CDM

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# US Army Corps of Engineers
# Kansas City District

## Final Beach Sampling
## Technical Memorandum

**Remedial Investigation/ Feasibility Study**
**Raritan Bay Slag Superfund Site**
**Old Bridge/ Sayreville, New Jersey**

**USACE Contract No. W912DQ-08-D-0018**
**Task Order No. 018**

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## Acronyms

| | |
|---|---|
| CDM | CDM Federal Programs Corporation |
| CLP | contract laboratory program |
| DESA | Division of Environmental Science and Assessment |
| EDD | electronic data deliverable |
| EPA | United States Environmental Protection Agency |
| EQuIS | environmental quality information system |
| J | estimated |
| mg/kg | milligram per kilogram |
| NJDEP | New Jersey Department of Environmental Protection |
| NJRDCSRS | New Jersey Residential Direct Contact Soil Remediation Standards |
| PCB | polychlorinated biphenyl |
| QAPP | Quality Assurance Project Plan |
| QA/QC | quality assurance/quality control |
| R | rejected |
| RAND | random number generator function |
| RANK | rank function |
| RI/FS | remedial investigation/feasibility study |
| SST | Superfund Support Team |
| SVOC | semi-volatile organic compound |
| TAL | Target Analyte List |
| TCL | Target Compound List |
| the site | Raritan Bay Slag Superfund Site |
| µg/kg | microgram per kilogram |
| µg/L | microgram per liter |
| USACE | United States Army Corps of Engineers |
| VOC | volatile organic compound |
| XRF | X-Ray Fluorescence |

# Section 1
# Introduction

Under the United States Army Corps of Engineers (USACE), Kansas City District Contract No. W912DQ-08-D-0018, Task Order No. 018, CDM Federal Programs Corporation (CDM) has been tasked to provide technical services to complete a Remedial Investigation/Feasibility Study (RI/FS) for the Raritan Bay Slag Superfund Site (the site) located in Old Bridge and Sayreville, Middlesex County, New Jersey (Figure 1-1). As part of this work, CDM was tasked to prepare this technical memorandum to summarize the results of the beach sampling event conducted by the United States Environmental Protection Agency (EPA) in May 2010.

## 1.1 Purpose of the Technical Memorandum

From May 10 through May 19, 2010, EPA collected soil, sediment, and surface water samples to assess potential changes in contaminant concentrations in these media after a storm event and to support the ongoing assessment of recreational use in Areas 1, 3, 5, and 6 (Figure 1-2). This report presents the results of the beach sampling program and a comparison between the current data and historical data. EPA used these data to support their ongoing assessment of recreational use in Areas 1, 3, 5, and 6.

The target metals for this sampling event included antimony, arsenic, copper, chromium, and lead.

## 1.2 Site Description

The site is located on the shore of Raritan Bay, in the eastern part of Old Bridge Township within the Laurence Harbor section in Middlesex County, New Jersey. A small portion of the northern end of the site, the western jetty at the Cheesequake Creek Inlet, is located in the Borough of Sayreville. Raritan Bay is also referred to as Raritan-Sandy Hook Bay, but will be referred to as Raritan Bay throughout this document. The site is situated in a residential area and is bordered to the east and west by residential properties; by State Highway 35 to the south beyond the residential properties; and to the north by Raritan Bay (Figure 1-1)

## 1.3 Investigation Areas

The site has been divided into 11 Site Areas based on areas identified in historical investigations and reports, site physical characteristics, and the locations of known or potential sources. The beach sampling event was conducted in Areas 1, 3, 5, and 6. Figure 1-2 shows the location of these Site Areas.

The Site Areas where sampling was conducted are defined as follows:

- Area 1: Laurence Harbor Seawall - The seawall along Old Bridge Waterfront Park west of Margaret's Creek to the beach area at the foot of Laurence Parkway.

- Area 3: Laurence Harbor Playground - The park playground adjacent to the western end of the seawall.

- Area 5: Laurence Harbor Beach - The beach area between the first and third jetty.

- Area 6: Laurence Harbor Beach - The beach area between the third jetty and Cheesequake Creek Inlet eastern jetty.

## 1.4 Technical Memorandum Organization

This Technical Memorandum is organized in the following manner:

| | |
|---|---|
| Section 1 | Introduction - Presents an overview of the beach sampling event and site description. |
| Section 2 | Methods – Describes the methods used to collect, analyze, and assess the results of the samples collected from Areas 1, 3, 5, and 6. |
| Section 3 | Results – Presents the results of the samples collected from Areas 1, 3, 5, and 6. Previous sample results (collected before 2010) and the beach sampling event are compared. |
| Section 4 | Summary. |
| Section 5 | References. |

# Section 2
# Methods

This section discusses the methods used to collect, analyze, and assess the data collected during the beach sampling event and identifies the criteria used to screen the data.

## 2.1 Sample Planning

CDM was tasked with proposing sampling locations based on guidance from EPA to assess potential changes in contaminant concentrations in soil and sediment after a storm event and to support the ongoing assessment of recreational use in Areas 1, 3, 5, and 6. Guidance included: a) sample depths, b) the percentage of previously sampled locations to be resampled during this event, c) sampling locations should be chosen at random so that the data could be used for statistical analysis, and d) that the beach sampling data be compared with data from samples previously collected in Areas 3, 5, and 6. CDM prepared a series of tables and figures for each Area and matrix for use by EPA in conducting the field work (included in Appendix A). The information included location, coordinates, and sample depths (if appropriate). The methods used during sample planning are discussed in the following sections. The sample locations were incorporated into the Quality Assurance Project Plan (QAPP) prepared by EPA.

### 2.1.1 Random Sample Location Selection

Sampling locations were selected at random to ensure that the samples obtained during this event could be used for statistical analysis. The data were extracted from the environmental quality information system (EQuIS) project database and were broken down by Area and by matrix and put in separate tables in Microsoft Excel. The locations were sorted in ascending order and the Excel software random number generator function (RAND) was used to assign a random number to each location in a column next to the location name. Because the RAND function is a volatile function (it recalculates every time the spreadsheet recalculates) the COPY/PASTE VALUES function was used to freeze the random numbers assigned to each location. In a column next to the random number, the RANK function[1] was used to assign a TRUE or FALSE value to each location so that the total number of true values would be equal to the number of locations required in the Area. For example, in Area 5 a total of 28 (50 percent) of the 55 previous sediment sampling locations were required. To do this, the RANK function was used to assign a true value to 28 locations. The locations with true values were then designated for sampling.

### 2.1.2 Area 1 Soil Sample Planning

A total of 14 new sampling locations were proposed in Area 1 at depths of 0-12 and 12-24 inches. The samples were distributed along the fence line to provide data on soil contaminant concentrations in this area.

[1] The RANK function returns the rank, or size of a number, relative to the other values in the list.

### 2.1.3 Area 3 Soil Sample Planning

A total of 19 sampling locations were proposed, including all 16 previously sampled locations (100 percent of previous locations) and 3 new sampling locations. The three new locations were in the grassy field just west of the playground. Proposed sampling depths were 0-12 and 12-24 inches.

### 2.1.4 Area 5 Soil Sample Planning

A total of 74 soil samples (excluding duplicates) were collected from 62 locations during previous sampling conducted before 2010. To provide sufficient data to achieve project objectives, a total of 31 (50 percent) of the 62 previously sampled locations were chosen at random for sampling. From these 31 locations, a total of 51 samples (excluding duplicates) were planned for collection at depth intervals ranging from 0-6, 6-12, and 12-24 inches. After reviewing the randomly selected sample locations, EPA decided to adjust sample coverage of the area of interest by dropping locations S149 and S210 and adding locations S153 and S117 to the sampling program. No new sampling locations were added.

### 2.1.5 Area 5 Sediment Sample Planning

During previous sampling, a total of 131 sediment samples (excluding duplicates) were collected from 68 locations. From the original 68 locations, a subset of 55 locations was selected for potential resampling. These locations were selected because they were all located within an area defined by the beach and a line drawn between the ends of the three jetties in Area 5. To provide sufficient data to achieve project objectives, a total of 28 (50 percent) of the 55 previously sampled locations were chosen at random for sampling. From these 28 locations, a total of 46 samples (excluding duplicates) were planned for collection at depth intervals ranging from 0-6, 6-12, and 12-24 inches. No new sampling locations were added.

### 2.1.6 Area 5 Surface Water Sample Planning

During previous sampling, a total of seven surface water samples (excluding duplicates) were collected from seven locations. To provide sufficient data to achieve project objectives, all seven of the previously sampled locations were chosen for sampling. In addition, three new locations were added. Two of the new locations are in or just off the surf area and the third location is beyond the jetties.

### 2.1.7 Area 6 Soil Sample Planning

During previous sampling, a total of 40 soil samples (excluding duplicates) were collected from 31 locations. To provide sufficient data to achieve project objectives, a total of 10 (32 percent) of the 31 previously sampled locations were chosen at random for sampling. In addition, four new soil sample locations were added. Twenty-eight soil samples were planned for collection from the 14 locations at depth intervals ranging from 0-6, 6-12, and 12-24 inches. After reviewing the randomly selected sampling locations, EPA decided to adjust sample coverage of the area of interest by dropping locations S45, S89, and S209 and adding locations S46, S51, and S208 to the sampling program.

### 2.1.8 Area 6 Sediment Sample Planning

During previous sampling, a total of 153 sediment samples (excluding duplicates) were collected from 83 locations. From the original 83 locations, 66 locations were selected for potential resampling. These locations were selected because they were all located within an area defined by the beach and a line drawn parallel to the beach from the end of the jetty at the east end of Area 6 to the inlet at the west end of Area 6. To provide sufficient data to achieve project objectives, a total of 20 (30 percent) of the 66 previously sampled locations were chosen at random for sampling. No new sediment sample locations were added. Forty sediment samples were planned for collection from the 20 locations at depth intervals ranging from 0-6, 6-12, and 12-24 inches. After reviewing the randomly selected sampling locations, EPA decided to adjust sample coverage of the area of interest by dropping locations SED91 and B42 and adding locations SED47 and B55 to the sampling program.

### 2.1.9 Area 6 Surface Water Sample Planning

During previous sampling, a total of seven surface water samples (excluding duplicates) were collected from seven locations. To provide sufficient data to achieve project objectives, a total of 12 surface water samples were proposed for collection. Three samples were proposed for collection at previous surface water sampling locations: two in the surf and one from the group beyond the jetties. Nine new sample locations were proposed with seven of these locations evenly spaced in the surf and two locations about 100 feet out from the beach.

### 2.1.10 Addition and Adjustment of Sample Depth Increments

EPA reviewed sampling recommendations and used the information to prepare a QAPP (EPA 2010) for the sampling work. During preparation of the QAPP, EPA added the collection of soil and sediment samples at some locations from 0-2 inches. These samples were included to provide lead data for use in assessing the extent and impact of lead contamination at the site. The samples collected from 0-2 inches were distributed as follows:

- Area 3: 19 soil samples (and 2 duplicates) were collected and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and Target Analyte List (TAL) metals (excluding mercury and cyanide).

- Area 5: 9 sediment and 10 soil samples (no duplicates) were collected and analyzed for the target metals.

- Area 6: 9 sediment and 7 soil samples (and 1 duplicate) were collected and analyzed for target metals.

During preparation of the QAPP, EPA adjusted sample depth intervals to achieve the project objectives defined in the QAPP which were to assess potential changes in contaminant concentrations in these media after a storm event and to support the ongoing assessment of recreational use in Areas 1, 3, 5, and 6. All intervals were not necessarily sampled at each location.

- Area 1 soil: The planned intervals were 0-12 and 12-24 inches. In the QAPP, the proposed 12-24 inch samples were eliminated; the actual intervals were 0-6, and 6-12 inches. This is consistent with sampling in the other Areas and previous soil sampling in Area 1 which consisted of soil samples collected from 0-2, 0-6, and 6-12 inches.

- Area 3 soil: The planned intervals were 0-12 and 12-24 inches. In the QAPP, the proposed 12-24 inch samples were eliminated; the actual intervals were 0-2, 0-6, and 6-12 inches. Collecting soil samples from 0-6 and 6-12 intervals is consistent with soil sampling in the other areas. Previous soil samples in this Area were collected from 0-2 inches.

- Area 5 soil and sediment: No change (planned intervals: 0-6, 6-12, and 12-24 inches, actual intervals: 0-2, 0-6, 6-12, and 12-24 inches).

- Area 6 soil and sediment: No change (planned intervals: 0-6, 6-12, and 12-24 inches, actual intervals: 0-2, 0-6, 6-12, and 12-24 inches).

## 2.2 Sample Collection and Analysis

### 2.2.1 Sample Collection

All samples collected during the beach sampling program were collected by the EPA Region 2 Division of Environmental Science and Assessment (DESA) Superfund Support Team (SST) following sampling procedures and methods described in the EPA approved QAPP prepared by SST for this work. The QAPP details the sample collection methods, sample handling procedures, and analytical methods used to analyze all samples. Appendix A includes the DESA SST Final Report, which includes the QAPP.

Table 2-1 lists the sample information and analysis for all samples collected during the beach sampling event. This list was prepared by CDM using the DESA SST Trip Report, which included chain-of-custody documents and the electronic deliverables provided by DESA. The DESA Trip Report is also included in Appendix A. The sample information in Table 2-1 matches the contents of the project database being maintained in EQuIS by CDM.

### 2.2.2 Sample Analysis Summary

All samples from Areas 1 and 3 were analyzed by an EPA Contract Laboratory Program (CLP) laboratory for a full spectrum of compounds including VOCs, SVOCs, pesticides, PCBs, and TAL metals. A total of 197 soil and sediment samples (plus 15 duplicate samples) were collected in Area 5 and Area 6; 176 of these samples (plus 8 duplicate samples) were analyzed at the DESA laboratory in Edison, New Jersey for the five target metals (antimony, arsenic, copper, chromium, and lead). A total of 158 of the Area 5 and Area 6 soil and sediment samples (plus 7 duplicate samples) were screened by the DESA SST for the target metals using X-ray fluorescence (XRF). Of the soil and sediment samples collected in Area 5 and Area 6 (excluding duplicates), a total of 21were screened by XRF only, 39 samples were analyzed at the DESA laboratory only, and 137 samples were both screened with XRF and analyzed for

target metals at the DESA laboratory. All surface water samples were analyzed for the target metals at the DESA laboratory. A detailed breakdown of sample analyses by Area is provided below.

### 2.2.3 Area 1 Sampling

The locations of the soil samples collected in Area 1 are shown on Figure 2-1 and listed on Table 2-1. A total of 28 soil samples (plus 3 duplicate samples) were collected from 14 locations in Area 1 at depth intervals of 0-6 and 6-12 inches. All samples were analyzed at a CLP laboratory for VOCs, SVOCs, pesticides, PCBs, and TAL metals.

### 2.2.4 Area 3 Sampling

The locations of the soil samples collected in Area 3 are shown on Figure 2-2 and listed on Table 2-1. A total of 57 soil samples (plus 3 duplicate samples) were collected from 19 locations in Area 3 at depth intervals including 0-2, 0-6, and 6-12 inches. All samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and TAL metals.

### 2.2.5 Area 5 Sampling

The locations of the soil, sediment, and surface water samples collected in Area 5 are shown on Figures 2-3, 2-4, and 2-5, respectively, and listed on Table 2-1. A total of 59 soil samples (plus 3 duplicate samples) were collected from 31 locations in Area 5 at depth intervals of 0-2, 0-6, 6-12, and 12-24 inches. A total of 55 sediment samples (plus 3 duplicate samples) were collected from 28 locations in Area 5 at depth intervals of 0-2, 0-6, 6-12, and 12-24 inches. A total of 10 surface water samples (plus 1 duplicate) were collected from 10 locations in Area 5. A total of 52 soil samples (out of 59) and 48 sediment samples (out of 55) were analyzed by the DESA laboratory for the target metals: antimony, arsenic, copper, chromium, and lead. All surface water samples were analyzed by the DESA laboratory for the five target metals.

### 2.2.6 Area 6 Sampling

The locations of the soil, sediment, and surface water samples collected in Area 6 are shown on Figures 2-6, 2-7, and 2-8, respectively, and listed on Table 2-1. A total of 34 soil samples (plus 2 duplicate samples) were collected from 13 locations in Area 6 at depth intervals of 0-2, 0-6, 6-12, and 12-24 inches. A total of 49 sediment samples (plus 1 duplicate sample) were collected from 20 locations in Area 6 at depth intervals of 0-2, 0-6, 6-12, and 12-24 inches. A total of 12 surface water samples were collected from 12 locations in Area 6 (no duplicates were collected). A total of 32 soil samples (out of 34) and 44 sediment samples (out of 49) were analyzed by the DESA laboratory for the five target metals: antimony, arsenic, copper, chromium, and lead. All surface water samples were analyzed by the DESA laboratory for the five target metals.

## 2.3 Data Management

To facilitate evaluation and presentation of the data collected by EPA during the beach sampling event, CDM uploaded the data provided by the CLP laboratories and DESA into the EQuIS database. This database also contains the results of previous sampling events conducted by EPA at the site. The beach sample data were provided by the CLP laboratories and by DESA in electronic data deliverables (EDDs). These data

were checked against the chain-of-custody documents and the DESA trip report to ensure that the database was complete and accurate. Sample information such as sample depth, location, and media type were checked.

The reporting tool in the EQuIS database was used to compare the sample results against the screening criteria and to prepare the results tables and other tables used in this technical memorandum.

## 2.4 Data Quality and Reporting

All data presented in this technical memorandum were generated by the DESA SST and CLP laboratories and were validated by EPA. DESA and the CLP laboratories operate in accordance with EPA's quality assurance/quality control (QA/QC) program requirements. The DESA Final Report incorporates their data evaluation report in the body of the report. The data evaluation discusses the accuracy, precision, representativeness, completeness, and comparability of the data set and deviations from planned procedures and analysis. The conclusion of the DESA data evaluation was that there are no limitations on the use of these data.

Review of the data indicated that some data were rejected during data validation. Data qualified as "rejected" (R) were not used in this technical memorandum. All of the remaining data, including data qualified as "estimated" (J), are considered to be valid and were used in this technical memorandum.

Analytical data presented in this technical memorandum are reported in units consistent with the standard data reporting units used by EPA's CLP laboratories and are as follows:

- Inorganic data for aqueous samples are presented in micrograms per liter (µg/L)
- Organic data for solid samples (i.e., soils and sediments) are presented in micrograms per kilogram (µg/kg)
- Inorganic data for solid samples are presented in milligrams per kilogram (mg/kg).

## 2.5 Screening Criteria

The results of the soil and sediment sample analyses, with the exception of chromium, were screened against the New Jersey Residential Direct Contact Soil Remediation Standards (NJRDCSRS) (New Jersey Department of Environmental Protection [NJDEP] 2009). The screening criteria are listed in Table 2-2. Sediment samples were screened against these standards because people are exposed to both soil and sediment when they use the beach. Human health-based criteria for sediment are not available. The NJRDCSRS does not include a standard for total chromium (the beach samples were analyzed for total chromium and were not analyzed for trivalent or hexavalent chromium) or for individual PCB Aroclors. CDM used the NJDEP "Residential Direct Contact Soil Cleanup Criteria" of 240 mg/kg for hexavalent chromium as the screening criterion for total chromium (NJDEP 1999). The

NJRDCSRS includes a standard of 0.2 mg/kg for PCBs but does not list standards for individual Aroclors, so this value, 0.2 mg/kg, was applied to the individual Aroclors. During the RI, soil and sediment samples may be screened against other applicable and appropriate criteria. Surface water samples were not screened because human health-based criteria for surface water have not been developed for the project. During the RI, appropriate screening criteria for surface water data will be developed if necessary and these data will be incorporated into the RI Report.

The screening criteria applied to soil and sediment samples are conservative because they are residential criteria and therefore assume more contact with the media than is likely in a recreational setting. Residential criteria are developed for a setting where a person lives year round (e.g., 350 days per year) and has the potential for direct contact with the media for an extended period of time (e.g., 30 years). In contrast, during recreational use of the beach a person is in contact with the media for a matter of hours or days per year so the potential for exposure is much lower. In addition, the residential exposure model assumes the media are accessible all the time. Some of the soil samples were collected at very low tide from areas that are typically underwater a majority of the time and are therefore not accessible as assumed by the residential exposure model.

## 2.6 XRF Screening

The DESA SST used XRF to screen soil and sediment samples from Areas 5 and 6 as part of the beach sampling event. The XRF work was conducted by DESA to help characterize the extent of contamination and to assess the performance of XRF as a screening tool. A total of 197 soil and sediment samples were collected from Areas 5 and 6 and 158 were screened using XRF. Of these 158 samples, a total of 137 (87 percent) were also analyzed at the DESA laboratory for the five target metals. The results of the XRF sampling are presented and discussed by the DESA SST Final Report for the project, which is included in Appendix A. The results of the target metals analyses by the DESA laboratory were provided to CDM and are included in the project database being maintained by CDM. The results of the XRF analysis and associated sample information are not included in the project database being maintained by CDM. Table 2-1 lists the samples screened using XRF. The breakdown of XRF analyses by Area and matrix is as follows:

- Area 5 Soil: 48 samples screened by XRF, 41 also analyzed at DESA
- Area 5 Sediment: 46 samples screened by XRF, 39 also analyzed at DESA
- Area 6 Soil: 25 samples screened by XRF, 23 also analyzed at DESA
- Area 6 Sediment: 39 samples screened by XRF, 34 also analyzed at DESA
- Figures 2-3, 2-4, 2-6, and 2-7 show the locations of samples analyzed at the laboratory and screened using XRF and the locations of samples only screened with XRF.

Chain-of-custody forms were not prepared for the XRF samples because they were screened in the field.

# Section 3
# Results

## 3.1 Area 1 Soil Sampling Results

Area 1 soil samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and TAL metals. The results are listed on Table B-1 in Appendix B. These data were screened against the screening criteria listed in Table 2-2 and samples that exceed screening criteria are highlighted in light blue on Table B-1. Figure 3-1 is a box map showing the location of the samples and results where analytes exceed the screening criteria. In the following eight samples, one or more analytes exceed their screening criteria:

- A1-SS09-06 (0-6 inches): Aroclor 1254
- A1-SS09-12 (6-12 inches): arsenic, lead, and Aroclor 1254
- A1-SS11-06 (0-6 inches): benzo(a)pyrene
- A1-SS14-06 (0-6 inches): benzo(a)pyrene
- A1-SS14-12 (6-12 inches): lead and Aroclor 1254
- A1-SS15-06 (0-6 inches): Aroclor 1254
- A1-SS15-12 (6-12 inches): benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene
- A1-SS16-06 (0-6 inches): arsenic and Aroclor 1254
- No VOCs or pesticides exceeded screening criteria

## 3.2 Area 3 Soil Sampling Results

Area 3 soil samples were analyzed for VOCs, SVOCs, Pesticides, PCBs, and TAL metals. The results are listed on Table B-2 in Appendix B. These data were screened against the screening criteria listed in Table 2-2 and samples that exceed screening criteria are highlighted in light blue on Table B-2. Figure 3-2 is a box map showing the location of the samples and results where analytes exceed the screening criteria. In the following three samples, one or more analytes exceed their screening criteria:

- A3-SS75-12 (6-12 inches): arsenic and vanadium
- A3-SS76-06 (0-6 inches): benzo(a)pyrene
- A3-SS77-06 (0-6 inches): arsenic and vanadium
- No VOCs, pesticides, or PCBs exceeded screening criteria

## 3.3 Area 5 Soil Sampling Results

Area 5 soil samples were analyzed for the five target metals: antimony, arsenic, copper, chromium, and lead. The results are listed on Table B-3 in Appendix B. These data were screened against the screening criteria listed in Table 2-2 and samples that exceed screening criteria are highlighted in light blue on Table B-3. Figure 3-3 is a box map showing the location of the samples and results where analytes exceed the screening criteria. In the following seven samples, one or more analytes exceed their screening criteria:

- A5-SS29-06 (0-6 inches): arsenic
- A5-SS33-06 (0-6 inches): antimony and arsenic
- A5-SS35-06 (0-6 inches): arsenic
- A5-SS159-06 (0-6 inches): antimony and arsenic
- A5-SS162-02 (0-2 inches): antimony, arsenic, and lead
- A5-SS162-06 (0-6 inches): antimony, arsenic, and lead
- A5-SS213-06 (0-6 inches): antimony, arsenic, and lead

## 3.4 Area 5 Sediment Sampling Results

Area 5 sediment samples were analyzed for the five target metals: antimony, arsenic, copper, chromium, and lead. The results are listed on Table B-4 in Appendix B. These data were screened against the screening criteria listed in Table 2-2 and samples that exceed screening criteria are highlighted in light blue on Table B-4. Figure 3-4 is a box map showing the location of the samples and results where analytes exceed the screening criteria. In the following sample, one analyte exceeds its screening criterion:

- A5-SDB3-12 (6-12 inches): arsenic

## 3.5 Area 5 Surface Water Sampling Results

Area 5 surface water samples were analyzed for the five target metals: antimony, arsenic, copper, chromium, and lead. The results are listed on Table B-5 in Appendix B. Ten surface water samples and one duplicate sample were collected. In seven of the samples the analytes were not detected. Copper was detected in two samples at concentrations of 10 and 33 µg/L (the detection limit was 10 µg/L). Lead was detected in two samples at concentrations of 8 and 81 µg/L (the detection limit was 8 µg/L). These data were not screened against any criteria as part of this report. These data will be evaluated as part of the RI.

## 3.6 Area 6 Soil Sampling Results

Area 6 soil samples were analyzed for the five target metals: antimony, arsenic, copper, chromium, and lead. The results are listed on Table B-6 in Appendix B. These

data were screened against the screening criteria listed in Table 2-2 and samples that exceed screening criteria are highlighted in light blue on Table B-6. Figure 3-5 is a box map showing the location of the samples and results where analytes exceed the screening criteria. In the following sample, one analyte exceeds its screening criterion:

- A6-SS37-06 (0-6 inches): arsenic

## 3.7 Area 6 Sediment Sampling Results

Area 6 sediment samples were analyzed for the five target metals: antimony, arsenic, copper, chromium, and lead. The results are listed on Table B-7 in Appendix B. These data were screened against the screening criteria listed in Table 2-2 and samples that exceed screening criteria are highlighted in light blue on Table B-7. Figure 3-6 is a box map showing the location of the samples and results where analytes exceed the screening criteria. In the following sample, one analyte exceeds its screening criterion:

- Z6-SD41-06 (0-6 inches): arsenic. Sample Z6-SD41-06 was a duplicate of sample A6-SD41-06. In sample A6-SD41-06, arsenic was detected at 6.8 mg/kg, which is below the screening criterion of 19 mg/kg.

## 3.8 Area 6 Surface Water Sampling Results

Area 6 surface water samples were analyzed for the five target metals: antimony, arsenic, copper, chromium, and lead. The results are listed on Table B-8 in Appendix B. Twelve surface water samples were collected. In three of the samples, the analytes were not detected. Copper was detected the most frequently. It was detected in 7 out of 12 samples at concentrations ranging from 11 to 25 µg/L (the detection limit was 10 µg/L). Lead was detected in 5 out of 12 samples at concentrations ranging from 8.2 to 45 µg/L (the detection limit was 8 µg/L). Chromium was detected in two samples at 6.2 µg/L, which is just above the detection limit of 5 µg/L. Arsenic was detected only in sample A6-SW38, at 17 µg/L. These data were not screened against any criteria as part of this report. These data will be evaluated as part of the RI.

## 3.9 Comparison of Beach Sampling and Historical Data

### 3.9.1 Purpose

The historical soil and sediment sampling results, collected before 2010, were compared to the beach sample data collected in May 2010, to assess whether concentrations of the five target metals in the two data sets were different. The comparison was conducted using soil and sediment samples from Areas 3, 5, and 6.

### 3.9.2 Methods

All statistical comparisons were conducted using the nonparametric Gehan score test. This method is a standard test for left-censored data (data which contains nondetects) comparisons and is described in detail in EPA (2010a) and Helsel (2005). ProUCL statistical analysis software was used to run the tests. In cases where the data being tested are all above detection limits, the Gehan test is the same as the Mann-Whitney U test (also referred to as the Wilcoxon rank-sum test). These nonparametric methods test whether two data sets (i.e., historic data and the beach sampling data from May

2010) exhibit the same or similar concentrations—more precisely whether the distribution functions or survival functions of the two groups differ significantly. The initial sets of comparisons tested the null hypothesis that there is no difference between the two groups versus the alternative that there is a significant difference (i.e., a 2-sided test). The probabilities, or p-values, were calculated and compared to a critical level (a) of 0.05. Cases where the p-value was less than a indicated a statistically significant difference between the data sets. Such cases were also tested under the null hypothesis that the current data were less than or equal to the historic data versus the alternative that the beach sample data were greater than the historic data. In this case, p-values less than a indicated that the beach sample data were significantly greater than the historic data.

Prior to statistical testing, the data were processed as follows:

- All "R" qualified (rejected) data were removed.
- Field duplicate results were removed (field duplicates results were not averaged with the parent sample data).
- Data sets were grouped into 0-6, 6-12, and 12-24 inch depth intervals by including any increments that fell within these intervals. Note that this resulted in removal of 65 samples in the historic data set where the increment sampled was 0-12 inches. These 65 samples included 30 sediment samples from Area 5 and 35 sediment samples from Area 6 collected from 0-12 inches. No samples were collected from 0-12 inches during the May 2010 sampling event so combining the historic samples collected from 0-12 inches with current samples collected from 0-2 and 0-6 inches would not have been useful.
- Datasets were grouped by Area: 3, 5, and 6.
- The soil and sediment data from a given Area were combined into one data set for purposes of this comparison because, in this case, they were screened against the same screening criteria.

The Gehan test results should be considered preliminary since the distributions of the two groups were not examined or tested for normality or log-normality. More rigorous testing of such assumptions, along with testing of outliers, could potentially warrant the use of more powerful parametric comparison methods.

### 3.9.3 Results

The results of the comparison between current and historical data for the target metals are summarized in Tables 3-1, 3-2, and 3-3 and are discussed below. In Area 5, the comparison showed that concentrations of lead (in the 12-24 inch sample interval) and antimony (in the 0-6 inch and 12-24 inch interval) were higher in the beach sample data set than in the same intervals in the historical data set. In Area 6, the comparison showed that arsenic and antimony concentrations were higher in the 0-6 inch interval in the beach sample data set than in the 0-6 inch interval in the historical data set. As discussed in the following sections, in some cases the comparison also showed no

significant difference between the data sets or that the concentration of a metal in the beach sample data set was lower than the historical data set. The causes of these differences, and the other differences discussed below, include natural processes such as storm events. The significance of the differences between the beach sampling data set and the historical data set are discussed in Section 4.3.

#### 3.9.3.1 Area 1 Soil Samples

A comparison was not performed on Area 1 samples because the samples from Area 1 were collected to characterize soil contamination along the fence line.

#### 3.9.3.2 Area 3 Soil Samples

In Area 3, there was no significant difference in concentration between the historical and beach sample soil data sets for the 0-6 inch depth interval (Table 3-1). Historical data were not available from the 6-12 or 12-24 inch intervals so a comparison could not be performed.

#### 3.9.3.3 Area 5 Soil and Sediment Samples

In Area 5, the comparison showed that the concentrations of antimony and lead, in the historical and beach sample data sets, were significantly different and that the concentrations in the beach samples were greater than the concentration in the historical samples (Table 3-2). The greater concentration of antimony in the beach samples, as compared to the historical samples, was observed in samples collected from the 0-6 inches and 12-24 inches depth intervals. The greater concentration of lead in the beach samples, as compared to the historical samples, was observed in samples collected from the 12-24 inch depth interval (Table 3-2). Concentrations of arsenic, chromium, and copper were not significantly different between the historic and beach samples.

#### 3.9.3.4 Area 6 Soil and Sediment Samples

In samples collected in the 0-6 inch interval in Area 6, the concentrations of antimony and arsenic were greater in the beach samples compared to the historical samples. In contrast, the concentrations of arsenic, copper, and lead in the beach samples were less, as compared to the historical samples, in samples collected from the 12-24 inch interval. No difference in chromium concentrations were observed between the two data sets. These results are summarized in Table 3-3.

