities as well as in contractual capacities that the *JCMUA* has with the Passaic Valley Sewerage Commissioners.
4) The applicant shall not construct sewer facilities until such time as the *JCMUA* is in receipt of all necessary approvals from the NJDEP or any other municipal, state or federal agency that may be required.
5) The *JCMUA* shall not approve an application that is incomplete or an application for service or services that cannot be rendered as a result of the lack of conveyance or contractual capacity.
6) When an NJDEP TWA Permit has been issued, the NJDEP IVQM-005 Form with approved as-builts should be submitted to the *JCMUA* prior to the release of fees, bonds, or others.

SECTION 4.02 NEW CONSTRUCTION

A) Applies to small and large development that meet the following criteria:
   i) Do not require a NJDEP-TWA Permit
   ii) Sanitary sewage flow does not exceed 8,000 gpd.
   iii) No extension on sewer main is required.
   iv) PVSC Sewer Connection Permit is required.
   v) Plans shall be submitted in conformance with Article IV, Section 4.00.

B) Applies to large developments only that meet the criteria of Section 4.02 A:
   i) NJDEP-TWA is required.
   ii) Stormwater management system is required.
      a) Stormwater system design shall consist of the following items:

1) Detention system is capable of containing a 100 year storm runoff.
   A) On site outlet control structure designed in compliance with NJDEP Stormwater Regulations.
   B) Stormwater pipes shall be designed with a minimum velocity of 3.5 fps for a 2 year storm, and capable of passing 100 year Storm flow to the detention basin.
   C) Stormwater discharge from the site, post construction conditions for the 2 year, 10 year, and 100 year events.
   D) The post-construction peak runoff rate for 2 year, 10 year, and 100 year shall be 50%, 75%, 80% respectively of the pre-construction peak rates.

SECTION 4.03 NEW CONSTRUCTION – SEWER EXTENSION (TWA APPLICATION REQUIRED)

A. Small Development (Less than 10,890 SF area developed)
   a. The plans must be submitted as stated in ARTICLE IV, Section 4.00
   b. Application and Fees must be submitted as per the Connection Fee Rules
      1. Performance Bond
         i. Required if a new storm or sanitary sewer main will be installed or if there will be a sewer main extension
         ii. Performance Bond shall be 120% of the total construction cost guaranteeing complete construction within the time period to be specified by the *JCMUA* and further guaranteeing that said construction will be in accordance with these Rules and Regulations of the *JCMUA* and the plans and specifications, Engineer's Report and cost estimates approved by the *JCMUA*
         iii. Engineer's Construction Cost Estimate must be submitted
         iv. Inspection Fees, TWA Review Fee and As-Built Deposits must also be submitted as per SCHEDULE IV.
      2. Indemnification Agreement
         i. Required if a new storm or sanitary sewer main will be installed or if there will be a sewer main extension
         ii. *JCMUA's* General Counsel, Elnardo Webster, Esq. of the Law Firm of Trenk, DiPasquale, et al., 347 Mt. Pleasant Avenue, West Orange, NJ 07052, 973-243-8600, must be contacted, for the execution of an Indemnity and Hold Harmless Agreement with the *JCMUA*

B. Large Development (Greater than 10,890 SF area developed)
   a. The plans shall be submitted as stated in ARTICLE IV.
   b. Development shall include a detention system satisfying the following criteria:

The on-site flow control structure shall detain a volume of storm water runoff equal to:

i. The volume of storm water discharged from the site so that the rate of runoff from 2, 10 and 100 year events for the post-construction site conditions does not exceed the pre-construction volume and rate of run-off; and

ii. The post-construction peak runoff rate for the 2 year storm event is 50 percent of the pre-construction peak runoff rate and the post-development peak runoff rate for the 10 and 100 year storm shall be 75% and 80% respectively of the pre-construction peak runoff rates.

A storm drainage report and calculations must be submitted to this office for review.

c. Application and Fees must be submitted as per the Connection Fee Rules
    1. Performance Bond
        i. Required if a new storm or sanitary sewer main will be installed or if there will be a sewer main extension
        ii. Performance Bond must be 120% of the total construction cost guaranteeing complete construction within the time period to be specified by the *JCMUA* and further guaranteeing that said construction will be in accordance with these Rules and Regulations of the *JCMUA* and the plans and specifications, Engineer's Report and cost estimates approved by the *JCMUA*
        iii. Engineer's Construction Cost Estimate must be submitted.
        iv. Inspection Fees, TWA Review Fee and As-Built Deposits must also be submitted as per SCHEDULE IV.
    2. Indemnification Agreement
        i. Required if a new storm or sanitary sewer main will be installed or if there will be a sewer main extension
        ii. *JCMUA's* General Counsel, Elnardo Webster, Esq. of the Law Firm of Trenk, DiPasquale, et al., 347 Mt. Pleasant Avenue, West Orange, NJ 07052, 973-243-8600, must be contacted, for the execution of an Indemnity and Hold Harmless Agreement with the *JCMUA*.

SECTION 4.04 MULTIPLE PARCEL DEVELOPMENTS

A. Proposed developments that are composed of multiple parcels or lots and being constructed in phases shall submit an overall site plan for storm water and sanitary sewers.

a. The stormwater management shall be considered to be one (1) system for the entire development, not one (1) parcel at a time.
b. Stormwater detention systems shall be sized and constructed for the entire site.
c. The detention system and stormwater management system shall be constructed in the first phase.
d. In the event that the detention system cannot be constructed in the first phase due to demolition of existing structures, temporary detention shall be constructed, and operated until development or final detention system is completed.
e. All other requirements of Section 4.03-B et al shall be applicable.

SECTION 4.05 ADDITION/RENOVATION/REHABILITATION

A. No changes made to the existing service laterals/connections
   a. The plans must be submitted as stated in ARTICLE IV.
   b. A letter must be submitted explaining the scope and use of additions/renovations/rehabilitation work that is being completed and why no changes are being made to the existing service, and no increase in impervious or disturbed are or increase in sanitary or stormwater flows.
   c. Application and Fees must be submitted as per the Connection Fee Rules

B. Changes made to the existing service laterals/connections
   a. The plans must be submitted as stated in ARTICLE IV.
   b. The same rules apply as for "new construction" in SECTION 4.01 or 4.02.
   c. Application and Fees must be submitted as per the Connection Fee Rules

SECTION 4.06 CONNECTION FEES

The Applicant shall pay a one-time sewer connection fee and sewer connection fee for each EDU in an amount as established by the *JCMUA's* rate schedule in effect at the time the fee is paid. The Connection Fee shall be applicable to all connections for each single-family unit or EDU.

The Connection Fee rate schedule can be found in Schedule I.
The Connection Fee Rules can be found in Appendix VI.

ARTICLE V. DESIGN AND CONSTRUCTION

This section provides information on the minimum standards of the *JCMUA*. The Applicant and his/her design engineer shall ensure that the construction of all facilities

are conducted in accordance with these standards. ALL application and connection fees must be paid by form of a bank or certified check.

The authority reserves the right to periodically modify these Rules and Regulations and its Standard Specifications and construction details to address changes in Federal, State, County, Municipal, and Building Code regulations or engineering standards. Accordingly, the Design Engineer must verify prior to design that the standards contained herein have not been modified in any manner, and shall implement and use the Authority's standard construction specifications and details in effect at the time.

All work to be done shall comply with all applicable requirements of Federal, State, County, and local statutes, regulations and codes, and especially the safety provisions contained therein.

SECTION 5.01 GENERAL

All sanitary sewers shall be designed to carry a peak flow of 2.0 times the average flow for a half full pipe estimated based on a twenty-five years flow projection. Average flow shall be assumed to be 100 gallons per person, per day, and 3 persons shall be assumed per EDU, including infiltration.

Wherever possible for new construction, all sewers must be designed on a "separate system" basis in which all water from roofs, basement sump pumps, groundwater, streets and any other areas are connected to a separate Storm Sewer System to minimize the impact of new development on the *JCMUA's* combined sewers. Where storm water runoff from roofs, streets or any other areas is to be connected to the combined sewer system, the applicant shall undertake appropriate planning, design and construction of offline storage facilities (detention systems) to reduce peak discharges into the combined sewer system so as to maintain, at a minimum, existing storm water flow conditions within the combined sewer system.

If the proposed project includes the construction, connection or extension of a Storm Sewer System, the Applicant shall comply with all applicable requirements of the Residential Site Improvements Standards, N.J.A.C.5-21, et seq., and the NJDEP Tier A Municipal Stormwater General Permit. Any sites engaging in "industrial activity" as defined in N.J.A.C. 7:14A-1.2, the facility must comply with all applicable NJDEP Regulations, and Passaic Valley Sewage Commission (PVSC) Regulations.

Sanitary Sewers and Force Mains shall be designed to flow with a minimum velocity of not less than 2.2 fps (feet per second) at full flow based on Manning formula with n=0.013.

Acceptable materials used in the construction of sewers, service laterals and force mains are listed below:

1. Gravity Sewers

a. Reinforced Concrete
b. Ductile Iron
c. Cast Iron
d. Polyvinyl Chloride (PVC)
e. Vitrified Clay Tile

2. Inverted Siphons and Force Mains
    a. Cement Lined Ductile Iron (CLDP)
    b. Cast Iron (CIP)
    c. High Density Polyethylene

3. Outfalls
    a. Reinforce Concrete Pipe.
    b. Ductile Iron
    c. Reinforced Concrete Box Culvert

The materials must meet the requirements listed below. All references to standard specifications NJDEP, NJDOT, ASTM, ANSI, AWWA, EPA, AWS, AASHTO, ACI, AISC, UniBell and the like, shall be to the latest version thereof.

The *JCMUA* or its Engineers shall not be responsible for the design of the project or any errors or omissions therein; such responsibility shall be solely and completely assumed by the Applicant's engineer, surveyor, architect or other design professional.

Any changes in pipe materials during prior to start of construction, the Developer, Developer's Engineer or Developer's Contractor/Construction Manager shall contact JCMUA for review, comment and approval of change in materials prior to proceeding with construction.

SECTION 5.02 EXCAVATION AND BACKFILL

A. Character of Material

Any and all fill imported to the site shall be certified as clean fill. An original copy of such certification and laboratory analysis reports shall be provided to the Authority prior to the material being brought to the site.

B. Excavations, Clearances and Trimming

Excavations shall be of sufficient width to permit work to be done competently, in the manner and of the size specified and shown, and limits shall be such as to permit the use of excavation support, unless permission for an alternate procedure is specifically granted. In no case shall excavations be carried more than bedding depth below grade by machine and backfill used to bring the grade to the proper elevation for bottom slabs, footings or pipelines.

In all excavations for sewer system components, boulders, rock, masonry, or other similar materials shall be excavated to a level at least six inches below the outside wall of the pipe at the invert, and carefully backfilled with NJDOT No.57 or No.67 stone or other approved material to 18-inches over the top of the pipe. Rock or boulders shall be removed from sides of trenches to a plane 12 inches beyond the outside wall of the pipe, manholes, etc., unless permission to do otherwise is expressly given.

Where the removal of a boulder creates a void below the pipe bedding, the void shall be backfilled with bedding stone. In cases where the boulder creates a void in the side of a trench, all material above the void shall be removed and backfilled as part of the normal trench backfill operation.

The trench width just above the top of the pipe shall be maintained as narrow as possible and in general shall not exceed the outside diameter of pipe plus two (2) feet.

C. Unauthorized Excavation

If any excavation is caused by the Contractor's error, or wherever the excavation is carried beyond or below the lines and grade given by the Engineer, the Contractor shall, at his own expense, refill all such excavated space with such material and in such manner as may be directed, in order to insure the stability of the various structures. Beneath all structures, the space excavated without Engineer shall be backfilled with 4,000 psi concrete.

D. Sheeting and Bracing

Where necessary, particularly to prevent disturbance, damage, or settlement of adjacent structures, pipelines, utilities, improvements or paving, excavation shall be adequately sheeted and braced. In areas where excavations exceed four (4) feet in depth, the Contractor shall assume full responsibility for the design and installation of sheeting and bracing of excavations such that the sheeting and bracing design meets all the latest requirements of the New Jersey Construction Safety Code and Federal Occupational Safety and Health Act.

Sheeting and bracing shall be furnished and installed, and if ordered by the Engineer, left permanently in place. If sheeting is not ordered to be left in place it shall be removed.

All permanent steel sheet piling and accessories shall be new and conform to the requirements of ASTM A6-99, "Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling." All steel sheet piling shall be interlocking steel sheeting as shown on Contract Drawings and conform to the ASTM Designation A572-99a, "Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel" (GR50).

E. Compacting Foundation

Wherever the development of suitable foundation conditions requires it, the Contractor shall take the proper means of compacting such foundation material. After excavation to grade, the surface shall be compacted, or otherwise consolidated to adequately prepare the bottom for the loads to come upon it, the method depending upon the quality and condition of the material. Where so required to stabilize the surface, screened gravel shall be placed on the surface and shall be compacted into the sub-grade in such thickness as may be required by the Engineer.

F. Additional Excavation

Wherever, in the opinion of the Engineer, the material found at the grades for the slabs, wall footings, or pipe inverts, is not satisfactory, the Contractor shall make any additional excavations as directed by the Engineer, and shall refill the same to two inches above the required grade with selected material.

G. Backfilling

As soon as practicable, after the pipe, masonry, or cast in place concrete has been placed and has acquired a suitable degree of hardness, or cast in place concrete has reached seven (7) day strength, the backfilling shall begin and shall thereafter be prosecuted expeditiously.

All lumber, rubbish, and braces shall be carefully removed from behind walls or other structures, unless ordered left in place by the Engineer. Backfill under the pipe haunches, around the pipe, and up to a cover of at least 18 inches over the top of the pipe shall be placed by hand in 6 inch layers, each layer to be thoroughly compacted by mechanical tampers of an approved type.

All other backfill shall be compacted and tamped in maximum 6 inch to 12 inch lifts to obtain 90 to 95% of relative density. If 90 to 95% relative density is not obtained, the lifts shall be reduced in thickness and the moisture level shall be adjusted. No stones or boulders over three (3) inches shall be allowed to drop in the trench.

All excavated soil within roadways and other paved areas shall be replaced with NJDOT virgin dense aggregate or quarry process stone conforming to I-5 (recycled concrete will not be accepted). Backfill between a horizontal plane 18 inches above the top of the pipe and the finished surface grade shall be placed in successive layers of not over 6 inches compacted thickness. Each layer shall be thoroughly compacted using approved tamping machines.

In rights-of-way, easements, and paper streets, backfill between a plane 18 inches above the top of the pipe and the finished surface grade, the Contractor shall keep settlement to a minimum and shall promptly restore to proper grade any settlement that might occur. Backfill in this zone shall be placed in successive layers of not over one (1) foot

compacted thickness, or as directed by the Engineer. Each layer shall be thoroughly compacted using tamping machines.

All excavated material outside the roadways i.e., easements, shall be stockpiled at the site, outside the roadway. The stockpiled materials shall not interfere with vehicular bicycle or pedestrian traffic, interfere with drainage or cause sight distance problems for vehicular bicycle or pedestrian traffic.

The trench outside the roadway shall be backfilled with only acceptable excavated material. Where in the opinion of the Engineer the excavated material is unsuitable for backfilling, the excavated material shall be disposed of at approved off site locations and the trench backfilled with NJDOT virgin grade aggregate or quarry process (I-5) stone as directed by the Engineer.

All backfill in embankments shall be thoroughly compacted by rollers of approved size and weight or by other approved methods.

H. Disposal of Material

All areas where soil is to be used as backfill shall be tested for potential contaminants based on EPA's total listed priority contaminates plus forty (TLPC +40).

Only excavated material acceptable to the Engineer shall be placed as backfill, outside roadways, i.e. easements and to the lines and grades established by the Design Engineer. All other excess material and all material within roadways shall be disposed of by the Contractor in approved locations outside of the working areas.

Temporary storage of excavated material shall not be on environmentally sensitive areas. Also excess fill shall not be used for the top 6 inches of topsoil. All stockpiles shall be in compliance with the NJDEP requirements and soil erosion and sediment control standards.

The Contractor shall restore all grades to those elevations existing, prior to construction. The Contractor shall be responsible for removal and disposal of all excess excavated material. Approval by the City Engineer must be obtained prior to disposal of excess excavated material to sites within the City.

Prior to disposal of excess material, the Contractor shall notify and obtain approval from the City of Jersey City regarding the location of the disposal site. All permits, surveys, tests, manifests, etc., as required for disposal of material, by the NJDEP or any other agency shall be obtained by the Contractor. Under no circumstances shall material be disposed of in flood plain, wetlands, or any other environmentally sensitive area.

I. Protection and Restoration of Existing Structures & Pipe Lines

The Contractor shall carefully protect all existing structures, both above and underground, including but not limited to poles, curbs, driveways, parking areas, privately owned pavements, signs, sumps, pits, catch basins, manholes, underground tanks, ads building foundations; pipe lines, including gas mains, water mains, hydrants, drain lines, storm sewers, sanitary sewers, service connections, conduits, and miscellaneous underground pipe lines; and shall restore same to a condition equivalent to conditions existing prior to his operation.

The Contractor is specifically directed to the requirements of protecting all trees along the route of the work in an approved manner.

The work of protecting and restoring existing utilities and facilities and including trees where no definite physical interference exists, or where the interference is avoidable, shall be the responsibility of the Contractor.

Ample precautions shall be taken to prevent settlement of existing improvements.

The work will be located so as to avoid interference to the greatest degree practicable, based upon data available as to depth and location of existing utilities and other existing facilities.

The Contractor shall make all efforts required by law and all other reasonable efforts to determine in advance of excavation of operations, the location of all utilities and other subsurface structures and facilities, and shall accurately mark same so that they may be avoided by Contractor's operations.

Where existing utilities or other sub-surface facilities adjacent to the trench or crossing through the trench require temporary support or protection, the work shall be the responsibility of the Contractor.

Where definite physical interference would be unavoidable in the final work and necessitates the removal, alteration, replacement or extension of existing utilities, the Contractor shall make all excavations for such work and shall cooperate with other forces involved in the work.

The labor, pipe and other material necessary for removing, altering, replacing, or extending such utilities, other than for excavation, will, unless otherwise ordered, be coordinated by the Contractor with the respective utility companies or other owners involved. In specific cases, the Contractor may be ordered to perform such work unless otherwise completed by the utility.

The Contractor shall be responsible for protecting all existing Jersey City Municipal Utilities Authority's (*JCMUA's*) Engineer appurtenances including but not limited to catch basin inlets, sanitary/combined/storm manhole covers, and water valve boxes or manhole covers hereafter referred to as utility castings. The Contractor shall accurately mark out the location of all utility castings in advance of milling of the roadway. Care

shall be exercised during the milling/paving operations to avoid damage to the utility castings by the milling/paving machines. Following the milling operation and prior to pavement, the Contractor shall inspect all utility castings within the roadway to assure that they were not hit and displaced during the milling activity and that no millings have entered the utility castings. The Contractor shall be responsible for removing any and all millings from the valve box or other utility castings and shall assure that complete and clear access is available to all valves and other utility appurtenances. In addition, the Contractor shall remove and reinstall/replace to the satisfaction of the *JCMUA*, all utility castings which have been dislodged by the milling or paving operations.

The Contractor shall also be responsible for raising all utility castings located in the roadway to the proposed finished grade in areas where the roadway is scheduled for additional pavement above the existing rim elevations. The work and materials associated with altering, replacing or extending such utility castings shall be the sole responsibility of the Contractor and shall be coordinated by the Contractor with the *JCMUA* Engineer prior to work being undertaken.

The *JCMUA* shall be contacted within 48 hours of final paving to schedule an inspection of all the utility castings within the project area to assure compliance with this specification. All utility castings determined to have been buried, damaged, moved or in any other way affected by the project, shall be reinstalled, replaced or uncovered to the satisfaction of the *JCMUA* within two weeks of notification by the *JCMUA*.

J. Work in Private Easements

Where the work is in easements located within privately owned areas, rear yards, etc., the Contractor shall make every effort to minimize disturbance to the area. All trees shall be boxed or fenced to dripline. Excavated material shall be stored on tarpaulins or other means used to prevent it from being spread on the ground. Backfill shall be completed on the same day. Topsoil shall be removed and stored separately, and upon completion of backfill shall be evenly spread over the disturbed area. If settlement occurs, the Contractor shall bring in additional topsoil of an approved variety to bring the trench up to grade.

All disturbed lawns, trees, shrubs, bushes, planting, fences, walls, driveways, walkways, etc. shall be restored to the satisfaction of the owner. It is required that the Contractor take “before and after” photographs of all such areas. Any disturbance or damage to existing structures and/or any site enhancement, shall be immediately repaired in kind by the Contractor without compensation.

K. Connection to Existing Manholes

Where new connections to existing manholes are required, the Contractor shall core drill a hole in the existing manhole to accept the pipe and a flexible gasket around the pipe with stainless steel appurtenances to hold the gasket in place. The Contractor shall

properly reconstruct the existing manhole channel and benching to accommodate the new sanitary sewer upon testing and acceptance of the sewer.

Where it is determined by the Authority to be unfeasible to core drill an existing manhole, the Contractor shall use a hammer drill to create an adequately sized opening to accept the incoming sewer at the invert specified on the plans. A waterstop as manufactured by Fernco or approved equal shall be provided on the clean end of the new pipe. The waterstop shall be positioned so that it is centered on the manhole wall. Non-shrink grout shall be placed around the waterstop to fill the voids between the manhole walls and the waterstop. The non-shrink grout shall be Five Star Structural Concrete, or approved equal. Prior to placement of the grout, the manhole surface shall be roughened to facilitate adherence of the grout.

L. Abandonment of Existing Sewers

Where deemed necessary and approved by the Authority in approved plans and specifications, the Contractor shall undertake the abandonment of existing sewers. The abandonment of existing sewers must be coordinated with the Authority and must be approved by the system operator. The cast iron frames, covers and castings on all manholes and drain inlets or appurtenances to be abandoned shall be removed and transported to the Jersey City Municipal Utilities Authority East Side Pumping Station, or as designated by the Authority for future use.

The downstream end of the existing sewer to be abandoned shall be plugged with concrete or capped with a mechanical plug. All structures within a minimum distance of 12-inches from existing grade shall be demolished and removed. All sewers, manholes and drain inlets to be abandoned shall then be filled with pea gravel or sand and capped with a minimum of 4-inches of concrete. The upstream end of the pipes shall then be capped or plugged and the ground surfaces adjacent to all inlets or manholes shall be restored to their original condition.

SECTION 5.03 REINFORCED CONCRETE PIPE (CLASS III to CLASS V)

A. General

Unless otherwise specified, all pipe shall be best quality reinforced concrete pipe Class III, in 8" – 0" lengths, joints providing requisite flexibility and water-tightness under service conditions. All reinforced concrete pipe shall conform to the Standard Specifications for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe, ASTM C-76, latest issue. Where required by the Engineer best quality reinforced concrete pipe Class V shall be used.

All circumferential reinforcing steel in circular reinforced concrete pipe shall be of the circular type and use of elliptical steel will not be allowed.

All pipe shall be sound, true and free from cracks or other defects. Interior surfaces shall be smooth and free from ridges. Pipe ends shall be accurately formed, and no pipe shall be used in the work which has cracked, chipped or otherwise defective jointing surfaces. Patching or plastering of defective surfaces will not be permitted.

B. Jointing

Pipe joints between sections of the RCP shall be sealed with a gasket conforming with ASTM C443 or approved equal. The upper half of all pipe joints shall be totally sealed with 1:2 mortar mixture.

The mortar shall consist of one part of Portland cement and two parts of sand by volume, mixed together with sufficient water to produce a stiff, workable mortar. The amount of water shall in no case exceed five and one-half (5-1/2) gallons of water per bag of cement.

Before making a joint, the pipe ends shall be thoroughly cleaned and wet with clean water.

C. Pipe Laying

All pipe shall be carefully examined for dents, cracks, through wall lifting holes, chips on spigot or bell, and other defects, and no pipe known to be defective shall be laid. If any pipe is found to be broken or defective after being laid, it shall be removed and replaced by sound pipe without any further payment.

Joint surfaces shall be protected from damage and shall be carefully examined before jointing. No damaged joints shall be used in the work.

Pipe shall be thoroughly cleaned and ample precautions shall be taken to prevent entrance of dirt and debris into the pipe after laying. Exposed ends of the sewer shall be provided with temporary plugs or covers.

All pipe shall be carefully laid to true alignment and grade with bell ends upstream. All pipe shall be bedded as required by the Engineer or Authority. Care shall be taken not to excavate below grade. Material excavated below adopted grade shall be replaced with broken stone as provided in Section 503.

Immediately after the pipe is brought to final position, it shall be thoroughly secured and properly bedded, and ample support shall be provided to prevent settlement or disturbance. Pipe shall be protected during construction against possible flotation due to pouring of concrete cradle or in case the trench bottom becomes flooded prior to placing the backfill.

D. Pipe Testing

All concrete pipe shall be tested using the methods discussed in Section 7.03.

SECTION 5.04 DUCTILE IRON PIPE

A. General

Ductile iron pipe shall be centrifugally cast cement-lined and shall conform with the latest revision of ANSI A21.51 (AWWA C-151) Ductile Iron-Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids. Cement lining shall conform with A21.4 Cement Mortar Lining for Cast Iron Pipe and Fittings and shall receive a standard foundry bituminous seal coat. Pipe exterior shall receive a standard foundry coal tar dip coating. Pipe may be furnished in 18 or 20 foot nominal laying lengths.

Main line joints shall be of the push-on type with a rubber gasket conforming with the latest revision of ANSI A21.11 (AWWA C-111). Pipe plain ends shall be suitable beveled to permit easy entry into the bell. Each joint shall be provided with two bronze wedges. Pipe joints shall be "TR Flex" as manufactured by United States Pipe and Foundry Company, or approved equal, or as required by the Engineer.

Flanged ductile iron pipe shall have ductile iron flanges conforming to ANSI B16.1 Class 125 specifications designed for use with ANSI/AWWA C151/A21.10-82 flanges fittings, with pipe barrel conform to ANSI/AWWA C151/A21.51-81, or latest revisions with the previously mentioned exception. Ductile iron pipe shall be threaded and flanged in the foundry. The flanges shall be of the long hub type; screwed on the pipe barrel; power tightened by machine, and faced and drilled after tightening. No ductile iron pipe of class thickness less than Class 53 shall be threaded and flanged.

Joint restraint on straight pipe lengths, where required by the Engineer, shall be by the use of mechanical joint retainer glands or by specially modified push-on joints with joint restraint provided by ductile iron retainer rings jointed together by corrosion resistant, low alloy, high strength steel tee head bolts and nuts.

B. Pipe Thickness

Pipe thickness design shall be in accordance with the latest revision of ANSI Standard A21.50 Thickness Design of Ductile Iron Pipe, latest edition, with design based upon maximum anticipated working pressure combined with a 50% increase for water hammer and utilizing the maximum anticipated earth loading conditions combined with an H-20m live loading. Minimum bedding condition shall be Condition 2 as outlined in the above Standard. Minimum acceptable pipe thickness is Class 52, or as required by the Engineer.

C. Jointing

Pipe shall be handled with care to avoid damage to the lining and coating. Cutting of pipe where required shall be done only by experienced men using power-driven pipe cutters in such a manner to leave a smooth end, normal to the pipe axis, with cement lining undamaged. Cut ends shall be beveled to prevent damage to gaskets.

Jointing shall be done in strict accordance with manufacturer's recommendations. Pipe ends shall be thoroughly cleaned prior to jointing and only approved lubricants shall be used. Gland bolts for fittings shall be uniformly tightened using torque limiting ratchet wrenches properly set to the foot pound of torque as recommended by the manufacturer.

Pipe shall be properly aligned to line and grade. Where necessary to change direction, pipe may be deflected in the joint in accordance with the manufacturer's recommendations.

Yellow warning tape shall be buried approximately two (2) feet above all force mains.

D. Pipe Laying

All pipe shall be laid to accurate line and grade on a continuously ascending grade from the downstream station, except where shown otherwise on the plans. The minimum cover over the pipe shall be 4 feet.

All pipe shall be carefully examined for defects, and no pipe known to be defective shall be laid. If any pipe is found to be broken or defective after being laid, it shall be removed and replaced by sound pipe without any further payment.

Joint surfaces shall be protected from damage, and shall be carefully examined before jointing. No damaged joints shall be used in the work.

Pipe shall be thoroughly cleaned and ample precautions shall be taken to prevent entrance of dirt and debris into pipe after laying. Exposed ends of all uncompleted lines shall be provided with plugs or covers at all times when pipe laying is not actually in progress.

All pipe shall be carefully laid to true alignment and grade with the open end of bell facing upgrade. The trench bottom shall be carefully graded to the proper elevation, and the maximum practical solid bearing area shall be provided throughout its entire length, prior to swinging the pipe into place. The pipe shall be laid on a minimum of 6-inches of ¾ inch clean broken stone in accordance with the requirements of the Authority.

Care shall be taken not to excavate below grade. Material excavated below grade shall be replaced by material, which will meet with the approval of the Engineer, without any further payment.

Immediately after the pipe is brought to final position, it shall be thoroughly secured and properly bedded, in accordance with ANSI A21.50 (latest revision), and ample support shall be provided to prevent settlement of disturbances.

Pipe shall be protected during construction against possible flotation due to poring of concrete or in case the trench becomes flooded prior to placing the backfill, either with water, or a wet mud mixture.

E. Pipe Testing

Ductile iron pipe shall be tested using the method described in section 7.03.