# Section 4
# Summary

## 4.1 Soil, Sediment, and Surface Water Sample Results

In Area 1, a total of 28 soil samples were collected from 14 locations along the fence line and screening criteria were exceeded in 8 samples. The samples which exceeded their screening criteria were distributed along the line of samples with no apparent pattern to their aerial distribution (see Figure 3-1). Five of the eight samples (63%) which exceeded their screening criteria were collected from 0-6 inches. Concentrations of PCB Aroclor 1254 exceeded the screening criterion in five samples. Three of these samples were collected from 0-6 inches while the other two were collected from 6-12 inches. Samples from Areas 1 and 3 were analyzed for PCBs. PCBs were only detected in the samples collected in Area 1. Benzo(a)pyrene exceeded the screening criterion in three samples including one where benzo(a)anthracene and benzo(b)fluoranthene also exceeded the screening criteria. Arsenic and lead each exceeded the screening criteria in two samples.

In Area 3, a total of 57 soil samples were collected at 19 locations and screening criteria were exceeded in 3 samples. These three samples were distributed around the sampling area with no apparent pattern to their aerial distribution (see Figure 3-2). Two of the samples that exceeded screening criteria were collected from 0-6 inches while the other sample was collected from 6-12 inches. Arsenic and vanadium exceeded the screening criteria in two samples and benzo(a)pyrene exceeded the screening criterion in one sample.

In Area 5, a total of 59 soil samples were collected at 31 locations and screening criteria were exceeded in 7 samples. All the samples which exceeded their screening criteria were collected from 0-6 inches. Arsenic exceeded the screening criterion in all seven samples, antimony exceeded criterion in five samples, and lead exceeded the criterion in three samples. The samples which exceeded screening criteria were concentrated at the eastern end of Area 5 adjacent to Area 2 (where the beach has been closed, see Figure 3-3). These data indicate that site-related contaminants are being deposited at the east end of Area 5 due to erosion of the nearby First Jetty and/or transport of material from the east to west along the shore.

In Area 5, a total of 55 sediment samples were collected from 28 locations. Only one sample exceeded the screening criterion for arsenic. The sample was collected from 6-12 inches between the First and Second Jetties (see Figures 1-2 and 3-4). These data indicate that the processes that lead to soil samples exceeding screening criteria in Area 5 are not having a similar impact on sediment samples.

In Area 6, a total of 34 soil samples were collected from 13 locations and the screening criterion for arsenic was exceeded in one sample collected from 0-6 inches. In Area 6, a total of 49 sediment samples were collected from 20 locations and the screening criterion for arsenic was exceeded in only one sample collected from 0-6 inches. Both the soil sample and sediment samples that exceeded screening criteria were collected

near the west end of the Area close to Cheesequake inlet. The concentrations of arsenic in these samples were only slightly above the screening criterion.

The results of the surface water sampling showed that copper and lead were the analytes detected most frequently. Lead was detected in 7 out of a total of 22 samples. Copper was detected in 9 out of 22 samples. In contrast antimony was not detected in any samples, arsenic was detected in one sample, and chromium was detected in two samples. These data were not screened against any criteria for this report. These data will be evaluated as part of the RI.

## 4.2 Comparison of Current and Historical Data

In Area 5, concentrations of antimony in the 0-6 and 12-24 inch depth intervals, and lead in the 12-24 inch interval in the beach sample data set are greater than concentrations in the historical data set. Concentrations of arsenic, chromium, and copper were not significantly different between the two data sets.

In Area 6, concentrations of antimony and arsenic in the beach sampling data in samples collected from 0-6 inches were greater compared to historic data. The concentrations of arsenic, copper, and lead in the beach sampling data in samples collected from 12-24 inches were less compared to historic data.

## 4.3 EPA Data Assessment

The fact sheet prepared by EPA and released to the public (Appendix C) summarizes the results of this sampling program, provides an assessment of changes in contaminant concentrations in soil, sediment, and surface water, and discusses ongoing recreational use in Areas 1, 3, 5 and 6 (Figure 1-2). In their review of the beach sampling data and comparison to historical data, EPA concluded that the public health determination conducted in February 2009 is still valid and therefore Areas 1, 3, 5, and 6 could continue to be used by the public (unless conditions change).

# Section 5
# References

CDM. 2010. Final (Revised) Data Gap Evaluation Technical Memorandum. Remedial Investigation/Feasibility Study, Raritan Bay Slag Superfund Site, Old Bridge/Sayreville, New Jersey. USACE Contract No. W912DQ-08-D-0018. Edison, NJ. June.

EPA. 2010. Uniform Federal Policy Quality Assurance Project Plan for Raritan Bay Slag Beach Sampling Site. May 10, 2010, Revision 0. Prepared by the U.S. Environmental Protection Agency, Division of Environmental Site Assessment, Superfund Support Team. Edison, New Jersey.

_____. 2010a. ProUCL v. 4.00.05 Technical Guide, EPA/600/R-07/041, May 2010.

Helsel, Dennis R. 2005. Nondetects and Data Analysis, Statistics for Censored Environmental Data, Wiley.

New Jersey Department of Environmental Protection. 1999. Soil Cleanup Criteria (mg/kg), http://www.nj.gov/dep/srp/guidance/scc/. Revised 12 May 1999. Last accessed June 25, 2010.

_____. 2009. NJDEP Residential Direct Contact Health Based Criteria and Soil Remediation Standards. Revised November 4, 2009. http://www.state.nj.us/dep/srp/guidance/rs/. Last accessed May 25, 2010.

# Tables

**Table 2-1**
**Sample Information and Analyses**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area | Location | Sample ID | Duplicate Sample ID | X Coordinate | Y Coordinate | Date Collected | Start Depth | End Depth | Units | Matrix | VOCs | SVOCs | Pesticide | PCBs | Metals | Sb, As, Cu, Cr, Pb | XRF Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area 1 | A1-S05 | A1-SS05-06 | | 563116.73 | 591924.16 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S05 | A1-SS05-12 | | 563116.73 | 591924.16 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S06 | A1-SS06-06 | | 563211.65 | 591921.25 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S06 | A1-SS06-12 | | 563211.65 | 591921.25 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S07 | A1-SS07-06 | | 563302.17 | 591902.59 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S07 | A1-SS07-12 | | 563302.17 | 591902.59 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S08 | A1-SS08-06 | | 563482.7587 | 591825.6158 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S08 | A1-SS08-12 | | 563482.7587 | 591825.6158 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S09 | A1-SS09-06 | | 563674.9904 | 591785.7379 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S09 | A1-SS09-12 | | 563674.9904 | 591785.7379 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S10 | A1-SS10-06 | | 563862.1095 | 591701.8922 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S10 | A1-SS10-12 | | 563862.1095 | 591701.8922 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S11 | A1-SS11-06 | | 564051.2737 | 591653.8343 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S11 | A1-SS11-12 | | 564051.2737 | 591653.8343 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S12 | A1-SS12-06 | | 564250.663 | 591665.0819 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S12 | A1-SS12-12 | | 564250.663 | 591665.0819 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S13 | A1-SS13-06 | Z1-SS13-06 | 564448.0072 | 591681.442 | 5/17/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S13 | A1-SS13-12 | | 564448.0072 | 591681.442 | 5/17/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S14 | A1-SS14-06 | | 564643.3064 | 591682.4645 | 5/18/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S14 | A1-SS14-12 | | 564643.3064 | 591682.4645 | 5/18/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S15 | A1-SS15-06 | | 564828.3806 | 591633.3841 | 5/18/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S15 | A1-SS15-12 | | 564828.3806 | 591633.3841 | 5/18/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S16 | A1-SS16-06 | | 565013.9632 | 591643.1654 | 5/18/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S16 | A1-SS16-12 | | 565013.9632 | 591643.1654 | 5/18/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S17 | A1-SS17-06 | | 565209.6864 | 591617.9966 | 5/18/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S17 | A1-SS17-12 | Z1-SS17-12 | 565209.6864 | 591617.9966 | 5/18/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S17 | A1-SS17-06 | | 565209.6864 | 591617.9966 | 5/18/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S17 | A1-SS17-12 | Z1-SS17-12 | 565209.6864 | 591617.9966 | 5/18/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S18 | A1-SS18-06 | Z1-SS18-06 | 565387.693 | 591582.2586 | 5/18/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 1 | A1-S18 | A1-SS18-12 | | 565387.693 | 591582.2586 | 5/18/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S88 | A3-SS88-02 | | 563085.46 | 591840.76 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S88 | A3-SS88-06 | | 563085.46 | 591840.76 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S88 | A3-SS88-12 | | 563085.46 | 591840.76 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S89 | A3-SS89-02 | Z3-SS89-02 | 563116.73 | 591876.42 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S89 | A3-SS89-06 | Z3-SS90-06 | 563116.73 | 591876.42 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S89 | A3-SS89-12 | | 563116.73 | 591876.42 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S90 | A3-SS90-02 | | 563139.77 | 591911.54 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S90 | A3-SS90-06 | | 563139.77 | 591911.54 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | A3-S90 | A3-SS90-12 | | 563139.77 | 591911.54 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S70 | A3-SS70-02 | | 563135.742 | 591833.588 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S70 | A3-SS70-06 | | 563135.742 | 591833.588 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S70 | A3-SS70-12 | | 563135.742 | 591833.588 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S71 | A3-SS71-02 | | 563185.2 | 591869.663 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S71 | A3-SS71-06 | | 563185.2 | 591869.663 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S71 | A3-SS71-12 | | 563185.2 | 591869.663 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S73 | A3-SS73-02 | | 563220.827 | 591869.075 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S73 | A3-SS73-06 | | 563220.827 | 591869.075 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S73 | A3-SS73-12 | | 563220.827 | 591869.075 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S74 | A3-SS74-02 | | 563260.622 | 591875.217 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S74 | A3-SS74-06 | | 563260.622 | 591875.217 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S74 | A3-SS74-12 | | 563260.622 | 591875.217 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S75 | A3-SS75-02 | Z3-SS75-02 | 563316.092 | 591859.54 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S75 | A3-SS75-06 | | 563316.092 | 591859.54 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S75 | A3-SS75-12 | | 563316.092 | 591859.54 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S76 | A3-SS76-02 | | 563167.973 | 591875.848 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S76 | A3-SS76-06 | | 563167.973 | 591875.848 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S76 | A3-SS76-12 | | 563167.973 | 591875.848 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |



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**Table 2-1**
**Sample Information and Analyses**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area | Location | Sample ID | Duplicate Sample ID | X Coordinate | Y Coordinate | Date Collected | Start Depth | End Depth | Units | Matrix | VOCs | SVOCs | Pesticide | PCBs | Metals | Sb, As, Cu, Cr, Pb | XRF Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area 3 | S77 | A3-SS77-02 | | 563168.638 | 591852.801 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S77 | A3-SS77-06 | | 563168.638 | 591852.801 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S77 | A3-SS77-12 | | 563168.638 | 591852.801 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S79 | A3-SS79-02 | | 563184.158 | 591902.82 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S79 | A3-SS79-06 | | 563184.158 | 591902.82 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S79 | A3-SS79-12 | | 563184.158 | 591902.82 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S80 | A3-SS80-02 | | 563213.328 | 591846.016 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S80 | A3-SS80-06 | | 563213.328 | 591846.016 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S80 | A3-SS80-12 | | 563213.328 | 591846.016 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S81 | A3-SS81-02 | | 563321.41 | 591833.611 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S81 | A3-SS81-06 | | 563321.41 | 591833.611 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S81 | A3-SS81-12 | | 563321.41 | 591833.611 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S82 | A3-SS82-02 | | 563273.307 | 591836.993 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S82 | A3-SS82-06 | | 563273.307 | 591836.993 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S82 | A3-SS82-12 | | 563273.307 | 591836.993 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S83 | A3-SS83-02 | | 563230.102 | 591896.726 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S83 | A3-SS83-06 | | 563230.102 | 591896.726 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S83 | A3-SS83-12 | | 563230.102 | 591896.726 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S84 | A3-SS84-02 | | 563285.406 | 591887.4 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S84 | A3-SS84-06 | | 563285.406 | 591887.4 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S84 | A3-SS84-12 | | 563285.406 | 591887.4 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S85 | A3-SS85-02 | | 563324.213 | 591881.886 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S85 | A3-SS85-06 | | 563324.213 | 591881.886 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S85 | A3-SS85-12 | | 563324.213 | 591881.886 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S86 | A3-SS86-02 | | 563239.903 | 591840.358 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S86 | A3-SS86-06 | | 563239.903 | 591840.358 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S86 | A3-SS86-12 | | 563239.903 | 591840.358 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 3 | S87 | A3-SS87-02 | | 563338.488 | 591861.358 | 5/10/2010 | 0 | 2 | in | SO | X | X | X | X | X | | |
| Area 3 | S87 | A3-SS87-06 | | 563338.488 | 591861.358 | 5/10/2010 | 0 | 6 | in | SO | X | X | X | X | X | | |
| Area 3 | S87 | A3-SS87-12 | | 563338.488 | 591861.358 | 5/10/2010 | 6 | 12 | in | SO | X | X | X | X | X | | |
| Area 5 | A130 | A5-SDA130-02 | | 561729.894 | 593218.97 | 5/13/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | A130 | A5-SDA130-06 | | 562876.5953 | 592239.742 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | A130 | A5-SDA130-12 | | 562876.5953 | 592239.742 | 5/13/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | A130 | A5-SDA130-24 | | 562876.5953 | 592239.742 | 5/13/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | A133 | A5-SDA133-06 | | 562876.5953 | 592314.742 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | A165 | A5-SDA165-06 | | 563005.6796 | 592392.8265 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | B10 | A5-SDB10-02 | | 562130.6238 | 592764.8343 | 5/12/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | B10 | A5-SDB10-06 | | 562130.6238 | 592764.8343 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | B10 | A5-SDB10-12 | | 562130.6238 | 592764.8343 | 5/12/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | B10 | A5-SDB10-24 | Z5-SDB10-24 | 562130.6238 | 592764.8343 | 5/12/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | B15 | A5-SDB15-06 | | 561930.6238 | 592964.8343 | 5/18/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 5 | B20 | A5-SDB20-02 | | 561930.6238 | 593164.8343 | 5/12/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | B20 | A5-SDB20-06 | | 561930.6238 | 593164.8343 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | B20 | A5-SDB20-12 | | 561930.6238 | 593164.8343 | 5/12/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | B20 | A5-SDB20-24 | Z5-SDB20-24 | 561930.6238 | 593164.8343 | 5/12/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | B22 | A5-SDB22-06 | | 561530.6238 | 593164.8343 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | B3 | A5-SDB3-02 | | 562530.6238 | 592364.8343 | 5/13/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | B3 | A5-SDB3-06 | | 562530.6238 | 592364.8343 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | B3 | A5-SDB3-12 | | 562530.6238 | 592364.8343 | 5/13/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | B3 | A5-SDB3-24 | | 562530.6238 | 592364.8343 | 5/13/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | B6 | A5-SDB6-02 | | 562330.6238 | 592564.8343 | 5/13/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | B6 | A5-SDB6-06 | | 562330.6238 | 592564.8343 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | B6 | A5-SDB6-12 | | 562330.6238 | 592564.8343 | 5/13/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | B6 | A5-SDB6-24 | | 562330.6238 | 592564.8343 | 5/13/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | B9 | A5-SDB9-06 | | 562330.6238 | 592764.8343 | 5/14/2010 | 0 | 6 | in | SE | | | | | | X | X |

**Table 2-1**
**Sample Information and Analyses**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area | Location | Sample ID | Duplicate Sample ID | X Coordinate | Y Coordinate | Date Collected | Start Depth | End Depth | Units | Matrix | VOCs | SVOCs | Pesticide | PCBs | Metals | Sb, As, Cu, Cr, Pb | XRF Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area 5 | SED121 | A5-SD121-06 | Z5-SD121-06 | 562344.221 | 592584.741 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED123 | A5-SD123-06 | | 562169.393 | 592685.992 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED124 | A5-SD124-02 | | 562096.408 | 592748.998 | 5/12/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | SED124 | A5-SD124-06 | | 562096.408 | 592748.998 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED124 | A5-SD124-12 | | 562096.408 | 592748.998 | 5/12/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | SED124 | A5-SD124-24 | | 562096.408 | 592748.998 | 5/12/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | SED127 | A5-SD127-06 | | 561905.726 | 592973.997 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED129 | A5-SD129-06 | | 561783.935 | 593137.774 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED130 | A5-SD130-06 | | 561729.894 | 593218.97 | 5/18/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 5 | SED134 | A5-SD134-06 | | 561763.323 | 593233.109 | 5/19/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 5 | SED136 | A5-SD136-06 | | 561879.167 | 593079.696 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED139 | A5-SD139-02 | | 562066.675 | 592847.005 | 5/12/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | SED139 | A5-SD139-06 | | 562066.675 | 592847.005 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED139 | A5-SD139-12 | | 562066.675 | 592847.005 | 5/12/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | SED139 | A5-SD139-24 | | 562066.675 | 592847.005 | 5/12/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | SED141 | A5-SD141-02 | | 562200.776 | 592723.179 | 5/12/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | SED141 | A5-SD141-06 | | 562200.776 | 592723.179 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED141 | A5-SD141-12 | | 562200.776 | 592723.179 | 5/12/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | SED141 | A5-SD141-24 | | 562200.776 | 592723.179 | 5/12/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | SED142 | A5-SD142-06 | | 562283.82 | 592667.024 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED143 | A5-SD143-06 | | 562371.954 | 592626.117 | 5/19/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 5 | SED147 | A5-SD147-06 | | 562577.416 | 592319.449 | 5/12/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED148 | A5-SD148-06 | | 562512.517 | 592386.378 | 5/18/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 5 | SED151 | A5-SD151-06 | | 562441.292 | 592584.054 | 5/19/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 5 | SED152 | A5-SD152-06 | | 562491.803 | 592495.327 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED155 | A5-SD155-06 | | 562610.467 | 592363.885 | not available | 0 | 6 | in | SE | | | | | | | X |
| Area 5 | SED157 | A5-SD157-02 | | 562753.551 | 592216.906 | 5/13/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 5 | SED157 | A5-SD157-06 | | 562753.551 | 592216.906 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 5 | SED157 | A5-SD157-12 | | 562753.551 | 592216.906 | 5/13/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 5 | SED157 | A5-SD157-24 | | 562753.551 | 592216.906 | 5/13/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 5 | S107 | A5-SS107-02 | | 561644.862 | 593290.022 | 5/12/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S107 | A5-SS107-06 | | 561644.862 | 593290.022 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S107 | A5-SS107-12 | | 561644.862 | 593290.022 | 5/12/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S107 | A5-SS107-24 | | 561644.862 | 593290.022 | 5/12/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S109 | A5-SS109-02 | | 561697.756 | 593201.682 | 5/12/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S109 | A5-SS109-06 | | 561697.756 | 593201.682 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S109 | A5-SS109-12 | | 561697.756 | 593201.682 | 5/12/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S109 | A5-SS109-24 | | 561697.756 | 593201.682 | 5/12/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S110 | A5-SS110-06 | | 561757.683 | 593127.882 | 5/18/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 5 | S111 | A5-SS111-02 | | 561819.008 | 593048.848 | 5/12/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S111 | A5-SS111-06 | | 561819.008 | 593048.848 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S111 | A5-SS111-12 | | 561819.008 | 593048.848 | 5/12/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S111 | A5-SS111-24 | | 561819.008 | 593048.848 | 5/12/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S112 | A5-SS112-02 | | 561878.736 | 592966.792 | 5/12/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S112 | A5-SS112-06 | | 561878.736 | 592966.792 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S112 | A5-SS112-12 | | 561878.736 | 592966.792 | 5/12/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S112 | A5-SS112-24 | | 561878.736 | 592966.792 | 5/12/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S113 | A5-SS113-06 | Z5-SS113-06 | 561936.09 | 592887.242 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S115 | A5-SS115-06 | | 562065.97 | 592738.149 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S117 | A5-SS117-06 | | 562217.295 | 592618.332 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S118 | A5-SS118-02 | | 562346.647 | 592566.622 | 5/12/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S118 | A5-SS118-06 | | 562346.647 | 592566.622 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S118 | A5-SS118-12 | | 562346.647 | 592566.622 | 5/12/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S118 | A5-SS118-24 | | 562346.647 | 592566.622 | 5/12/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S119 | A5-SS119-06 | | 562311.041 | 592532.166 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |

**Table 2-1**
**Sample Information and Analyses**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area | Location | Sample ID | Duplicate Sample ID | X Coordinate | Y Coordinate | Date Collected | Start Depth | End Depth | Units | Matrix | VOCs | SVOCs | Pesticide | PCBs | Metals | Sb, As, Cu, Cr, Pb | XRF Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area 5 | S123 | A5-SS123-06 | | 562032.016 | 592699.974 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S125 | A5-SS125-02 | | 561897.356 | 592854.527 | 5/12/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S125 | A5-SS125-06 | | 561897.356 | 592854.527 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S125 | A5-SS125-12 | | 561897.356 | 592854.527 | 5/12/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S125 | A5-SS125-24 | | 561897.356 | 592854.527 | 5/12/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S129 | A5-SS129-06 | | 561660.135 | 593173.354 | 5/18/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 5 | S131 | A5-SS131-06 | | 561585.168 | 593211.622 | 5/18/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 5 | S132 | A5-SS132-06 | | 561620.815 | 593144.799 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S135 | A5-SS135-06 | | 561795.569 | 592904.605 | 5/18/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 5 | S139 | A5-SS139-06 | | 561601.705 | 592974.718 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S140 | A5-SS140-06 | | 561510.564 | 593009.581 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S144 | A5-SS144-06 | | 562278.871 | 592485.759 | 5/19/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 5 | S153 | A5-SS153-02 | | 562435.287 | 592445.287 | 5/13/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S153 | A5-SS153-06 | | 562435.287 | 592445.287 | 5/13/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S153 | A5-SS153-12 | | 562435.287 | 592445.287 | 5/13/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S153 | A5-SS153-24 | | 562435.287 | 592445.287 | 5/13/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S155 | A5-SS155-02 | | 562351.702 | 592503.363 | 5/13/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S155 | A5-SS155-06 | | 562351.702 | 592503.363 | 5/13/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S155 | A5-SS155-12 | | 562351.702 | 592503.363 | 5/13/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S155 | A5-SS155-24 | | 562351.702 | 592503.363 | 5/13/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | S157 | A5-SS157-06 | | 562467.195 | 592349.63 | 5/19/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 5 | S159 | A5-SS159-06 | | 562607.085 | 592207.11 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S160 | A5-SS160-06 | | 562685.771 | 592138.76 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S162 | A5-SS162-02 | | 562769.923 | 592096.84 | 5/13/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S162 | A5-SS162-06 | | 562769.923 | 592096.84 | 5/13/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S211 | A5-SS211-06 | | 561929.635 | 592906.697 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | |
| Area 5 | S213 | A5-SS213-06 | | 562579.855 | 592283.362 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S29 | A5-SS29-06 | | 562760.308 | 592161.652 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S30 | A5-SS30-06 | Z5-SS30-06 | 562736.448 | 592183.239 | 5/19/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 5 | S33 | A5-SS33-06 | | 562628.655 | 592234.283 | 5/12/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S35 | A5-SS35-02 | | 562575.751 | 592326.071 | 5/13/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 5 | S35 | A5-SS35-06 | | 562575.751 | 592326.071 | 5/13/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 5 | S35 | A5-SS35-12 | | 562575.751 | 592326.071 | 5/13/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 5 | S35 | A5-SS35-24 | Z5-SS35-24 | 562575.751 | 592326.071 | 5/13/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 5 | A5-SW-37 | A5-SW37 | Z5-SW37 | 561687.25 | 593306.51 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | A5-SW-38 | A5-SW38 | | 561939.01 | 593056.37 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | A5-SW-39 | A5-SW39 | | 562515.28 | 592442.74 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | SW30 | A5-SW30 | | 561820.652 | 593141.978 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | SW31 | A5-SW31 | | 561980.694 | 592927.904 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | SW32 | A5-SW32 | | 562172.569 | 592786.636 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | SW33 | A5-SW33 | | 562358.841 | 592702.731 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | SW34 | A5-SW34 | | 562792.896 | 592294.989 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | SW35 | A5-SW35 | | 562677.666 | 592354.715 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 5 | SW36 | A5-SW36 | | 562568.559 | 592547.436 | 5/17/2010 | | | | WO | | | | | | X | |
| Area 6 | B26 | A6-SDB26-02 | | 561530.6238 | 593364.8343 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | B26 | A6-SDB26-06 | | 561530.6238 | 593364.8343 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | B26 | A6-SDB26-12 | | 561530.6238 | 593364.8343 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | B26 | A6-SDB26-24 | | 561530.6238 | 593364.8343 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | B27 | A6-SDB27-06 | | 561330.6238 | 593364.8343 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | B35 | A6-SDB35-02 | | 560730.6238 | 593564.8343 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | B35 | A6-SDB35-06 | | 560730.6238 | 593564.8343 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | B35 | A6-SDB35-12 | | 560730.6238 | 593564.8343 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | B35 | A6-SDB35-24 | | 560730.6238 | 593564.8343 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | B36 | A6-SDB36-06 | | 560530.6238 | 593564.8343 | 5/16/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 6 | B43 | A6-SDB43-02 | | 560530.6238 | 593764.8343 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |

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**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area | Location | Sample ID | Duplicate Sample ID | X Coordinate | Y Coordinate | Date Collected | Start Depth | End Depth | Units | Matrix | VOCs | SVOCs | Pesticide | PCBs | Metals | Sb, As, Cu, Cr, Pb | XRF Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area 6 | B43 | A6-SDB43-06 | | 560530.6238 | 593764.8343 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | B43 | A6-SDB43-12 | | 560530.6238 | 593764.8343 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | B43 | A6-SDB43-24 | | 560530.6238 | 593764.8343 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | B47 | A6-SDB47-02 | | 559730.6238 | 593764.8343 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | B47 | A6-SDB47-06 | | 559730.6238 | 593764.8343 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | B47 | A6-SDB47-12 | | 559730.6238 | 593764.8343 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | B47 | A6-SDB47-24 | | 559730.6238 | 593764.8343 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | B55 | A6-SDB55-06 | | 559930.6238 | 593964.8343 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED100 | A6-SD100-06 | | 560760.981 | 593486.601 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED106 | A6-SD106-02 | | 560291.322 | 593661.482 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | SED106 | A6-SD106-06 | | 560291.322 | 593661.482 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED106 | A6-SD106-12 | | 560291.322 | 593661.482 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | SED106 | A6-SD106-24 | | 560291.322 | 593661.482 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | SED109 | A6-SD109-06 | | 560574.777 | 593565.525 | 5/12/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 6 | SED112 | A6-SD112-02 | | 560875.895 | 593507.88 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | SED112 | A6-SD112-06 | | 560875.895 | 593507.88 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED112 | A6-SD112-12 | | 560875.895 | 593507.88 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | SED112 | A6-SD112-24 | | 560875.895 | 593507.88 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | SED116 | A6-SD116-06 | | 561163.198 | 593385.316 | 5/16/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 6 | SED119 | A6-SD119-06 | | 561421.566 | 593237.781 | 5/16/2010 | 0 | 6 | in | SE | | | | | | | X |
| Area 6 | SED38 | A6-SD38-02 | | 559569.824 | 593923.331 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | SED38 | A6-SD38-06 | | 559569.824 | 593923.331 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED38 | A6-SD38-12 | | 559569.824 | 593923.331 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | SED38 | A6-SD38-24 | | 559569.824 | 593923.331 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | |
| Area 6 | SED41 | A6-SD41-06 | Z6-SD41-06 | 559716.75 | 593841.668 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED48 | A6-SD48-02 | | 559989.46 | 593729.701 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | SED48 | A6-SD48-06 | | 559989.46 | 593729.701 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED48 | A6-SD48-12 | | 559989.46 | 593729.701 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | SED48 | A6-SD48-24 | | 559989.46 | 593729.701 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | SED85 | A6-SD85-06 | | 560268.182 | 593627.257 | not available | 0 | 6 | in | SE | | | | | | | X |
| Area 6 | SED95 | A6-SD95-02 | | 561139.068 | 593344.421 | 5/11/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | SED95 | A6-SD95-06 | | 561139.068 | 593344.421 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED95 | A6-SD95-12 | | 561139.068 | 593344.421 | 5/11/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | SED95 | A6-SD95-24 | | 561139.068 | 593344.421 | 5/11/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | SED98 | A6-SD98-06 | | 560952.452 | 593433.361 | 5/11/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED99 | A6-SD99-02 | | 561492.832 | 593161.766 | 5/13/2010 | 0 | 2 | in | SE | | | | | | X | |
| Area 6 | SED99 | A6-SD99-06 | | 561492.832 | 593161.766 | 5/13/2010 | 0 | 6 | in | SE | | | | | | X | X |
| Area 6 | SED99 | A6-SD99-12 | | 561492.832 | 593161.766 | 5/13/2010 | 6 | 12 | in | SE | | | | | | X | X |
| Area 6 | SED99 | A6-SD99-24 | | 561492.832 | 593161.766 | 5/13/2010 | 12 | 24 | in | SE | | | | | | X | X |
| Area 6 | A6-S210 | A6-SS210-02 | | 560686.2 | 593432.1 | 5/11/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 6 | A6-S210 | A6-SS210-06 | | 560686.2 | 593432.1 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | A6-S210 | A6-SS210-12 | | 560686.2 | 593432.1 | 5/11/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 6 | A6-S210 | A6-SS210-24 | | 560686.2 | 593432.1 | 5/11/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 6 | A6-S211 | A6-SS211-02 | | 560861.8 | 593393.5 | 5/11/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 6 | A6-S211 | A6-SS211-06 | | 560861.8 | 593393.5 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | A6-S211 | A6-SS211-12 | | 560861.8 | 593393.5 | 5/11/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 6 | A6-S211 | A6-SS211-24 | | 560861.8 | 593393.5 | 5/11/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 6 | A6-S212 | A6-SS212-02 | Z6-SS212-02 | 561049.1 | 593298.9 | 5/11/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 6 | A6-S212 | A6-SS212-06 | | 561049.1 | 593298.9 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | A6-S212 | A6-SS212-12 | | 561049.1 | 593298.9 | 5/11/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 6 | A6-S212 | A6-SS212-24 | Z6-SS212-24 | 561049.1 | 593298.9 | 5/11/2010 | 12 | 24 | in | SO | | | | | | X | |

**Table 2-1**
**Sample Information and Analyses**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area | Location | Sample ID | Duplicate Sample ID | X Coordinate | Y Coordinate | Date Collected | Start Depth | End Depth | Units | Matrix | VOCs | SVOCs | Pesticide | PCBs | Metals | Sb, As, Cu, Cr, Pb | XRF Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area 6 | A6-S213 | A6-SS213-06 | | 561222.8 | 593194.6 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S101 | A6-SS101-06 | | 560407.107 | 593546.214 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S142 | A6-SS142-06 | | 561362.746 | 593078.686 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S208 | A6-SS208-06 | | 560024.423 | 593670.286 | 5/12/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 6 | S37 | A6-SS37-02 | | 559507.823 | 593771.372 | 5/11/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 6 | S37 | A6-SS37-06 | | 559507.823 | 593771.372 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S37 | A6-SS37-12 | | 559507.823 | 593771.372 | 5/11/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 6 | S37 | A6-SS37-24 | | 559507.823 | 593771.372 | 5/11/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 6 | S41 | A6-SS41-06 | | 559868.657 | 593701.91 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S44 | A6-SS44-02 | | 560154.993 | 593581.774 | 5/11/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 6 | S44 | A6-SS44-06 | | 560154.993 | 593581.774 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S44 | A6-SS44-12 | | 560154.993 | 593581.774 | 5/11/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 6 | S44 | A6-SS44-24 | | 560154.993 | 593581.774 | 5/11/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 6 | S46 | A6-SS46-02 | | 560258.219 | 593602.633 | 5/11/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 6 | S46 | A6-SS46-06 | | 560258.219 | 593602.633 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S46 | A6-SS46-12 | | 560258.219 | 593602.633 | 5/11/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 6 | S46 | A6-SS46-24 | | 560258.219 | 593602.633 | 5/11/2010 | 12 | 24 | in | SO | | | | | | X | X |
| Area 6 | S51 | A6-SS51-06 | | 559798.864 | 593788.214 | 5/16/2010 | 0 | 6 | in | SO | | | | | | | X |
| Area 6 | S88 | A6-SS88-02 | | 559605.385 | 593819.022 | 5/11/2010 | 0 | 2 | in | SO | | | | | | X | |
| Area 6 | S88 | A6-SS88-06 | | 559605.385 | 593819.022 | 5/11/2010 | 0 | 6 | in | SO | | | | | | X | X |
| Area 6 | S88 | A6-SS88-12 | | 559605.385 | 593819.022 | 5/11/2010 | 6 | 12 | in | SO | | | | | | X | X |
| Area 6 | S88 | A6-SS88-24 | | 559605.385 | 593819.022 | 5/11/2010 | 12 | 24 | in | SO | | | | | | X | |
| Area 6 | A6-SW30 | A6-SW30 | | 559905.2 | 593768.75 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW31 | A6-SW31 | | 560175.61 | 593651.17 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW32 | A6-SW32 | | 560419.57 | 593583.57 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW33 | A6-SW33 | | 560689.99 | 593536.54 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW34 | A6-SW34 | | 561010.37 | 593421.91 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW35 | A6-SW35 | | 561230.81 | 593280.82 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW36 | A6-SW36 | | 561418.93 | 593189.71 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW37 | A6-SW37 | | 561147.07 | 593398.96 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | A6-SW38 | A6-SW38 | | 560067.07 | 593751.59 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | SW12 | A6-SW12 | | 559540.325 | 593847.165 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | SW13 | A6-SW13 | | 559661.346 | 593881.997 | 5/11/2010 | | | | WO | | | | | | X | |
| Area 6 | SW14 | A6-SW14 | | 559768.09 | 593854.916 | 5/11/2010 | | | | WO | | | | | | X | |

X - indicates the sample was analyzed for the set of parameters indicated by the abbreviation listed below.