SECTION 5.05 CAST IRON PIPE

Cast iron (pit cast) house connection pipe and fittings shall be extra heavy thickness conforming with the requirements of A.N.S.I. Specifications A74.
Neoprene gasket joints shall conform to A.S.T.M. C-564. Lead and oakum joints shall be made in accordance with A.W.W.A. Standard C-600.

SECTION 5.06 POLYVINYL CHLORIDE (PVC) PIPE

A. General

All pipe shall be best quality unplasticized polyvinyl chloride sewer pipe, adequate for external loading conditions with joints providing flexibility and water tightness under service conditions. Smooth internal surfaces, producing high carrying capacity obtainable with best standard practice and best workmanship, will be required. Gravity sewer pipe shall be in accordance with ASTM D3034 for sizes 4" through 15", and ASTM F679 for sizes greater than 15" (latest revisions). Pressure sewer pipe shall be in accordance with ASTM D2241. Sewer pipe shall meet the requirements for extra strength sections of the above noted ASTM Specifications (minimum of SDR-35 for gravity pipe and SDR-26 for pressure pipe).

All pipe shall be of uniform dimensions, straight, and true to form, without bulges, dents, cracks, tears, or other defects or exposure to sunlight longer than two (2) months, which will result in a noticeable variation in diameter from that obtained on adjacent unaffected portions of the surface. Each pipe shall not vary in length more than 1.0 inch in a length of 12-1/2 feet (20 feet for pressure pipe) measured as mid-ordinate. Materials properties shall meet the test requirements of ASTM D1784 (latest revisions).

B. Joints

Joints shall be of the bell and 76 spigot type with rubber ring. Joints shall be manufactured in accordance with ASTM 3212 (ASTM D3139 Pressure Pipe), latest revision. The ring groove shall be so designed as to prevent ring displacement. Sizes shall be as required by field conditions. Joints shall be in accordance with recommendations of the manufacturer.

C. Jointing

Pipe shall be carefully jointed in conformity with the best practice and the detailed instructions of the manufacturers. All pipe ends shall be thoroughly cleaned prior to and during the jointing operation. The pipe end shall be thoroughly lubricated in accordance with the recommendation of the manufacturer.

Actual details of required jointing practice will depend upon the particular type adopted, but shall in all cases, involve approved practice and shall be such as to produce the required results, particularly with regard to watertightness.

D. Pipe Laying

The Contractor shall submit calculations and plans including sketches and details of the method of installation of manholes and gravity sewers in areas requiring excavation greater than 8 feet deep. If trench boxes are to be used, the design strength of the boxes shall be checked against the soil loading. The calculations and sketches shall be accompanied by a signed and sealed certificate from a currently licensed N.J. Professional Engineer stating that the method of installation proposed meets all the latest requirements of the New Jersey Construction Safety Code and the Federal Occupational Safety and Health Act.

All pipe shall be carefully examined for dents, excessive deflection, or bowing, and other defects. The minimum pipe cover for PVC pipe shall be 4 feet unless otherwise approved by the Engineer.

No pipe known to be defective shall be laid. If any pipe is found to be broken or defective after being laid, it shall be removed and replaced by sound pipe without any further payment.

Joint surfaces shall be protected from damage and shall be carefully examined before jointing. No damage joints shall be used in the work.

Pipe shall be thoroughly cleaned and ample precautions shall be taken to prevent entrance of dirt and debris into the pipe after laying. Exposed ends of the sewer shall be provided with temporary plugs or covers.

All pipe shall be carefully laid to true alignment and grade and installed in accordance with ASTM D2321 (latest revisions).

The trench bottom shall be carefully graded to the proper elevation, and the maximum practical solid bearing area shall be provided throughout its entire length, prior to swinging the pipe into place. Requirements for proper bedding shall also include adherence to typical bedding details.

Care shall be taken not to excavate below grade. Material excavated below adopted grade shall be replaced by material, which meets with the approval of the Engineer.

All pipe shall be accurately centered prior to jointing and then thoroughly driven home.

All trenches shall be dewatered prior to laying pipe.

Immediately after the pipe is brought to final position, it shall be thoroughly secured and properly bedded, and ample support shall be provided to prevent settlement or disturbances as detailed in these Specifications.

Pipe shall be protected during construction against possible floatation due to pouring of concrete cradle or in case the trench becomes flooded prior to placing the backfill.

Six inch wide metallic warning tape shall be buried approximately two (2) feet above all PVC pressure pipe. The tape shall be capable of being detected with a non-ferric metal detector.

E. Branch Connections

Branch connections shall be of the type that are manufactured integrally with the main sewer pipe and shall be PVC 45 degrees or 60 degrees wye connections or 90 degree tee connections of a 4 inch or 6 inch diameter. Branch connections shall be best quality unplasticized polyvinyl chloride (PVC) sewer pipe and shall be provided and installed in accordance with applicable specifications sections and details.

F. Bedding and Corporation Notes

1. Bedding and haunch material to springline shall be in ¾ inch clean crushed stone and gravel in accordance with the requirements of the Engineer.

2. After placement of pipe, Contractor shall install haunch material and compact to 90% relative density utilizing equipment as necessary. Note: Hydro-hammers are <u>not</u> to be used 3 feet or less from the top of pipe.

3. After installation of haunch material, the Contractor shall install initial backfill and compact to 90% relative density.

4. If Contractor excavates to greater depth or a wider trench then specified, it shall be his responsibility to install material and compaction as deemed necessary by the Engineer to achieve the required bedding strength.

5. Precautions shall be taken to ensure sufficient material is placed under the pipe haunch (area between bottom and springline of pipe) to provide adequate side support. Take precaution to prevent movement of the pipe during the placement

of the material in this area. All sheeting below the top of the pipe shall be left in place.

Movable trench supports shall be used only in earlier wide trench constructions (wide trenches are classified as trenches whose width at the top of the pipe is greater than 2-1/2 pipe diameters on each side of the pipe) where supports extend below the top of the pipe or on a stable shelf above the pipe with the pipe installed in a narrow, vertical wall sub-ditch. (Uni-bell B-5)

G. Connection to Existing Brick Manholes

Connection of new or replacement gravity sewers at existing brick manholes shall be performed using an elastrometric plastic waterstop. The Contractor shall carefully remove the damaged section of pipe at the manhole wall or create an opening in the manhole wall using saws or other appropriate methods to accept the new gravity sewer. All efforts shall be made to limit the opening in the existing manhole to a diameter that is less than 6" greater than the pipe to be installed. The opening in the wall shall be cleaned and the edges roughened to facilitate the adherence of grout.

The waterstop shall be Model LDCMA as manufactured by Fernco, Inc., approved equal. The waterstop shall be installed on the new pipe section in accordance with the manufacturer's recommendations. The pipe and waterstop shall be positioned in the opening at the required elevation so that the waterstop is centered along the wall's thickness. Non-shrink, non-metallic grout shall be carefully applied between the edges of the wall opening and the pipe so that all gaps are filled and the pipe is securely fastened in place. Grout shall be Five-Star Structural Concrete as manufactured by U.S. Grout Corporation, or approved equal.

H. Connection to Existing Pre-cast Concrete Manholes

Connections of new or replacement gravity sewers at existing pre-cast concrete manholes shall be made by using the cast in place flexible gasket if available, or by core drilling the manhole wall and by the use of a Kor-n-seal gasket or approved equal. The channel and benching in the manhole shall be reconstructed as necessary with non-shrink grout to provide a smooth transition between the new and existing main connection.

I. Pipe Testing

All PVC pipe shall be tested using methods described in section 7.03.

SECTION 5.07 PIPE BEDDING AND TRENCHING

Trench dimensions, maximum depths and bedding requirements (including cradles and encasement) for sewers, laterals, etc. shall be in accordance with the manufacturer's

recommendations and as a minimum shall conform to the details shown on the Division of Engineering Street Opening Requirements and Trench Detail.

The applicant's application for preliminary review by the Authority shall include trenching dimensions and bedding details including cut reinforcing bar schedules for concrete cradles where applicable.

If proposed facilities or mains are to be constructed on piles for any reason, the Applicant must submit a report that is signed and sealed by a NJ Licensed Professional Engineer analyzing the surrounding surface and subsurface. The report must evaluate the possibility settling in the areas surrounding the proposed structures. The report must determine whether future settling in the surrounding areas will adversely impact the proposed structures and/or roadways, pavement, etc.

SECTION 5.08 PRE-CAST CONCRETE MANHOLES

A. General

Manholes shall be provided at ends of sewer lines, at interceptions and at changes of grade or alignment. Distances between manholes shall not exceed 200 feet for sewers 15 inches or less in diameter, 300 feet for sewers greater than 15 inches in diameter. Where collector sewers or lateral connections enter manholes at elevations two feet or more above the invert, drop manholes shall be provided and drop pipes shall be built.

B. Description

Pre-cast concrete manholes shall consist of pre-cast reinforced concrete sections, a conical or flat slab top section, and a base section conforming to the requirements of the *JCMUA*, as illustrated on the enclosed standard details, and as specified herein.

C. Materials

Concrete: Precast manhole shall be constructed of 4000psi or stronger concrete with type III or IIIA cements in accordance with ASTM CISO. Aggregate shall be a maximum of 3/8" crushed stone.

Reinforcing Steel: Reinforcing steel shall be F_Y = 60,000psi deformed bar.

Structural Design: Manholes shall be designed to support the sill loading and H-20 loading.

Frames and Covers: The Contractor shall furnish and set level and to the proper grade, Class 30B cast iron manhole frames and covers of the form and dimensions specified by the *JCMUA* conforming to standards.

All castings for manhole frames and covers shall be of tough gray iron, free from cracks, holes and cold shuts. The quality should be such that a blow from a hammer will produce an indentation on a rectangular edge of the casting without flaking the metal.

All castings shall be made accurately to dimensions and shall be machined to provide even bearing surfaces. Covers must fit frames in any position, and if found to rattle under traffic, shall be replaced. Filling to obtain tight covers will not be permitted. No plugging, burning in or filling will be allowed. The frame shall be thoroughly bedded in mortar.

All castings shall be carefully coated inside and out with coal-tar pitch varnish of approved quality.

Exterior of Manhole: Shall be coated with black epoxy bitumastic paint for waterproofing. Lift holes shall be non-through pick-up holes. Interior shall be coated with white epoxy bitumastic paint.

Steps: During the construction of each manhole, Polypropylene steps with a 5/8-inch Grade 60 steel reinforcement shall be set in place on the inside of the manhole beginning two feet above the bottom, and spaced not more than twelve inches center to center.

Steps shall be constructed to the dimensions required by the Jersey City MUA and shall be properly embedded in the wall.

Piezometer: Manholes shall be constructed with piezometer pipe through the wall located immediately above the bench. The piezometer shall be constructed as shown within *JCMUA* Sanitary Sewer Details.

Lifting Holes: Lifting holes shall be non-penetrating with a keyed lock as manufactured by Atlantic Concrete or equal.

Force Main Discharge Manholes: The discharge pipe shall be aimed in to the channel of the manhole to limit splashing to as little as possible. Inside walls shall have HDPE liner plates cast into the wall. Liner plates shall be equal to a "T-lock" as manufactured by American International.

D. Installation

Pre-cast base sections shall be installed on a 12-inch crushed stone foundation mat as indicated on the standard detail drawings. Concrete foundation mats (4000 psi) shall be furnished if required by the Engineer due to adverse field conditions. The bell of the manhole base shall be wiped clean, be free of all dirt and grit, and liberally soaped in preparation for receiving the riser, cone or slab top sections. Prior to snapping the gasket onto the spigot groove of the riser or cone sections, the gasket should be wiped clean and well soaped. Soaping the gasket groove will also make jointing of the pipe sections easier. A screwdriver or hammer handle inserted beneath the gasket and run around the

pipe will ensure even seating. The riser or cone sections with gasket in place should then be lowered into the bell of the manhole base, taking care that no dirt gets into the joint on the gasket. Additional riser or cone section shall be jointed in a similar manner.

Manhole joints shall be mortared inside and outside. The entire exterior of manholes including bottom shall receive two waterproof coatings with an epoxy sealing compound.

E. Watertight Work Required

THE ENTIRE WORK OF CONSTRUCTION MANHOLES MUST BE CARRIED ON IN A MANNER TO INSURE WATERTIGHT WORK, AND ANY LEAKS IN MANHOLES SHALL BE GROUTED, REPAIRED, OR THE ENTIRE WORK SHALL BE REMOVED AND REBUILT.

ATTENTION IS PARTICULARLY CALLED TO THE NECESITY OF KEEPING THE WATER LEVEL BELOW ALL PARTS OF THE BRICK OR CONCRETE FOUNDATION AND WALLS UNTIL THE CEMENT HAS OBTAINED ADEQUATE SET.

F. Watertight Covers

In areas susceptible to flooding or where directed by the Engineer, watertight manhole frames and covers shall be installed, Campbell No. 6548 or approved equal. The Contractor shall cement the rubber gasket in place, lubricate all bolts, and permanently mark the frame and cover for alignment. Where watertight manholes are used, vents stack and branch pipe shall be installed. See vent stack detail.

G. Locking Type Covers

Where directed by the Design Engineer or *JCMUA* Engineer, locking type frames and covers shall be installed, Campbell No. 1486 or approved equal.

H. Manhole Testing

Manholes shall be tested as described in Section 7.03.

SECTION 5.09 PRE-CAST CONCRETE CATCH BASINS

A. Description

Pre-cast concrete catch basin inlets shall consist of pre-cast reinforced concrete sections, a flat slab top section, and a base section in conformance with the requirements of the *JCMUA* and as detailed in the attached “Standard Construction Details” and specified herein.

B. Other Materials

Frames and Grates – The Contractor shall furnish and set level and to the proper grade, cast iron catch basin inlet frames and grates of the form and dimensions shown on the standard detail drawings. All grates shall be bicycle type grates.

All castings for catch basin inlet frames and grates shall be of tough gray iron conforming to ASTM Specification A48-83, Class 30B (A.A.S.H.T.O. M105-82), free from cracks, holes and cold shuts. The quality shall be such that a blow from a hammer will produce an indentation on a rectangular edge of the casting without flaking the metal. All castings shall be heavy duty and shall be capable of safely withstanding A.A.S.H.T.O. HS20-44 Highway Loading.

All castings shall be made accurately to dimensions and shall be machined to provide even bearing surfaces. Grates must fit frames in any position, and if found to rattle under traffic, shall be replaced. Filling to obtain tight grates will not be permitted. No plugging, burning in or filling will be allowed. The frame shall be thoroughly bedded in mortar.

All castings shall be carefully coated inside and out with coal-tar pitch varnish of approved quality.

Steps – During the construction of each catch basin inlet, polypropylene steps with a 1/2-inch Grade 60 steel reinforcement shall be set in place on the inside of the catch basin inlet beginning 2 feet above the bottom and spaced 12-inches center to center, as shown on the standard detail drawings. Steps shall be constructed to the dimensions required by the Owner and shall be properly embedded in the inlet wall.

C. Installation

Pre-cast base sections shall be installed on a 12-inch NJDOT No. 57 foundation mat. Concrete foundation mats (4,000 psi) shall be furnished, if required by the Engineer due to adverse field conditions. The bell of the catch basin inlet shall be wiped clean, be free of all dirt and grit, and be liberally soaped in preparation for receiving the riser or top slab section. The riser or top slab sections should then be lowered into the bell of the catch basin inlet base, taking care that no dirt gets into the joint. Additional riser sections or top slab sections shall be jointed in a similar manner. All catch basin inlet joints shall be mortared inside and outside. All catch basin inlets that have flows tributary to the Authority's combined sewer system shall be constructed with a 2-foot deep sediment sump and a Standard Type Catch Basin Trap as manufactured by Campbell Foundry of Harrison, New Jersey.

D. General Requirements

All pre-cast catch basin inlets shall be designed and manufactured to meet the requirements of "Pre-Cast Concrete Water and Wastewater Structures," ASTM Spec, C-

913 and shall conform with the requirements of the NJDOT Standard Specifications. The minimum compressive strength for all concrete sections shall be 4000 psi.

Joints of the catch basin inlet sections shall be formed entirely of concrete and when assembled, shall be self-centering and make a uniform tight joint. All inside surfaces of the bell or outside surfaces of the spigot, or both, shall be parallel within 1 degree and have an angle of not more than 2 degrees with the longitudinal axis of the pipe. Joints shall be mortared on exterior and interior surfaces.

The Contractor must submit shop prints prior to placing orders.

E. "Solids Restricting" Type Inlet Frame and Grate

Storm drain inlets shall meet or exceed NJDEP Design Standards under NJPDE's Permit No. NJ0141852 (latest revision), which requires that the curb opening be divided by bars or other means into individual clear spaces. Each such clear opening shall have an area of no more than seven (7.0) square inches and the smallest dimension of the opening shall not be greater than two (2.0) inches. The Authority may provide relief and approval an alternate inlet opening at low points if required for adequate hydraulic performance.

Catch basin frames and grates shall be supplied with a "Solids Restricting" type catch basin curb piece as manufactured by Campbell Foundry Company of Harrison, New Jersey. Curb pieces shall be either Campbell Foundry Eco Curb Piece, Type "E". Model 25481362 for use with a 6 inch high curb or Model 25481382 for use with an 8 inch high curb, as modified, if necessary, to meet the above referenced clear opening requirements. The "Solids Restricting" type catch basin curb piece shall be used in conjunction with a Heavy Duty Club Type Inlet Frame and Bicycle Type Grate, Campbell Foundry Company Model #2617, or approved equal, unless specified otherwise.

SECTION 5.10 SEWER CLEANOUTS

All clean outs shall be left a minimum of 24" above finished grade during initial construction. Prior to final testing of all clean outs, installation of the clean out protection box, as shown on the construction details In Appendix II, will be required and installed to final grade. Clean outs are required for all newly constructed individual sewer connections (Both storm and Sanitary). The *JCMUA* reserves the right to have bull tee cleanouts constructed when, in the opinion of the Chief Engineer, it is warranted.

SECTION 5.11 INVERTED SIPHONS

Inverted siphons, if permitted, shall not have less than two barrels at a minimum of 8" diameter. Provision shall be made for rodding and for flushing. Velocity shall not be less than 3 feet per second and flow control gates in chambers shall be provided. These are special conditions and further standards will be provided by the Authority. When a siphon is approved, it should be constructed of ductile iron pipe.

SECTION 5.12 SEWER PIPE SERVICE CONNECTIONS AND SADDLES

A. General

Break in connections and protruding plumbers taps shall not be allowed for sewer main extensions or where existing combined/sanitary sewers are to be replaced. Connections made to existing combined/sanitary sewers for individual residential and/or existing buildings can be constructed as a "break-in" connection in accordance with the Authority's standard details. The maximum protrusion of the service lateral into the existing sewer main is 1 inch. The Contractor shall be fully responsible for excavation and reinstallation of the connection should internal inspection by the Authority or others note that the connection protrudes more than the maximum amount allowed.
The cost correction of the installation shall be borne completely by the Contractor and shall not be the responsibility of the Authority or the Customer.

In areas wherein the Contractor damages the existing combined/sanitary sewer main, the Contractor shall immediately notify the Authority and undertake under their direction the repair of the sewer main. The length of the new sewer pipe required shall be suitable to accomplish the repair as hereinafter described. The existing combined/sanitary sewer, and branch connection if applicable, shall be removed as necessary to completely repair the effected area. Where the proposed branch connection is within (3) feet of a pipe joint on the sewer main, and the main is of a suitable size, the portion of the new main installed shall be connected to the existing sewer main by use of a fully flexible coupling. After securely fastening the coupling to the pipes, it shall be fully encased in concrete. Special care shall exercise by the Contractor to fully support the pipe to assure a consistent invert at the transition. Where the sewer main is of a size wherein flexible connectors are not available, the transition between the new and existing pipes shall be constructed as a cast-in-place transition collar in accordance with the Authority's standard details.

B. Lateral Connections

Sewer service laterals that are ¼ or smaller in diameter than the sewer on the combined sewer main being connected to shall be constructed in conformance with Section 5.12-A, C, D, and E.

Where the sewer service lateral is greater than ¼ in diameter of the receiving sewer main, the connection shall be made to the nearest existing manhole or when the nearest manhole is more than 50 feet upstream or downstream of property lines, the tap shall be connected to the main with a manhole constructed 5 feet upstream of the point of connection on the lateral.

C. Taping and Saddles

For existing combined/sanitary sewers less than 24 inches in diameter the service connection for individual residential and/or existing buildings can be completed by the use of a properly installed sewer pipe saddle or other approved method, such as a "Kor-n-Tee". The sewer pipe saddles or service adaptor shall be designed to provide an infiltration-free connection between service laterals and existing gravity sewers. Sewer pipe saddles shall Sealite Model UH, EH, CH or CH8 as manufactured by the General Engineering Company of Frederick, MD 21705-0609, or equal for connecting SDR 35-PVC laterals to existing sewers. Sealite Model US, ES or CS, or equal shall be used for connecting laterals that are made of a material other than SDR 35-PVC. Kor-n-Tee shall be manufactured by NPC Inc. or approved equal.

The sewer pipe saddles shall consist of a cast iron saddle body with a captive rubber o-ring flange gasket and a stainless steel strap for attaching the assembly to the existing sewer pipe. The inner diameter of the cast iron saddle body shall be correctly contoured for the size and kind of pipe on which it is to be installed.

The saddle body shall be ASTM A-48 Class 30 cast iron and shall be furnished with a tubular rubber flange gasket cemented into a groove within the saddle body. The gasket shall be resilient enough to seal against minor pipe irregularities yet sturdy enough to resist expansion due to temperature and earth movement. The tubular rubber flange gasket shall conform to ASTM C-361-77.

The sewer pipe saddle is to be installed by positioning it over a core-drilled hole, sized in accordance with the recommendations of the saddle manufacturer. The cast iron saddle body shall be secured to the sewer pipe with the use of a Type 304 stainless steel strap, Type 304 stainless steel t-bolt and Type 18-8 stainless steel nut. The steel strap shall be a minimum of 24 gage and shall be provided with a Type 303 stainless steel swivel pin so designed to permit the band to seat properly on the outside of the sewer pipe. The manufacturer of the sewer saddle shall supply all bands, nuts and bolts used to attach the saddle.

D. Pipe

Saddles used for connecting SDR-35-PVC laterals to the existing sewers shall be furnished with an ASTM D3034, SDR-35 PVC gasketed adapter. The adapter shall be installed by the saddle manufacturer and attached to the saddle with a suitable epoxy.

Where laterals of a material other than SDR-35-PVC are to be used, an appropriately sized Fernco electrometric coupling, or equal, with a stainless steel shear ring and clamping bands, shall be furnished for attaching the lateral to the saddle spigot. The 5psi of internal pressure when installed.

E. Finishes

All cast iron surfaces shall be coated with asphaltum paint.

SECTION 5.13 EROSION CONTROL

The developer/applicant shall be responsible for obtaining all soil erosion and sediment control permits from the Hudson Essex Passaic District office. Erosion control procedures, inclusive of mulching, shall be utilized in all project areas. Erosion control measures shall be taken, as required, staring immediately after site and access clearing, continuing during sewer construction, site demolition, and until the site has been satisfactorily restored.

The Contractor shall continuously control erosion during construction. Critical Areas shall be protected at all times by temporary seeding, mulching, or sodding, or the slope lengths shall be reduced by the installation of diversions or other means. Where topography permits, debris basins shall be constructed at points of water concentration from Critical Areas. Earth berms or diversions shall be constructed to intercept and divert runoff water away from Critical Areas. Diversion outlets shall be stabilized by paving or other means acceptable to the Engineer, if required.

Structures proposed for erosion control shall be designed by the Contractor and approved by the Engineer and constructed in accordance with the Engineering Practice Standards for diversions, waterways, and debris basins as defined by "Standards for Soil Erosion and Sediment Control in New Jersey," prepared by the New Jersey State Soil Conservation Committee.

In critical areas, particularly along steep slopes and wetlands, site clearing shall be delayed until absolutely necessary for the continuance of construction.

SECTION 5.14 SEDIMENT CONTROL

Sediment shall be settled or filtered out of all surface or subsurface water encountered during construction before such water enters any surface waters. Dewatering operations shall direct pumpage as far from stream banks as possible. Care should be taken not to damage or kill vegetation by excessive watering or silt accumulation in the discharge area. Settling basins or sediment traps shall be constructed and used where necessary to protect vegetation and to achieve environmental objectives.

Construction staging areas, and areas for stockpiling material, shall be selected so as to be consistent with environmental objectives and constraints. All such areas shall be located so as to avoid erosion and siltation. Locations of staging areas used for stockpiling shall be approved by the Owner and modified as required by other authorities.

SECTION 5.15 DATUM

All elevations and coordinates on site plans must use vertical datum NAVD 1988 and horizontal datum NAD 1983.

SECTION 5.16 GREASE TRAPS/INTERCEPTORS

Grease traps/interceptors shall be constructed of Concrete, stainless steel, or PVC. Grease traps shall have two chambers influent and effluent flow. The influent chamber shall be maintained such that grease is allowed to rises to the top and wastewater passes through an orifice into the effluent chamber. Shall be two access covers one into each section of the chamber. When the grease trap is constructed of stainless steel or PVC an anti-floatation slab shall be placed around the chamber with tie down straps.

Grease traps/interceptors shall be constructed such that it can support the appropriate loading for roadway or sidewalk or interior building uses.

Grease traps/interceptors shall be operated and maintained in conformance with PVSC Rules and regulation sections 405 and 406.

Grease traps/interceptors shall be sized based on fixture count for apartment buildings, traps maybe size based on 2006 National Plumbing Code Chapter 6 et al and Plumbing and Drainage Institute Standard G101 as stated in national plumbing code or by the following method:

Grease Interceptor Sizing Formula

GI = SC * FF * RT * SF

GI = grease interceptor volume, gallons
SC = seating capacity (# of seats)
RT = retention time, hours = 2.5
SF = storage factor, dimensionless = 1.5
FF = flow factor criteria in gallons/meal-hour determined using following criteria:

Restaurant Operation Condition	Flow factor
Deep frying and dishwasher	3.0
No deep frying, dishwasher	2.5
Deep frying, disposable serving ware	2.5
No deep frying, reusable serving ware, no dishwasher	2.0
No deep frying, disposable serving ware	1.5
No cooking of any type, disposable serving ware	0.5

Grease Trap Sizing Formula

GT = CS * 0.4
GT = minimum grease trap rating in gallons per minute
CS = capacity in gallons of fixtures or sink to be discharged to the grease trap

Oil/Water Separator Sizing Criteria

Separator capacity = Six cubic feet for the first 100 square feet of floor space draining to separator plus 1 cubic foot for each 100 square feet thereafter.

SECTION 5.17 PUMP STATIONS

A. Wetwell

Wetwell shall conform in volume requirement of NJDEP Standards. The structure shall be either cast in place concrete or precast concrete. The top slab shall be designed to support AASHTO H20 loading.

Access shall be through a single leaf or double leaf stainless steel hatch. The hatch shall be equipped with lift cylinders, safety locks to prevent closure. The hatch shall be equipped with locking mechanism with recessed key. The hatch shall be approved by the JCMUA.

B. Piping

Piping in Pump Station wet well, dry well and for a distance of eight (8) ft below the exterior face of the structure shall be bitomastic cement-lined ductile iron class SG pipe. Pipe inside the wet well and dry well shall be flanged pipe. At 24-inch outside the structure shall be a mechanical joint with retainer gland. When the piping is less than 3" in diameter, the pipe shall be 307 stainless steel – SCH 40 pipe, meeting the same flanging requirements.

C. Pumps

Pumps shall be ABS Piranha submersible or approved equal. The pumps shall be capable of passing a 2" solid and have cutting heads to masicate all sewage solids. Pump shall be equipped with Motor High Temp, Motor Overload, seal failure and capable of working under water. All pumps to be turned over to JCMUA shall be approved by the Senior Engineer. Pumps shall be sized based on NJDEP Requirements.

D. Trash Basket

As manufactured by Holiday or approved equal.

E. Ventilation

F. Controls

- Transducer – Submersible; approved by JCMUA
- Flow Metering – Provide a Venturi flow meter, chart recorder
- SCADA - shall work with JCMUA's system without modification to existing system.

G. Electrical

- Generator – shall be diesel and approved by JCMUA. The generator shall be sized to power entire station
- Fuel Systems – self contained and under generator tank with secondary containment

H. Water Supply

Shall comply with Jersey City Water Standards

I. Miscellaneous

ARTICLE VI. CONSTRUCTION REQUIREMENTS

SECTION 6.01 WORKING HOURS

The Contractor should generally limit construction operations and activities between the hours of 7:00 a.m. to 4 p.m. unless law establishes stricter limitations. No pile driving, pulling or other noisy operations or operations entailing the use of vibratory hammers or compactors will be permitted, other than between the hours of 8:00 a.m. to 4:00 p.m.

The Contractor must also have all work completed (including backfilling, plating and cleanup) on all County and NJDOT roadways by 3:00 p.m. each afternoon.

SECTION 6.02 ROAD OPENING

Road opening permits must be obtained from the Jersey City City Engineer's office prior to undertaking any construction in or along the Jersey City public Right-of-Way. Backfill and resurfacing of County and NJDOT roadways shall be as per the requirements of the County and the NJDOT. The Contractor is specifically alerted to include the requirement for traffic control, working hour restrictions, and provisions of uniformed Municipal Policemen when working within the municipality, County and NJDOT Right-of-Ways.

SECTION 6.03 ENVIRONMENTAL PROTECTION

The Contractor is to minimize environmental impact due to his/her operations during all phases of his work. This shall include, but is not limited to, prohibition of the following construction procedures.