Abbreviations:
VOCs - volatile organic compounds
SVOCs - semi-volatile organic compounds
Pesticide - pesticides
PCBs - polychlorinated biphenyls
Metals - total metals
Pb, As, Cu, Cr, Sb - lead, arsenic, copper, chromium, and antimony
XRF Analysis - X-ray fluorescence

Matrices:
SO - soil
SE - sediment
WO - Raritan Bay water

**Table 2-2**
**Soil and Sediment Screening Criteria**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| CAS Number | Chemical Name | NJDEP Residential Direct Contact Soil Remediation Standard (NJRDCSRS)[1] | Soil and Sediment Screening Criteria |
|---|---|---|---|
| **Inorganic Analytes (mg/kg)** | | | |
| 7429-90-5 | Aluminum | 78,000 | 78,000 |
| 7440-36-0 | Antimony | 31 | 31 |
| 7440-38-2 | Arsenic | 19 a | 19 |
| 7440-39-3 | Barium | 16,000 | 16,000 |
| 7440-41-7 | Beryllium | 16 | 16 |
| 7440-43-9 | Cadmium | 78 | 78 |
| 7440-70-2 | Calcium | NL | NL |
| 7440-47-3 | Chromium | 240 b, 2 | 240 |
| 18540-29-9 | Chromium (hexavalent) | 240 b, 2 | 240 |
| 7440-48-4 | Cobalt | 1,600 a | 1,600 |
| 7440-50-8 | Copper | 3,100 | 3,100 |
| 57-12-5 | Cyanide | 1,600 | 1,600 |
| 7439-89-6 | Iron | NL | NL |
| 7439-92-1 | Lead | 400 | 400 |
| 7439-95-4 | Magnesium | NL | NL |
| 7439-96-5 | Manganese | 11,000 | 11,000 |
| 7439-97-6 | Mercury | 23 | 23 |
| 7440-02-0 | Nickel | 1,600 | 1,600 |
| 7440-09-7 | Potassium | NL | NL |
| 7782-49-2 | Selenium | 390 | 390 |
| 7440-22-4 | Silver | 390 | 390 |
| 7440-23-5 | Sodium | NL | NL |
| 7440-28-0 | Thallium | 5 | 5 |
| 7440-62-2 | Vanadium | 78 | 78 |
| 7440-66-6 | Zinc | 23,000 | 23,000 |
| **Volatile Organic Compounds (µg/kg)** | | | |
| 71-55-6 | 1,1,1-Trichloroethane | 290,000 | 290,000 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1,000 | 1,000 |
| 79-00-5 | 1,1,2-Trichloroethane | 2,000 | 2,000 |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | NL | NL |
| 75-34-3 | 1,1-Dichloroethane | 8,000 | 8,000 |
| 75-35-4 | 1,1-Dichloroethene | 11,000 | 11,000 |
| 87-61-6 | 1,2,3-Trichlorobenzene | NL | NL |
| 120-82-1 | 1,2,4-Trichlorobenzene | 73,000 | 73,000 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 80 | 80 |
| 106-93-4 | 1,2-Dibromoethane | 8 | 8 |
| 95-50-1 | 1,2-Dichlorobenzene | 5,300,000 | 5,300,000 |
| 107-06-2 | 1,2-Dichloroethane | 900 | 900 |
| 78-87-5 | 1,2-Dichloropropane | 2,000 | 2,000 |
| 541-73-1 | 1,3-Dichlorobenzene | 5,300,000 | 5,300,000 |
| 106-46-7 | 1,4-Dichlorobenzene | 5,000 | 5,000 |
| 78-93-3 | 2-Butanone | 3,100,000 | 3,100,000 |

**Table 2-2**
**Soil and Sediment Screening Criteria**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| CAS Number | Chemical Name | NJDEP Residential Direct Contact Soil Remediation Standard (NJRDCSRS)[1] | Soil and Sediment Screening Criteria |
|---|---|---|---|
| 591-78-6 | 2-Hexanone | NL | NL |
| 108-10-1 | 4-Methyl-2-pentanone | NL | NL |
| 67-64-1 | Acetone | 70,000,000 | 70,000,000 |
| 71-43-2 | Benzene | 2,000 | 2,000 |
| 74-97-5 | Bromochloromethane | NL | NL |
| 75-27-4 | Bromodichloromethane | 1,000 | 1,000 |
| 75-25-2 | Bromoform | 81,000 | 81,000 |
| 74-83-9 | Bromomethane | 25,000 | 25,000 |
| 75-15-0 | Carbon Disulfide | 7,800,000 | 7,800,000 |
| 56-23-5 | Carbon Tetrachloride | 600 | 600 |
| 123-91-1 | 1-4 Dioxane | NL | NL |
| 108-90-7 | Chlorobenzene | 510,000 | 510,000 |
| 75-00-3 | Chloroethane | 220,000 | 220,000 |
| 67-66-3 | Chloroform | 600 | 600 |
| 74-87-3 | Chloromethane | 4,000 | 4,000 |
| 156-59-2 | cis-1,2-Dichloroethene | 230,000 | 230,000 |
| 10061-01-5 | cis-1,3-Dichloropropene | NL | NL |
| 110-82-7 | Cyclohexane | NL | NL |
| 124-48-1 | Dibromochloromethane | 3,000 | 3,000 |
| 75-71-8 | Dichlorodifluoromethane | 490,000 | 490,000 |
| 100-41-4 | Ethylbenzene | 7,800,000 | 7,800,000 |
| 98-82-8 | Isopropylbenzene | NL | NL |
| 79-20-9 | Methyl Acetate | 78,000,000 | 78,000,000 |
| 1634-04-4 | Methyl Tert-Butyl Ether | 110,000 | 110,000 |
| 108-87-2 | Methylcyclohexane | NL | NL |
| 75-09-2 | Methylene Chloride | 34,000 | 34,000 |
| 100-42-5 | Styrene | 90,000 | 90,000 |
| 127-18-4 | Tetrachloroethene | 2,000 | 2,000 |
| 108-88-3 | Toluene | 6,300,000 | 6,300,000 |
| 156-60-5 | trans-1,2-Dichloroethene | 300,000 | 300,000 |
| 10061-02-6 | trans-1,3-Dichloropropene | NL | NL |
| 79-01-6 | Trichloroethene | 7,000 | 7,000 |
| 75-69-4 | Trichlorofluoromethane | 23,000,000 | 23,000,000 |
| 75-01-4 | Vinyl Chloride | 700 | 700 |
| 1330-20-7 | Xylenes (Total) | 12,000,000 c | 12,000,000 |
| **Semi-Volatile Organic Compounds (µg/kg)** | | | |
| 92-52-4 | 1,1'-Biphenyl | 3,100,000 | 3,100,000 |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | NL | NL |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | 23,000 | 23,000 |
| 95-95-4 | 2,4,5-Trichlorophenol | 6,100,000 | 6,100,000 |
| 88-06-2 | 2,4,6-Trichlorophenol | 19,000 | 19,000 |
| 120-83-2 | 2,4-Dichlorophenol | 180,000 | 180,000 |
| 105-67-9 | 2,4-Dimethylphenol | 1,200,000 | 1,200,000 |

**Table 2-2**
**Soil and Sediment Screening Criteria**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| CAS Number | Chemical Name | NJDEP Residential Direct Contact Soil Remediation Standard (NJRDCSRS)[1] | Soil and Sediment Screening Criteria |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 120,000 | 120,000 |
| 121-14-2 | 2,4-Dinitrotoluene | 700 | 700 |
| 606-20-2 | 2,6-Dinitrotoluene | 700 | 700 |
| 91-58-7 | 2-Chloronaphthalene | NL | NL |
| 95-57-8 | 2-Chlorophenol | 310,000 | 310,000 |
| 91-57-6 | 2-Methylnaphthalene | 230,000 | 230,000 |
| 95-48-7 | 2-Methylphenol | 310,000 | 310,000 |
| 88-74-4 | 2-Nitroaniline | 39,000 | 39,000 |
| 88-75-5 | 2-Nitrophenol | NL | NL |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1,000 | 1,000 |
| 99-09-2 | 3-Nitroaniline | NL | NL |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 6,000 | 6,000 |
| 101-55-3 | 4-Bromophenyl-phenylether | NL | NL |
| 59-50-7 | 4-Chloro-3-methylphenol | NL | NL |
| 106-47-8 | 4-Chloroaniline | NL | NL |
| 7005-72-3 | 4-Chlorophenyl-phenylether | NL | NL |
| 106-44-5 | 4-Methylphenol | 31,000 | 31,000 |
| 100-01-6 | 4-Nitroaniline | NL | NL |
| 100-02-7 | 4-Nitrophenol | NL | NL |
| 83-32-9 | Acenaphthene | 3,400,000 | 3,400,000 |
| 208-96-8 | Acenaphthylene | NL | NL |
| 98-86-2 | Acetophenone | 2,000 | 2,000 |
| 120-12-7 | Anthracene | 17,000,000 | 17,000,000 |
| 1912-24-9 | Atrazine | 210,000 | 210,000 |
| 100-52-7 | Benzaldehyde | 6,100,000 | 6,100,000 |
| 56-55-3 | Benzo(a)anthracene | 600 | 600 |
| 50-32-8 | Benzo(a)pyrene | 200 | 200 |
| 205-99-2 | Benzo(b)fluoranthene | 600 | 600 |
| 191-24-2 | Benzo(g,h,i)perylene | 380,000,000 | 380,000,000 |
| 207-08-9 | Benzo(k)fluoranthene | 6,000 | 6,000 |
| 111-91-1 | bis(2-Chloroethoxy)methane | NL | NL |
| 111-44-4 | bis(2-Chloroethyl)ether | 400 | 400 |
| 117-81-7 | bis-(2-Ethylhexyl)phthalate | 35,000 | 35,000 |
| 85-68-7 | Butylbenzylphthalate | 1,200,000 | 1,200,000 |
| 105-60-2 | Caprolactam | 31,000,000 | 31,000,000 |
| 86-74-8 | Carbazole | 24,000 | 24,000 |
| 218-01-9 | Chrysene | 62,000 | 62,000 |
| 53-70-3 | Dibenzo(a,h)anthracene | 200 | 200 |
| 132-64-9 | Dibenzofuran | NL | NL |
| 84-66-2 | Diethylphthalate | 49,000,000 | 49,000,000 |
| 131-11-3 | Dimethylphthalate | NL | NL |
| 84-74-2 | Di-n-butylphthalate | 6,100,000 | 6,100,000 |
| 117-84-0 | Di-n-octylphthalate | 2,400,000 | 2,400,000 |

**Table 2-2**
**Soil and Sediment Screening Criteria**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| CAS Number | Chemical Name | NJDEP Residential Direct Contact Soil Remediation Standard (NJRDCSRS)[1] | | Soil and Sediment Screening Criteria |
|---|---|---|---|---|
| 206-44-0 | Fluoranthene | 2,300,000 | | 2,300,000 |
| 86-73-7 | Fluorene | 2,300,000 | | 2,300,000 |
| 118-74-1 | Hexachlorobenzene | 300 | | 300 |
| 87-68-3 | Hexachlorobutadiene | 6,000 | | 6,000 |
| 77-47-4 | Hexachlorocyclopentadiene | 45,000 | | 45,000 |
| 67-72-1 | Hexachloroethane | 35,000 | | 35,000 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 600 | | 600 |
| 78-59-1 | Isophorone | 510,000 | | 510,000 |
| 91-20-3 | Naphthalene | 6,000 | | 6,000 |
| 98-95-3 | Nitrobenzene | 31,000 | | 31,000 |
| 621-64-7 | N-Nitroso-di-n-propylamine | 200 | | 200 |
| 86-30-6 | N-Nitrosodiphenylamine | 99,000 | | 99,000 |
| 87-86-5 | Pentachlorophenol | 3,000 | | 3,000 |
| 85-01-8 | Phenanthrene | NL | | NL |
| 108-95-2 | Phenol | 18,000,000 | | 18,000,000 |
| 129-00-0 | Pyrene | 1,700,000 | | 1,700,000 |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | |
| 72-54-8 | 4,4'-DDD | 3,000 | | 3,000 |
| 72-55-9 | 4,4'-DDE | 2,000 | | 2,000 |
| 50-29-3 | 4,4'-DDT | 2,000 | | 2,000 |
| 309-00-2 | Aldrin | 40 | | 40 |
| 319-84-6 | alpha-BHC | 100 | | 100 |
| 5103-71-9 | alpha-Chlordane | 200 | | 200 |
| 12674-11-2 | Aroclor-1016 | 200 | d | 200 |
| 11104-28-2 | Aroclor-1221 | 200 | d | 200 |
| 11141-16-5 | Aroclor-1232 | 200 | d | 200 |
| 53469-21-9 | Aroclor-1242 | 200 | d | 200 |
| 12672-29-6 | Aroclor-1248 | 200 | d | 200 |
| 11097-69-1 | Aroclor-1254 | 200 | d | 200 |
| 11096-82-5 | Aroclor-1260 | 200 | d | 200 |
| 37324-23-5 | Aroclor-1262 | 200 | d | 200 |
| 11100-14-4 | Aroclor-1268 | 200 | d | 200 |
| 319-85-7 | beta-BHC | 400 | | 400 |
| 319-86-8 | delta-BHC | 400 | e | 400 |
| 60-57-1 | Dieldrin | 40 | | 40 |
| 959-98-8 | Endosulfan I | 470,000 | | 470,000 |
| 33213-65-9 | Endosulfan II | 470,000 | | 470,000 |
| 1031-07-8 | Endosulfan Sulfate | 470,000 | | 470,000 |
| 72-20-8 | Endrin | 23,000 | | 23,000 |
| 7421-93-4 | Endrin aldehyde | 23,000 | f | 23,000 |
| 53494-70-5 | Endrin ketone | 23,000 | f | 23,000 |
| 58-89-9 | gamma-BHC (Lindane) | 400 | | 400 |
| 5103-74-2 | gamma-Chlordane | 200 | | 200 |

**Table 2-2**
**Soil and Sediment Screening Criteria**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| CAS Number | Chemical Name | NJDEP Residential Direct Contact Soil Remediation Standard (NJRDCSRS)[1] | Soil and Sediment Screening Criteria |
|---|---|---|---|
| 76-44-8 | Heptachlor | 100 | 100 |
| 1024-57-3 | Heptachlor epoxide | 70 | 70 |
| 72-43-5 | Methoxychlor | 390,000 | 390,000 |
| 8001-35-2 | Toxaphene | 600 | 600 |

**Source:**

1 - NJDEP Residential Direct Contact Health Based Criteria and Soil Remediation Standards. Revised November 4, 2009. http://www.state.nj.us/dep/srp/guidance/rs/. Last accessed May 25, 2010

2 - NJDEP Soil Cleanup Criteria (mg/kg), http://www.nj.gov/dep/srp/guidance/scc/. Revised 12 May 1999. Last accessed June 25, 2010.

mg/kg - milligram per kilogram
µg/kg - microgram per kilogram
NL - not listed
a - based on natural background levels as noted in NJDEP criteria
b - value for chromium (hexavalent)
c - applied to m,p xylene and o-xylene
d - criteria for PCBs
e - criteria for beta-BHC
f - criteria for endrin

**Table 3-1**
**Area 3 Comparison of Beach Sampling and Historical Data**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area 3 Soil and Sediment Samples | | | | | |
|---|---|---|---|---|---|
| **Depth Interval** | **Count (Historical Data)** | **Count (Beach Sampling Data)** | **p-value (2-sided)** | **p-value (1-sided)** | **Conclusion** |
| **Antimony** | | | | | |
| 0-6 | 16 | 36 | 1 | | No significant difference |
| 6-12 | 0 | 18 | N/A | | N/A |
| 12-24 | 0 | 0 | N/A | | N/A |
| **Arsenic** | | | | | |
| 0-6 | 16 | 37 | 0.792 | | No significant difference |
| 6-12 | 0 | 18 | N/A | | N/A |
| 12-24 | 0 | 0 | N/A | | N/A |
| **Chromium** | | | | | |
| 0-6 | 16 | 38 | 0.69 | | No significant difference |
| 6-12 | 0 | 19 | N/A | | N/A |
| 12-24 | 0 | 0 | N/A | | N/A |
| **Copper** | | | | | |
| 0-6 | 16 | 38 | 0.426 | | No significant difference |
| 6-12 | 0 | 19 | N/A | | N/A |
| 12-24 | 0 | 0 | N/A | | N/A |
| **Lead** | | | | | |
| 0-6 | 16 | 38 | 0.583 | | No significant difference |
| 6-12 | 0 | 19 | N/A | | N/A |
| 12-24 | 0 | 0 | N/A | | N/A |

Count – number of samples

p-value (2-sided) – probability that the two data sets are not significantly different

p-value (1-sided) – probability that the concentration in the beach sampling data is less than or equal to the concentration in the historical data set

N/A – historical data set is insufficient for comparison

**Table 3-2**
**Area 5 Comparison of Beach Sampling and Historical Data**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area 5 Soil and Sediment Samples | | | | | |
|---|---|---|---|---|---|
| **Depth Interval** | **Count (Historical Data)** | **Count (Beach Sampling Data)** | **p-value (2-sided)** | **p-value (1-sided)** | **Conclusion** |
| **Antimony** | | | | | |
| 0-6 | 118 | 64 | 0.0427 | 0.0214 | Beach Sampling Data > Historical Data |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 35 | 18 | 0.00582 | 0.00291 | Beach Sampling Data > Historical Data |
| **Arsenic** | | | | | |
| 0-6 | 118 | 64 | 0.528 | | No significant difference |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 35 | 18 | 0.31 | | No significant difference |
| **Chromium** | | | | | |
| 0-6 | 128 | 64 | 0.138 | | No significant difference |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 35 | 18 | 0.0984 | | No significant difference |
| **Copper** | | | | | |
| 0-6 | 128 | 64 | 0.987 | | No significant difference |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 35 | 18 | 0.0714 | | No significant difference |
| **Lead** | | | | | |
| 0-6 | 127 | 64 | 0.206 | | No significant difference |
| 6-12 | 2 | 18 | N/A | | N/A |
| 12-24 | 34 | 18 | 0.00498 | 0.00249 | Beach Sampling Data > Historical Data |

Count – number of samples

p-value (2-sided) – probability that the two data sets are not significantly different

p-value (1-sided) – probability that the concentration in the beach sampling data is less than or equal to the concentration in the historical data set

N/A – historical data set is insufficient for comparison

Yellow highlight = Beach Sampling Data > Historical Data

**Table 3-3**
**Area 6 Comparison of Beach Sampling and Historical Data**
**Raritan Bay Slag Superfund Site**
**Old Bridge and Sayreville, New Jersey**

| Area 6 Soil and Sediment Samples | | | | | |
|---|---|---|---|---|---|
| **Depth Interval** | **Count (Historical Data)** | **Count (Beach Sampling Data)** | **p-value (2-sided)** | **p-value (1-sided)** | **Conclusion** |
| **Antimony** | | | | | |
| 0-6 | 109 | 42 | 0.0361 | 0.0181 | Beach Sampling Data > Historical Data |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 39 | 17 | 1 | | No significant difference |
| **Arsenic** | | | | | |
| 0-6 | 112 | 42 | 0.00463 | 0.00232 | Beach Sampling Data > Historical Data |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 42 | 17 | 0.0109 | 0.995 | Historical Data > Beach Sampling Data |
| **Chromium** | | | | | |
| 0-6 | 108 | 42 | 0.208 | | No significant difference |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 39 | 17 | 0.449 | | No significant difference |
| **Copper** | | | | | |
| 0-6 | 112 | 42 | 0.107 | | No significant difference |
| 6-12 | 3 | 18 | N/A | | N/A |
| 12-24 | 42 | 17 | 0.000081 | 1 | Historical Data > Beach Sampling Data |
| **Lead** | | | | | |
| 0-6 | 104 | 42 | 0.056 | | No significant difference |
| 6-12 | 0 | 18 | N/A | | N/A |
| 12-24 | 35 | 17 | 0.0378 | 0.981 | Historical Data > Beach Sampling Data |

Count – number of samples

p-value (2-sided) – probability that the two data sets are not significantly different

p-value (1-sided) – probability that the concentration in the beach sampling data is less than or equal to concentration in the historical data set

N/A – historical data set is insufficient for comparison

Yellow highlight = Beach Sampling Data > Historical Data

Blue highlight = Historical Data > Beach Sampling Data

# Figures

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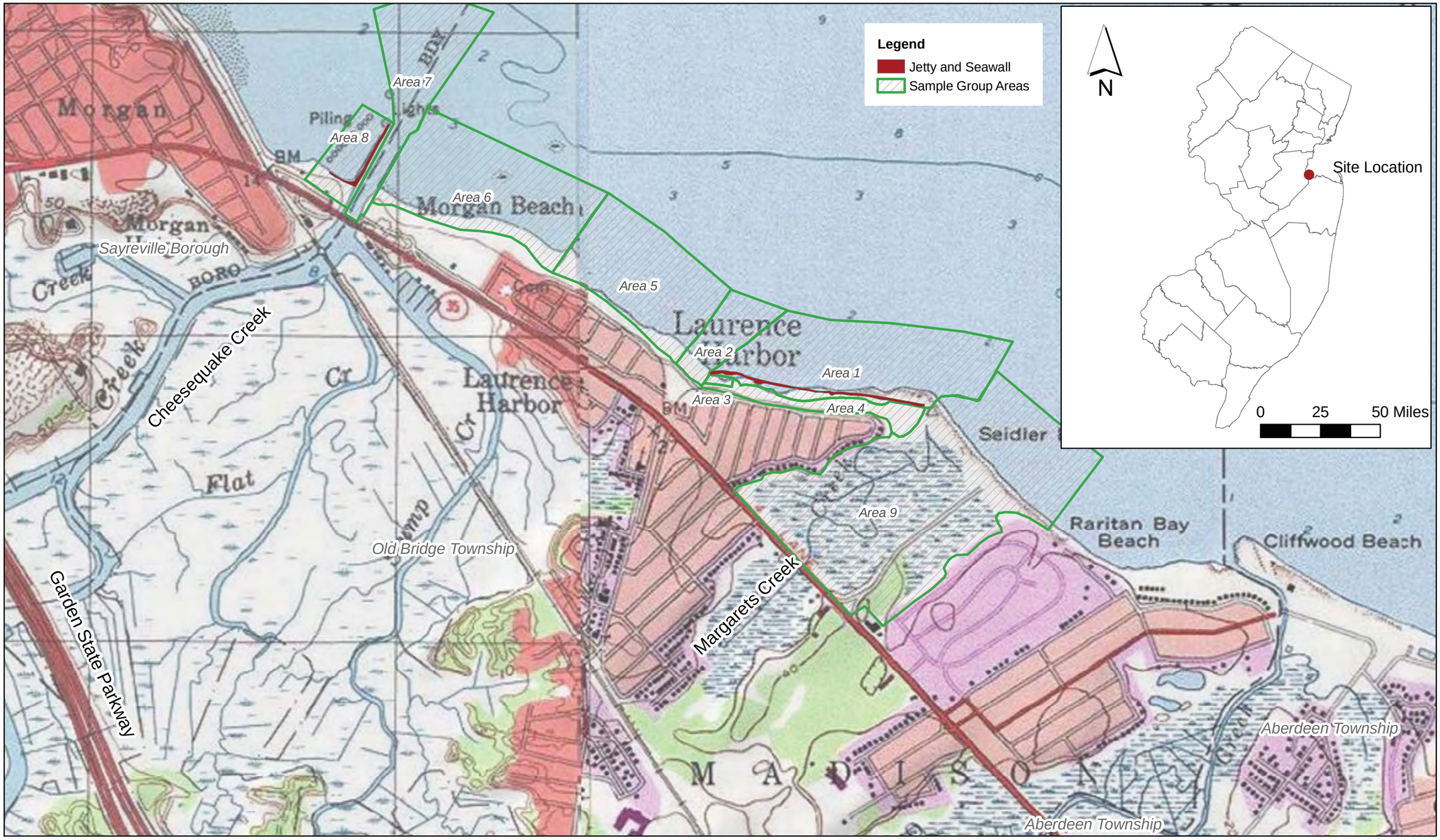


Source: USGS Topographic Quadrangle

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

N

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Figure 1-1
Site Map
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

CDM

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N

500 250 0 500 1,000 1,500 Feet

Figure 1-2
Beach Sampling Areas
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

CDM

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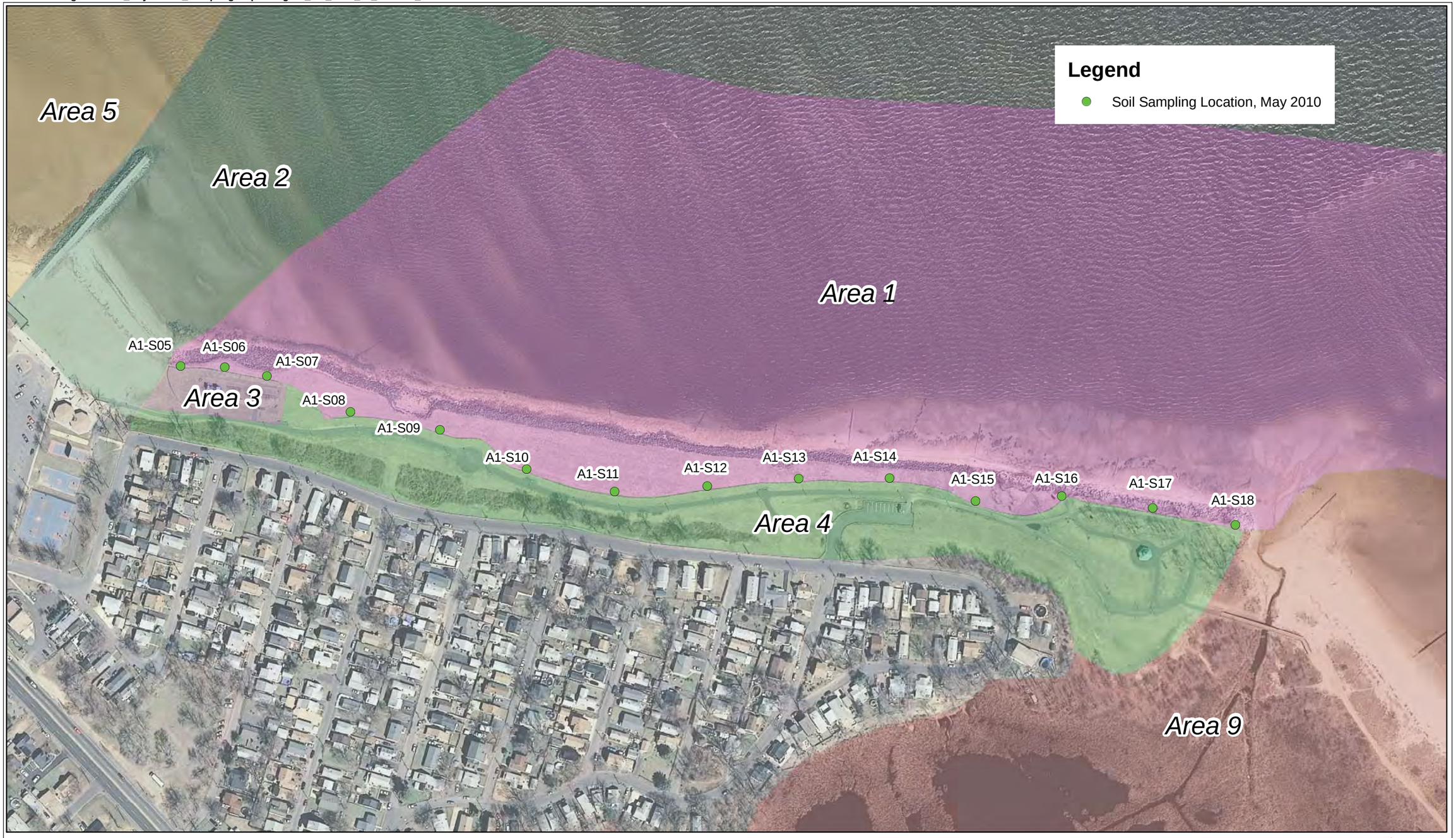
\\Ednfedsvr1\gis\Raritan_Bay\Beach_Sampling\Report\Figure_2-1_Area_01_Surface_Soil.mxd




Note: All Area 1 sampling locations are new sampling locations which have not been sampled previously.

N

200 100 0 200 400 Feet

Figure 2-1
Area 1
Soil Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

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R2-0004111

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Note: Sampling locations A3-S88, A3-S89, and A3-S90 are new sampling locations which have not been sampled previously. All other locations were sampled previously.

N

50 25 0 50 Feet

Figure 2-2
Area 3
Soil Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

CDM

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Figure 2-3
Area 5
Soil Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

CDM

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## Legend

- Lab Analysis, Sediment Sampling Location, May 2010 (previously sampled)
- XRF Analysis Only, Soil Sampling Location, May 2010 (previously sampled)
- Previous Sampling Location (not sampled in May 2010)
- Previous Sampling Location, Not Included in Resampling Set

B29 B24 B23 SED132 B25 SED131 SED134 SED130 B22 B21 SED135 B20 B19 B18 B17 SED129 SED136 Area 5 SED128 SED127 SED137 B16 B14 B13 B12 B11 B15 SED138 SED126 SED139 SED125 SED140 B9 B8 B7 SED124 B10 SED141 SED142 SED123 SED143 SED122 SED151 B5 B4 A167 A166 SED121 B6 SED150 SED152 SED149 SED154 A165 SED148 SED155 B2 B3 A133 A132 SED156 SED147 A130 SED157 SED146 SED158 SED145 SED144 B1 Area 2

N

200 100 0 200 400 600 Feet

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Figure 2-4
Area 5
Sediment Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

R2-0004114

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Locations A5-SW-37, A5-SW-38, A5-SW-39 are new sampling locations which have not been sampled previously.