1. Dumping of spoil material into any stream corridor, any wetlands, any surface waters, or any unspecified locations.

2. Indiscriminate, arbitrary or capricious operation of equipment in any stream corridors, wetlands or surface waters.

3. Pumping of silt-laden water from trenches or other excavations into catch basins, surface waters, stream corridors or wetlands.

4. Damaging vegetation adjacent to or outside of the access road or the right of way.

5. Disposal of trees, brush and other debris in any stream corridors, wetlands, surface waters or at unspecified locations.

6. Permanent or unspecified alteration of any flow line of any stream.

7. Open burning of project debris.

8. Use of chemicals for dust control.

9. Use of asphaltic mulch binder.

10. Discharge of test waters with high chemical disinfectant or other pollutant concentrations.

The Contractor shall protect, to the dripline, all trees not designated by the Engineer, the City of Jersey City or the Authority to be removed.

The Contractor is directed to the appropriate sections of the Specifications for additional information regarding environmental work and protection.

SECTION 6.04 LABOR, SAFETY, HEALTH AND SECURITY REGULATION

The Contractor is to refer to the appropriate portions of Information for Bidders regarding Regulations.

The Contractor is to provide adequate signs, barricades, red lights and uniformed guards and take all necessary precautions for the protection of the workers, the work and the safety of the public. All traffic control shall be in accordance with the requirements of the latest edition of the USDOT "Manual of Uniform Traffic Control Devices". All barricades and obstructions are to be protected at night by suitable signal lights which are to be lit from sunset to sunrise. Barricades are to be of substantial construction and painted such as to increase their visibility at night. Suitable warning signs are to be so placed and illuminated at night as to show in advance where construction, barricades or detours exist.

The Contractor is to keep on proper lights each night between the hours of sunset and sunrise at and upon all portions of his work; upon all ranges or other stakes in connection

with the work, when deemed necessary by the Owner, the Authority, or by the proper authorities, or when required by the liability insurance coverers, and is to be responsible for all injuries and damages resulting from neglect or failure in this respect. Night lighting must be so sized, concentrated and located so as to cast sufficient illumination around new construction and excavations. All excavations and obstructions must be properly marked, lighted and provided with railing and other guards.

The Contractor is to maintain sufficient guards by day and night to prevent accidents of any kind or character whatsoever, and will be liable for any damage, which may arise from any negligence on his part or that of his agents and employees.

If, at any time, in the opinion of the Owner, the Engineer, the City, the Authority, the work is not properly lighted, barricaded, and in all respects safe in respect to public travel, persons on or about the work, or public or private property, the Owner will have the right, but not the obligation, to order such safeguards to be erected and such precautions to be taken as he deems advisable, and the Contractor is to promptly comply with such orders. If, under the circumstances, the Contractor does not, or cannot, immediately put the same into proper and approved condition, or if the Contractor or his representative is not upon the grounds so that he can be immediately notified of this insufficiency of safety precautions in accordance with the procedures for notification of the Contractor specified under "Emergency Telephone", then the Owner may put the work into such a condition that it shall be, in his opinion, in all respects safe and the Contractor is to pay all expenses of such labor and materials as may have been used for this purpose by him or by the Owner. Such action of the Owner, or his failure to take such action, will in no way relieve the Contractor of the entire responsibility for any cost, loss or damage by any party sustained on account of the insufficiency of the safety precautions taken by him, by the Owner acting under authority of this Section.

SECTION 6.05 SANITATION

Sanitary conveniences, properly screened from public observation, for the use of all persons employed on the work and beginning with the first persons engaged in preliminary operations, are to be provided and maintained by the Contractor in sufficient numbers, in such a manner and at such locations as will be approved. Sanitary facilities are to be completely self-contained, chemically treated and regularly serviced.

SECTION 6.06 FIRE SAFETY

The Contractor is held responsible and is to maintain conditions, which promote fire safety in his operations at all times. Materials that could constitute a fire hazard such as gasoline, paints, wood and paper products are to be safely stored.

SECTION 6.07 MATERIALS

Unless otherwise specified, only new materials are to be incorporated into the work. All materials furnished by the Contractor to be incorporated into the work may be subjected to the inspection and approval of the Engineer. No material is to be processed, fabricated or delivered to the work without the prior approval of the Engineer, except at the risk of the Contractor.

The Contractor is to submit, to the Design Engineer and Engineer, data relating to materials he proposes to furnish for the work. Such data are to be in sufficient detail to enable the Engineers to identify the particular product in question and to form an opinion as to its conformity to the Authority Rules and Regulations. This data must be submitted for review and approval as soon as possible and prior to the ordering of any materials for construction.

Facilities and labor for the handling and inspection of all materials are to be furnished by the Contractor. Defective materials must immediately be removed from the site of the work.

If the Engineer so requires, either prior to beginning, or during the progress of the work, the Contractor is to submit samples of materials for such specific tests as may be necessary to demonstrate that the materials conform to the Specifications. Such samples are to be furnished, taken, stored, packed and shipped as directed, at the expense of the Contractor, Except as otherwise noted, the Owner will make arrangements for and pay for tests.

All samples are to be packed so as to reach their destination in good condition and are to be so labeled as to indicate the materials represented, the name of the building or work and location for which the material is intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor is to notify the Engineer by letter that the samples have been shipped and is to properly describe the samples in the letter. In no case is the letter of notification to be enclosed with the samples.

The Contractor is to submit data and samples, or to place his orders, sufficiently early to permit consideration, inspection, testing, and approval before the materials are necessary for incorporation in the work. Any delay resulting from his failure to do so is not to be used as the basis of a claim against the Owner, the Design Engineer, the Authority, or the Authority's Consulting Engineer.

When required, the Contractor is to furnish to the Engineer, in quadruplicate, sworn copies of manufacturer's shop or mill tests, or reports from independent testing laboratories relative to material data.

In accordance with the "Buy American" provision in Public Law 95-217 (Section 215 of the Public Law 92-500 as amended) N.J. Public Contracts Law 40A:11-18, and implementing EPA regulations and guidelines, the Contractor agrees that preference will

be given to domestic construction material by the Contractor, subcontractor, material suppliers, and equipment suppliers in the performance of this contract.

The Contractor is to certify that the purchased products and materials are in accordance with the above referenced "Buy American" clause and, in addition, is to provide all information required to justify the use of any foreign made product.

SECTION 6.08 CUTTING AND PATCHING

The Contractor is to do all necessary cutting and patching of the work that may be required to properly receive the work of the various trades or as may be required by the Specifications to complete the structures. He is to restore all such cut or patched work to a condition, which receives the approval of the Engineer. Cutting of structures that may endanger the work, adjacent property, workers or the public is not to be done.

SECTION 6.09 DELIVERY AND STORAGE

The Contractor is to deliver equipment and materials to the site and store them in original containers suitably sheltered from the elements, but readily accessible for inspection until installed. He is to store all items subject to moisture damage (such as controls and electrical equipment) in dry, heated spaces. All excavated materials, construction equipment and materials to be incorporated in the new work are to be so placed as not to damage the work and so placed that free access may be had at any time to all parts of the work and to all public utility installations in the vicinity of the work. If insufficient area is available, the Contractor is to provide off-site areas at his own expense. Materials are to be kept neatly piled and compacted and conveniently stored so as to inconvenience, as little as possible, public travel and adjoining tenants.

SECTION 6.10 ASBESTOS-CONTAINING MATERIAL AND HAZARDOUS MATERIAL

The Contractor shall not supply, provide or bring onto the construction site any asbestos containing material or hazardous material (either in kind, as a component of equipment to be used or furnished under the Contract, or as a component of another material to be used or furnished under the Contract) without the express advance, written consent of the Owner. The term, 'hazardous material" shall have the meaning ascribed in Federal Standard No. 313B in effect on the date of the Contract.

The Contractor shall submit to the Authority and the Owner (with a copy to the Engineers) a Material Safety Data Sheet (Department of Labor Form OSHA-20) together with a complete written description of the intended usage for any such material for which the Owner's consent is required, at least thirty (30) days before the delivery of such material.

Such consent shall not be given if materials or equipment not containing asbestos or hazardous material are available, and the Contractor shall not be entitled to any

adjustment in time or compensation for providing non-asbestos containing and non-hazardous materials.

ARTICLE VII. INSPECTION OF SEWER SYSTEM

SECTION 7.01 GENERAL

All construction of sewerage systems shall be under the Jurisdiction of the Engineer for the Authority, either directly or through consultants or inspectors. The Engineer shall have the authority to stop work in the event of discovery of non-compliance.
Construction or testing of sewerage systems shall be performed during the regular JCMUA working hours.
The applicant shall give 48 hours notice to the Authority prior to construction or testing of sewers at all times during the construction period for the project. Should any sewer construction be performed wherein a qualified inspector is absent due to the applicant's failure to provide the proper notification, the Authority may require said work to be uncovered at the applicant's expense. Failure to do so may result in non-acceptance of the work.
The applicant shall also furnish the name of occupant, the street address and lot and block number of every connection made to an approved section of sewer main during the month.
No house service connections shall be made to a street main, whether tested or not, unless under the supervision and inspection of the engineer or agent for the Authority.
When a section of sewer main has been satisfactorily tested, then all individual house connections must also be satisfactorily tested.
A temporary, leak-proof, masonry bulkhead type plug shall be installed in the downstream (outlet) side of the manhole furthest downstream in any sewer main or branch under construction and shall remain in tact and unloosened until written permission is received from the Authority Engineer to remove same.
This permission will not be granted until each section of the sewer has been cleaned and flushed in a manner acceptable to the Authority's Engineer.
The applicant's engineer must certify to the Authority and to the State that the project has been constructed according to the approved plans and specifications. NJDEP requires that such certification be given prior to its issuance of a permit to operate new sewerage facilities.

SECTION 7.02 INSPECTION DURING CONSTRUCTION

All sewer projects are subject to inspection by JCMUA personnel at any time during construction.

SECTION 7.03 TESTING OF COMPLETED SEWER SYSTEM

All sewers constructed within Jersey City by Contractors not contracted to the Jersey City Municipal Utilities Authority (*JCMUA*) shall comply with the following testing/inspection procedures:

1. CCTV inspection of all pipes, including, but not limited to vitrified clay pipe (VCP), reinforced concrete pipe (RCP), polyvinyl chloride pipe (PVC), ductile iron pipe (DIP), high density polyethylene pipe (HDPE) with a copy of the video showing distances, date, operators, names, and a letter signed and sealed by the NJPE certifying tape (where applicable when *JCMUA* has not received an inspection fee to conduct a CCTV inspection).

2. The testing shall be witnessed by a representative of the *JCMUA*. In the event that the developer/Contractor is testing without the *JCMUA* representative present and has written permission from the *JCMUA* Chief Engineer. All test data and results shall be signed and sealed by a New Jersey Licensed Professional Engineer from a certified independent testing company.

3. Air pressure testing for the following pipe types: PVC, DIP, VCP, HDPE, and RCP adhering to the procedure as follows (ASTM F1417-92) or (ASTM 924 for RCP):
    a. All laterals shall be installed.
    b. Trench is backfilled.
    c. Pipe is cleaned and has been flushed.
    d. Stabilized base asphalt pavement is in place.
    e. Pipes entering manholes are plugged at the inside face of manhole laterals, are plugged at ends and clean outs (where applicable) are plugged at top.
    f. Pipe is pressurized to 3.5 psig with an allowable maximum pressure drop of 0.5 psig over the time period as shown in the table below.

Pipe Size	**Time**
8”	3 min. 47 sec.
12”	5 min. 40 sec.
15”	7 min. 5 sec.
18”	8 min. 30 sec.
24”	10 min. 0 sec.

For pipes with 24-inch diameter, or where laterals are included in main being tested, see the test time calculation procedure in section six (6).

In cases where a connection to a manhole is a drop configuration, plugs shall be placed in both upper and lower pipes of the drop, and the assembly shall be tested as a part of the pipeline.

4. Testing of Reinforced Concrete Pipe and Vitrified Clay Pipe:
    a. Pipe shall be backfilled; stabilized base asphalt pavement shall be in place.

b. All laterals and clean outs installed and plugged at ends.
c. Both ends of pipe shall be plugged.
d. The pipe shall be filled with water to a level of 24-inches above crown of pipe or 12-inches above groundwater whichever provides greater head pressure. Filling with water and bleeding of air shall be at the upstream end of the pipe.
e. The test shall be held for 24 hours with an allowable leakage rate of one hundred (100) gallons per inch diameter per mile, as per NJDEP regulations.

5. Manholes shall be vacuum tested for infiltration in accordance with ASTM C1244. All pipes in this structure shall be plugged at the inside face of the manhole.
   a. A vacuum shall be pulled on the manhole equal to 10-inches Hg. Vacuum shall be turned off and all valves closed.
   b. The vacuum shall be held as shown in the following table:

Manhole Diameter	**Time**
48”	60 sec.
60”	75 sec.
72”	90 sec.
>72”	+15 sec./12 diameter

6. Determining test time for large diameter pipe (>24”) or when laterals are included in the main being tested:

   $\mathbf{T} = 0.085 * \mathbf{DK}/\mathbf{Q}$

   (for mains only)

   $\mathbf{T} = 0.085[(\mathbf{D}^2 * \mathbf{L}) + (\mathbf{d}_L * \mathbf{L}_T) / (\mathbf{D} * \mathbf{L}) + (\mathbf{d}_L * \mathbf{L}_T)] * (1.0 / 0.0015)$

   (for sewer mains & laterals)

   Where:

   T = shortest time to drop 1.0 psig

   K = 0.000419 **DL**

   (must not be less than 1.0)

   $\mathbf{K} = 0.000419[(\mathbf{D} * \mathbf{L}) + (\mathbf{d}_L * \mathbf{L})]$

   (in cases where the laterals are included in the testing)

   Q = 0.0015 cubic feet/minute/square feet of internal surface area

   D = *pipe* nominal diameter *(inches)*

   $\mathbf{d}_L$ = lateral diameter *(inches)*

   L = length of pipe reach tested

   *(the time to drop 0.5 psig shall be equal to half of **T** as calculated)*

   $\mathbf{L}_T$ = total length of laterals included in test

7. Deflection testing for PVC, HDPE, and other:
   A. A 7½ % deflection mandrel shall be pulled through the entire pipe length by hand, without mechanical assistance.

8. All sanitary, storm, or combined sewer shall also be visually inspected by Lamping Method.

9. Attached is a test form to be submitted to the *JCMUA*.

ARTICLE VIII. ACCEPTANCE OF NEW SEWER SYSTEM

Prior to acceptance by the JCMUA, the Applicant's Engineer will certify to the JCMUA, and the State, where necessary, that all plans and specifications were prepared in accordance with the JCMUA's Rules and Regulations and with the requirements of the NJDEP, that actual construction costs were not significantly different from the originally submitted cost estimates and that the construction has been in conformance with the approved plans and specifications.

It should be noted that the sewer lateral from the first clean-out at the street onto a private property belongs to the property owner. The property owner has the sole responsibility of maintenance and repair of that section of sewer lateral.

SECTION 8.01 RECORD DRAWINGS AND MANUALS

Upon completion of construction and prior to JCMUA acceptance of the new sewer system, complete As-Built Drawings and/or Manuals must be submitted to the JCMUA. They must be signed and sealed by a New Jersey Licensed Professional Engineer or Land Surveyor. They must meet all the requirements of the JCMUA's "Submission of Record Drawings for Extension of Water/Sewer Mains and other Water/Wastewater Facilities," current revision, which can be found in Appendix V.

The applicant shall also provide for each connection to this system data including depth at clean out, length of lateral from cleanout to main, stationing, upstream and downstream manhole data and location by triangulation of all cleanout and tee-wye.

This submission MUST include a digital rendering using a current version of the AutoCAD format.

Prior to receiving water meter approval, the Developer/Owner/Contractor/Engineer shall have submitted and received approval of as-builts both electronic (AUTO CAD) and paper for sanitary sewer, storm sewers and water main from JCMUA. Additionally, when applicable, the WQM-005 for sewers and construction certification shall be submitted to JCMUA prior to issuance and release of water meters.

SECTION 8.02 EASEMENTS

After construction and before final acceptance by the Authority, the applicant shall furnish one (1) reproducible and two (2) prints (blue and white) of maps together with metes and bounds descriptions for each easement to be deeded to the Authority. Maps shall be sealed by a licensed land surveyor. The applicant shall also provide the Authority with a properly executed Deed of Conveyance for the easements to be conveyed to the Authority in form recordable in the office of the Hudson County Clerk.

SECTION 8.03 CERTIFICATIONS AND PERMITS

The applicant must provide the JCMUA with all applicable certifications/permits from any municipal, state or federal agency that may be required.

SECTION 8.04 MAINTENANCE BOND

Upon completion of the new sewer system, the applicant must post a Maintenance Bond for an amount equal to 15% of the Total Construction Cost. The Maintenance Bond must guarantee satisfactory performance of the system for a period of 730 Calendar Days.

SECTION 8.05 SEWER SYSTEM ACCEPTANCE

Upon receipt and approval of the above listed items in Section 7.01 through Section 7.04, the Authority will:

A. Release the applicant from the Performance Bond.
    a. Replaced with the Maintenance Bond listed above.

B. Accept the title to **all** lands, easements, structures, appurtenances and improvements.

C. Assume the operation and maintenance of the system thereafter.

ARTICLE IX. WASTE DISCHARGE REQUIREMENTS

SECTION 9.01 INDUSTRIAL WASTES

All industrial users must apply to the Passaic Valley Sewerage Commission in Newark, NJ to obtain an industrial permit, if required, prior to final approval by the JCMUA. If the user is exempt from said permit, a copy of the correspondence stating such exemption must be submitted.

SECTION 9.02 RESIDENTIAL AND COMMERCIAL WASTES

All residential and commercial discharges must comply with Passaic Valley Sewerage Commission's Pretreatment Regulations. The JCMUA also reserves the right to enforce these standards by separately adopted JCMUA resolution.

SECTION 9.03 PROHIBITED WASTES

No person shall discharge or cause to be discharged any storm water, surface water, ground water, roof runoff, subsurface drainage or discharge from a sump pump into any sanitary interceptor sewer. No person shall discharge or cause to be discharged any prohibited waste as outlined by PVSC regulations.

SECTION 9.04 GREASE

No person shall discharge Grease, Fats, and oils directly to any storm water, sanitary sewer, combined sewer without a Grease trap.

Grease traps shall be required on all establishments handling, managing, preparing, disposing of: food products, food, animal food, grease or renderings, animal waste or plant material.

Food handling shall be considered as: preparation of foods, packing of foods, distribution of packaged foods, on-site cooking/baking/frying/or other method, washing of utensils used in context of food. These types of establishments shall include: coffee shops, fast food, ethnic food restaurants, diners, bakeries, factories, bodegas, delicatessens, supermarkets, rendering plants, oil processing and all other similar businesses.

The trap shall be constructed such that greases and oils are collected and removed from the sanitary flow before entering combined sewer system or sanitary sewer.

Food establishments shall submit to JCMUA, monthly invoices for grease trap cleaning and grease/oil as removed by grease/oil handling firm.

Traps shall be constructed of durable materials capable of sanitary service without leakage. Trap arrangement shall be installed in conformance with National Plumbing Code, Jersey City Plumbing requirements, Passaic Valley Sewerage Commission requirements and NJDEP.

Where the JCMUA is required to clean sewers to remove grease blockage due to grease and/or oils being discharged by a business into the system without a grease trap in place, the business owner shall be billed the costs related to the cleaning. Those costs shall include: all labor (3 workers), 1 Superintendent, 1 jet vacuum truck, 1 superintendent truck. The Laborers' arrival at Westside Plant shall be billed at a minimum of two (2) hours, up to the total time taken, to the nearest hour after work is completed, including emptying of truck at the East Side Plant and returning to the West Side Plant. Minimum rate per Laborer is $35.00/hour; per Superintendent is $60.00/hour. Vacuum Truck is billed at $150.00/hour and Superintendent truck at $15.00/hour. The Superintendent shall

be billed from the time call is received to the time the Superintendent returns to the West Side Plant.

ARTICLE X. USE OF SEWER SYSTEM

SECTION 10.01 USE BY JCMUA

During any construction and before final acceptance, the JCMUA shall have the right to use any portion of the system completed without waiving their right to order correction of any defects upon final completion.

SECTION 10.02 UNAUTHORIZED USE

Discharge of any non-approved commercial, residential or industrial waste into the system is strictly prohibited

ARTICLE XI. COMPLIANCE WITH RULES AND REGULATIONS

SECTION 11.01 GENERAL

The applicant MUST comply with ALL of the Rules and Regulations as set forth herein. Failure to do so will result in a stop work order directive by the JCMUA.

The applicant shall exercise ALL construction constraints to be required to conform to the New Jersey Department of Environmental Protection (NJDEP).

SECTION 11.02 NONCOMPLIANCE

The JCMUA reserves the right to refuse to any applicant the privilege of connecting o the Authority's system, or to compel discontinuance of use of a sewer, or to compel the pretreatment of wastes as per PVSC regulations at any time, in order to prevent discharge of wastes into the sewerage system which are deemed to be harmful to the system, treatment process or operating personnel.

Appendix F

Worker Training Manual for Managing Contaminated Soils and Groundwater

WORKER TRAINING MANUAL
FOR MANAGING CONTAMINATED SOILS AND GROUNDWATER

HONEYWELL SITES
JERSEY CITY, NEW JERSEY

Prepared by:
Amec Foster Wheeler Environment & Infrastructure, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

DECEMBER 2014;
UPDATED JANUARY 2017

TABLE OF CONTENTS

This Worker Training Manual is hereby approved by the following parties.

Honeywell - Global Remediation Director	4/5/17 Date
Jersey City Municipal Utilities Authority - Senior Engineer	3/28/17 Date

1.0 INTRODUCTION

This document presents a Worker Training Manual (Manual) for sewer sites located in Jersey City, New Jersey, for which Honeywell has responsibility for remediation of chromium-impacted fill (referred to herein as "sewer sites" or "sites"). Portions of the sites may contain chromium ore processing residue (COPR) historically used as fill material.

This Manual was prepared by Honeywell to assist the Jersey City Municipal Utilities Authority (JCMUA) with protection and training of workers who potentially may be exposed to COPR, chromium-impacted soils or groundwater in conjunction with utility or other subsurface work performed at the sites, and provides steps for the identification and coordination of work with Honeywell.

This Manual:

- Identifies health and safety requirements for workers who maintain, repair or replace utilities or conduct other ground intrusive activities (e.g., digging, drilling, excavation) in areas of COPR and/or chromium contaminated fill.
- Provides a basis for worker awareness and training to inform workers of potential hazards associated with chromium-impacted media.
- Addresses identification and coordination of work with Honeywell.

This Manual supplements a Standard Operating Procedure (SOP) for coordinating work within chromium soils, which has been developed by Honeywell in cooperation with the JCMUA. The SOP addresses coordination of work between the JCMUA and Honeywell at the sites. The coordination covers notification, response, and handling and disposal of chromium soils in conjunction with sewer work at the sites. Site information and maps are provided with the SOP.

This Manual is organized into the following sections:

Section 1 – Introduction: identifies the purpose and scope of the Manual.

Section 2 – Site Background: includes site information including regulatory background, remediation phase, engineering and institutional controls

Section 3 – Hazard Evaluation: provides general information on potential health hazards associated with chromium.

Section 4 – Health and Safety Requirements: identifies applicable health and safety requirements for workers.

Section 5 – Coordination of Work: addresses coordination of work between the JCMUA and Honeywell including management and disposal of chromium-impacted materials in connection with utility work.

JCMUA employees may perform sewer maintenance and repair work for projects up to depths of approximately 20 feet below grade. For emergency sewer work and excavation to depths greater than 20 feet below grade, work is typically performed by JCMUA contractors. Additionally, the JCMUA has entered into a long-term agreement with United Water for operation and maintenance of its water systems. Accordingly, any reference to the JCMUA in terms of operation and maintenance of its water system shall be interpreted as including United Water, its contractors and employees. Similarly, any mention of Honeywell in this document includes its contractors and consultants.

This Worker Training Manual focuses on work performed by JCMUA and their contractors; however, it may also be used by other parties as a guide for other workers who may be doing utility or other subsurface work on the sites. Other potential users of the manual may include the following utilities and their contractors: Public Service Electric and Gas Company (PSE&G), Comcast, Verizon, and SUEZ North America (formerly United Water).

It is essential that all existing and future remedial measures and engineering controls (e.g. capping systems) are not compromised by utility or other subsurface work. Deed notice documents contain specific requirements pertaining to notification, disturbance and repair of engineering controls.

2.0 SITE BACKGROUND

Pursuant to a Consent Judgment between the NJDEP et al. and Honeywell et al., dated September 7, 2011 (Consent Judgment), Honeywell has responsibility for the investigation and remediation of designated sewer sites in accordance with a NJDEP approved Sewer Protocol, which includes requirements for developing procedures to identify when sewer sites are scheduled for repair, emergency utility repair procedures, training for utility workers on recognition of chromium materials and appropriate steps for worker protection.

The SOP for Coordinating Utility Work within Chromium Soils identifies Honeywell-assigned sewer sites and contains site maps and a summary table with information on ownership, address, and tax parcel information. The majority of sites are currently in the remedial investigation phase. Additional remedial investigation work to assess chromium impacts in soils and groundwater will be conducted and documented in Remedial Investigation Reports pursuant to Honeywell's Master Schedule for chromium sites approved by the NJDEP. Refer to the SOP for site maps and further information about the sites.

Chromium-contaminated fill (also referred to as chromite ore processing residue or COPR) was historically used as construction fill at various sites in Hudson County, New Jersey, including portions of sewer pipelines in Jersey City. The presence of chromium impacts or fill may be indicated as gray-black granular material, yellow-green colored staining, reddish-brown nodules in soils, green-gray mud, or extremely hard layers of dark brown soil. Chromium-impacted groundwater may be indicated by yellow-green colored water. Fill soils may also contain other contaminants that are commonly associated with historic fill and unrelated to chromium fill, such as polycyclic aromatic hydrocarbons (PAHs) and metals.

3.0 HAZARD EVALUATION

This section provides information on chromium, including health and safety information and general assessment of potential hazards and health and safety concerns for work on sites where COPR fill or chromium-impacted media such as soils or groundwater are present.

Chromite ore processing residue (COPR) is a by-product of the extraction process of chromium from its ore. COPR is typically a grayish-black colored granular material and may also be indicated by the presence of yellow to green colored staining, reddish-brown nodules, or hard layers of reddish-brown material. COPR contains both hexavalent and trivalent chromium in a complex mineral matrix and may be caustic, i.e., highly alkaline with pH values typically greater than 11.

Potential chemical hazards associated with sewer repair and/or replacement work or disturbance of remedial measures and engineering controls at the sites may include the presence of chromium and hexavalent chromium in fill soils and groundwater. Chromium-impacted soil (also referred to as "chromium soils") refers to soils containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]). Chromium-impacted groundwater refers to groundwater containing chromium above the NJDEP groundwater quality standards, currently 70 micrograms per liter (µg/L or parts per billion [ppb] based on total chromium).

Potential chemical exposure pathways include:

- Inhalation of airborne dusts and mists that may contain contaminated particulates
- Skin and eye contact and absorption due to direct contact with contaminated soil sediment, and/or liquids
- Incidental ingestion of contaminated soils, liquids, and/or particulates

Potential exposure to chromium contamination could occur by construction or utility workers performing ground intrusive activities (e.g., drilling, digging, excavation). Only properly trained and equipped personnel should be allowed to perform tasks

that may involve the handling of known or suspected contaminated media. Worker training requirements are included in Section 4.

In the event of any inadvertent disturbance to any existing engineering controls or underlying chromium soils by workers who are not properly trained, workers are advised to stop work, cover and secure the area using appropriate measures (e.g., plastic sheeting, traffic cones or barrier) and notify appropriate site management personnel (JCMUA or other applicable party). On-going work would then be coordinated with Honeywell with respect to the management of chromium-contaminated materials and restoration of any engineering controls (see Section 5 for coordination of work).

The following fact sheets with information on chromium, potential health hazards, and precautions to prevent exposure are provided in **Appendix A**:

- Agency for Toxic Substance and Disease Registry (ATSDR) Fact Sheet on Chromium
- Occupational Safety and Health Administration (OSHA) Fact Sheet on Health Effects of Hexavalent Chromium
- New Jersey Department of Health and Senior Services (DHSS) Right to Know Hazardous Substance Fact Sheet

Representative photographs of COPR fill are provided for reference in **Appendix B**.

4.0 HEALTH AND SAFETY REQUIREMENTS

This section presents health and safety requirements and programs for workers who may be potentially exposed to hazardous substances including hexavalent chromium. These programs include worker training, medical monitoring, respiratory protection, and hazard communication. Applicable regulations include OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements at 29 Code of Federal Regulations (CFR) Section 1926.65 and the Hexavalent Chromium Standard (29 CFR 1926.1126; Construction Industry Standard). A summary of worker training requirements for hazardous waste sites and hexavalent chromium is presented on **Table 1**.

The training requirements in this section are applicable to workers who could be exposed to chromium-contaminated materials and are to be addressed by the employer of the person performing the work. These requirements do not apply to work that does not involve potential exposure to contaminants, such as non-intrusive work or work limited to clean cover soils above any existing engineering controls (cap).