N

150 75 0 150 300 Feet

Figure 2-5
Area 5
Surface Water Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

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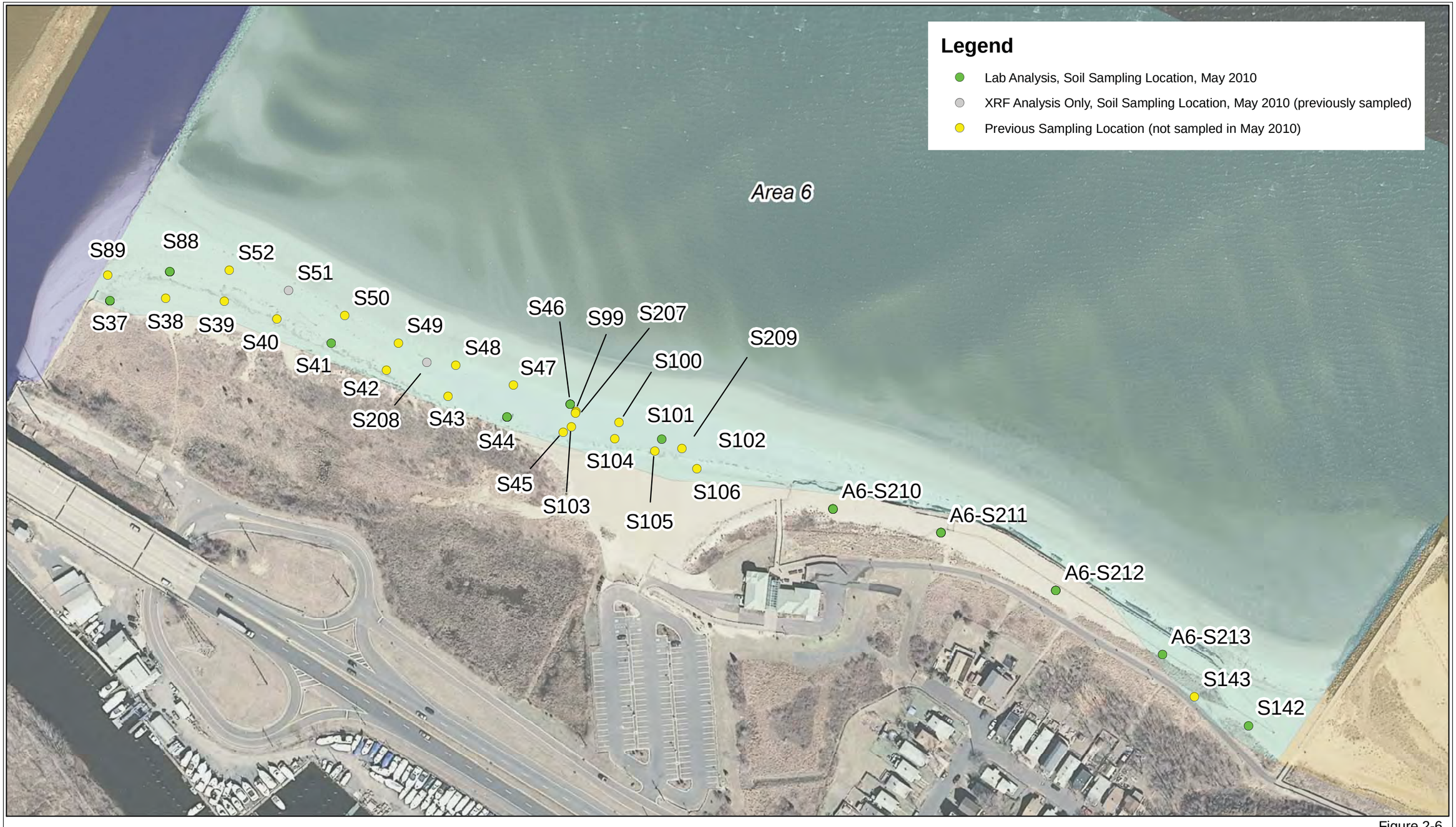


New Sample Locations begin with "A6"
Other locations sampled in May 2010
were sampled previously.

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Figure 2-6
Area 6
Soil Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

R2-0004116

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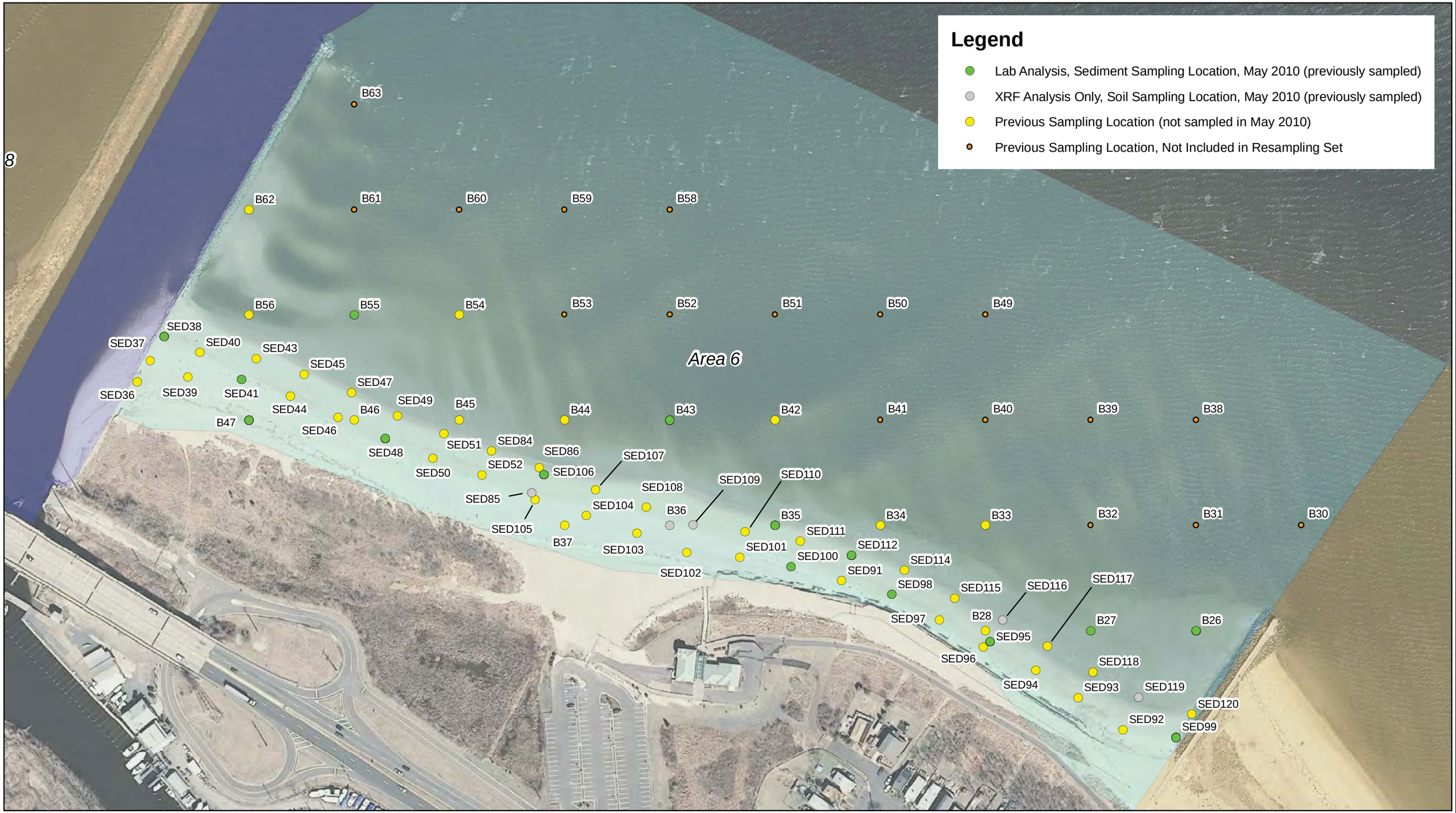


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Figure 2-7
Area 6
Sediment Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

CDM

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Locations A6-SW30 through A6-SW36 are new sampling locations which have not been sampled previously.
Locations begining with SW were sampled previously.

N

200 100 0 200 400 Feet

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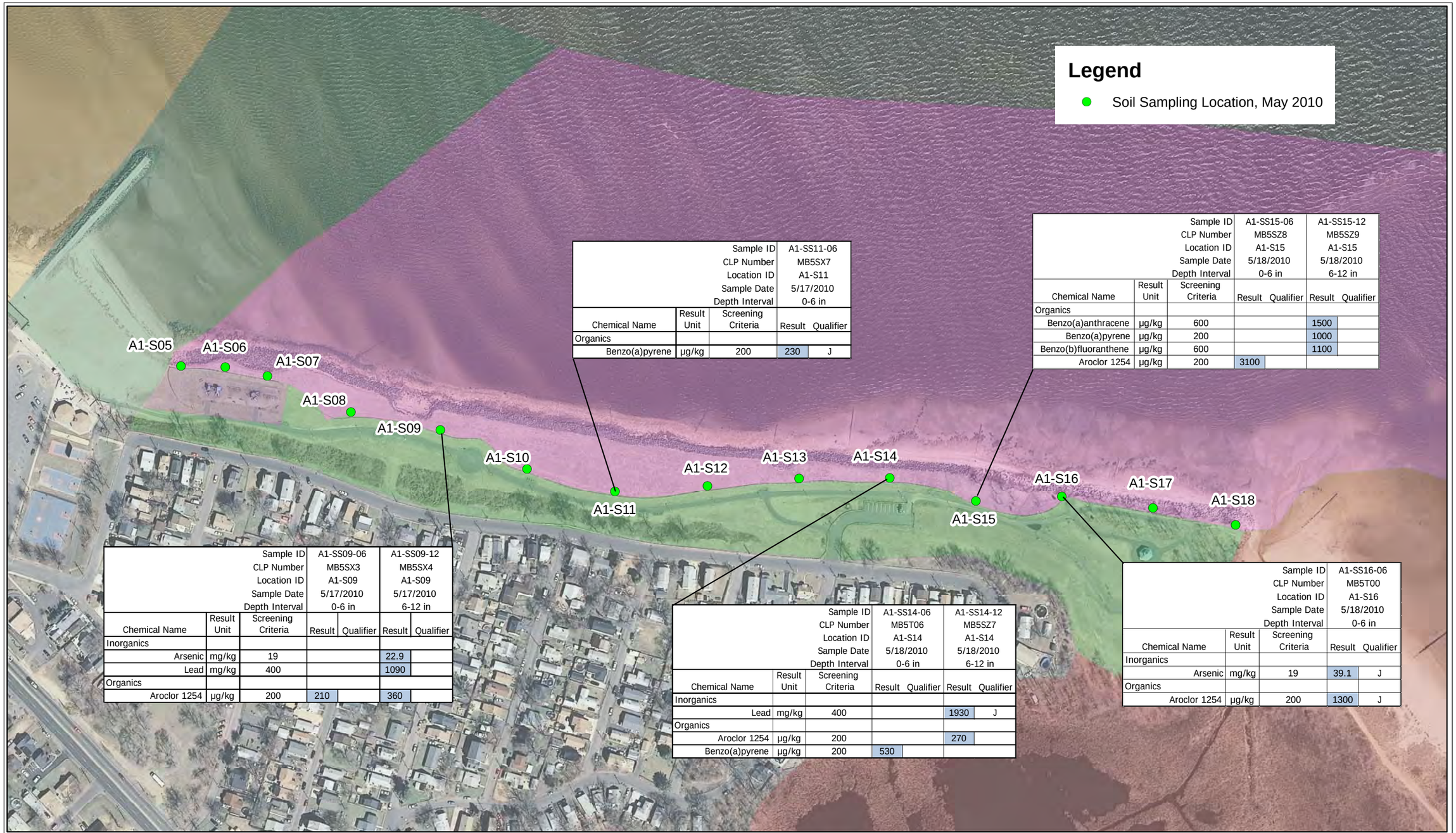
Figure 2-8
Area 6
Surface Water Sampling Locations
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

R2-0004118

Figure_3-1_Area_01_Soil_Sample_Results_Box_Map.ai




| | | | Sample ID | A1-SS11-06 |
|---|---|---|---|---|
| | | | CLP Number | MB5SX7 |
| | | | Location ID | A1-S11 |
| | | | Sample Date | 5/17/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Organics | | | | |
| Benzo(a)pyrene | µg/kg | 200 | 230 | J |

| | | | Sample ID | A1-SS15-06 | | A1-SS15-12 | |
|---|---|---|---|---|---|---|---|
| | | | CLP Number | MB5SZ8 | | MB5SZ9 | |
| | | | Location ID | A1-S15 | | A1-S15 | |
| | | | Sample Date | 5/18/2010 | | 5/18/2010 | |
| | | | Depth Interval | 0-6 in | | 6-12 in | |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier | Result | Qualifier |
| Organics | | | | | | |
| Benzo(a)anthracene | µg/kg | 600 | | | 1500 | |
| Benzo(a)pyrene | µg/kg | 200 | | | 1000 | |
| Benzo(b)fluoranthene | µg/kg | 600 | | | 1100 | |
| Aroclor 1254 | µg/kg | 200 | 3100 | | | |

| | | | Sample ID | A1-SS09-06 | | A1-SS09-12 | |
|---|---|---|---|---|---|---|---|
| | | | CLP Number | MB5SX3 | | MB5SX4 | |
| | | | Location ID | A1-S09 | | A1-S09 | |
| | | | Sample Date | 5/17/2010 | | 5/17/2010 | |
| | | | Depth Interval | 0-6 in | | 6-12 in | |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier | Result | Qualifier |
| Inorganics | | | | | | |
| Arsenic | mg/kg | 19 | | | 22.9 | |
| Lead | mg/kg | 400 | | | 1090 | |
| Organics | | | | | | |
| Aroclor 1254 | µg/kg | 200 | 210 | | 360 | |

| | | | Sample ID | A1-SS14-06 | | A1-SS14-12 | |
|---|---|---|---|---|---|---|---|
| | | | CLP Number | MB5T06 | | MB5SZ7 | |
| | | | Location ID | A1-S14 | | A1-S14 | |
| | | | Sample Date | 5/18/2010 | | 5/18/2010 | |
| | | | Depth Interval | 0-6 in | | 6-12 in | |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier | Result | Qualifier |
| Inorganics | | | | | | |
| Lead | mg/kg | 400 | | | 1930 | J |
| Organics | | | | | | |
| Aroclor 1254 | µg/kg | 200 | | | 270 | |
| Benzo(a)pyrene | µg/kg | 200 | 530 | | | |

| | | | Sample ID | A1-SS16-06 | |
|---|---|---|---|---|---|
| | | | CLP Number | MB5T00 | |
| | | | Location ID | A1-S16 | |
| | | | Sample Date | 5/18/2010 | |
| | | | Depth Interval | 0-6 in | |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Arsenic | mg/kg | 19 | 39.1 | J |
| Organics | | | | |
| Aroclor 1254 | µg/kg | 200 | 1300 | J |

Note: All Area 1 sampling locations are new sampling locations which have not been sampled previously.

N

200 100 0 200 400 Feet

Samples exceeding screening criteria are highlighted in blue.
J - estimated concentration
U - not detected, value to left is detection limit

Figure 3-1
Area 1
Soil Sample Results Exceeding Screening Criteria
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

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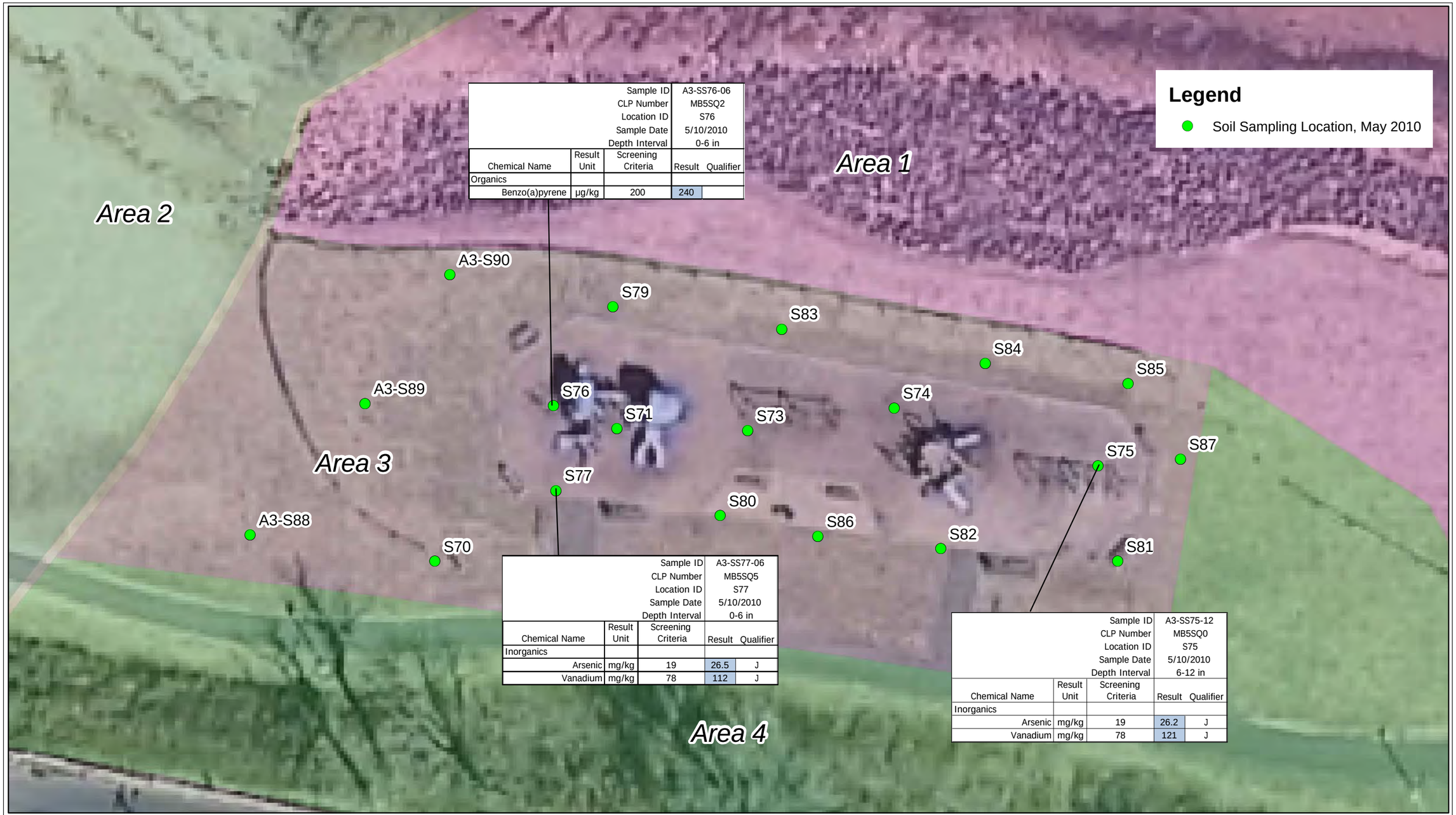
Figure_3-2_Area_03_Soil_Sample_Results_Box_Map.ai




| | | | Sample ID | A3-SS76-06 |
|---|---|---|---|---|
| | | | CLP Number | MB5SQ2 |
| | | | Location ID | S76 |
| | | | Sample Date | 5/10/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Organics | | | | |
| Benzo(a)pyrene | µg/kg | 200 | 240 | |

| | | | Sample ID | A3-SS77-06 |
|---|---|---|---|---|
| | | | CLP Number | MB5SQ5 |
| | | | Location ID | S77 |
| | | | Sample Date | 5/10/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Arsenic | mg/kg | 19 | 26.5 | J |
| Vanadium | mg/kg | 78 | 112 | J |

| | | | Sample ID | A3-SS75-12 |
|---|---|---|---|---|
| | | | CLP Number | MB5SQ0 |
| | | | Location ID | S75 |
| | | | Sample Date | 5/10/2010 |
| | | | Depth Interval | 6-12 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Arsenic | mg/kg | 19 | 26.2 | J |
| Vanadium | mg/kg | 78 | 121 | J |

Note: Sampling locations A3-S88, A3-S89, and A3-S90 are new sampling locations which have not been sampled previously. All other locations were sampled previously.
Samples exceeding screening criteria are highlighted in blue.
J - estimated concentration
U - not detected, value to left is detection limit

N

50 25 0 50
Feet

Figure 3-2
Area 3
Soil Sample Results Exceeding Screening Criteria
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

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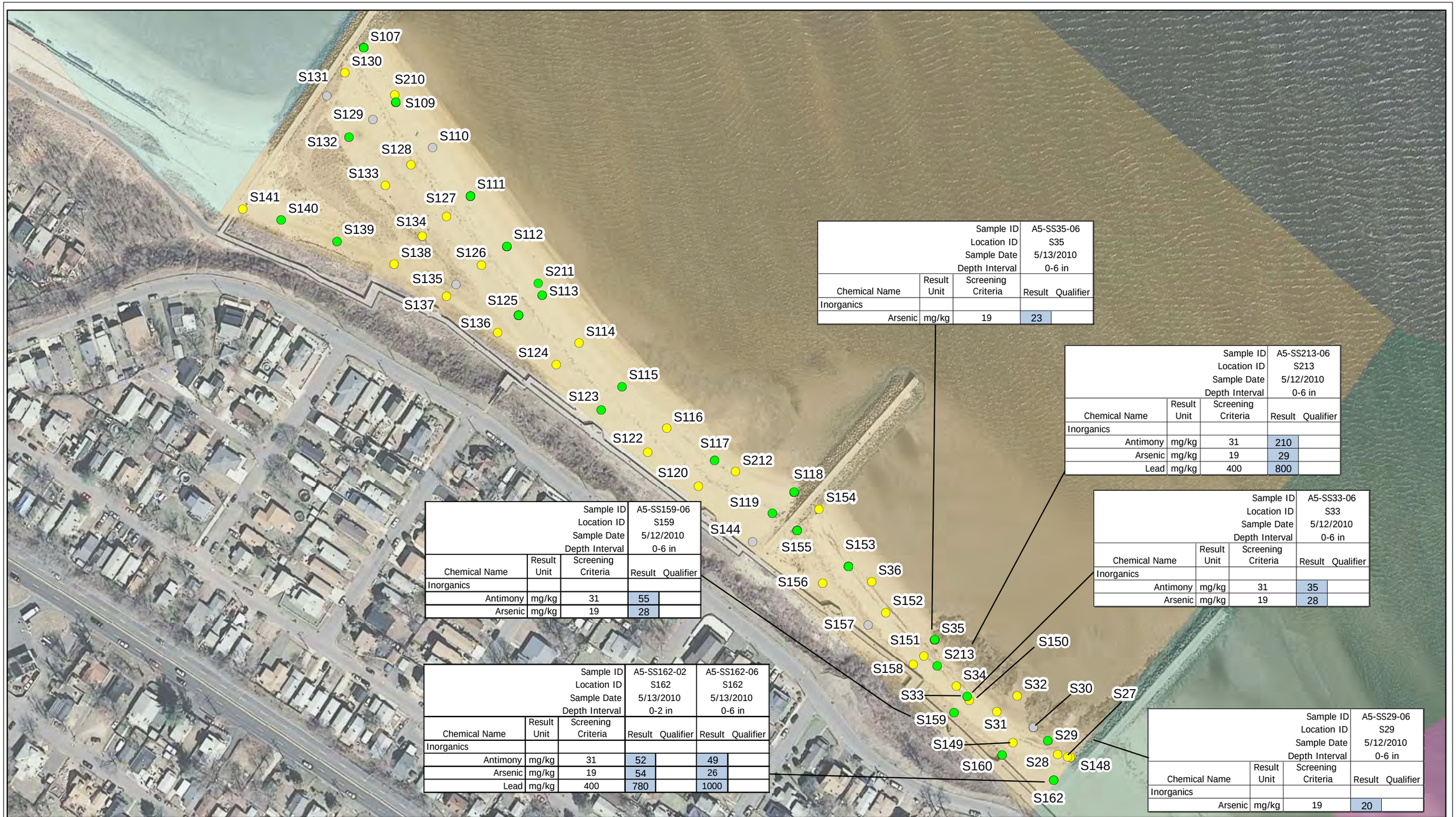
Figure_3-3_Area_05_Soil_Sample_Results_Box_Map.ai




| | | | Sample ID | A5-SS35-06 |
|---|---|---|---|---|
| | | | Location ID | S35 |
| | | | Sample Date | 5/13/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Arsenic | mg/kg | 19 | 23 | |

| | | | Sample ID | A5-SS213-06 |
|---|---|---|---|---|
| | | | Location ID | S213 |
| | | | Sample Date | 5/12/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Antimony | mg/kg | 31 | 210 | |
| Arsenic | mg/kg | 19 | 29 | |
| Lead | mg/kg | 400 | 800 | |

| | | | Sample ID | A5-SS33-06 |
|---|---|---|---|---|
| | | | Location ID | S33 |
| | | | Sample Date | 5/12/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Antimony | mg/kg | 31 | 35 | |
| Arsenic | mg/kg | 19 | 28 | |

| | | | Sample ID | A5-SS159-06 |
|---|---|---|---|---|
| | | | Location ID | S159 |
| | | | Sample Date | 5/12/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Antimony | mg/kg | 31 | 55 | |
| Arsenic | mg/kg | 19 | 28 | |

| | | | Sample ID | A5-SS162-02 | A5-SS162-06 | |
|---|---|---|---|---|---|---|
| | | | Location ID | S162 | S162 | |
| | | | Sample Date | 5/13/2010 | 5/13/2010 | |
| | | | Depth Interval | 0-2 in | 0-6 in | |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier | Result | Qualifier |
| Inorganics | | | | | | |
| Antimony | mg/kg | 31 | 52 | | 49 | |
| Arsenic | mg/kg | 19 | 54 | | 26 | |
| Lead | mg/kg | 400 | 780 | | 1000 | |

| | | | Sample ID | A5-SS29-06 |
|---|---|---|---|---|
| | | | Location ID | S29 |
| | | | Sample Date | 5/12/2010 |
| | | | Depth Interval | 0-6 in |
| Chemical Name | Result Unit | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Arsenic | mg/kg | 19 | 20 | |

Sample results exceeding screening criteria are highlighted in blue.

N

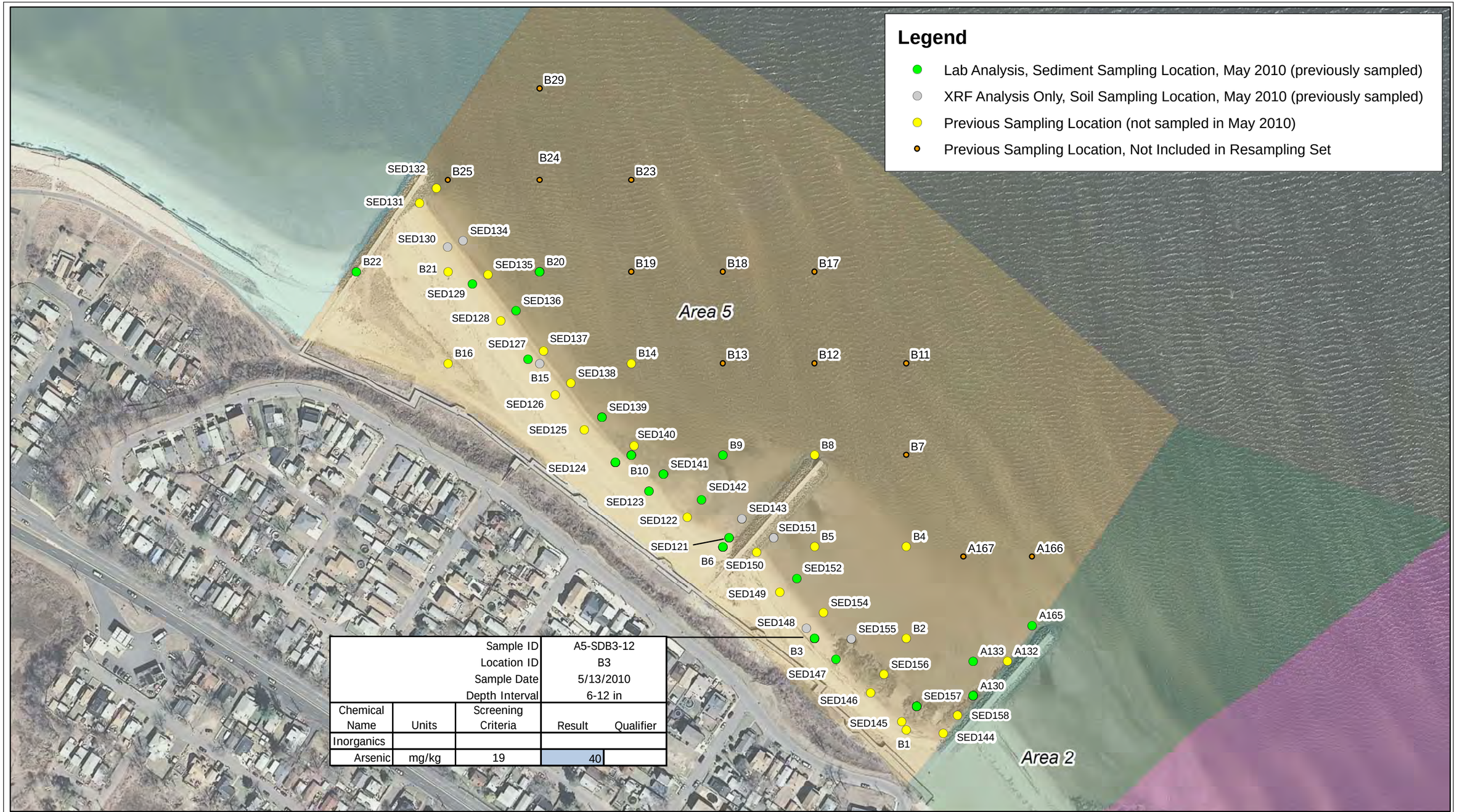
150 75 0 150 300 Feet

11/09/2010 1:42:51 PM

Figure 3-3
Area 5
Soil Sample Results Exceeding Screening Criteria
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

R2-0004121

Figure_3-4_Area_05_Sediment_Sample_Results_Box_Map.ai




Sample results exceeding screening criteria are highlighted in blue.

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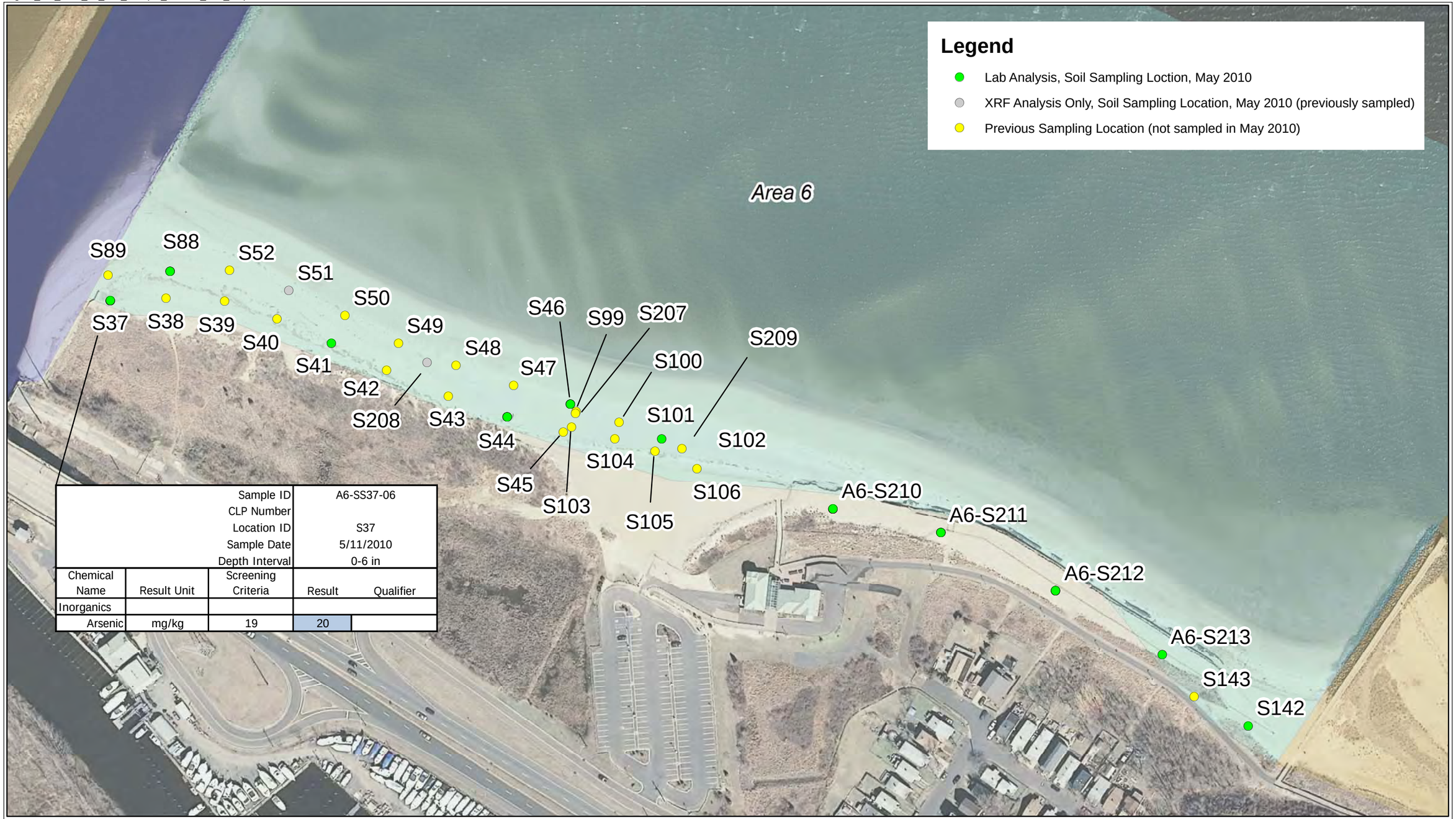
Figure 3-4
Area 5
Sediment Sample Results Exceeding Screening Criteria
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

R2-0004122

Figure_3-5_Area_06_Soil_Sample_Results_Box_Map.ai




Sample results exceeding screening criteria are highlighted in blue.
New Sample Locations begin with "A6".
Other locations sampled in May 2010
were sampled previously.