Prior to work at the sites in areas of known or suspected chromium soils, Honeywell must be notified as indicated in Section 5 to confirm requirements and coordinate removal and/or disposal of chromium soils and restoration of engineering controls, if required in connection with the work. Contractors for JCMUA should incorporate the worker protection requirements of this section into their Health and Safety Plan, which would be prepared and implemented by the site contractors performing the work under OSHA HAZWOPER requirements.

In most cases, JCMUA personnel are not expected to conduct ground intrusive activities (e.g., excavation, digging, drilling) that would involve potential for exposure to chromium soils. It is expected that such activities (if required) would be implemented by contractors for JCMUA who need to be knowledgeable about potential hazards and procedures to be followed when work is conducted in areas of engineering controls. Therefore, the JCMUA and/or other applicable party responsible for conducting work at the sites are obligated to confirm that their personnel and contractors have appropriate training.

Honeywell Training

Honeywell will provide the following training (refer to Section 5 for details):

- Initial and periodic training for JCMUA on this Worker Training Manual including chromium awareness, remedial measures and engineering controls, and procedures for coordination of work with Honeywell

JCMUA and Contractors

The following sections include, but are not necessarily limited to, current OSHA requirements expected to be applicable to work involving potential for exposure to chromium-contaminated soils or groundwater. All parties conducting work at the sites are responsible for complying with current OSHA requirements.

Personnel Training

- OSHA HAZWOPER training is required for field personnel whose job responsibilities cause them to be exposed or have the potential to be exposed to hazardous substances/wastes, in this case, hexavalent chromium. This applies to work involving disturbance of any existing engineering controls and potential exposure to hexavalent chromium at the sites or work within the exclusion zone or regulated area for field work as defined in the site-specific HASP.
- Management and Supervisory Training is required for individuals who manage or supervise personnel engaged in hazardous waste operations.
- Training documentation is required to be maintained by the party conducting the field work. Field work supervisory personnel (i.e., health and safety officer) are responsible for checking training documentation to verify that workers have complete and current documentation.

Preparation of Site Health and Safety Plan

- Potential exposure to contaminants in the soil or groundwater would be addressed as part of a site-specific HASP, which would be prepared and implemented by contractors performing field work under OSHA HAZWOPER requirements.

Medical Monitoring

- Under the OSHA HAZWOPER standard, medical monitoring is required for workers performing field work onsite for more than 30 days per year and exposed to hazardous substances including hexavalent chromium above applicable exposure limits. Medical monitoring requirements would apply to most work situations involving disturbance of engineering controls and potential for exposure to chromium-contaminated soils, to be determined on a case by case basis by the entity performing field work. If required, medical monitoring is provided by the employer of the person performing field work.

Hazard Communication

- OSHA hazard communication requirements govern "hazardous substances" and exclude "hazardous waste." For hazardous waste site work, the OSHA Hazard Communication standard only applies to hazardous chemicals brought to the site (e.g., decontamination fluids), not to the contaminants in the soil or groundwater.
- The hazard communication program is required to be part of the Health and Safety Policy and Procedures Manual and be made available to employees for review. A model hazard communication program can be found at the following OSHA website: *http//www.osha.gov/dsg/hazcom/oshacomplianceassistance.html.*
- Containers of hazardous substances are required to be labeled as to the contents, appropriate hazard warning, and the name and address of the manufacturer. The name on the label must match the name on Material Safety Data Sheets/Globally Harmonized System. Material Safety Data Sheets are obtained from the manufacturer when hazardous substances are purchased to conduct field work, and maintained at the work site for all hazardous substances to be used.

In addition to the above requirements to address work at the sites involving potential exposure to hexavalent chromium, there may be other applicable OSHA training requirements for contractors performing field work. Compliance with such requirements, as for example those pertaining to excavation activities under OSHA 29 CFR 1926.650, is the result of the type of activity undertaken rather than the presence of chromium, thus the JCMUA and their respective contractors must independently evaluate the need to comply with such requirements. All parties

conducting work at the subject sites must check applicability and comply with current OSHA requirements.

5.0 COORDINATION OF WORK

Details regarding coordination of utility work at the sites are contained in the SOP for Coordinating Utility Work within Chromium Soils, which has been developed by Honeywell in cooperation with the JCMUA. Prior to performing any utility maintenance or repair work at the chromium sewer sites, the JCMUA and/or their contractors or other parties conducting work must notify Honeywell and provide information regarding the work location and nature of disturbance (i.e., area and depth of disturbance, timing of work). This information will enable coordination of work, establishing requirements for worker protection, handling and disposal of chromium-impacted media, and repair and restoration of the engineering controls. A summary of worker training requirements for hazardous waste sites and hexavalent chromium is provided for reference on **Table 1.**

As indicated in the SOP, JCMUA is required to notify Honeywell prior to any planned maintenance or emergency repair of sewer pipelines on any of the chromium sewer sites. Deed Notice requirements also specify notification to Honeywell and the NJDEP prior to any activities that will involve the disturbance of engineering controls or remedial measures.

Honeywell has established a telephone notification and response system for use by the JCMUA and/or other parties to notify Honeywell of any activities planned or required on an emergency basis at the sites. The notification and response system facilitates coordination of activities between Honeywell, JCMUA and/or other parties with respect to handling and disposal of contaminated media that may be generated during sewer work at the sites. The notification and response system is an element of the JCMUA work process for sewer work.

The notification system includes a telephone answering service (referred to as the Chromium Response Hotline: **855-727-2658**); this number will also be included in Deed Notice documents for providing notification to Honeywell prior to disturbance of engineering controls. All parties who plan to perform any work that may have the potential to disturb any existing engineering controls and/or cause exposure to chromium-impacted media must notify Honeywell and determine what level of

worker protection is appropriate and if the proposed work activities comply with or are applicable to any existing deed notice requirements.

Standard Operating Procedure for Coordination of Work

Honeywell in cooperation with the JCMUA has developed a Standard Operating Procedure (SOP) for identifying and coordinating work at the chromium sewer sites. The SOP addresses repair or replacement performed as part of planned maintenance work or required as a result of an emergency situation. Prior to performing sewer work, JCMUA will contact the Chromium Response Hotline, which will prompt Honeywell to coordinate field work activities including proper handling and disposal of chromium-contaminated materials with the JCMUA. Refer to the SOP document for further details regarding coordination of work between Honeywell and the JCMUA.

Coordination of Work Between Honeywell, JCMUA and Other Parties

The following steps summarize procedures for coordination of work between Honeywell, JCMUA or other parties performing subsurface work at the sites:

1. JCMUA or other party identifies work project (e.g., sewer/utility repair or replacement) at the chromium sewer sites.

2. JCMUA or other party notifies Honeywell of the planned work location and the estimated schedule/timing for completion of work.

3. For emergency situations where work needs to be done before a determination can be made on whether the work location is in an area of chromium soils, JCMUA's contractor will proceed with work using properly trained workers (i.e., OSHA 40-hour HAZWOPER training) and Honeywell will provide technical assistant and field support (to be determined in cooperation with JCMUA). For non-emergency situations, Honeywell determines whether or not the proposed work location is within an area of chromium soils and provides confirmation to the JCMUA and/or other applicable party. If the work location is confirmed to be in an area of chromium soils, then Honeywell coordinates with the JCMUA or other party regarding response and field work activities. If Honeywell determines that the proposed work is not in an area of chromium soils, then JCMUA or other party would proceed with its work without further coordination with Honeywell.

4. Honeywell or other applicable party provides notification to the NJDEP, as may be required in accordance with Deed Notice requirements for disturbance of engineering controls or other regulatory requirements.

5. Honeywell coordinates with JCMUA or other party as needed for performance of field work including the use of qualified contractors for excavation and disposal of chromium-contaminated materials at a facility licensed to accept such materials, backfilling, and site restoration including replacement of any engineering controls. JCMUA's contractor will take the lead in performing field work (with the exception of possibly longer term, planned sewer work). Honeywell will provide technical assistance and field support as needed for documentation and reporting requirements. In some cases, Honeywell's contractor may take the lead in performing field work or a portion of field work (e.g., removal and disposal of chromium contaminated materials, restoration of engineering controls), to be determined on a case by case basis in consultation and cooperation with the JCMUA or other party performing site work.

6. Honeywell prepares an updated chromium soils map and provides a copy to the JCMUA following completion of the work, as applicable.

7. Honeywell or other applicable party prepares and submits a summary report of field work to the NJDEP (with copies provided to the JCMUA) in accordance with Deed Notice or other regulatory requirements.

Training - JCMUA

With respect to training of JCMUA employees, Honeywell will provide training support to the JCMUA as deemed appropriate, and JCMUA will develop and implement a worker training plan based on the requirements outlined in this Worker Training Manual. Honeywell in consultation with the JCMUA has identified the following training needs for JCMUA employees that would be provided by Honeywell (or its designated contractor):

- Chromium Awareness Training - initial and periodic training (every 3 years estimated): estimated 1 to 2 hours and include JCMUA staff with responsibility for performing field work.

- HAZWOPER 40-hour training and annual 8-hour refresher training: estimated to include two JCMUA supervisory employees.

Honeywell will pay for the cost of the training program and the JCMUA would cover the cost for the time for its employees to attend the training.

JCMUA's contractors performing field work on the sites will be required to have applicable health and safety training as indicated in the Worker Training Manual. It is expected that health and safety training requirements for JCMUA contractors will be specified as part of JCMUA's bidding process for sewer work and that contractors will be required to demonstrate appropriate training documentation to the JCMUA prior to performing field work at the sites.

The timing for training will be coordinated in consultation with JCMUA.

TABLE 1

SUMMARY OF WORKER TRAINING REQUIREMENTS

TABLE 1: Summary of Worker Training Requirements
Hazardous Waste Sites and Hexavalent Chromium Standard

Type of Workers	Hexavalent Chromium Standard Awareness Training	40-Hour OSHA Hazwoper Training	24-Hour OSHA Hazwoper Training [1]	On The Job Training	8-hour refresher	8-hour Supervisory	Respiratory Protection	Medical Monitoring [2]	Hazard Communication [3]
Hands On Site Workers (JCMUA, Contractors or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR	Required on hazardous waste sites for site workers. Site workers may potentially be required to wear respirators. This training is recommended for workers who may be directly exposed (direct contact) to COPR or hexavalent chromium. While the use of respiratory protection isn't expected to be required, this would allow the use of respiratory protection should site conditions warrant	Not applicable - superseded by 40-hour training	3 Days	Required annually	Required if directly supervises other workers	Respiratory protection program is required for workers who work on hazardous waste sites	Medical monitoring is required for workers who work on hazardous waste sites. Typically, HAZWOPER physicals also cover medical monitoring requirements under the Hexavalent Chromium Standard (verify with examining physician)	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.
Supervisory Type Personnel (JCMUA, Contractors or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Not required	Minimum Training allowable for working on hazardous waste sites and typically does not include in-depth coverage of respiratory protection and level C and B personal protection equipment. Cannot be used if respiratory protection will be required.	1 Day	Required annually	Required if directly supervises other workers	These types of workers are unlikely to be exposed to levels above the PEL/TLV therefore, the need for respiratory protection is not likely to be required	Workers are not expected to be exposed to elevated levels above the PEL/TLV, medical monitoring is not likely required under the OSHA Standard	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.

This table is provided for reference purposes; all parties conducting work at the subject sites are responsible to verify applicability and comply with current OSHA requirements, as applicable.

[1] Workers who have only received 24-hour of initial training who then need to wear a respirator will first be required to complete an additional 16 hour of classroom training and two additional days of on the job training and be enrolled in a medical monitoring program. If use of respirator is likely, then worker should receive 40-hours of initial training.

[2] Medical monitoring is required under the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1926.65) and the Hexavalent Chromium Standard (29 CFR 1926.1126) if on site more than 30 days per year and exposed to hazardous waste or hexavalent chromium above applicable exposure limits (PEL/TLVs). In addition, medical clearance is required prior to wearing a respirator (29 CFR 1910.134). *If required, medical exams include baseline physicals, periodic exams (typically annually), and exit physicals. The content and frequency of medical exams must be determined in consultation with the JCMUA's medical consultant/physician; typical medical exam requirements include: occupational/medical history, physical exam, blood/urine test, ability to wear PPE (e.g., pulmonary function testing, EKG), and baseline monitoring based on potential onsite exposure to particular contaminants (e.g., hexavalent chromium). For further information, refer to OSHA Guidance Manual for Hazardous Waste Site Activities at http://www.cdc.gov/niosh/85-115.html*

[3] Hazard Communication is applicable to hazardous substances such as any chemical brought onsite for use during site work. For work on hazardous waste sites, a Site Health and Safety Plan would be required to be prepared and implemented by the site remediation contractor to address potential exposure to contaminated soils and/or groundwater. *For more information, refer to the OSHA Hazard Communication Standard at http://www.osha.gov/dsg/hazcom/oshacomplianceassistance.html*

APPENDIX A

FACT SHEETS: CHROMIUM INFORMATION AND POTENTIAL HEALTH HAZARDS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CHROMIUM

CAS # 7440-47-3

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2008

This fact sheet answers the most frequently asked health questions (FAQs) about chromium. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to chromium occurs from ingesting contaminated food or drinking water or breathing contaminated workplace air. Chromium(VI) at high levels can damage the nose and cause cancer. Ingesting high levels of chromium(VI) may result in anemia or damage to the stomach or intestines. Chromium(III) is an essential nutrient. Chromium has been found in at least 1,127 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is chromium?

Chromium is a naturally occurring element found in rocks, animals, plants, and soil. It can exist in several different forms. Depending on the form it takes, it can be a liquid, solid, or gas. The most common forms are chromium(0), chromium(III), and chromium(VI). No taste or odor is associated with chromium compounds.

The metal chromium, which is the chromium(0) form, is used for making steel. Chromium(VI) and chromium(III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving.

What happens to chromium when it enters the environment?

❑ Chromium can be found in air, soil, and water after release from the manufacture, use, and disposal of chromium-based products, and during the manufacturing process.
❑ Chromium does not usually remain in the atmosphere, but is deposited into the soil and water .
❑ Chromium can easily change from one form to another in water and soil, depending on the conditions present.
❑ Fish do not accumulate much chromium in their bodies from water.

How might I be exposed to chromium?

❑ Eating food containing chromium(III).
❑ Breathing contaminated workplace air or skin contact during use in the workplace.
❑ Drinking contaminated well water.
❑ Living near uncontrolled hazardous waste sites containing chromium or industries that use chromium.

How can chromium affect my health?

Chromium(III) is an essential nutrient that helps the body use sugar, protein, and fat.

Breathing high levels of chromium(VI) can cause irritation to the lining of the nose, nose ulcers, runny nose, and breathing problems, such as asthma, cough, shortness of breath, or wheezing. The concentrations of chromium in air that can cause these effects may be different for different types of chromium compounds, with effects occurring at much lower concentrations for chromium(VI) compared to chromium(III).

The main health problems seen in animals following ingestion of chromium(VI) compounds are irritation and ulcers in the stomach and small intestine and anemia. Chromium(III) compounds are much less toxic and do not appear to cause these problems.