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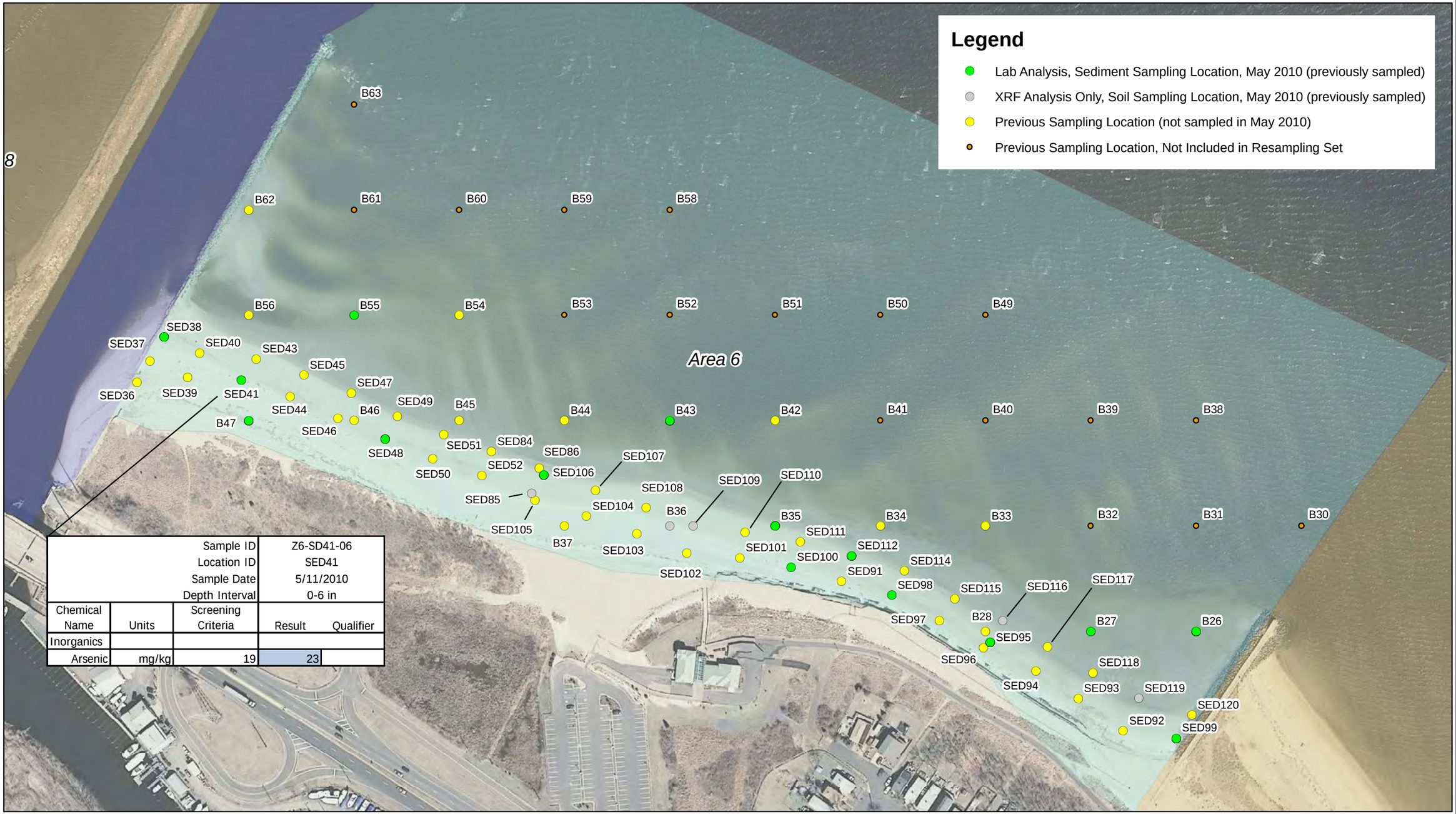
Figure 3-5
Area 6
Soil Sample Results Exceeding Screening Criteria
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey
CDM

R2-0004123

Figure_3-6_Area_06_Sediment_Sample_Results_Box_Map.ai




| | | Sample ID | Z6-SD41-06 | |
|---|---|---|---|---|
| | | Location ID | SED41 | |
| | | Sample Date | 5/11/2010 | |
| | | Depth Interval | 0-6 in | |
| Chemical Name | Units | Screening Criteria | Result | Qualifier |
| Inorganics | | | | |
| Arsenic | mg/kg | 19 | 23 | |

Sample results exceeding screening criteria are highlighted in blue.

N

175 87.5 0 175 350 525 Feet

Figure 3-6
Area 6
Sediment Sample Results Exceeding Screening Criteria
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

CDM

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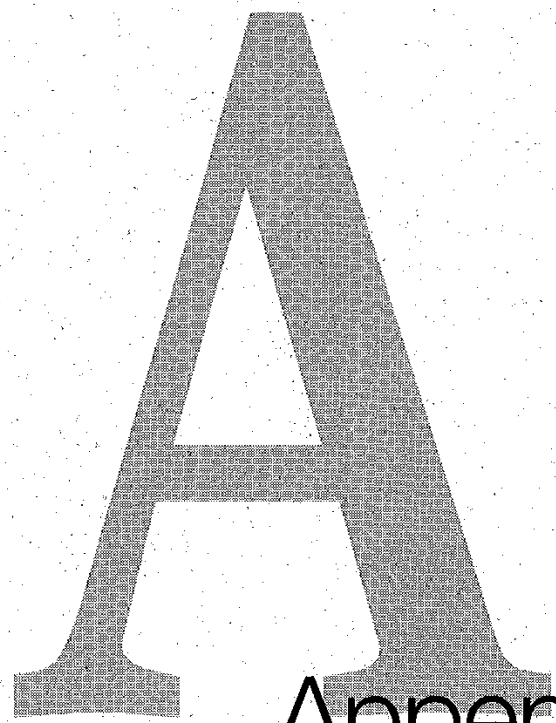
R2-0004124



# Appendix A

Appendix A
EPA Superfund Support Team Sampling Report for the Raritan Bay Slag Sampling Site
Final Beach Sampling
Technical Memorandum

See Attached CD

CDM

**SUPERFUND SUPPORT TEAM**

**SAMPLING REPORT**

**for the**

**RARITAN BAY SLAG SAMPLING SITE**

**in MONMOUTH COUNTY, NEW JERSEY**

**May 10 - 20, 2010**

| | |
|---|---|
| Participating Personnel: | United States Environmental Protection Agency<br>Christina Leung, Project Manager<br>Amelia Jackson, Acting Superfund Support Team Leader<br>Pat Sheridan, Project Quality Assurance Officer |
| Report Prepared by: | _____<br>Christina Leung, Environmental Scientist |
| Date Prepared: | July 19, 2010 |
| Approved for the Director by: | _____<br>Robert Runyon, Chief, Hazardous Waste Support Branch |

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3.0 DESCRIPTION OF EVENTS.....4

4.0 RESULTS.....6

5.0 CONCLUSION.....9




R2-0004128

## APPENDICES


APPENDIX A: Site Maps

APPENDIX B: Raritan Bay Slag Sampling Site Quality Assurance Project Plan

APPENDIX C: Raritan Bay Slag Sampling Site Trip Report

APPENDIX D: Data Tables 1 – 5


## TABLES


TABLE 1: CLP Laboratory Organic Soil Sample Summary

TABLE 2: CLP Laboratory Inorganic Soil Sample Summary

TABLE 3: DESA Laboratory Inorganic Soil/Sediment Sample Summary

TABLE 4: DESA Laboratory Inorganic Surface Water Sample Summary

TABLE 5: XRF Inorganic Soil/Sediment Sample Summary




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## 1.0 BACKGROUND

The Raritan Bay Slag Site (RBS) (CERCLIS ID No. NJN000206276) is approximately 1.3 miles in length and consists of the Laurence Harbor seawall in Old Bridge Waterfront Park and portions of the area in and around the Cheesequake Creek inlet, both located on Raritan Bay. During the replacement of a sewer line, fill and battery casings were observed in the Margaret's Creek area, which is located east of the Laurence Harbor seawall. The Margaret's Creek area was proposed for acquisition by the State of New Jersey under the Green Acres Program in 2006. During a preliminary assessment phase of the Green Acres review process, historical aerial photos revealed the filling of approximately 20 acres of that area by 1974. Further investigation by the New Jersey Department of Environmental Protection (NJDEP) found slag deposits along the seawall at the Old Bridge Waterfront Park. The NJDEP referred the seawall and the area around the Cheesequake Creek inlet to EPA for a removal action, while maintaining control of the Margaret's Creek Site.

In September 1972, the NJDEP was advised by a local environmental commission member that lead-bearing waste material was being disposed of along the Laurence Harbor beachfront on Raritan Bay. Also by letter to NJDEP dated December 7, 1972, NL Industries, Inc. (NL) acknowledged that "slag which consists of non-recoverable low yield metallic waste from blast furnace and blast furnace rubble are disposed of by Liberty Trucking Company at their property in Madison Township, Route 35, New Jersey." The Liberty Trucking Company property was located in the Margaret's Creek area. Madison Township is now known as Old Bridge Township. NL used battery plates from lead/acid storage batteries as the principal feed material for the blast furnace at its plant in Perth Amboy.

On December 13, 2006, the NJDEP conducted a limited site investigation at the Margaret's Creek Site to visually characterize fill material via excavation of test pits. Waste materials were evident in numerous locations across the surface of the site, including large quantities of what appeared to be shredded automotive battery casings and refractory brick and slag. On March 14, 2007, the NJDEP collected soil samples at the Margaret's Creek Site. Lead was detected at concentrations ranging from 701 to 146,000 parts per million (ppm).

On May 23, 2007, NJDEP conducted further soil sampling at the Margaret's Creek Site and the Laurence Harbor seawall. Antimony was detected at concentrations above state criteria, ranging from 17.8 ppm to 12,900 ppm. Arsenic was detected at concentrations ranging from 23.6 ppm to 3,350 ppm. Copper was detected at concentrations ranging from 4.2 ppm to 3,590 ppm. Lead was detected at concentrations ranging from 647 ppm to 142,000 ppm.

On July 24, 2007, NJDEP conducted another round of soil sampling in a preliminary attempt to identify the boundary of contaminated soils in public areas. Thirty-one locations were sampled from the 0-6 inch depth interval in the park area including an expanse of beach east of the footbridge over Margaret's Creek. Analysis of samples collected from the RBS Site indicated antimony at concentrations ranging from 0.42 ppm to 20.2 ppm. Arsenic was detected at concentrations ranging from 1.3 ppm to 24.5 ppm.



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Copper was detected at concentrations ranging from 3.5 ppm to 44 ppm. Lead was detected at concentrations ranging from 3.1 ppm to 545 ppm.

From September 10 through 16, 2008, EPA-ERRD contracted WESTON Solutions, Inc. personnel to conduct an Integrated Assessment (IA) sampling program. WESTON collected a total of 48 aqueous samples (including two environmental duplicate samples), 95 surface soil samples (including five environmental duplicate samples), 10 subsurface soil samples, and 84 sediment samples (including four environmental duplicate samples) from the Site. Lead was detected in the soil, sediment, and surface water samples.

From April 20 through 23, 2009, Weston Solutions, Inc. conducted a Phase II Sampling Program that included collection of 384 environmental samples (including duplicate samples). Weston collected 134 surface and near-surface soil samples, 116 sediment samples, and 34 surface water samples from the site. Surface soil and sediment samples were collected from 0 to 2 inches and 0 to 3 inches, respectively. Soil samples were collected at various depths including 0 to 2 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches bgs. Surface water, sediment, and surface soil samples were collected from Area 5, Area 6, and Area 9. Sediment samples were also collected from a background area (Area 10). Near-surface soil samples were collected from Area 5 and Area 6. All samples were analyzed for TAL metals (excluding mercury). Surface water samples were also analyzed for dissolved metals.

Offshore and onshore sediment core sampling was conducted by EPA REAC in June and July 2009 to evaluate the extent of contamination in offshore sediments in Raritan Bay adjacent to the Cheesequake Creek Inlet jetties, the seawall, and the coastal subtidal zone. A core sampler was used to collect sediment at depths from 0 to 6 inches, 0 to 12 inches, and 12 to 24 inches. EPA DESA SST personnel were on-site to provide sample management and processing. Each core sample was homogenized prior to sediment collection. A total of 354 sediment samples were collected and processed from Areas 1, 2, and 5 through 8. All of the sediment samples were sent to a CLP laboratory for metals analysis. An additional 34 samples collected from 0 to 6 inches were also analyzed for VOCs, SVOCs, pesticides, and PCBs. The same 34 sample locations were also analyzed for total organic carbon (TOC) from 0 to 6 inches and 12 to 24 inches.

## 2.0 SAMPLING PROCEDURES

The sampling procedures were in accordance with the guidelines set forth in the Quality Assurance Project Plan (QAPP) which is located in Appendix B.

## 3.0 DESCRIPTION OF EVENTS

All CLP Laboratory samples were shipped via UPS to the U.S. Environmental Protection Agency CLP Laboratory within 24 hours of sampling time. All soil samples in Area 3 and Area 1 were analyzed for Volatile Organic Compounds (VOC), Semi-volatile Organic (SVOA), Pesticides (PEST), Polychlorinated Biphenyls (PCB), Total Metals except Mercury and Cyanide (TM). All soil, sediment and surface water samples from Area 5 and Area 6 were hand-delivered to DESA Laboratory within 48 hours of sampling time. All samples from Area 5 and Area 6 were analyzed for Lead (Pb), Antimony (Sb),



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Arsenic (As), Copper (Cu), Chromium (Cr) only.

All samples were labeled as follows: Area location-MatricesLocation# - Depth Interval (Ex: A1-SS05-06). Area sample locations comprised of A1, A3, A5, and A6. Matrices were soil (SS), sediment (SD) or surface water (SW). Depth intervals were 0 – 2 inches (-02), 0 – 6 inches (-06), 6 – 12 inches (-12), or 12 – 24 inches (-24).

On May 10, 2010, sixty (60) soil samples from nineteen locations and three depth intervals in Area 3 were collected. This included three (3) field duplicates and three (3) MS/MSDs for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 2, 0 – 6, and 6 - 12 inch intervals. The US EPA CLP Region 2 Chain of Custody Record is presented in the Trip Report, Appendix C and CLP sample descriptions are presented in Table 1 and Table 2, Appendix D.

On May 11, 2010, twenty-six soil/sediment samples from twenty-four depths/locations in Area 6, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were collected and hand-delivered to DESA Lab. Twelve (12) surface water samples from twelve locations were also collected. The US EPA Region 2 Chain of Custody Record is presented in the Trip Report, Appendix C and sample descriptions are presented in Table 3 and Table 4, Appendix D.

On May 12, 2010, seventy-four soil/sediment samples from seventy- two depths/locations in Area 6, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were processed and hand-delivered to DESA Lab. The US EPA Region 2 Chain of Custody Record is presented in the Trip Report, Appendix C and sample descriptions are presented in Table 3 and Table 4, Appendix D.

On May 13, 2010, forty-two (42) soil/sediment samples from forty depths/locations in Area 5, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were processed and hand-delivered to DESA Lab. The US EPA Region 2 Chain of Custody Record is presented in the Trip Report, Appendix C and sample descriptions are presented in Table 3 and Table 4, Appendix D.

On May 14, 2010, forty-three (43) soil/sediment samples from forty-one depths/locations in Area 5, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were processed and hand-delivered to DESA Lab. The US EPA Region 2 Chain of Custody Record is presented in Appendix B. Twelve (12) soil samples from five locations and two depth intervals in Area 1 were collected. This included one (1) field duplicate and one (1) MS/MSD for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 6, and 6 - 12 inch intervals. The US EPA CLP Region 2 Chain of Custody Record is presented in the Trip Report, Appendix C and CLP sample descriptions are presented in Table 1 and Table 2, Appendix D.

VOCs and inorganic samples that were shipped on Friday May 14, 2010 arrived on Monday May 17, 2010 morning, instead of Saturday delivery May 15, 2010 (EPA checked off Saturday delivery on UPS airbill). As a result, samples exceeded 4 degrees Celsius and were re-sampled on Tuesday May 18, 2010.



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On May 17, 2010, nineteen (19) soil samples from nine locations and two depth intervals in Area 1 were collected. This included one (1) field duplicate and one (1) MS/MSD for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 6, and 6 - 12 inch intervals. The US EPA CLP Region 2 Chain of Custody Record is presented in the Trip Report, Appendix C and CLP sample descriptions are presented in Table 1 and Table 2, Appendix D. Eleven (11) surface water samples from ten locations, which included one (1) field duplicate and one (1) MS/MSD for field quality control (QC) purposes were collected and hand-delivered to DESA laboratory.

On May 18, 2010, twelve (12) soil samples from five locations and two depth intervals in Area 1 were re-sampled for VOCs, percent moisture, and TM only. This included one (1) field duplicate for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 6, and 6 - 12 inch intervals. The US EPA CLP Region 2 Chain of Custody Record is presented in the Trip Report, Appendix C and CLP sample descriptions are presented in Table 1 and Table 2, Appendix D.

On May 17 - 20, 2010, XRF samples were analyzed for screening purposes only.

## 4.0 RESULTS

All organic and inorganic results were compared to the NJDEP Soil Cleanup Criteria Levels. All of the results can be found in Tables # 1 – 5 in Appendix D and all the results that exceed the criteria levels are highlighted in yellow. The "J" data qualifier following the result means it is an estimated value and the identification of the analyte is acceptable.

**CLP Lab – Table 1 and Table 2**

***Polychlorinated Biphenyls (PCB)***

PCBs were found above the NJ soil cleanup criteria in thirteen (13) samples. 12 out of the 13 samples were detected in Area 1. The highest concentrations were found in the surface samples of A1-SS15 (3100 mg/kg) and A1-SS16 (1300 mg/kg). A3-SS70-12 (160 mg/kg) was the only location in Area 3 that PCB was detected.

***Pesticides (PEST)***

Pesticides were detected in both Areas 1 and 3. The contaminants in surface and/or depth that were found above the NJ soil cleanup criteria were: Heptachlor (Area 3 – SS76 and SS90; Area 1 – SS05, SS07, SS08, SS11, SS14), 4, 4'-DDD (Area 3 – SS70 and SS82; Area 1 – SS11), 4, 4'-DDE (Area 3 – SS76-06; Area 1 – SS05, SS06, SS07, SS08, SS09, SS13, SS14, SS15, SS16), and 4, 4'-DDT (Area 3 – SS70, SS87, SS88, SS89, SS90; Area 1 – SS05, SS07, SS08, SS09, SS11, SS13).

***Volatile Organic Compounds (VOC)***

The only volatile organic compounds present in Area 1 and 3 were Acetone (Area 3 – SS73 – SS77, SS79, SS83; Area 1 – SS13, SS14), Trichloroethene (A3-SS90-06, A1-SS10-12), and Tetrachloroethene (A1-SS70-06). All VOCs found in both Areas 1 and 3 were below the New Jersey soil cleanup criteria.



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***Semi-volatile Organic Compounds (SVOC)***
There were semi-volatile organic compounds detected in both Areas 1 and 3. Bis (2-chloroethyl)ether was detected above the NJ soil cleanup criteria for A1-SS14-12 only. For A1-SS15-12, Fluoranthene (4500 mg/kg) was detected above the 2300 mg/kg criteria and Pyrene (3500 mg/kg) was detected above the 1700 mg/kg criteria. Bis (2-ethylhexyl)phthalate was found above the NJ soil cleanup criteria in Area 3 at locations SS71, SS73 - SS76, SS84, SS88, SS90 and in Area 1 at locations SS05 – SS14, and SS16. All locations in both Areas 1 and 3 with the following compounds present, exceeded the NJ Soil cleanup criteria: Dibenz(a,h)anthracene (detected in Area 1 only), Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(a)pyrene, and Indeno(1,2,3-cd)pyrene.

***Total Metals (TM)***
Antimony was detected above the NJ soil cleanup criteria of 14 mg/kg at A1-SS15-12 only. Arsenic was detected above the NJ soil cleanup criteria of 20 mg/kg at A3-SS75-12, A3-SS77-06, A1-SS09-12, and A1-SS16-06. Lead was detected above the NJ soil cleanup criteria of 400 mg/kg at A1-SS09-12 and A1-SS14-12. Thallium was detected above the NJ soil cleanup criteria of 2 mg/kg at A3-SS77-06, A3-SS79-12, and A3-SS80-02.

**DESA Lab – Table 3 and Table 4**

***Soil and Sediment***
Area 6 was found to have one contaminant at one location at the NJ soil cleanup criteria; A6-SS37-06 was found to have arsenic at the criteria level of 20 mg/kg. Area 5 was found to have one (1) sample above the NJ soil cleanup criteria for lead, eight (8) samples for arsenic, and eleven (11) samples for antimony. A5-SD147-06 contained antimony at the criteria level of 14 mg/kg. A5-SS213-06 contained arsenic at 29 mg/kg, exceeding the 20 mg/kg criteria level, antimony at 210 mg/kg, exceeding the criteria level of 14 mg/kg, and lead at 800 mg/kg, exceeding the criteria limit of 400 mg/kg. A5-SS33-06 contained arsenic at 28 mg/kg, exceeding the 20 mg/kg criteria level and antimony at 35 mg/kg, exceeding the criteria level of 14 mg/kg. A5-SS159-06 contained arsenic at 28 mg/kg, exceeding the 20 mg/kg criteria level and antimony at 55 mg/kg, exceeding the criteria level of 14 mg/kg. A5-SS160-06 contained antimony at 21 mg/kg, exceeding the criteria level of 14 mg/kg and lead at the criteria level of 400 mg/kg. A5-SS29-06 contained arsenic at the criteria level of 20 mg/kg and antimony at 24 mg/kg, exceeding the criteria level of 14 mg/kg. A5-SS162-02 contained arsenic at 54 mg/kg, exceeding the 20 mg/kg criteria level, and antimony at 52 mg/kg, exceeding the 14 mg/kg criteria level. A5-SS162-06 contained arsenic at 26 mg/kg, exceeding the 20 mg/kg criteria level, lead at 1,000 mg/kg, exceeding the criteria limit of 400 mg/kg, and antimony at 49 mg/kg, exceeding the criteria level of 14 mg/kg. A5-SDB3-12 contained arsenic at 40 mg/kg, exceeding the 20 mg/kg criteria level, and antimony at 25 mg/kg, exceeding the 14 mg/kg criteria level. A5-SS155-24 contained antimony at the criteria level of 14 mg/kg. A5-SS35-02 contained antimony at 24 mg/kg, exceeding the 14 mg/kg criteria level. A5-SS35-06 contained arsenic at 23 mg/kg, exceeding the 20 mg/kg criteria level, and antimony at 19 mg/kg, exceeding the 14 mg/kg criteria level.



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***Surface Water***
With the exception of one sample, surface water samples were all below the NJ standards of quality criteria. Sample A6-SW38 (17 ug/L) was found to be above the arsenic 0.061 ug/L criteria. The "K" data qualifier means the identification of the analyte is acceptable; the reported value may be biased high.

**XRF Data – Table 5**

The results of the XRF duplicates indicate good comparability at approximately 12.1 average Relative Percent Difference (RPD). Maximum concentrations of each analyte were found to be: 179ppm for antimony (A5-SD157-06 >250microns); 8.20ppm cadmium (A5-SDA130-24); 129.76 chromium (A5-SS144-6); 45.68ppm copper (A6-SDB47-12); 27.10ppm arsenic (A5-SD157-12 <250microns); 376.80ppm lead (A5-SS162-6).

***Correlation***
Accuracy was assessed by comparing the XRF instrument's results with data generated by the fixed laboratory. The laboratory performed element analysis using acid digestion and inductively coupled plasma – atomic emission spectrometry (ICP-AES). These data were input into MS Access in order to be free of human error before the regressions were performed. Therefore, data points whose paired sample IDs were different between the laboratories LIMS system and the values input into the XRF are not present.

Paired data for analytes that would result in a meaningless relationship were not run (i.e. 22 ND on the XRF vs. 24 detects from the lab). This was the case for Antimony and Chromium, so the data for these two metals can be disregarded. It is also the case for paired data where all values are below the detection limit.

***Antimony***
Naturally occurring antimony in surface soils is typically found at less than 1 to 4 milligrams per kilogram (mg/kg). Typical detection limits for field-portable XRF instruments range from 10 to 40 mg/kg. Antimony is typically analyzed with success by ICP-AES; however, recovery of antimony in soil matrix spikes is often below quality control (QC) limits (50 percent or less) as a result of loss through volatilization during acid digestion; results using ICP-AES may be lower than are obtained by XRF. For the Raritan Bay, there was no correlation between XRF and fixed-laboratory results; the XRF consistently yielded a result value below the limit of detection for almost every sample.

***Arsenic***
Naturally occurring arsenic in surface soils typically ranges from 1 to 50 mg/kg (ppm). Typical detection limits for field-portable XRF instruments range from 10 to 20 mg/kg arsenic. Arsenic is successfully analyzed by ICP-AES; however, spectral interferences between peaks for arsenic and lead can affect detection limits and accuracy for XRF analysis when the ratio of lead to arsenic is 10 to 1 or more. Risk-based screening levels and soil screening levels for arsenic may be lower than the detection limits of field-portable XRF instruments. For the Raritan Bay, the correlation between XRF and fixed-



R2-0004135

laboratory results was 0.47; the XRF consistently yielded a higher result value compared to the laboratory.

***Cadmium***
Naturally occurring cadmium in surface soils typically ranges from 0.6 to 1.1 mg/kg. Typical detection limits for field-portable XRF instruments range from 10 to 50 mg/kg. Cadmium is successfully analyzed by both ICP-AES and fieldportable XRF; however, action levels for cadmium may be lower than the detection limits of field-portable XRF instruments. For the Raritan Bay, there was no correlation between XRF and fixed-laboratory results; the XRF consistently yielded a result value below the limit of detection for almost every sample.

***Chromium***
Naturally occurring chromium in surface soils typically ranges from 1 to 1,000 mg/kg. The variable oxidation states of chromium affect its behavior and toxicity. Typical detection limits for field-portable XRF instruments range from 10 to 50 mg/kg. Neither ICP-AES nor field-portable XRF can distinguish between oxidation states for chromium (or any other element). For the Raritan Bay, there was no correlation between XRF and fixed-laboratory results; the XRF consistently yielded a result value below the limit of detection for almost every sample.

***Copper***
Naturally occurring copper in surface soils typically ranges from 2 to 100 mg/kg. Typical detection limits for field-portable XRF instruments range from 10 to 50 mg/kg. Copper is successfully analyzed by ICP-AES and XRF; however, spectral interferences between peaks for copper and zinc may affect the detection limits and accuracy of the XRF analysis. For the Raritan Bay, there was no correlation between XRF and fixed-laboratory results with a resulting regression coefficient equal to 0.011.

***Lead***
Naturally occurring lead in surface soils typically ranges from 2 to 200 mg/kg. Typical detection limits for field-portable XRF instruments range from 10 to 20 mg/kg. Lead is successfully analyzed by ICP-AES and XRF; however, spectral interferences between peaks for lead and arsenic in XRF analysis can affect detection limits and accuracy when the ratio of arsenic to lead is 10 to 1 or more. Differences between ICP-AES and XRF results are expected in the presence of high concentrations of arsenic, especially when the ratio of lead to arsenic is low. For the Raritan Bay, the correlation between XRF and fixed-laboratory results was 0.71.

***Particle-size correlation***
The result of the regression will allow one to model the concentration of particles smaller than 250microns for exposure purposes. For this project:

$$[Sieved] = 1.0005[Unsieved] + 3.9848$$

For the Sieved vs. Non-sieved paired sample data, samples with nomenclature ending in '250' (refer to Table 5 in Appendix D) were sieved using a NIST #60 sieve. This analysis was performed in order to assist in the site-specific input of values to model risk via the



R2-0004136

IEUBK. Since it was not possible to sieve every sample in this manner in a short amount of time, a subset of the samples were sieved. This linear relationship can be used in order to model the concentration present in the particle fraction smaller than 250 microns (those easily respirable and easily adsorbed to hands) using the available quantitative data. The regression analysis was conducted only for lead, see Appendix D for graph.

## 5.0 CONCLUSION:

The contaminants of concern at the Raritan Bay Beach Area 5 and 6 are Antimony, Arsenic, Lead, Copper, and Chromium. The playground Area 3 and fenceline Area 1 samples were analyzed for organic and inorganic analyses. As can be seen from the highlighted portions of Table 1 through 5 in Appendix D , the contaminants were detected above New Jersey soil cleanup criteria. All sampling results from the May 2010 sampling event can be seen on Table 1 through 5 in Appendix D. These results will be used by the remedial project manager and risk assessors to aid in the decision-making process for the site.



R2-0004137

# APPENDIX A

## Site Maps

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N

50 25 0 50 Feet

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Figure 1
Area-03
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

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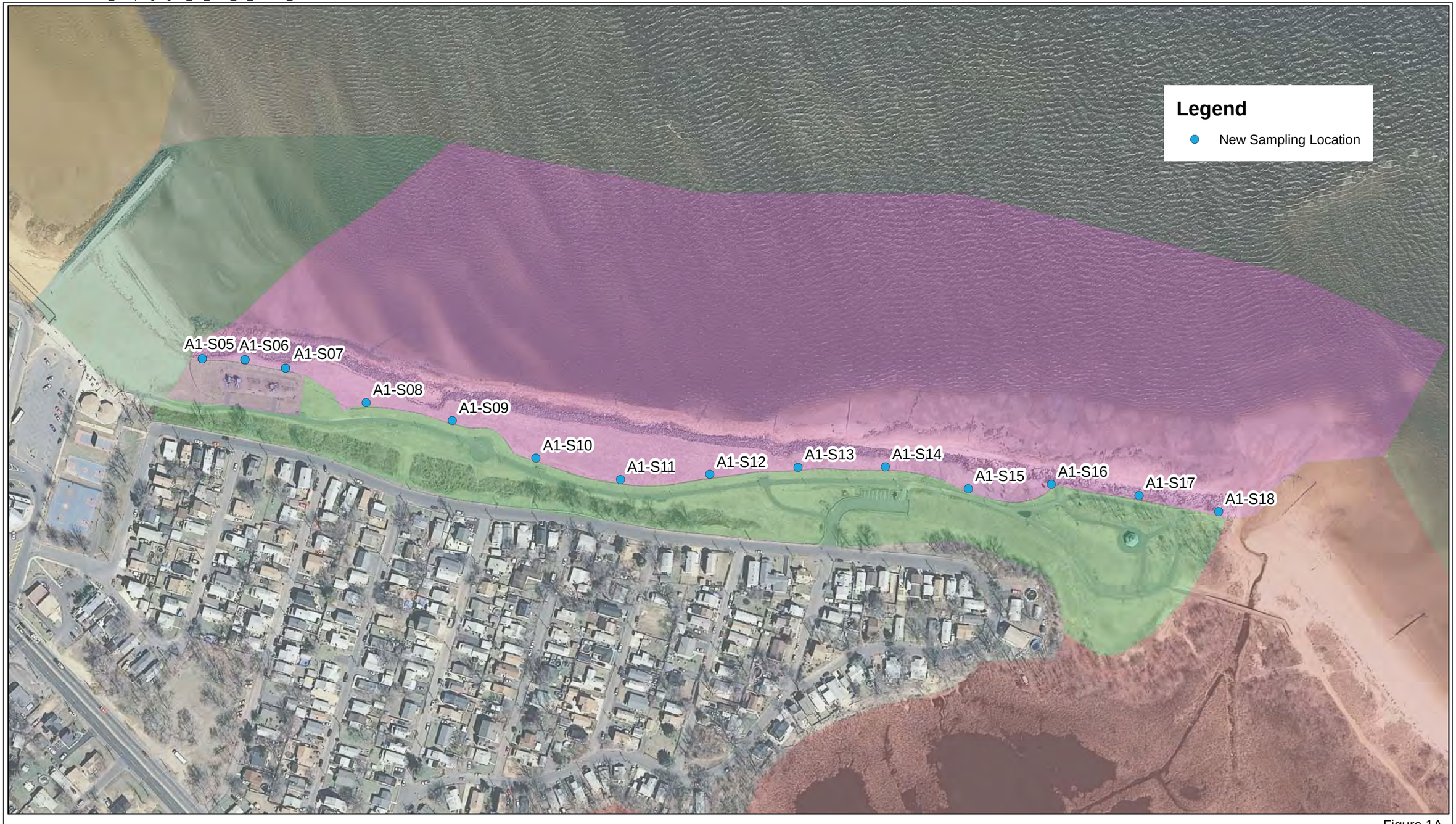


N

200 100 0 200 400 Feet

**DRAFT**

Figure 1A
Area-01
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

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150 75 0 150 300 Feet

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Figure 2
Area-05
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey
CDM

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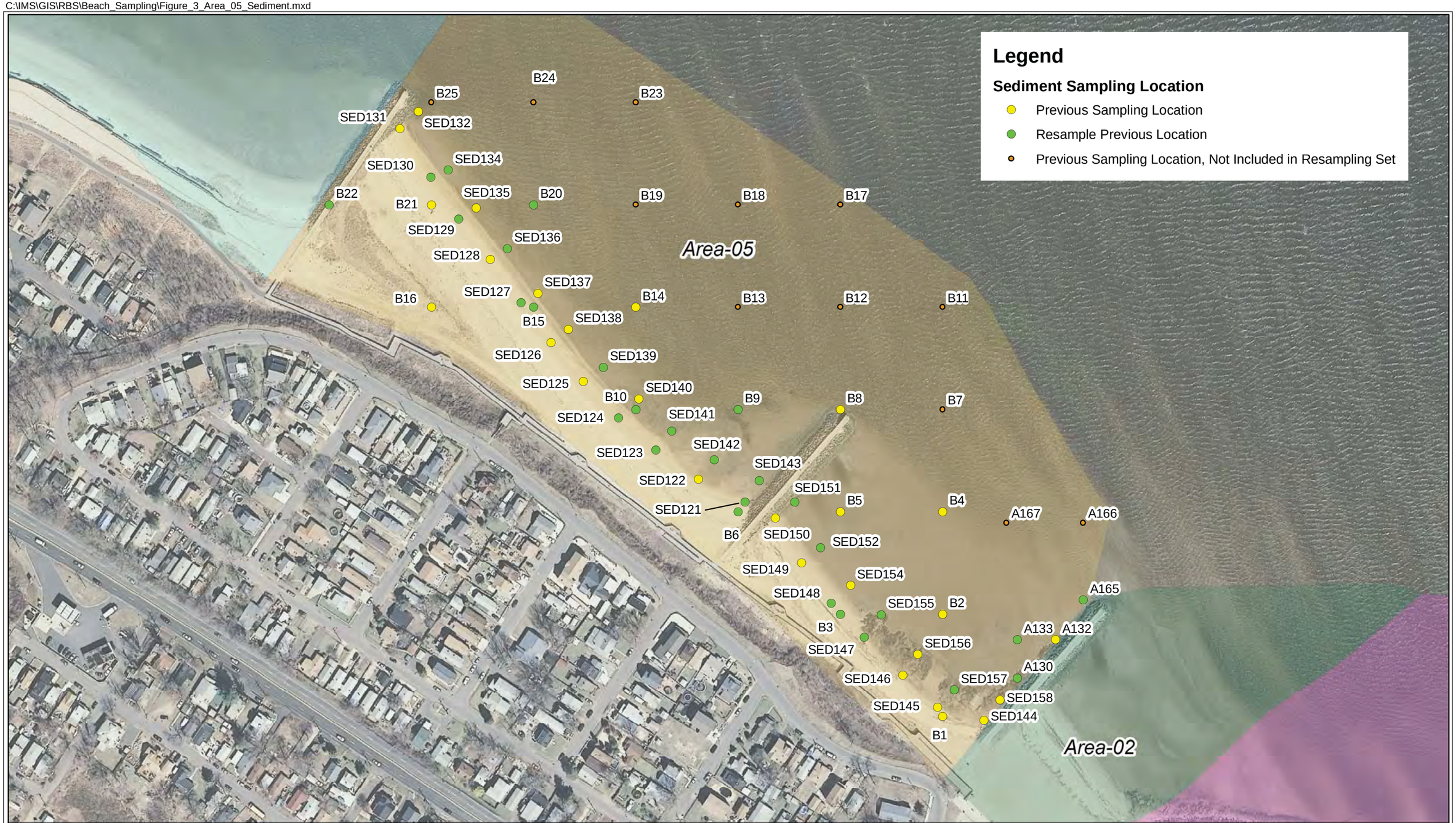


N

175 87.5 0 175 350 525 Feet

**DRAFT**

04/22/2010 9:52:42 AM

Figure 3
Area-05
Sediment Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

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N

500 250 0 Feet

04/22/2010 9:54:02 AM

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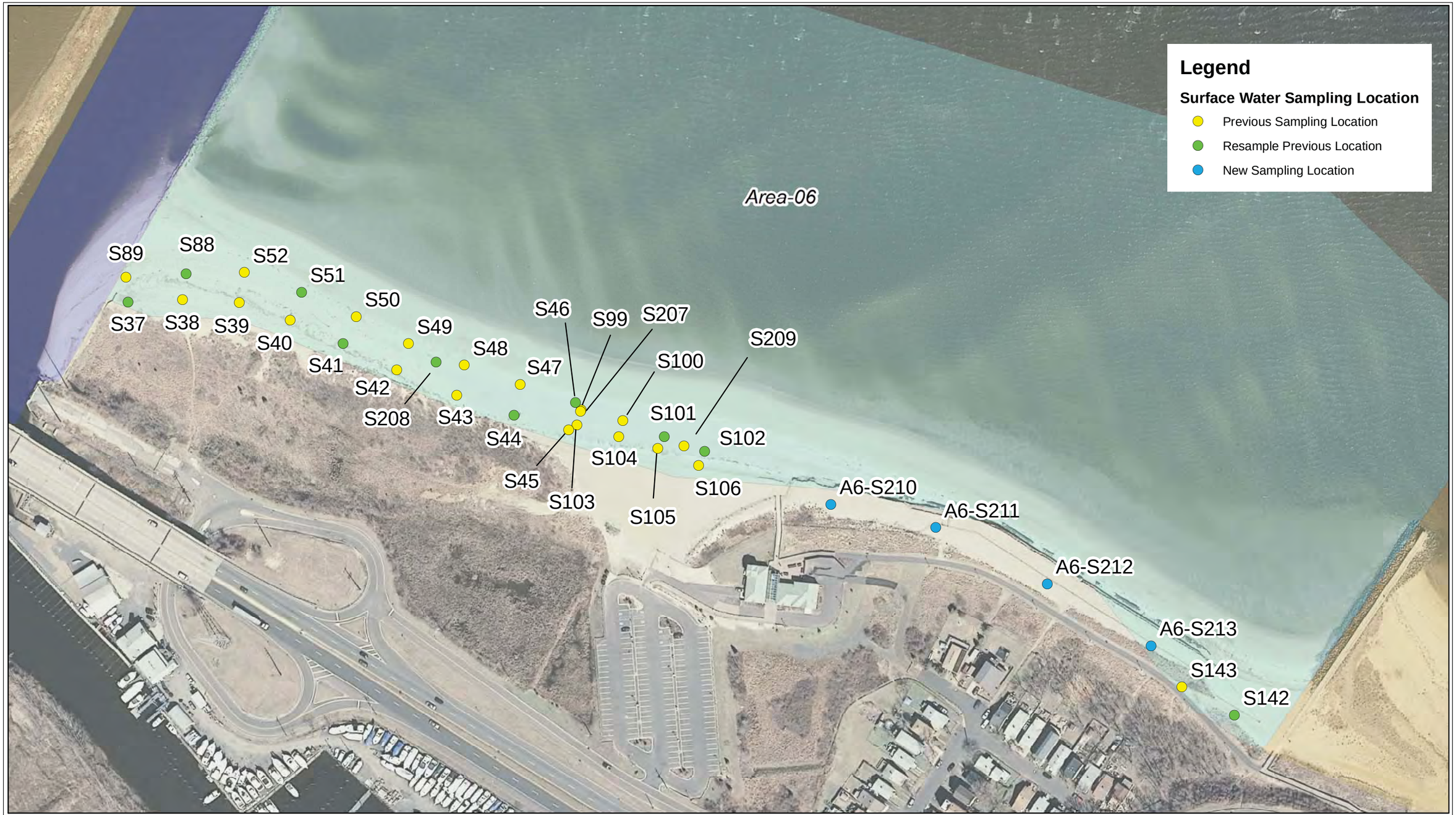
Figure 4
Area-05
Surface Water Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

R2-0004143

C:\IMS\GIS\RBS\Beach_Sampling\Figure_5_Area_06_Surface_Soil.mxd

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150 75 0 150 300 Feet

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**DRAFT**

Figure 5
Area-06
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey
CDM

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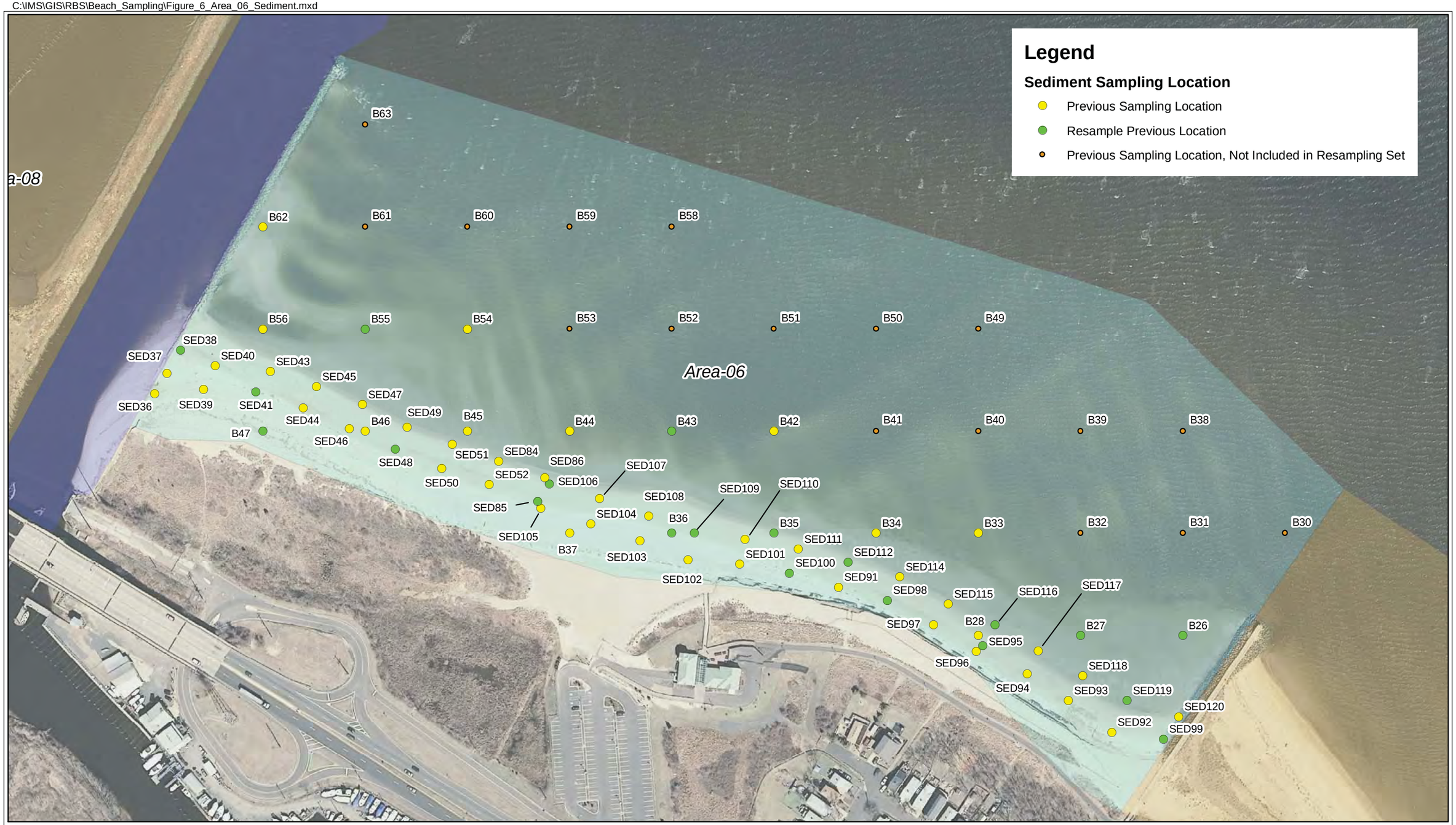


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Figure 6
Area-06
Sediment Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

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N

200 100 0 200 400 Feet

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Figure 7
Area-06
Surface Water Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

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R2-0004146

# APPENDIX B

# Quality Assurance Project Plan

# for the

# Raritan Bay Slag Sampling Site

UNIFORM FEDERAL POLICY
QUALITY ASSURANCE PROJECT PLAN
FOR

# RARITAN BAY SLAG BEACH SAMPLING SITE

May 10, 2010

REVISION 0

Prepared by:

Christina Leung Date
Project Manager
EPA/DESA/HWSB/SST

Approved by:

Patricia Sheridan Date
QA Officer
EPA/DESA/HWSB/SST

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9.0 Data Usability

**ATTACHMENT 1**: EPA Division of Science and Assessment (DESA) Hazardous Waste Support Branch (HWSB) Superfund Support Team (SST) Standard Operating Procedures (SOP) *Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment,* SOP # SST 2, Revision 2.0, May 2010.

**ATTACHMENT 2:** Environmental Response Team (ERT), US EPA. *Soil Sampling*, SOP No.2012, Revision 1.0. July 11, 2001.

**ATTACHMENT 3:** Environmental Response Team (ERT), US EPA. *Sediment Sampling*, SOP No.2016, Revision 0.0. November 17, 1994.

**ATTACHMENT 4:** Environmental Response Team (ERT), US EPA. *Surface Water Sampling*, SOP No.2013, Revision 1.0. December 17, 2002.

**ATTACHMENT 5:** Environmental Response Team (ERT), US EPA. *Sampling Decontamination*, SOP No.2006, Revision 0.0. August 11, 1994.

**ATTACHMENT 6:** Site Maps

**ATTACHMENT 7:** Field sample documentation

**ATTACHMENT 8A:** New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program Soil Cleanup Criteria, May 12, 1999.

**ATTACHMENT 8B:** New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards, January 4, 2010.

**ATTACHMENT 9:** UFP QAPP Worksheets



R2-0004149

## 1.0 Introduction

### 1.1 Site Description and History

The Raritan Bay Slag Site (RBS) (CERCLIS ID No. NJN000206276) is approximately 1.3 miles in length and consists of the Laurence Harbor seawall in Old Bridge Waterfront Park and portions of the area in and around the Cheesequake Creek inlet, both located on Raritan Bay. During the replacement of a sewer line, fill and battery casings were observed in the Margaret's Creek area, which is located east of the Laurence Harbor seawall. The Margaret's Creek area was proposed for acquisition by the State of New Jersey under the Green Acres Program in 2006. During a preliminary assessment phase of the Green Acres review process, historical aerial photos revealed the filling of approximately 20 acres of that area by 1974. Further investigation by the New Jersey Department of Environmental Protection (NJDEP) found slag deposits along the seawall at the Old Bridge Waterfront Park. The NJDEP referred the seawall and the area around the Cheesequake Creek inlet to EPA for a removal action, while maintaining control of the Margaret's Creek Site.

In September 1972, the NJDEP was advised by a local environmental commission member that lead-bearing waste material was being disposed of along the Laurence Harbor beachfront on Raritan Bay. Also by letter to NJDEP dated December 7, 1972, NL Industries, Inc. (NL) acknowledged that "slag which consists of non-recoverable low yield metallic waste from blast furnace and blast furnace rubble are disposed of by Liberty Trucking Company at their property in Madison Township, Route 35, New Jersey." The Liberty Trucking Company property was located in the Margaret's Creek area. Madison Township is now known as Old Bridge Township. NL used battery plates from lead/acid storage batteries as the principal feed material for the blast furnace at its plant in Perth Amboy.

On December 13, 2006, the NJDEP conducted a limited site investigation at the Margaret's Creek Site to visually characterize fill material via excavation of test pits. Waste materials were evident in numerous locations across the surface of the site, including large quantities of what appeared to be shredded automotive battery casings and refractory brick and slag. On March 14, 2007, the NJDEP collected soil samples at the Margaret's Creek Site. Lead was detected at concentrations ranging from 701 to 146,000 parts per million (ppm).

On May 23, 2007, NJDEP conducted further soil sampling at the Margaret's Creek Site and the Laurence Harbor seawall. Antimony was detected at concentrations above state criteria, ranging from 17.8 ppm to 12,900 ppm. Arsenic was detected at concentrations ranging from 23.6 ppm to 3,350 ppm. Copper was detected at concentrations ranging from 4.2 ppm to 3,590 ppm. Lead was detected at concentrations ranging from 647 ppm to 142,000 ppm.

On July 24, 2007, NJDEP conducted another round of soil sampling in a preliminary attempt to identify the boundary of contaminated soils in public areas. Thirty-one locations were sampled from the 0-6 inch depth interval in the park area including an expanse of beach east of the footbridge over Margaret's Creek. Analysis of samples collected from the RBS Site indicated antimony at concentrations ranging from 0.42 ppm to 20.2 ppm. Arsenic was detected at



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concentrations ranging from 1.3 ppm to 24.5 ppm. Copper was detected at concentrations ranging from 3.5 ppm to 44 ppm. Lead was detected at concentrations ranging from 3.1 ppm to 545 ppm.

From September 10 through 16, 2008, EPA-ERRD contracted WESTON Solutions, Inc. personnel to conduct an Integrated Assessment (IA) sampling program. WESTON collected a total of 48 aqueous samples (including two environmental duplicate samples), 95 surface soil samples (including five environmental duplicate samples), 10 subsurface soil samples, and 84 sediment samples (including four environmental duplicate samples) from the Site. Lead was detected in the soil, sediment, and surface water samples.

From April 20 through 23, 2009, Weston Solutions, Inc. conducted a Phase II Sampling Program that included collection of 384 environmental samples (including duplicate samples). Weston collected 134 surface and near-surface soil samples, 116 sediment samples, and 34 surface water samples from the site. Surface soil and sediment samples were collected from 0 to 2 inches and 0 to 3 inches, respectively. Soil samples were collected at various depths including 0 to 2 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches bgs. Surface water, sediment, and surface soil samples were collected from Area 5, Area 6, and Area 9. Sediment samples were also collected from a background area (Area 10). Near-surface soil samples were collected from Area 5 and Area 6. All samples were analyzed for TAL metals (excluding mercury). Surface water samples were also analyzed for dissolved metals.

Offshore and onshore sediment core sampling was conducted by EPA REAC in June and July 2009 to evaluate the extent of contamination in offshore sediments in Raritan Bay adjacent to the Cheesequake Creek Inlet jetties, the seawall, and the coastal subtidal zone. A core sampler was used to collect sediment at depths from 0 to 6 inches, 0 to 12 inches, and 12 to 24 inches. EPA DESA SST personnel were on-site to provide sample management and processing. Each core sample was homogenized prior to sediment collection. A total of 354 sediment samples were collected and processed from Areas 1, 2, and 5 through 8. All of the sediment samples were sent to a CLP laboratory for metals analysis. An additional 34 samples collected from 0 to 6 inches were also analyzed for VOCs, SVOCs, pesticides, and PCBs. The same 34 sample locations were also analyzed for total organic carbon (TOC) from 0 to 6 inches and 12 to 24 inches.

### 1.2 Problem Definition

EPA DESA personnel have been requested by ERRD to sample the playground Area 3 and fenceline Area1 for organic and inorganic contamination in the soil. Additional sampling is requested in the beach Area 5 and Area 6 along the Raritan Bay for lead (Pb), arsenic (As), chromium ($Cr^{3+}$ and $Cr^{6+}$), antimony (Sb), and copper (Cu) in the soil, sediment, and surface water. See Attachment 6 for site maps and sample locations. Sampling will commence the week of May 10$^{th}$ and be completed May 21$^{st}$, 2010. The data will be compared to the NJDEP criteria for human health risk, provided in Attachment 9 worksheet 15.

The purpose of the Raritan Bay Slag beach sampling is to provide data which can be used to assess potential changes in concentrations of contaminants of concern at the site after a storm event and to support ongoing assessment of the suitability of recreational use of the beaches in



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Areas 5 and 6 and the playground in Areas 1 and 3. Contaminants of concern at the beach Area 5 and 6 are lead, arsenic, copper, chromium, and antimony. Volatile organic compounds, semi-volatile organics, pesticides, and polychlorinated biphenols, and total metals will be analyzed at Area 3 and 1 to determine if there is a potential exposure pathway. Data from all sample areas will be used in making decisions regarding property access. This sampling plan has been designed to obtain sufficient data to allow statistical analysis of this data set (a minimum of ten sampling points), if necessary, in the future. The design included selecting from 30% to 100% of the previous sampling locations by Area for re-sampling. The final percentages were based on concentrations from previous sampling events. Area 5 contained a larger data set than Area 6 and thus respectively 50% and 30% of the previous locations were chosen for re-sampling. However, Area 6 is more heavily used for recreation than Area 5 and thus the reverse percentages were used to identify subset sampling. One hundred percent of the samples in Area 3 were selected for analysis. This data will be used to support the Remedial Investigation.

## 2.0 Project Organization

### 2.1 Personnel

The following list of key personnel and their corresponding responsibilities. Due to the work breakdown structure of the project, an organization list is provided instead of a concise organization chart.

| PROJECT PERSONNEL | RESPONSIBILITY |
|---|---|
| Christina Leung, Project Officer<br>DESA/HWSB Superfund Support Team | Project Management/<br>Sampling Operations/Field Support |
| Michael Mercado, Environmental Scientist<br>DESA/HWSB Superfund Support Team | Sampling Operations/Field Support |
| Steven Wall, Environmental Scientist<br>DESA/HWSB Superfund Support Team | Sampling Operations/Field Support |
| Michael Clemetson, Environmental Scientist<br>DESA/HWSB Superfund Support Team | Sampling Operations/Field Support |
| Rachael Graham, Environmental Scientist<br>DESA/HWSB Superfund Support Team | Sampling Operations/Field Support |
| Pat Sheridan, Project Quality Assurance Officer<br>DESA/HWSB/SST | Report QA |
| EPA CLP Laboratory | Laboratory Analysis |
| | Laboratory QC |
| | Data Processing Activities |
| U.S. EPA Laboratory Branch | Laboratory Analysis |
| | Laboratory QC |
| | Data Processing Activities |
| DESA/Hazardous Waste Support Branch | Data Quality Review |



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| | |
|---|---|
| Not Applicable | Performance Auditing |
| Not Applicable | Systems Auditing |
| DESA/Hazardous Waste Support Branch | Overall QA |
| Tanya Mitchell, Remedial Project Manager (RPM)<br>ERRD/SPB | Overall Project Coordination |

## 3.0 Project Quality Objectives

### 3.1 Data Usability

Overall project objectives include:

- Derive observable trends from the data
- Current addition of Chromium analysis, as per RPM's request.
- Determine if there is any potential metal contamination, specifically Pb, As, Sb, Cu, Cr in the soil and sediment at the Raritan Bay beach area, particularly in Area 5 and Area 6, which are depicted in Attachment 6.
- Determine if there is any potential metal and organic contamination, in the soil at the Raritan Bay playground Area 1 and Area 3, which are depicted in Attachment 6.
- Investigate concentrations of Pb, As, Sb, Cu, Cr in the surface water at the Raritan Bay beach area, particularly in Area 5 and Area 6, which are depicted in Attachment 6.

## 4.0 Project Overview

### 4.1 Tasks

Sampling Tasks: Locations for soil and sediment sampling were selected randomly by computer from the set of existing, previously, sampled locations. In Areas 1, 3, 5 and 6, new sample locations were proposed for soils and surface water to support both this effort and potentially the upcoming remedial investigation. All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. From this 0-6" paired data, a linear regression will be calculated to allow for future XRF correlations should additional data is needed to assess the suitability of recreational use of the beaches in Areas 5 and 6. In addition, a subset (30-50%) of samples in Area 5 and Area 6 will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24" for soil and sediments as humans are likely to be exposed to soil and sediment down to 2 feet. The XRF will be utilized for the same subsets at 6-12" and 12-24" for screening purposes only. See Attachment 1, EPA SOP SST 2 for usage instructions.

Below is a detailed description and table depicting sample locations in Areas 1, 3, 5 and 6, the number of samples, at what depth, and what will be analyzed at each sample depth and location. See Attachment 6 for site maps and sample locations. See worksheet #18 in Attachment 9.



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AREA 1 – Soil
All soil samples (14 locations) in Areas 1 will be sent to CLP Laboratory for VOC, SVOC, PCB, PEST, TM, % Moisture analysis. All samples will be analyzed at 0 - 6" and 6 - 12" depths. A total of 28 field samples, plus 4 QC samples (2 MS/MSD and 2 duplicates) will be collected by EPA Region II DESA/HWSB/SST and shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

AREA 3 – Soil
All soil samples (19 locations) in Areas 3 will be sent to CLP Laboratory for VOC, SVOC, PCB, PEST, TM, % Moisture analysis. All samples will be analyzed at 0-2", 0 - 6" and 6 - 12" depths. A total of 57 field samples, plus 6 QC samples (3 MS/MSD and 3 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

AREA 5 – Soil
All soil samples (31 locations) in Areas 5 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples (24 locations) will be sent to DESA Laboratory for confirmation. From this paired data, a linear regression will be calculated to allow for future XRF correlations should additional data be needed to assess the suitability of recreational use of the beaches in Areas 5.

In addition, a subset of samples in Area 5 (30% of 31 locations = 10 locations) will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24", as humans are likely to be exposed to soil down to 2 feet. 6-12" and 12-24" depths will also be screened using XRF. The soil samples collected at depth will be sampled using an acetate sleeve. The soil samples collected at 0-2" will be sampled using a sterile scoop and sent to DESA Laboratory only and will not be XRFed. A total of 54 field samples, plus 6 QC samples (3 MS/MSD and 3 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.

AREA 5 - Sediment
All sediment samples (28 locations) in Areas 5 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples (21 locations) will be sent to DESA Laboratory for confirmation. From this paired data, a linear regression will be calculated to allow for future XRF correlations should additional data be needed to assess the suitability of recreational use of the beaches in Areas 5.

In addition, a subset of samples in Area 5 (30% of 28 locations = 9 locations) will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24", as humans are likely to be exposed to soil down to 2 feet. 6-12" and 12-24" depths will also be screened using XRF. The soil samples collected at depth will be sampled using an acetate sleeve. The soil samples collected at 0-2" will be sampled using a sterile scoop and sent to DESA Laboratory only and will not be XRFed. A total of 48 field samples, plus 6 QC samples (3 MS/MSD and 3 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.

AREA 5 – Surface Water



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All surface water samples (10 locations) in Areas 5 will be sent to DESA Laboratory for analysis of Pb, As, Sb, Cu, and Cr. The samples collected will not be XRFed. A total of 10 field samples, plus 2 QC samples (1 MS/MSD and 1 duplicate) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.

AREA 6 – Soil

All soil samples (14 locations) in Areas 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples (11 locations) will be sent to DESA Laboratory for confirmation. From this paired data, a linear regression will be calculated to allow for future XRF correlations should additional data be needed to assess the suitability of recreational use of the beaches in Areas 6.

In addition, a subset of samples in Area 6 (50% of 14 locations = 7 locations) will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24", as humans are likely to be exposed to soil down to 2 feet. 6-12" and 12-24" depths will also be screened using XRF. The soil samples collected at depth will be sampled using an acetate sleeve. The soil samples collected at 0-2" will be sampled using a sterile scoop and sent to DESA Laboratory only and will not be XRFed. A total of 32 field samples, plus 4 QC samples (2 MS/MSD and 2 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.

AREA 6 - Sediment

All sediment samples (20 locations) in Areas 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples (15 locations) will be sent to DESA Laboratory for confirmation. From this paired data, a linear regression will be calculated to allow for future XRF correlations should additional data be needed to assess the suitability of recreational use of the beaches in Areas 6.

In addition, a subset of samples in Area 6 (50% of 20 locations = 10 locations) will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24", as humans are likely to be exposed to soil down to 2 feet. 6-12" and 12-24" depths will also be screened using XRF. The soil samples collected at depth will be sampled using an acetate sleeve. The soil samples collected at 0-2" will be sampled using a sterile scoop and sent to DESA Laboratory only and will not be XRFed. A total of 45 field samples, plus 6 QC samples (3 MS/MSD and 3 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.

AREA 6 – Surface Water

All surface water samples (12 locations) in Areas 6 will be sent to DESA Laboratory for analysis of Pb, As, Sb, Cu, Cr. The samples collected will not be XRFed. A total of 12 field samples, plus 2 QC samples (1 MS/MSD and 1 duplicate) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.



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## TABLE 1. Sample Locations and Analytical Requirements

| Matrix | Sampling Location(s) | Depth (inch) | Analytical Group(s) | Concentration Level | No. of Samples | Sampling SOP Reference | QC Samples |
|---|---|---|---|---|---|---|---|
| Soil | Area 3 19 sample locations | 0 – 2 stainless steel spoon | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| Soil | Area 1 14 sample locations | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | |
| Soil | Area 5 31 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 24 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 51 | SST #2 | |
| Sediment | Area 5 28 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 21 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 46 | SST #2 | |
| Surface Water | Area 5 10 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2013 | 1 MS/MSD, 1 duplicate |
| Soil | Area 6 14 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 11 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 28 | SST #2 | |
| Sediment | Area 6 20 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 15 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 40 | SST #2 | |
| Surface Water | Area 6 12 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 12 | ERT # 2013 | 1 MS/MSD, 1 duplicate |



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Analysis Tasks:

CLP Laboratory

Soil samples collected from the playground (Area 3) and fenceline (Area 1) sampling location will be definitively analyzed for total metals (TM) (except Mercury and Cyanide), volatile organic compounds (VOC), semi-volatile organics (BNA), pesticides, and polychlorinated biphenols (PCB). Three depths will be taken from each sampling location at Area 3: 0-2", 0-6", 6-12". Only two depths will be taken from each sampling location at Area 1: 0-6", 6-12". A total of 85 field samples, plus 10 QC samples (5 MS/MSD and 5 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors from Areas 1 and 3, and shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

DESA Laboratory

Select samples collected at Area 5 and Area 6 will be sent to DESA Laboratory for confirmation analysis for lead (Pb), arsenic (As), chromium (Cr) antimony (Sb), and copper (Cu). A total of 201 field samples, plus 22 QC samples (11 MS/MSD and 11 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.

XRF Screening Tool

The XRF instrument will be utilized at all soil and sediment sample locations at Area 5 and Area 6, except for 0 – 2" depth. Since 0 – 6" for all soil and sediment sample locations will be screened with the XRF instrument, additional screening will not be needed at the 0 – 2" depth. A total of 165 samples will be analyzed for lead (Pb), arsenic (As), total chromium (Cr) antimony (Sb), and copper (Cu). The results are stored in the instrument electronically and will also be recorded by hand. See Attachment 1 for details on the instrument.

Quality Control Tasks: Sediment, soil, and surface water samples will have one or more of the following QC samples analyzed: field duplicates, matrix spike/matrix spike duplicate, temperature blank, rinsate blank and all other QA/QC samples as defined in the method. Area 1 - 2 MS/MSD and 2 duplicates; Area 3 - 3 MS/MSD and 3 duplicates; Area 5 - 7 MS/MSD and 7 duplicates; Area 6 - 6 MS/MSD and 6 duplicates. One rinsate blank will be collected for the decontamination process of stainless steel scoops and bowls used in Areas 1 and 3 for organic analyses. See worksheet #20 for the field quality control sample summary table.

Data Management Tasks: Data management tasks include data receipt, checking, uploading, usability evaluations, and the preparation of reports, tables, and figures. The sample handling and custody requirements, including field logbook and generation of sample paperwork, sample labels are discussed in worksheets #26 and #27. Analytical data collected during the field effort will be entered into an appropriate relational database management system (DBMS) software and/or standard commercial software packages. This system will include both location and environmental data. Data tables that compare the results of the various sampling efforts will be



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prepared and evaluated. Data tables that illustrate statistical trends from tests performed on the data will be prepared. Figures that illustrate monotonic changes will be prepared.