Sperm damage and damage to the male reproductive system have also been seen in laboratory animals exposed to chromium(VI).

Skin contact with certain chromium(VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium(VI) or chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted.

How likely is chromium to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Reseach on Cancer (IARC), and the EPA have determined that chromium(VI) compounds are known human carcinogens. In workers, inhalation of chromium(VI) has been shown to cause lung cancer. Chromium(VI) also causes lung cancer in animals. An increase in stomach tumors was observed in humans and animals exposed to chromium(VI) in drinking water.

How can chromium affect children?

It is likely that health effects seen in children exposed to high amounts of chromium will be similar to the effects seen in adults.

We do not know if exposure to chromium will result in birth defects or other developmental effects in people. Some developmental effects have been observed in animals exposed to chromium(VI).

How can families reduce the risks of exposure to chromium?

❑ Children should avoid playing in soils near uncontrolled hazardous waste sites where chromium may have been discarded.

❑ Chromium is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.

❑ Although chromium(III) is an essential nutrient, you should avoid excessive use of dietary supplements containing chromium.

Is there a medical test to determine whether I've been exposed to chromium?

Since chromium(III) is an essential element and naturally occurs in food, there will always be some level of chromium in your body. Chromium can be measured in hair, urine, and blood.

Higher than normal levels of chromium in blood or urine may indicate that a person has been exposed to chromium. However , increases in blood and urine chromium levels cannot be used to predict the kind of health effects that might develop from that exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to chromium in drinking water at concentrations of 1 mg/L for up to 10 days is not expected to cause any adverse effects in a child.

The FDA has determined that the chromium concentration in bottled drinking water should not exceed 1 mg/L.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 0.005 mg/m^3 chromium(VI), 0.5 mg/m^3 chromium(III), and 1.0 mg/m^3 chromium(0) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Chromium (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmenta l quality department if you have any more questions or concerns.

OSHA FactSheet

Health Effects of Hexavalent Chromium

Hexavalent chromium is a toxic form of the element chromium. Hexavalent chromium compounds are man-made and widely used in many different industries.

Some major industrial sources of hexavalent chromium are:

- chromate pigments in dyes, paints, inks, and plastics
- chromates added as anti-corrosive agents to paints, primers and other surface coatings
- chrome plating by depositing chromium metal onto an item's surface using a solution of chromic acid
- particles released during smelting of ferro-chromium ore
- fume from welding stainless steel or nonferrous chromium alloys
- impurity present in portland cement.

How hexavalent chromium can harm employees

Workplace exposure to hexavalent chromium may cause the following health effects:

- lung cancer in workers who breathe airborne hexavalent chromium
- irritation or damage to the nose, throat, and lung (respiratory tract) if hexavalent chromium is breathed at high levels
- irritation or damage to the eyes and skin if hexavalent chromium contacts these organs in high concentrations.

How hexavalent chromium affects the nose, throat and lungs

Breathing in high levels of hexavalent chromium can cause irritation to the nose and throat. Symptoms may include runny nose, sneezing, coughing, itching and a burning sensation.

Repeated or prolonged exposure can cause sores to develop in the nose and result in nosebleeds. If the damage is severe, the nasal septum (wall separating the nasal passages) develops a hole in it (perforation).

Breathing small amounts of hexavalent chromium even for long periods does not cause respiratory tract irritation in most people.

Some employees become allergic to hexavalent chromium so that inhaling chromate compounds can cause asthma symptoms such as wheezing and shortness of breath.

How hexavalent chromium affects the skin

Some employees can also develop an allergic skin reaction, called allergic contact dermatitis. This occurs from handling liquids or solids containing hexavalent chromium. Once an employee becomes allergic, brief skin contact causes swelling and a red, itchy rash that becomes crusty and thickened with prolonged exposure. Allergic contact dermatitis is long-lasting and more severe with repeated skin contact.

Direct skin contact with hexavalent chromium can cause a non-allergic skin irritation. Contact with non-intact skin can also lead to chrome ulcers. These are small crusted skin sores with a rounded border. They heal slowly and leave scars.

How employees can be exposed to hexavalent chromium

Employees can inhale airborne hexavalent chromium as a dust, fume or mist while:

- producing chromate pigments and powders; chromic acid; chromium catalysts, dyes, and coatings
- working near chrome electoplating
- welding and hotworking stainless steel, high chrome alloys and chrome-coated metal
- applying and removing chromate-containing paints and other surface coatings.

Skin exposure can occur during direct handling of hexavalent chromium-containing solutions, coatings, and cements.

Steps OSHA has taken to protect employees from health hazards caused by hexavalent chromium

The new OSHA workplace standard requires employers to:

- limit eight-hour time-weighted average hexavalent chromium exposure in the workplace to 5 micrograms or less per cubic meter of air.
- perform periodic monitoring at least every 6 months if initial monitoring shows employee exposure at or above the action level (2.5 micrograms per cubic meter of air calculated as an 8-hour time-weighted average).
- provide appropriate personal protective clothing and equipment when there is likely to be a hazard present from skin or eye contact.
- implement good personal hygiene and housekeeping practices to prevent hexavalent chromium exposure.
- prohibit employee rotation as a method to achieve compliance with the exposure limit (PEL).
- provide respiratory protection as specified in the standard.
- make available medical examinations to employees within 30 days of initial assignment, annually, to those exposed in an emergency situation, to those who experience signs or symptoms of adverse health effects associated with hexavalent chromium exposure, to those who are or may be exposed at or above the action level for 30 or more days a year, and at termination of employment.

For more complete information:

OSHA Occupational Safety and Health Administration

U.S. Department of Labor

www.osha.gov

(800) 321-OSHA

DSG 7/2006

Right to Know
Hazardous Substance Fact Sheet

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium

Chemical Name: Chromium

Date: January 2000 Revision: March 2009

CAS Number: 7440-47-3

RTK Substance Number: 0432

DOT Number: UN 3089

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Description and Use

Chromium is a hard, gray, odorless solid with a metallic luster. It is used in stainless and alloy steels, in making alloys, and as an isotope in medicine and research.

Hazard Summary

Hazard Rating	NJDHSS	NFPA
HEALTH	2	-
FLAMMABILITY	3	-
REACTIVITY	0	-
FLAMMABLE POWDER POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

Reasons for Citation

- **Chromium** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, DEP, IARC and EPA.
- This chemical is on the Special Health Hazard Substance List.

- **Chromium** can affect you when inhaled.
- Contact can irritate and burn the skin and eyes with possible eye damage.
- Inhaling **Chromium** can irritate the nose and throat.
- Exposure to **Chromium** *fumes* can cause a flu-like illness called *metal fume fever.*
- **Chromium** may cause a skin allergy and an asthma-like allergy
- Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose.
- **Chromium** may affect the liver and kidneys.
- **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact
- Immediately flush with large amounts of water for at least 30 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention.

Skin Contact
- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation
- Remove the person from exposure
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **1 mg/m^3** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.5 mg/m^3** averaged over a 8-hour workshift.

ACGIH: The threshold limit value (TLV) is **0.5 mg/m^3** averaged over an 8-hour workshift.

Determining Your Exposure

- Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- For each individual hazardous ingredient, read the New Jersey Department of Health and Senior Services Hazardous Substance Fact Sheet, available on the RTK Program website (www.nj.gov/health/eoh/rtkweb) or in your facility's RTK Central File or Hazard Communication Standard file.
- You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects
The following acute (short-term) health effects may occur immediately or shortly after exposure to **Chromium**:

- Contact can irritate and burn the skin and eyes with possible eye damage.
- Inhaling **Chromium** can irritate the nose and throat causing coughing and wheezing.
- Exposure to **Chromium** *fumes* can cause *"metal fume fever."* This is a flu-like illness with symptoms of metallic taste in the mouth, headache, fever and chills, aches, chest tightness and cough. The symptoms may be delayed for several hours after exposure and usually last for a day or two.

Chronic Health Effects
The following chronic (long-term) health effects can occur at some time after exposure to **Chromium** and can last for months or years:

Cancer Hazard
- While **Chromium** has been tested, it is not classifiable as to its potential to cause cancer.

Reproductive Hazard
- There is no evidence that **Chromium** affects reproduction. This is based on test results presently available to the NJDHSS from published studies.

Other Effects
- Inhaling **Chromium** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose, sometimes with bleeding, discharge, and/or formation of a crust.
- **Chromium** may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
- **Chromium** may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, coughing, and/or chest tightness.
- Prolonged skin contact can cause burns, blisters and deep ulcers
- **Chromium** may affect the liver and kidneys.

Medical

Medical Testing
For frequent or potentially high exposure (half the TLV or greater), the following are recommended before beginning work and at regular times after that:

- Lung function tests. The results may be normal if the person is not having an attack at the time of the test.

If symptoms develop or overexposure is suspected, the following are recommended:

- Examine your skin periodically for little bumps or blisters, the first sign of "chrome ulcers." If not treated early, these can last for years after exposure.
- Evaluation by a qualified allergist can help diagnose skin allergy.
- Liver and kidney function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures
- Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.
- More than light alcohol consumption can cause liver damage. Drinking alcohol can increase the liver damage caused by **Chromium**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- Label process containers.
- Provide employees with hazard information and training.
- Monitor airborne chemical concentrations.
- Use engineering controls if concentrations exceed recommended exposure levels.
- Provide eye wash fountains and emergency showers.
- Wash or shower if skin comes in contact with a hazardous material.
- Always wash at the end of the workshift.
- Change into clean clothing if clothing becomes contaminated.
- Do not take contaminated clothing home.
- Get special training to wash contaminated clothing.
- Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- Before entering a confined space where **Chromium** *powder* may be present, check to make sure that an explosive concentration does not exist.
- Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- Avoid skin contact with **Chromium**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- Safety equipment manufacturers recommend Nitrile and Natural Rubber for gloves, and Tyvek®, or the equivalent, as a protective material for clothing.
- All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- Wear eye protection with side shields or goggles.
- If additional protection is needed for the entire face, use in combination with a face shield. A face shield should not be used without another type of eye protection.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved negative pressure, air-purifying, particulate filter respirator with an N, R or P95 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Chromium**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- Where the potential exists for exposure over **5 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- Exposure to **250 mg/m^3** is immediately dangerous to life and health. If the possibility of exposure above **250 mg/m^3** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- Extinguish fire using an agent suitable for type of surrounding fire. **Chromium** itself does not burn.
- **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air.
- Use dry sand or dry chemical extinguishing agents to fight **Chromium** *powder* fires.
- POISONOUS GASES ARE PRODUCED IN FIRE.
- CONTAINERS MAY EXPLODE IN FIRE.
- DO NOT get water inside container.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Chromium** *powder* is spilled, take the following steps:

- Evacuate personnel and secure and control entrance to the area.
- Eliminate all ignition sources.
- Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
- Keep **Chromium** *powder* out of confined spaces, such as sewers, because of the possibility of an explosion.
- Ventilate and wash area after clean-up is complete.
- DO NOT wash into sewer.
- It may be necessary to contain and dispose of **Chromium** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Chromium** you should be trained on its proper handling and storage.

- **Chromium** may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE.
- **Chromium** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).
- Store in tightly closed containers in a cool, well-ventilated area.
- Sources of ignition, such as smoking and open flames, are prohibited where **Chromium** *powder* is used, handled, or stored.

Occupational Health Information Resources

The New Jersey Department of Health and Senior Services, Occupational Health Service, offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New Jersey Department of Health & Senior Services
Right to Know Program
PO Box 368
Trenton, NJ 08625-0368
Phone: 609-984-2202
Fax: 609-984-7407
E-mail: rtk@doh.state.nj.us
Web address: http://www.nj.gov/health/eoh/rtkweb

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGLs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGLs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Right to Know Hazardous Substance Fact Sheet

Emergency Responders Quick Reference

Common Name: **CHROMIUM**

Synonyms: Chrome; Metallic Chromium
CAS No: 7440-47-3
Molecular Formula: Cr
RTK Substance No: 0432
Description: Hard, gray, odorless solid with a metallic luster

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
2 - Health **3 - Fire** **0 - Reactivity** **DOT#:** UN 3089 **ERG Guide #:** 170 **Hazard Class:** 4.1 (Flammable Solid)	Extinguish fire using an agent suitable for type of surrounding fire. **Chromium** itself does not burn. **Chromium** in *powder* form is FLAMMABLE and a DANGEROUS FIRE HAZARD. It may also spontaneously explode in air. Use dry sand or dry chemical extinguishing agents to fight **Chromium** *powder* fires. POISONOUS GASES ARE PRODUCED IN FIRE. CONTAINERS MAY EXPLODE IN FIRE. DO NOT get water inside container.	**Chromium** may react violently or explosively with AMMONIUM NITRATE; CARBON DIOXIDE ATMOSPHERES; BROMINE PENTAFLUORIDE; LITHIUM; NITROGEN OXIDES; and SULFUR DIOXIDE. **Chromium** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); STRONG ACIDS (such as HYDROCHLORIC and SULFURIC); and ALKALI METALS (such as SODIUM and POTASSIUM).

SPILL/LEAKS

Isolation Distance:

Spill: 25 meters (75 feet)

Fire: 800 meters (1/2 mile)

Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.

Keep **Chromium** *powder* out of confined spaces, such as sewers, because of the possibility of an explosion.

DO NOT wash into sewer.

PHYSICAL PROPERTIES

Odor Threshold:	Odorless
Flash Point:	Noncombustible solid, Flammable *powder*
Vapor Pressure:	<0 mm Hg at 68°F (20°C) (approximate)
Specific Gravity:	7.2 (water = 1)
Water Solubility:	Insoluble
Boiling Point:	4,788°F (2,642°C)
Melting Point:	3,452°F (1,900°C)
Molecular Weight:	52

EXPOSURE LIMITS

OSHA:	1 mg/m^3, 8-hr TWA
NIOSH:	0.5 mg/m^3, 8-hr TWA
ACGIH:	0.5 mg/m^3, 8-hr TWA
IDLH:	250 mg/m^3

The Protective Action Criteria values are:

PAC-1 = 1.5 mg/m^3 PAC-3 = 250 mg/m^3

PAC-2 = 2.5 mg/m^3

PROTECTIVE EQUIPMENT

Gloves:	Nitrile or Natural Rubber
Coveralls:	Tyvek®
Respirator:	>0.5 mg/m^3 - full facepiece APR with High efficiency filters >1.5 mg/m^3 - SCBA

HEALTH EFFECTS

Eyes:	Irritation, burns and possible eye damage
Skin:	Irritation, burns, itching, rash and skin ulcers
Inhalation:	Nose and throat irritation with coughing and wheezing Headache, fever and chills

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer promptly to a medical facility.

APPENDIX B

REPRESENTATIVE PHOTOGRAPHS
CHROMIUM ORE PROCESSING RESIDUE

CHROMITE ORE PROCESSING RESIDUE (COPR)
EXAMPLE PHOTOS