Data management will utilize personal computers, local area networks, and electronic communications to support the software.

Assessment/Audit Tasks: No performance audit of field operations is anticipated at this time. If conducted, performance and systems audits will be in accordance with the U.S. EPA Region 2, SST SOP #01, Performing Oversight of CERCLA Field Operations, Revision 0, April 2000.

Data Review Tasks: All data will be validated by USEPA DESA Laboratory in accordance to *USEPA SOP Guidance for Laboratory Data Review,* SOP # G-26, Revision 1, August 2008; and DESA HWSB for the CLP Laboratory generated data in accordance to *USEPA Validation of Metals for the Contract Laboratory Program (CLP) based on SOW ILMO5.3* SOP HW-2, Revision 13, September 2006*; USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Volatile Organic Compounds SOM01.2,* SOP HW-33, Revision 2, November 2008; . *Data Validation USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Semivolatile Organic Compounds SOM01.2,* SOP HW-35, Revision 3, August 2007; *Pesticide Data Validation USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Pesticide Organic Compounds SOM01.2,* SOP HW-36, Revision 2, August 2008; and *Aroclor Validation of Data USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Aroclor Organic Compounds SOM01.2,* SOP HW-37, Revision1, August 2007.

4.2 Schedule

| Activities | Organization | Dates (MM/DD/YY) | | Deliverable | Deliverable Due Date |
|---|---|---|---|---|---|
| | | Anticipated Date(s) of Initiation | Anticipated Date of Completion | | |
| Preparation of QAPP | EPA/DESA/SST | 4/28/10 | 5/05/10 | QAPP | 5/07/10 |
| Procurement of Equipment | EPA/DESA/SST | N/A | N/A | N/A | N/A |
| Laboratory Request | EPA/DESA/SST | 4/21/10 | 4/21/10 | Analytical Request Form | 4/28/10 |
| Field Reconnaissance/Access | EPA/DESA/SST | 5/10/10 | 5/10/10 | N/A | N/A |
| Collection of Field Samples | EPA/DESA/SST | 5/10/10 | 5/21/10 | N/A | N/A |
| Preliminary laboratory Results | EPA DESA and CLP Laboratory | 72 hours after sample collection | 5/26/10 | Preliminary data Packages | 5/26/10 |
| Validation of DESA Laboratory Results | EPA DESA Laboratory | 5/17/10 | 5/28/10 | Validated data Packages | 5/29/10 |
| Validation of CLP | EPA/DESA/HWSS | 5/17/10 | 5/28/10 | Validated | 5/29/10 |



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| Activities | Organization | Dates (MM/DD/YY) | | Deliverable | Deliverable Due Date |
|---|---|---|---|---|---|
| | | Anticipated Date(s) of Initiation | Anticipated Date of Completion | | |
| Laboratory Results | | | | data Packages | |
| Data Evaluation | EPA/ERRD/SPB | 5/20/10 | 5/26/10 | N/A | 5/28/10 |
| Preparation of Final Report | EPA/DESA/SST | 7/09/10 | 7/09/10 | Final Report | 7/09/10 |

## 5.0 Sampling

### 5.1 Sampling Tasks

See Section 4.1 for specific descriptions for each area to be sampled.

**TABLE 1. Sample Locations and Analytical Requirements**

| Matrix | Sampling Location(s) | Depth (inch) | Analytical Group(s) | Concentration Level | No. of Samples | Sampling SOP Reference | QC Samples |
|---|---|---|---|---|---|---|---|
| Soil | Area 3 19 sample locations | 0 – 2 stainless steel spoon | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| Soil | Area 1 14 sample locations | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | |
| Soil | Area 5 31 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 24 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 51 | SST #2 | |
| Sediment | Area 5 28 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 21 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 46 | SST #2 | |
| Surface Water | Area 5 10 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2013 | 1 MS/MSD, 1 duplicate |
| Soil | Area 6 14 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 11 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |



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| Matrix | Sampling Location(s) | Depth (inch) | Analytical Group(s) | Concentration Level | No. of Samples | Sampling SOP Reference | QC Samples |
|---|---|---|---|---|---|---|---|
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 28 | SST #2 | |
| Sediment | Area 6<br>20 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 15 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 40 | SST #2 | |
| Surface Water | Area 6<br>12 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 12 | ERT # 2013 | 1 MS/MSD, 1 duplicate |

Site Access

The EPA RPM will be responsible for providing site access to the Team.

Field Planning

Prior to each field mobilization, each team member will review all project plans and participate in a field planning meeting. The meeting will be conducted by the EPA HWSB/SST Project Lead and attended by all field staff. The meeting objective is to allow team members to become familiar with the site history, special project requirements, and other items listed below.

-Objectives of field work
-Equipment and training needs
-Health and safety requirements
-Field operating procedures, schedules of events, communications, and individual assignments
-Required QC measures
-Documents governing field work that must be on site

Decontamination Procedures

Field decontamination will be performed on the stainless steel scoops and bowls in accordance with the Environmental Response Team (ERT), USEPA. *Sampling Equipment Decontamination*, SOP No.2006, Revision 0.0. August 11, 1994, Attachment 5. One rinsate blank will be collected for the decontamination process of stainless steel scoops and bowls used in Areas 1 and 3 for organic analyses. For Areas 5 and 6, no decontamination will be necessary since disposable acetate sleeves, aluminum trays and sterile plastic scoops will be used for soil and sediment collection of metals analysis.

Sampling Rationale

All soil and sediment sample descriptions will be recorded and identified in a log fieldbook. Sample and field photographs may be captured during the duration of the project.

AREAS 1 and 3 – Soil



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All soil samples in Area 3 will be collected at 0-2", 0 - 6" and 6 - 12" depths using stainless steel scoops and bowls or aluminum trays. Area 1 samples will be collected at 0 - 6" and 6 - 12" depths only. Co-located samples will be collected at 0-2"and 0 - 6" depths. The samples will be homogenized in the bowls/trays before distributing into Teflon-lined glass jars. VOC, SVOC, PCB, PEST, TM, % Moisture analysis will be collected from each sample location and depth. VOC samples will be collected using encore samplers and not homogenized, see Attachment 2 for SOP. Samples will be shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

AREA 5 and 6 – Soil and Sediment
All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. See Attachment 1 for EPA SOP on XRF instrument. Fixed lab samples will be collected using disposable sterile plastic scoops and placed into ziplock bags for homogenization before distributing into Teflon-lined glass jars. Pb, As, Sb, Cu, and Cr will be analyzed from each sample location and depth. Samples will be hand-delivered to DESA Laboratory for analysis within 24 hours of sample collection.

In addition, a subset of samples in Areas 5 and 6 will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24", as humans are likely to be exposed to soil down to 2 feet. The samples collected at depth (6-12" and 12-24") will be both XRFed and sampled using an acetate sleeve or stainless steel auger, see Attachment 2 and 3 for procedures. Co-located samples will be collected for DESA Laboratory at 0-2"and 0 - 6" depths. The 0-2" sample will be collected using a sterile plastic scoop and placed into ziplock bags for homogenization before distributing into Teflon-lined glass jars. The 0-2"depth will not be XRFed.

AREA 5 and 6 – Surface Water
All surface water samples will be collected using the direct-grab method, see Attachment 4 for procedure. The collection of surface water will be dependent on the tidal schedule. The samples will be preserved with nitric acid and sent to DESA Laboratory for analysis of Pb, As, Sb, Cu, and Cr. The samples collected will not be XRFed.

Sample Selection Rationale:

Locations for soil and sediment sampling were selected randomly by computer from the set of existing, previously, sampled locations. In Areas 1, 3, 5 and 6, new sample locations were proposed for soils and surface water to support both this effort and potentially the upcoming remedial investigation. All soil samples in Area 3 will be collected at 0-2", 0 - 6" and 6 - 12" depths for VOC, SVOC, PCB, PEST, TM, % Moisture analyses. Area 1 samples will be collected at 0 - 6" and 6 - 12" depths only for VOC, SVOC, PCB, PEST, TM, % Moisture analyses. All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. From this 0-6" paired data, a linear regression will be calculated to allow for future XRF correlations should additional data is needed to assess the suitability of recreational use of the beaches in Areas 5 and 6. In addition, a subset (30-50%) of samples in Area 5 and Area 6 will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24" for soil and sediments as humans are likely to be exposed to soil and sediment



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down to 2 feet. The XRF will be utilized for the same subsets at 6-12" and 12-24" for screening purposes only. See Attachment 1, EPA SOP SST 2 for usage instructions.

### 5.2 Quality Control

Refer to Worksheet #28 for sample QC and analytical QC.

## 6.0 Analysis

### 6.1 Analytical Tasks

CLP Laboratory

Soil samples collected from the playground (Area 3) and fenceline (Area 1) sampling location will be definitively analyzed for total metals (TM) (except Mercury and Cyanide), volatile organic compounds (VOC), semi-volatile organics (BNA), pesticides, and polychlorinated biphenols (PCB). Three depths will be taken from each sampling location at Area 3: 0-2", 0-6", 6-12". Only two depths will be taken from each sampling location at Area 1: 0-6", 6-12". A total of 85 field samples, plus 10 QC samples (5 MS/MSD and 5 duplicates) will be collected by EPA Region II DESA/HWSB/SST from Areas 1 and 3, and shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

DESA Laboratory

Select samples collected at Area 5 and Area 6 will be sent to DESA Laboratory for confirmation analysis for lead (Pb), arsenic (As), chromium (Cr) antimony (Sb), and copper (Cu). A total of 201 field samples, plus 22 QC samples (11 MS/MSD and 11 duplicates) will be collected by EPA Region II DESA/HWSB/SST and hand-delivered to DESA Laboratory for analysis.

XRF Screening Tool

The XRF instrument will be utilized at all soil and sediment sample locations at Area 5 and Area 6, except for 0 – 2" depth. Since 0 – 6" for all soil and sediment sample locations will be screened with the XRF instrument, additional screening will not be needed at the 0 – 2" depth. A total of 165 samples will be analyzed for lead (Pb), arsenic (As), total chromium (Cr) antimony (Sb), and copper (Cu). The results are stored in the instrument electronically and will also be recorded by hand. See Attachment 1 for details on the instrument.

## 7.0 Documentation

### 7.1 Sample Documentation and Custody

Field data sheets and the field notebook will be completed for each sample collected. All field and sample documents will be legibly written in indelible ink. Any corrections or revisions will be made by lining through the original entry and initialing the change. The *Data Sheet* will



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record sample location, sample depth, sample time, sample characteristics, sampling personnel, weather and/or observations. The field notebook will be used by field personnel to record all aspects of sample collection and handling, visual observations, and field measurements. The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. The sample team or individuals performing a particular sampling activity are required to maintain a field notebook. This field notebook will be a bound weatherproof logbook that shall be filled out at the location of sample collection immediately after sampling. All entries will be signed by the individuals making them. At a minimum, the logbook will contain sample particulars including sample number, collection time, location, descriptions, methods used, daily weather conditions, field measurements, name of sampler(s), sample preservation, names of contractor/subcontractor personnel, and other site-specific observations including any deviations from protocol.

Sample labels will be securely affixed to the sample container and include only the sample identification number as per protocol. Once sealed, samples will be placed in a polyethylene bag inside waterproof High Density Polyethylene (HDPE) coolers. The coolers will be packed with sufficient wet ice to cool the samples to 6 °C along with non-combustible absorbent cushioning material to minimize the possibility of container breakage and movement during transport. All samples will be packaged and shipped via UPS within 24 hours of collection to CLP Laboratory or hand-delivered to EPA DESA Laboratory. Standard U.S.EPA Chain-of-Custody Procedures will be followed for all samples and be in accordance with the U.S.EPA Region II *CERCLA Quality Assurance Manual*. The *Sampler's Guide to the Contract Laboratory Program* will be used as a guidance manual for completion of all Inorganic/organic Traffic Reports & Chain-of-custody Record forms, sample labels, custody seals, and other sample documentation, as seen in Attachment 5. The Inorganic/organic Traffic Report & Chain of Custody Records will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept for each individual who has signed it. The chain-of-custody records will include, at a minimum, sample identification number, number of samples collected, sample collection date and time, sample type, sample matrix, sample container type, sample analysis requested, sample preservation, and the name(s) and signature(s) of samplers and all individuals who have had custody. Refer to Attachment 7 for field sample documentation.

### 7.2 Project Documentation

The following project personnel will receive copies of the approved QAPP and any subsequent revisions.

| **Project Personnel** | **Title** |
|---|---|
| Tanya Mitchell<br>ERRD/SPB | Remedial Project Manager |
| Christina Leung<br>DESA/HWSB | Project Officer |
| Pat Sheridan<br>DESA/HWSB | Quality Assurance Officer |



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Reports to Management

The data collected as a result of sampling activities; will be organized, analyzed and summarized in a final project report that will be submitted to the RPM according to the Project Schedule in section 4.2 of the QAPP summary. The report will be prepared by the project officer or project quality assurance officer and include appropriate data quality assessment.

8.0 Assessment

8.1 Assessment Findings

Procedures are provided for project personnel to make changes, take corrective actions and document the process through Corrective Action Request Forms. Corrective action can occur during field activities, laboratory analysis, data validation, and data assessment.

Corrective action in the field may be necessary when the monitoring network design is changed. A change in the field includes: increasing the number or type of samples or analyses; changing sampling locations; and/or modifying sampling protocol. When this occurs, the project officer or project QA officer will identify any suspected technical or QA deficiencies and note them in the field logbook. The project QA officer will be responsible for assessing the suspected deficiency and determining the impact on the quality of the data. Development of the appropriate corrective action will be the responsibility of the RPM.

9.0 Data Usability

The purpose of the Raritan Bay Slag beach sampling is to provide data which can be used to assess potential changes in concentrations of contaminants of concern at the site after a storm event and to support ongoing assessment of the suitability of recreational use of the beaches in Areas 5 and 6 and the playground in Areas 1 and 3.

All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. From this 0-6" paired data, a linear regression will be calculated to allow for future XRF correlations should additional data is needed to assess the suitability of property access in the area. This sampling plan has been designed to obtain sufficient data to allow statistical analysis of the data set. If the correlation between the on-site data and XRF screening results is demonstrated, then this regression can be used to generate definitive results for future sampling events.

Volatile organic compounds, semi-volatile organics, pesticides, and polychlorinated biphenols, percent moisture, and total metals will be analyzed at Area 3 and 1 to determine if there is a potential exposure pathway. Results will be compared to NJDEP, and used by risk assessors in making decisions regarding property access.

A Data Evaluation Report will describe the rationale for the data used and present any data limitations. The report will include a discussion of the accuracy, precision, representativeness,



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completeness and comparability of the data set and deviations from planned procedures and analysis. Tables will be prepared, including: a summary of samples collected and parameters analyzed; detections in field blanks; and comparison of field duplicates.



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**QAPP ATTACHMENT 1**: EPA Division of Science and Assessment (DESA) Hazardous Waste Support Branch (HWSB) Superfund Support Team (SST) Standard Operating Procedures (SOP) *Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment,* SOP # SST 2, Revision 2.0, May 2010.



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SOP # SST-2
Revision # 1
May 2010

# Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment

Prepared by: _____ Date: 7 May, 2010
Steven Wall, Physical Scientist

Peer Reviewed by: _____ Date: 5/7/2010
Amelia Jackson, Chemist

Concurred by: _____ Date: 5/7/2010
SST Team Leader

Approved by: _____ Date: 5/10/2010
Robert Runyon, HWSB Chief

Annual Review

Reviewed by: _____ Date: _____
Signature

Reviewed by: _____ Date: _____
Signature

# FIELD PORTABLE X-RAY FLUORESCENCE SPECTROMETRY FOR THE DETERMINATION OF ELEMENTAL CONCENTRATIONS IN SOIL AND SEDIMENT

## 1.0 SCOPE AND APPLICATION

1.1 This method is applicable to the in situ and intrusive analysis of the 29 analytes listed in Table 1 for soil and sediment samples. Some common elements are not listed in Table 1. This is because they are considered "light" elements that cannot be detected by field portable X-ray fluorescence (FPXRF). They are: magnesium, aluminum, silicon, phosphorus, and sulfur. Most of the analytes listed in Table 1 are of environmental concern, while a few others have interference effects or change the elemental composition of the matrix, affecting quantitation of the analytes of interest. Generally elements of atomic number 15 or greater can be detected and quantitated by FPXRF.

1.2 A FPXRF spectrometer with a solid-state detector is needed to perform inorganic analysis on soil, sediment, sludge, air particulate filters, and dust wipes. Consequently, an FPXRF spectrometer must be able to operate in two modes including bulk sample mode and thin sample mode, in order to compensate for various physical matrix effects. The modes of operation can be conducted as long as the performance standards delineated herein are achieved. The FPXRF spectrometer shall provide "real time" field analytical data through in-situ and/or ex-situ (i.e., prepared) sample collection methodologies. The samples will facilitate on-site confirmatory sample collection for site characterization and data management (e.g. fixed laboratory sample correlation). FBXRF will be used in conjunction with appropriate determination multi-element FPXRF procedures, including, but not limited to SW-846 Method 6200 for bulk sample analysis.

1.3 FPXRF shall display the complete x-ray spectrum from 2 KeV - 88 KeV for each reading with sufficient resolution that the displayed spectrum conclusively confirms the presence or absence of an element. This range allows for the detection and quantitation of at least 30 elements including all RCRA elements. In addition, nineteen (19) of the twenty-three (23) CLP-TAL inorganic analytes of environmental concern can be detected and quantitfied. The following four CLP-TAL metals cannot be detected: beryllium, sodium, magnesium, aluminum. Table 1 depicts the minimum detection limits for the selective elements of environmental concern using FPXRF. These detection limits are inherent to the Niton Corporation XL3t 600 Model. Therefore, the system shall meet these minimum brand name or equivalent performance standards. The detection limits were determined in a prepared (i.e., interference free) SiO2 matrix sample and an SRM typical soil matrix sample at an estimated 3 sigma with a source time of 60 seconds. The FPXRF minimum detection limits are below toxicity characteristic regulatory levels for most RCRA analytes and soil clean-up To Be Considered (TBCs) including Federal Soil Screening Levels (SSLs) and state soil clean-up criteria.

**Table 1: Minimum Detection Limits**

| Limits Of Detection for Contaminants in Soil<br>All values below represented in ppm (mg/kg) | | |
|---|---|---|
| | Si02 (interference free) | SRM (typical soil matrix) |
| Ca | 330 | 500 |
| Sc | 90 | 400 |
| Ti | 100 | 160 |
| V | 20 | 70 |
| Cr | 65 | 85 |
| Mn | 55 | 85 |
| Fe | 75 | 100 |
| Co | 40 | 260 |
| Ni | 50 | 65 |
| Cu | 25 | 35 |
| Zn | 15 | 25 |
| As | 9 | 11 |
| Se | 6 | 20 |
| Rb | 4 | 10 |
| Sr | 7 | 11 |
| Zr | 5 | 15 |
| Mo | 9 | 15 |
| Ag | 10 | 10 |
| Cd | 10 | 12 |
| Sn | 20 | 30 |
| Sb | 30 | 30 |
| Ba | 90 | 100 |
| Hg | 7 | 10 |
| Pb | 8 | 13 |
| Th | 8 | 20 |
| U | 8 | 20 |
| P | A/S | A/S |
| S | A/S | A/S |
| K | A/S | A/S |

1.4 Use of this method is restricted to personnel either trained or knowledgeable in the operation of an XRF instrument, or under the supervision of a trained and knowledgeable individual. This method can be utilized either as a screening method to be used with confirmatory analysis using EPA-approved methods, or as a definitive analytical device pending site-specific data quality objectives (DQOs). This method's main strength is as a rapid field screening procedure. The method detection limits (MDL) of FPXRF are below the toxicity characteristic regulatory level for most RCRA analytes. If the precision,

accuracy, and detection limits of FPXRF meet the DQOs of your project, then XRF is a fast, powerful, cost effective technology for site characterization.

## 2.0 SUMMARY OF METHOD

2.1 To be fully portable, the FPXRF shall use sealed non-radioisotope source to irradiate samples with x-rays. Inorganic analytes of interest shall be identified and quantified using a field portable energy dispersive x-ray fluorescence spectrometer with a solid-state detector.

## 3.0 PRINCIPLES OF OPERATION

3.1 XRF is a nondestructive qualitative and quantitative analytical technique used to determine the chemical composition of a sample. In an XRF analysis, primary X-rays emitted from a radioactive source are utilized to irradiate a sample. The primary X-rays incident on the sample cause the elements present in the sample to emit (that is, fluoresce) their characteristic X-ray line spectra. The elements may be identified by the energies of the wavelengths of their spectral lines. The unit of energy of an X-ray is the kilo electron volt (keV). The X-ray energy is proportional to the frequency of the X-ray waves and is inversely proportional to the wavelength. Since it is a fluorescent process, the energy of the fluorescent X-rays will always be of lower energy than the primary X-ray energy. In addition to the fluorescent X-rays, there will be a back scattering of the primary X-rays. Energies of the fluorescent and scattered X-rays are converted (within the detector) into a train of electric pulses, the amplitudes of which are linearly proportional to the energy. An electronic multi-channel analyzer measures the pulse amplitudes which is the basis of qualitative X-ray analysis. The counts at a given energy per unit of time are representative of the element concentration in a sample and are the basis for quantitative analysis.

3.2 Fluorescent X-rays

During interaction of the primary source X-rays with samples, they may either undergo scattering or absorption by sample atoms in a process known as the photoelectric effect. This latter analytical phenomenon occurs when incident radiation knocks an electron from the inner most shells of an atom. The atom, now in an excited state, releases its surplus energy almost instantly by filling the vacancy created with an electron from one of the outer energy shells. This rearrangement of electrons is associated with the emission of a X-ray with a wavelength (in terms of energy) of the given atom. X-rays are created in the inner most shells of an atom that have the strongest bond and weakest energies, as either the K, L, and M atomic shells. Each characteristic X-ray line is defined with the letter K, L, or M, which signifies which shell had the original vacancy and by a subscript alpha or beta, which indicates the higher shell from which an electron fell to fill the vacancy and produce the X-ray. For example, a

$K_\alpha$ line is produced by a vacancy in the K shell filled by an L shell electron, whereas a $K_\beta$ line is produced by a vacancy in the K shell filled by an M shell electron. Since the electrons producing the fluorescent X-rays are not valence (outer) shell electrons, the X-ray energy is not affected by the chemical or physical form of the atom. Thus, elemental sulfur and $CaSO_4$ give the same sulfur X-ray. Since there are few allowed transitions, and thus relatively few X-ray lines, the X-rays for a specific element are well defined. K lines are the shortest wavelengths and the lowest potential energies during orbital replacement. L lines have longer wavelengths and thus higher than K potential energies; M lines have very long wavelengths and higher potential energies (the surplus of energy is conserved by the release of photons when the electrons shift to orbits closer to the nucleus).

An X-ray source can excite characteristic X-rays from an element only if the source energy is greater than a threshold energy associated with a particular line group (K, L, or M). This energy threshold, called the absorption edge (i.e., K absorption edge, L absorption edge, or M absorption edge) is greater than the corresponding energy. (Actually, the K absorption edge is approximately equal to the sum of the K, L, and M line energies. The L absorption edge is approximately equal to the sum of the L and M line energies.) Also, the closer the absorption edge energy of an element is to the source energy (but not greater than the source energy), the more efficient is the excitation and the more sensitive is the element's detection. For example, if a source energy is sufficient enough to excite the K lines for both Zn (atomic number 30) and Ni (atomic number 28), then the Zn K lines will be more sensitive than the Ni L lines (i.e., the higher the atomic number, the higher the line energies, and the closer the line energy is to the source energy). If the source energy is sufficient to excite the K lines, then they will always be accompanied by the L and M lines of the same element. If there is insufficient energy to excite the K lines, but enough to excite the L line, then just the L and M lines will appear. XRF analyzers most commonly measure X-ray lines originating from the K and L shells; only elements with an atomic number greater than 57 have measurable M shell emissions.

3.3 Scattered X-rays

Scattered or back scattered radiation is simply the reflection of the primary X-rays off the sample. The source radiation is scattered from the sample by two physical reactions; coherent scattering (no energy loss), and incoherent or Compton scattering (small energy loss). Thus, for each line of primary radiation incident on the sample, two scattered X-ray lines close together are returned. The coherent scattered lines being equal to the source energy and the Compton scatter lines being slightly less than the source energy. The amount of scattering is due to the sample matrix. The two primary factors are particle size and average atomic number of the sample. Larger particle sizes and lighter matrices (lower average atomic number), produce more backscatter. The scattered X-rays have the highest energies in the spectrum.

4.0 DEFINITIONS

4.1 FPXRF: Field portable X-ray tube.

4.2 MCA: Multi-channel analyzer for measuring pulse amplitude.

4.3 SSCS: Site specific calibration standard.

4.4 FP: Fundamental parameter.

4.5 R.I.: Region of interest.

4.6 SRM: Standard reference material. A standard containing certified amounts of metals in soil or sediment.

4.7 eV: Electron Volt. A unit of energy equivalent to the amount of energy gained by an electron passing through a potential difference of one volt.

5.0 INTERFERENCES

5.1 The total method error for FPXRF analysis is defined as the square root of the sum of squares of both instrument precision and user or application-related error. Generally, instrument precision is the least significant source of error in FPXRF analysis. User or application-related error is generally more significant and varies with each site and method used. Some sources of interference can be minimized or controlled by the instrument operator, but others cannot. Common sources of user or application-related error are discussed below.

5.2 Physical matrix effects result from variations in the physical character of the sample. These variations may include such parameters as particle size, uniformity, homogeneity, moisture, and surface condition. For example, if any analytes exists in the form of very fine particles in a coarser-grained matrix, the analytes's concentration measured by the FPXRF will vary depending on how fine particles are distributed within the coarser-grained matrix. If the fine particles "settle" to the bottom of the sample cup, the analytes concentration measurement will be higher than if the fine particles are not mixed in well and stay on top of the coarser-grained particles in the sample cup. One way to reduce such error is to grind and sieve all soil samples to a uniform particle size thus reducing sample-to-sample particle size variability. Homogeneity is always a concern when dealing with soil samples. Every effort should be made to thoroughly mix and homogenize soil samples before analysis. Field studies have shown heterogeneity of the sample generally has the largest impact on comparability with confirmatory samples.

5.3 Moisture content may affect the accuracy of analysis of soil and sediment sample

analyses. When the moisture content is between 5 and 20 percent, the overall error from moisture may be minimal. However, moisture content may be a major source of error when analyzing samples of surface soil or sediment that are saturated with water. This error can be minimized by drying the samples in a convection or toaster oven. Microwave drying is not recommended because field studies have shown that microwave drying can increase variability between FPXRF data and confirmatory analysis and because metal fragments in the sample can cause arcing to occur in a microwave.

5.4 Inconsistent positioning of samples in front of the probe window is a potential source of error because the x-ray signal decreases as the distance from the radioactive source increases. This error is minimized by maintaining the same distance between the window and each sample. For the best results, the window of the probe should be in direct contact with the sample, which means that the sample should be flat and smooth to provide a good contact surface.

5.5 Chemical matrix effects result from differences in the concentrations of interfering elements. These effects occur as either spectral interferences (peak overlaps) or as x-ray absorption and enhancement phenomena. Both effects are common in soils contaminated with heavy metals. As examples of absorption and enhancement effects; iron (Fe) tends to absorb copper (Cu) X-rays, reducing the intensity of the Cu measured by the detector, while chromium (Cr) will be enhanced at the expense of Fe because the absorption edge of Cr is slightly lower in energy than the fluorescent peak of iron. An example is an overlap of peaks. The overlap of the arsenic K peak with the lead L peak can be an issue when the ration of the concentrations of these elements is greater than 10:1 ([Pb]:[Ar]). Effects can be corrected mathematically through the use of fundamental parameter (FP) coefficients. The effects also can be compensated for using SSCS, which contain all the elements present on site that can interfere with one another.

5.6 When present in a sample, certain X-ray lines from different elements can be very close in energy and, therefore, can cause interference by producing a severely overlapped spectrum. The degree to which a detector can resolve the two different peaks depends on the energy resolution of the detector. If the energy difference between the two peaks in electron volts is less than the resolution of the detector in electron volts, then the detector will not be able to fully resolve the peaks.

The most common spectrum overlaps involve the K[beta] line of element Z-1 with the Ka line of element Z. This is called the Ka/K[beta] interference. Because the Ka:K[beta] intensity ratio for a given element usually is about 7:1, the interfering element, Z-1, must be present at large concentrations to cause a problem. Two examples of this type of spectral interference involve the presence of large concentrations of vanadium (V) when attempting to measure Cr or the presence of large concentrations of Fe when attempting to measure cobalt (Co). The V Ka and K[beta] energies are 4.95 and 5.43 keV, respectively, and the Cr Ka energy is 5.41 keV. The Fe Ka and K[beta] energies are 6.40 and 7.06 keV, respectively, and the Co Ka energy is 6.92 keV. The difference between

the V K[beta] and Cr Ka energies is 20 eV, and the difference between the Fe K[beta] and the Co Ka energies is 140 eV. The resolution of the highest-resolution detectors in FPXRF instruments is 170 eV. Therefore, large amounts of V and Fe will interfere with quantitation of Cr or Co, respectively. The presence of Fe is a frequent problem because it is often found in soils at tens of thousands of parts per million (ppm).

5.7 Other interferences can arise from K/L, K/M, and L/M line overlaps, although these overlaps are less common. Examples of such overlap involve arsenic (As) Ka/lead (Pb) La and sulfur (S) Ka/Pb Ma. In the As/Pb case, Pb can be measured from the Pb L[beta] line, and As can be measured from either the As Ka or the As Kß line; in this way the interference can be corrected. If the As K[beta] line is used, sensitivity will be decreased by a factor of two to five times because it is a less intense line than the As Ka line. If the As Ka line is used in the presence of Pb, mathematical corrections within the instrument software can be used to subtract out the Pb interference. However, because of the limits of mathematical corrections, As concentrations cannot be efficiently calculated for samples with Pb:As ratios of 10:1 or more. This high ratio of Pb to As may result in no As being reported regardless of the actual concentration present.

No instrument can fully compensate for this interference. It is important for an operator to understand this limitation of FPXRF instruments and consult with the manufacturer of the FPXRF instrument to evaluate options to minimize this limitation. The operator's decision will be based on action levels for metals in soil established for the site, matrix effects, capabilities of the instrument, data quality objectives, and the ratio of lead to arsenic known to be present at the site. If a site is encountered that contains lead at concentrations greater than ten times the concentration of arsenic it is advisable that all critical soil samples be sent off site for confirmatory analysis by an EPA-approved method.

5.8 If SSCS are used to calibrate an FPXRF instrument, the samples collected must be representative of the site under investigation. Representative soil sampling ensures that a sample or group of samples accurately reflects the concentrations of the contaminants of concern at a given time and location. Analytical results for representative samples reflect variations in the presence and concentration ranges of contaminants throughout a site. Variables affecting sample representativeness include differences in soil type, contaminant concentration variability, sample collection and preparation variability, and analytical variability, all of which should be minimized as much as possible.

5.9 Soil physical and chemical effects may be corrected using SSCS that have been analyzed by inductively coupled plasma (ICP) or atomic absorption (AA) methods. However, a major source of error can be introduced if these samples are not representative of the site or if the analytical error is large. Another concern is the type of digestion procedure used to prepare the soil samples for the reference analysis. Analytical results for the confirmatory method will vary depending on whether a partial digestion procedure, such as SW-846 Method 3050, or a total digestion procedure, such as Method 3052 is used. It

is known that depending on the nature of the soil or sediment, Method 3050 will achieve differing extraction efficiencies for different analytes of interest. The confirmatory method should meet the project data quality objectives.

XRF measures the total concentration of an element; therefore, to achieve the greatest comparability of this method with the reference method (reduced bias), a total digestion procedure should be used for sample preparation. However, in the study used to generate the performance data for this method, the confirmatory method used was Method 3050, and the FPXRF data compared very well with regression correlation coefficients (r2 often exceeding 0.95, except for barium and chromium). The critical factor is that the digestion procedure and analytical reference method used should meet the data quality objectives (DQOs) of the project and match the method used for confirmation analysis.

5.10 Ambient temperature changes can affect the gain of the amplifiers producing instrument drift. Gain or drift is primarily a function of the electronics (amplifier or preamplifier) and not the detector as most instrument detectors are cooled to a constant temperature. Most FPXRF instruments have a built-in automatic gain control. If the automatic gain control is allowed to make periodic adjustments, the instrument will compensate for the influence of temperature changes on its energy scale. If the FPXRF instrument has an automatic gain control function, the operator will not have to adjust the instrument's gain unless an error message appears. If an error message appears, the operator should follow the manufacturer's procedures for troubleshooting the problem. Often, this involves performing a new energy calibration. The performance of an energy calibration check to assess drift is a quality control measure discussed in Section 9.2.

If the operator is instructed by the manufacturer to manually conduct a gain check because of increasing or decreasing ambient temperature, it is standard to perform a gain check after every 10 to 20 sample measurements or once an hour whichever is more frequent. It is also suggested that a gain check be performed if the temperature fluctuates more than 10 to 20deg.F. The operator should follow the manufacturer's recommendations for gain check frequency.

## 6.0 HEALTH AND SAFETY

6.1 The FPXRF shall have radiation safety features built-in and include, at a minimum, the following; exposure to user with safety shutter open during reading not to exceed 0.05 mR/hour; shutter safety lock; shutter safety switch; and automatic shutter closing mechanism engages when instrument is lifted from a surface.

6.2 Radiation exposure by employee's hand while holding the instrument with the safety shutter open shall not exceed 0.1 mR/hr.

6.3 To allow the instrument to be carried in a case without radiation labels, the system shall conform to 49 CFR 173.42 for "excepted package", instruments and articles, N.O.S. UN2910.

6.4 Proper training for the safe operation of the instrument and radiation training should be completed by the analyst prior to analysis. Radiation safety for each specific instrument can be found in the operator's manual. Protective shielding should never be removed by the analyst or any personnel other than the manufacturer. The analyst should be aware of the local state and national regulations that pertain to the use of radiation-producing equipment and radioactive materials with which compliance is required. Licenses for radioactive materials are of two types; (1) general license which is usually provided by the manufacturer for receiving, acquiring, owning, possessing, using, and transferring radioactive material incorporated in a device or equipment, and (2) specific license which is issued to named persons for the operation of radioactive instruments as required by local state agencies. There should be a person appointed within the organization that is solely responsible for properly instructing all personnel, maintaining inspection records, and monitoring X-ray equipment at regular intervals. A copy of the radioactive material licenses and leak tests should be present with the instrument at all times and available to local and national authorities upon request. X-ray tubes do not require radioactive material licenses or leak tests, but do require approvals and licenses which vary from state to state. In addition, fail-safe X-ray warning lights should be illuminated whenever an X-ray tube is energized. Provisions listed above concerning radiation safety regulations, shielding, training, and responsible personnel apply to X-ray tubes just as to radioactive sources. In addition, a log of the times and operating conditions should be kept whenever an X-ray tube is energized. Finally, an additional hazard present with X-ray tubes is the danger of electric shock from the high voltage supply. The danger of electric shock is as substantial as the danger from radiation but is often overlooked because of its familiarity.

6.5 Radiation monitoring equipment should be used with the handling of the instrument. The operator and the surrounding environment should be monitored continually for analyst exposure to radiation. Thermal luminescent detectors (TLD) in the form of badges and rings are used to monitor operator radiation exposure. The TLDs should be worn in the area of most frequent exposure. The maximum permissible whole-body dose from occupational exposure is 5 Roentgen Equivalent Man (REM) per year. Possible exposure pathways for radiation to enter the body are ingestion, inhaling, and absorption. The best precaution to prevent radiation exposure is distance and shielding.

## 7.0 EQUIPMENT AND SUPPLIES

7.1 The FPXRF Spectrometer system shall consist of a band held self contained unit having the following major components: (1) a tri-source that provides X-rays for the multi-element spectrum analyzer; (2) a sample presentation device; (3) a detector that converts X-rays generated photons emitted from the sample into measurable electronic signals; (4)

a data processing component that contains a fluorescence energy analyzer; such as a Multi-Channel Analyzer, that processes the signals into an X-ray energy spectrum from which elemental concentrations in the sample may be calculated; and (5) a data storage system.

7.2 The self-contained instrument may use either sealed radioisotope sources or an X-ray tube to produce X-rays in order to irradiate samples. X-ray tubes have higher radiation output, no intrinsic lifetime limit, produce constant output over their lifetime, and do not have the disposal problems of radioactive sources but are just now appearing in FPXRF instruments. An electrically-excited x-ray tube operates by bombarding an anode with electrons accelerated by a high voltage. The electrons gain an energy in electron volts equal to the accelerating voltage and can excite atomic transitions in the anode, which then produces characteristic x-rays. These characteristic x-rays are emitted through a window which contains the vacuum necessary for the electron acceleration. An important difference between x-ray tubes and radioactive sources is that the electrons which bombard the anode also produce a continuum of x-rays across a broad range of energies in addition to the characteristic x-rays. This continuum is weak compared to the characteristic x-rays but can provide substantial excitation since it covers a broad energy range. It has the undesired property of producing background in the spectrum near the analyte x-ray lines when it is scattered by the sample. For this reason a filter is often used between the x-ray tube and the sample to suppress the continuum radiation while passing the characteristic x-rays from the anode. This filter is sometimes incorporated into the window of the x-ray tube. The choice of accelerating voltage is governed both by the anode material, since the electrons must have sufficient energy to excite the anode, which requires a voltage greater than the absorption edge of the anode material and by the instrument's ability to cool the x-ray tube. The anode is most efficiently excited by voltages 2 to 2.5 times the edge energy (most x-rays per unit power to the tube), although voltages as low as 1.5 times the absorption edge energy will work. The characteristic x-rays emitted by the anode are capable of exciting a range of elements in the sample just as with a radioactive source.

7.3 The solid-state detector shall be thermo-electrically cooled (i.e., Peltier effect). The solid-state detector shall be high resolution (i.e., at or below 350 eV @ 5.95 KeV Manganese K X-ray spectral line), silicon pin diode detector for multi source, multi-element spectrum analyzer. The silicon pin diode detector operates near ambient temperature. Consequently, it is only slightly cooled using the Peltier effect and can result in a stronger signal intensity to noise for eliminating interferences. During operation of a solid-state detector, an X-ray photon strikes a biased, solid-state crystal and loses energy in the crystal by producing electron-hole pairs. The electric charge produced is collected and provides a current pulse that is directly proportional to the energy of the X-ray photon absorbed by the crystal of the detector. A gas-filled, proportional counter detector is an ionization chamber filled with a mixture of noble and other gases. An X-ray photon entering the chamber ionizes the gas atoms. The electric

charge produced is collected and provides an electric signal that is directly proportional to the energy of the X-ray photon absorbed by the gas in the detector.

7.4 Data Processing Units: The key component in the data processing unit of an FPXRF instrument is the MCA. The MCA receives pulses from the detector and sorts them by their amplitudes (energy level). The MCA counts pulses per second to determine the height of the peak in a spectrum, which is indicative of the target analytes's concentration. The spectrum of element peaks are built on the MCA. The MCAs in FPXRF instruments
have from 256 to 2,048 channels. The concentrations of target analytes are usually shown in parts per million on a liquid crystal display (LCD) in the instrument. FPXRF instruments can store both spectra and from 100 to 500 sets of numerical analytical results. Most FPXRF instruments are menu-driven from software built into the units or from PCs. Once the data-storage memory of an FPXRF unit is full, data can be downloaded by means of an RS-232 port and cable to a PC.

7.5 Sample Presentation Device: FPXRF instruments can be operated in two modes: in situ and ex-situ. If operated in the in situ mode, the probe window is placed in direct contact with the soil surface to be analyzed. When an FPXRF instrument is operated in the ex-situ mode, a soil or sediment sample must be collected, prepared, and placed in a sample cup. For most FPXRF instruments operated in the intrusive mode, the probe is rotated so that the window faces upward. A protective sample cover is placed over the window, and the sample cup is placed on top of the window inside the protective sample cover for analysis.

7.6 Spare battery chargers.

7.7 Polyethylene sample cups: 31 millimeters (mm) to 40 mm in diameter with collar, or equivalent (appropriate for FPXRF instrument).

7.8 X-ray window film: MylarTM, KaptonTM, SpectroleneTM, polypropylene, or equivalent; 2.5 to 6.0 micrometers (um) thick.

7.9 Mortar and pestle: glass, agate, or aluminum oxide; for grinding soil and sediment samples.

7.10 Containers: glass or plastic to store samples.

7.11 Sieves: 60-mesh (0.25 mm), stainless-steel, Nylon, or equivalent for preparing soil and sediment samples.

7.12 Trowels: for smoothing soil surfaces and collecting soil samples.

7.13 Plastic bags: used for collection and homogenization of soil samples.

7.14 Drying oven: standard convection or toaster oven, for soil and sediment samples that require drying.

8.0 REAGENTS AND STANDARDS

8.1 Pure Element Standards: Each pure, single-element standard is intended to produce strong characteristic X-ray peaks of the element of interest only. Other elements present must not contribute to the fluorescence spectrum. A set of pure element standards for commonly sought analytes is supplied by the instrument manufacturer, if required for the instrument; not all instruments require the pure element standards. The standards are used to set the region of interest (R.I.) for each element. They also can be used as energy calibration and resolution check samples.

8.2 Site-specific Calibration Standards (SSCS): Instruments that employ fundamental parameters (FP) or similar mathematical models minimizing matrix effects may not require SSCS. If the FP calibration model is to be optimized or if empirical calibration is necessary, then SSCSs must be collected, prepared, and analyzed.

8.2.1 The SSCS must be representative of the matrix to be analyzed by FPXRF. These samples must be well homogenized. A minimum of ten samples spanning the concentration ranges of the analytes of interest and of the interfering elements must be obtained from the site. A sample size of 4 to 8 ounces is recommended, and standard glass sampling jars should be used.

8.2.2 Each sample should be oven-dried for 2 to 4 hours at a temperature of less than 150deg.C. Site-specific studies can be undertaken in order to ascertain whether drying has a significant impact on results. If mercury is to be analyzed, a separate sample portion must remain undried, as heating may volatilize the mercury. When the sample is dry, all large, organic debris and nonrepresentative material, such as twigs, leaves, roots, insects, asphalt, and rock should be removed. The sample should be ground with a mortar and pestle and passed through a 60-mesh sieve. Only the coarse rock fraction should remain on the screen.

8.2.3 The sample can be homogenized by using plastic bag, a riffle splitter, or by placing 150 to 200 grams of the dried, sieved sample on a piece of kraft or butcher paper about 1.5 by 1.5 feet in size. Each corner of the paper should be lifted alternately, rolling the soil over on itself and toward the opposite corner. The soil should be rolled on itself 20 times. The rest of the prepared sample should be sent off site for ICP or AA analysis. The method use for confirmatory analysis should meet the data quality objectives of the project.

8.3 Blank Samples: The blank samples should be from a "clean" quartz or silicon dioxide matrix that is free of any analytes at concentrations above the method detection limits.

These samples are used to monitor for cross-contamination and laboratory-induced contaminants or interferences.

8.4 Standard Reference Materials: Standard reference materials (SRM) are standards containing certified amounts of metals in soil or sediment. These standards are used for accuracy and performance checks of FPXRF analyses. SRMs can be obtained from the National Institute of Standards and Technology (NIST), the U.S. Geological Survey (USGS), the Canadian National Research Council, and the national bureau of standards in foreign nations. In addition, Reference materials included wi the instrument that are provided by the manufacturer are also permissible. Pertinent NIST SRMs for FPXRF analysis include 2704, Buffalo River Sediment; 2709, San Joaquin Soil; and 2710 and 2711, Montana Soil. These SRMs contain soil or sediment from actual sites that has been analyzed using independent inorganic analytical methods by many different laboratories. Furthermore low, medium, and high NIST standards can be procured.

9.0 QUALITY CONTROL

9.1 All field data sheets and quality control data should be maintained for reference or inspection.

9.2 Energy Calibration Check: To determine whether an FPXRF instrument is operating within resolution and stability tolerances, an energy calibration check should be run. The energy calibration check determines whether the characteristic x-ray lines are shifting, which would indicate drift within the instrument. As discussed in Section 5.10, this check also serves as a gain check in the event that ambient temperatures are fluctuating greatly (> 10 to 20deg.F).
The energy calibration check should be run at a frequency consistent with manufacturers recommendations. Generally, this would be at the beginning of each working day, after the batteries are changed or the instrument is shut off, at the end of each working day, and at any other time when the instrument operator believes that drift is occurring during analysis. A pure element such as iron, manganese, copper, or lead is often used for the energy calibration check. A manufacturer-recommended count time per source should be used for the check.

9.2.1 The instrument manufacturer's manual specifies the channel or kiloelectron volt level at which a pure element peak should appear and the expected intensity of the peak. The intensity and channel number of the pure element as measured using the radioactive source should be checked and compared to the manufacturer's recommendation. If the energy calibration check does not meet the manufacturer's criteria, then the pure element sample should be repositioned and reanalyzed. If the criteria are still not met, then an energy calibration should be performed as described in the manufacturer's manual. With some FPXRF instruments, once a spectrum is acquired from the energy calibration check, the peak can be optimized and realigned to the manufacturer's specifications using their software.

9.3 Blank Samples: Two types of blank samples should be analyzed for FPXRF analysis: instrument blanks and method blanks. An instrument blank is used to verify that no contamination exists in the spectrometer or on the probe window.

9.3.1 The instrument blank can be silicon dioxide, a Teflon block, a quartz block, "clean" sand, or lithium carbonate. This instrument blank should be analyzed on each working day before and after analyses are conducted and once per every twenty samples. An instrument blank should also be analyzed whenever contamination is suspected by the analyst. The frequency of analysis will vary with the data quality objectives of the project. A manufacturer-recommended count time per source should be used for the blank analysis. No element concentrations above the method detection limits should be found in the instrument blank. If concentrations exceed these limits, then the probe window and the check sample should be checked for contamination. If contamination is not a problem, then the instrument must be "zeroed" by following the manufacturer's instructions.

9.3.2 A method blank is used to monitor for laboratory-induced contaminants or interferences. The method blank can be"clean" silica sand or lithium carbonate that undergoes the same preparation procedure as the samples. A method blank must be analyzed at least daily. The frequency of analysis will depend on the data quality objectives of the project. To be acceptable, a method blank must not contain any analytes at a concentration above its method detection limit. If an analytes's concentration exceeds its method detection limit, the cause of the problem must be identified, and all samples analyzed with the method blank must be reanalyzed.

9.4 Calibration Verification Checks: A calibration verification check sample is used to check the accuracy of the instrument and to assess the stability and consistency of the analysis for the analytes of interest. A check sample should be analyzed at the beginning of each working day, during active sample analyses, and at the end of each working day. The frequency of calibration checks during active analysis will depend on the data quality objectives of the project. The check sample sould be a well characterized soil from the site that is representative of site samples in terms of particle size and degree of homogeneity and that contains contaminants at concentrations near the action levels. If a site-specific sample is not available, then an NIST or other ARM that contains the analytes of interest can be used to verify the accuracy of the instrument. The measured value for each target analytes should be within +/-20 percent (%D) of the true value for the calibration verification check to be acceptable. If a measured value falls outside this range, then the check sample should be reanalyzed. If the value continues to fall outside the acceptance range, the instrument should be recalibrated, and the batch of samples analyzed before the unacceptable calibration verification check must be reanalyzed.

9.5 Precision Measurements: The precision of the method is monitored by analyzing a sample with low, moderate, or high concentrations of target analytes. The frequency of

precision measurements will depend on the data quality objectives for the data. A minimum of one precision sample should be run per day. It is recommended that precision measurements be obtained for samples with varying concentration ranges to assess the effect of concentration on method precision. Determining method precision for analytes at concentrations near the site action levels can be extremely important if the FPXRF results are to be used in an enforcement action; therefore, selection of at least one sample with target analytes concentrations at or near the site action levels or levels of concern is recommended. A precision sample is analyzed by the instrument for the same field analysis time as used for other project samples. The relative standard deviation (RSD) of the sample mean is used to assess method precision. For FPXRF data to be considered adequately precise, the RSD should not be greater than 20 percent with the exception of chromium. RSD values for chromium should not be greater than 30 percent.

The equation for calculating RSD is as follows:

RSD = (SD/Mean Concentration) x 100

where:

RSD = Relative standard deviation for the precision measurement for the analytes

SD = Standard deviation of the concentration for the analytes

Mean Concentration = Mean concentration for the analytes

The precision or reproducibility of a measurement will improve with increasing count time, however, increasing the count time by a factor of 4 will provide only 2 times better precision, so there is a point of diminishing return. Increasing the count time improves the detection limit, but decreases sample throughout.

9.6 Detection Limits for Definitive Quantitative Analysis: Results for replicate analyses of a low-concentration sample, SSCS, or SRM can be used to generate an average site-specific method detection and quantitation limits. In this case, the method detection limit is defined as 3 times the standard deviation of the results for the low-concentration samples and the method quantitation limit is defined as 10 times the standard deviation of the same results. Another means of determining method detection and quantitation limits involves use of counting statistics. In FPXRF analysis, the standard deviation from counting statistics is defined as SD = (N)1/2, where SD is the standard deviation for a target analytes peak and N is the net counts for the peak of the analytes of interest (i.e., gross counts minus background under the peak). Three times this standard deviation would be the method detection limit and 10 times this standard deviation would be the method quantitation limit. If both of the above mentioned approaches are used to calculate method detection limits, the larger of the standard deviations should be used to provide the more conservative detection limits. This SD based detection limit criteria

must be used by the operator to evaluate each measurement for its usability. A measurement above the average calculated or manufacturer's detection limit, but smaller than three times its associated SD, should not be used as a quantitative measurement. Conversely, if the measurement is below the average calculated or manufacturer's detection limit, but greater than three times its associated SD. It should be coded as an estimated value. When utilizing the instrument for field screening, the manufacturer-provided Limits of Detection (LOD) are sufficient.

9.7 Confirmatory Samples: The comparability of the FPXRF analysis is determined by submitting FPXRF-analyzed samples for analysis at a laboratory. The method of confirmatory analysis must meet the project and XRF measurement data quality objectives. The confirmatory samples must be splits of the well homogenized sample material. In some cases the prepared sample cups can be submitted. A minimum of 1 sample for each 20 FPXRF-analyzed samples should be submitted for confirmatory analysis. This frequency will depend on data quality objectives. The confirmatory analyses can also be used to verify the quality of the FPXRF data. The confirmatory samples should be selected from the lower, middle, and upper range of concentrations measured by the FPXRF. They should also include samples with analytes concentrations at or near the site action levels. The results of the confirmatory analysis and FPXRF analyses should be evaluated with a least squares linear regression analysis. If the measured concentrations span more than one order of magnitude, the data should be log-transformed to standardize variance which is proportional to the magnitude of measurement. The correlation coefficient (r2) for the results should be 0.7 or greater for the FPXRF data to be considered screening level data. If the r2 is 0.9 or greater and inferential statistics indicate the FPXRF data and the confirmatory data are statistically equivalent at a 99 percent confidence level, the data could potentially meet definitive level data criteria.

## 10.0 CALIBRATION AND STANDARDIZATION

10.1 Instrument Calibration: Instrument calibration procedures vary among FPXRF instruments. Users of this method should follow the calibration procedures outlined in the operator's manual for each specific FPXRF instrument. Generally, however, three types of calibration procedures exist for FPXRF instruments: FP calibration, empirical calibration, and the Compton peak ratio or normalization method. These three types of calibration are discussed below.

10.2 Fundamental Parameters Calibration: FP calibration procedures are extremely variable. An FP calibration provides the analyst with a "standardless" calibration. The advantages of FP calibrations over empirical calibrations include the following:

No previously collected site-specific samples are required, although site-specific samples with confirmed and validated analytical results for all elements present could be used.

Cost is reduced because fewer confirmatory laboratory results or calibration standards are required.

However, the analyst should be aware of the limitations imposed on FP calibration by particle size and matrix effects. These limitations can be minimized by adhering to the preparation procedure described in Section 8.2. The two FP calibration processes discussed below are based on an effective energy FP routine and a back scatter with FP (BFP) routine. Each FPXRF FP calibration process is based on a different iterative algorithmic method. The calibration procedure for each routine is explained in detail in the manufacturer's user manual for each FPXRF instrument; in addition, training courses are offered for each instrument.

10.2.1 Effective Energy FP Calibration: The effective energy FP calibration is performed by the manufacturer before an instrument is sent to the analyst. Although SSCS can be used, the calibration relies on pure element standards or SRMs such as those obtained from NIST for the FP calibration. The effective energy routine relies on the spectrometer response to pure elements and FP iterative algorithms to compensate for various matrix effects.

Alpha coefficients are calculated using a variation of the Sherman equation, which calculates theoretical intensities from the measurement of pure element samples. These coefficients indicate the quantitative effect of each matrix element on an analytes's measured x-ray intensity. Next, the Lachance Traill algorithm is solved as a set of simultaneous equations based on the theoretical intensities. The alpha coefficients are then downloaded into the specific instrument.
The working effective energy FP calibration curve must be verified before sample analysis begins on each working day, after every 20 samples are analyzed, and at the end of sampling. This verification is performed by analyzing either an NIST SRM or an SSCS that is representative of the site-specific samples. This SRM or SSCS serves as a calibration check. A manufacturer-recommended count time per source should be used for the calibration check. The analyst must then adjust the y-intercept and slope of the calibration curve to best fit the known concentrations of target analytes in the SRM or SSCS.

A percent difference (%D) is then calculated for each target analyte. The %D should be within +/-20 percent of the certified value for each analyte. If the %D falls outside this acceptance range, then the calibration curve should be adjusted by varying the slope of the line or the y-intercept value for the analyte. The SRM or SSCS is reanalyzed until the %D falls within +/-20 percent. The group of 20 samples analyzed before an out-of-control calibration check should be reanalyzed.

The equation to calibrate %D is as follows:

$$\%D = ((C_s - C_k) / C_k) \times 100$$

where:

%D = Percent difference

$C_k$ = Certified concentration of standard sample

$C_s$ = Measured concentration of standard sample

10.2.2 BFP Calibration: BFP calibration relies on the ability of the liquid nitrogen-cooled, Si(Li) solid-state detector to separate the coherent (Compton) and incoherent (Rayleigh) backscatter peaks of primary radiation. These peak intensities are known to be a function of sample composition, and the ratio of the Compton to Rayleigh peak is a function of the mass absorption of the sample. The calibration procedure is explained in detail in the instrument manufacturer's manual. Following is a general description of the BFP calibration procedure.

The concentrations of all detected and quantified elements are entered into the computer software system. Certified element results for an NIST SRM or confirmed and validated results for an SSCS can be used. In addition, the concentrations of oxygen and silicon must be entered; these two concentrations are not found in standard metals analyses. The manufacturer provides silicon and oxygen concentrations for typical soil types. Pure element standards are then analyzed using a manufacturer-recommended count time per source. The results are used to calculate correction factors in order to adjust for spectrum overlap of elements.

The working BFP calibration curve must be verified before sample analysis begins on each working day, after every 20 samples are analyzed, and at the end of the analysis. This verification is performed by analyzing either an NIST SRM or an SSCS that is representative of the site-specific samples. This SRM or SSCS serves as a calibration check. The standard sample is analyzed using a manufacturer-recommended count time per source to check the calibration curve. The analyst must then adjust the y-intercept and slope of the calibration curve to best fit the known concentrations of target analytes in the SRM or SSCS.

A %D is then calculated for each target analyte. The %D should fall within +/-20 percent of the certified value for each analyte. If the %D falls outside this acceptance range, then the calibration curve should be adjusted by varying the slope of the line the y-intercept value for the analyte. The standard sample is reanalyzed until the %D falls within +/-20 percent. The group of 20 samples analyzed before an out-of-control calibration check should be reanalyzed.

10.3 Empirical Calibration: An empirical calibration can be performed with SSCS, site-typical standards, or standards prepared from metal oxides. A discussion of SSCS is included in

Section 7.2; if no previously characterized samples exist for a specific site, site-typical standards can be used. Site-typical standards may be selected from commercially available characterized soils or from SSCS prepared for another site. The site-typical standards should closely approximate the site's soil matrix with respect to particle size distribution, mineralogy, and contaminant analytes. If neither SSCS nor site-typical standards are available, it is possible to make gravimetric standards by adding metal oxides to a "clean" sand or silicon dioxide matrix that simulates soil. Metal oxides can be purchased from various chemical vendors. If standards are made on site, a balance capable of weighing items to at least two decimal places is required. Concentrated ICP or AA standard solutions can also be used to make standards. These solutions are available in concentrations of 10,000 parts per million, thus only small volumes have to be added to the soil.

An empirical calibration using SSCS involves analysis of SSCS by the FPXRF instrument and by a conventional analytical method such as ICP or AA. A total acid digestion procedure should be used by the laboratory for sample preparation. Generally, a minimum of 10 and a maximum of 30 well characterized SSCS, site-typical standards, or prepared metal oxide standards are required to perform an adequate empirical calibration. The number of required standards depends on the number of analytes of interest and interfering elements. Theoretically, an empirical calibration with SSCS should provide the most accurate data for a site because the calibration compensates for site-specific matrix effects.

The first step in an empirical calibration is to analyze the pure element standards for the elements of interest. This enables the instrument to set channel limits for each element for spectral deconvolution. Next the SSCS, site-typical standards, or prepared metal oxide standards are analyzed using a count time of 200 seconds per source or a count time recommended by the manufacturer. This will produce a spectrum and net intensity of each analyte in each standard. The analyte concentrations for each standard are then entered into the instrument software; these concentrations are those obtained from the laboratory, the certified results, or the gravimetrically determined concentrations of the prepared standards. This gives the instrument analyte values to regress against corresponding intensities during the modeling stage. The regression equation correlates the concentrations of an analyte with its net intensity.

The calibration equation is developed using a least squares fit regression analysis. After the regression terms to be used in the equation are defined, a mathematical equation can be developed to calculate the analyte concentration in an unknown sample. In some FPXRF instruments, the software of the instrument calculates the regression equation. The software uses calculated intercept and slope values to form a multiterm equation. In conjunction with the software in the instrument, the operator can adjust the multiterm equation to minimize interelement interferences and optimize the intensity calibration curve.

It is possible to define up to six linear or nonlinear terms in the regression equation. Terms can be added and deleted to optimize the equation. The goal is to produce an equation with the smallest regression error and the highest correlation coefficient. These values are automatically computed by the software as the regression terms are added, deleted, or modified. It is also possible to delete data points from the regression line if these points are significant outliers or if they are heavily weighing the data. Once the regression equation has been selected for an analyte, the equation can be entered into the software for quantitation of analytes in subsequent samples. For an empirical calibration to be acceptable, the regression equation for a specific analyte should have a correlation coefficient of 0.98 or greater or meet the DQOs of the project.

In an empirical calibration, one must apply the DQOs of the project and ascertain critical or action levels for the analytes of interest. It is within these concentration ranges or around these action levels that the FPXRF instrument should be calibrated most accurately. It may not be possible to develop a good regression equation over several orders of analyte concentration.

10.4 Compton Normalization Method: The Compton normalization method is based on analysis of a single, certified standard and normalization for the Compton peak. The Compton peak is produced from incoherent backscattering of x-ray radiation from the excitation source and is present in the spectrum of every sample. The Compton peak intensity changes with differing matrices. Generally, matrices dominated by lighter elements produce a larger Compton peak, and those dominated by heavier elements produce a smaller Compton peak. Normalizing to the Compton peak can reduce problems with varying matrix effects among samples. Compton normalization is similar to the use of internal standards in organics analysis. The Compton normalization method may not be effective when analyte concentrations exceed a few percent.

The certified standard used for this type of calibration could be an NIST SRM such as 2710 or 2711. The SRM must be a matrix similar to the samples and must contain the analytes of interests at concentrations near those expected in the samples. First, a response factor has to be determined for each analyte. This factor is calculated by dividing the net peak intensity by the analyte concentration. The net peak intensity is gross intensity corrected for baseline interference. Concentrations of analytes in samples are then determined by multiplying the baseline corrected analyte signal intensity by the normalization factor and by the response factor. The normalization factor is the quotient of the baseline corrected Compton Ka peak intensity of the SRM divided by that of the samples. Depending on the FPXRF instrument used, these calculations may be done manually or by the instrument software.

11.0 PROCEDURE

11.1 Operation of the various FPXRF instruments will vary according to the manufacturers' protocols. Before operating any FPXRF instrument, one should consult the

manufacturer's manual. Most manufacturers recommend that their instruments be allowed to warm up for 15 to 30 minutes before analysis of samples. This will help alleviate drift or energy calibration problems later on in analysis.

11.2 Each FPXRF instrument should be operated according to the manufacturer's recommendations. There are two modes in which FPXRF instruments can be operated: in situ and intrusive. The in situ mode involves analysis of an undisturbed soil sediment or sample. Intrusive analysis involves collection and preparation of a soil or sediment sample before analysis. Some FPXRF instruments can operate in both modes of analysis, while others are designed to operate in only one mode. The two modes of analysis are discussed below.

11.3 For in situ analysis, one requirement is that any large or nonrepresentative debris be removed from the soil surface before analysis. This debris includes rocks, pebbles, leaves, vegetation, roots, and concrete. Another requirement is that the soil surface be as smooth as possible so that the probe window will have good contact with the surface. This may require some leveling of the surface with a stainless-steel trowel. During the study conducted to provide data for this method, this modest amount of sample preparation was found to take less than 5 minutes per sample location. The last requirement is that the soil or sediment not be saturated with water. Manufacturers state that their FPXRF instruments will perform adequately for soils with moisture contents of 5 to 20 percent but will not perform well for saturated soils, especially if ponded water exists on the surface. Another recommended technique for in situ analysis is to tamp the soil to increase soil density and compactness for better repeatability and representativeness. This condition is especially important for heavy element analysis, such as barium. Source count times for in situ analysis usually range from 30 to 120 seconds, but source count times will vary among instruments and depending on required detection limits. Due to the heterogeneous nature of the soil sample, in situ analysis can provide only "screening" type data.

11.4 For intrusive analysis of surface or sediment, it is recommended that a sample be collected from a 4- by 4-inch square that is 1 inch deep. This will produce a soil sample of approximately 375 grams or 250 cm3, which is enough soil to fill an 8-ounce jar. The sample should be homogenized, dried, and ground before analysis. The sample can be homogenized before or after drying. The homogenization technique to be used after drying is discussed in Section 5.2. If the sample is homogenized before drying, it should be thoroughly mixed in a beaker or similar container, or if the sample is moist and has a high clay content, it can be kneaded in a plastic bag. One way to monitor homogenization when the sample is kneaded in a plastic bag is to add sodium fluorescein dye to the sample. After the moist sample has been homogenized, it is examined under an ultraviolet light to assess the distribution of sodium fluorescein throughout the sample. If the fluorescent dye is evenly distributed in the sample, homogenization is considered complete; if the dye is not evenly distributed, mixing should continue until the sample has been thoroughly homogenized. During the study conducted to provide data for this method, the homogenization procedure using the fluorescein dye required 3 to 5 minutes

per sample. Homogenization has the greatest impact on the reduction of sampling variability. It produces little or no contamination. Often, it can be used without the more labor intensive steps of drying, grinding, and sieving given in Sections 11.5 and 11.6. Of course, to achieve the best data quality possible all four steps must be followed.

11.5 Once the soil or sediment sample has been homogenized, it should be dried. This can be accomplished with a toaster oven or convection oven. A small aliquot of the sample (20 to 50 grams) is placed in a suitable container for drying. The sample should be dried for 2 to 4 hours in the convection or toaster oven at a temperature not greater than 150deg.C. Microwave drying is not a recommended procedure. Field studies have shown that microwave drying can increase variability between the FPXRF data and confirmatory analysis. High levels of metals in a sample can cause arcing in the microwave oven, and sometimes slag forms in the sample. Microwave oven drying can also melt plastic containers used to hold the sample.

11.6 The homogenized dried sample material should be ground with a mortar and pestle and passed through a 60-mesh sieve to achieve a uniform particle size. Sample grinding should continue until at least 90 percent of the original sample passes through the sieve. The grinding step normally takes an average of 10 minutes per sample. An aliquot of the sieved sample should then be placed in a 31.0-mm polyethylene sample cup (or equivalent) for analysis. The sample cup should be one-half to three-quarters full at a minimum. The sample cup should be covered with a 2.5 um Mylar (or equivalent) film for analysis. The rest of the soil sample should be placed in a jar, labeled, and archived for possible confirmation analysis. All equipment including the mortar, pestle, and sieves must be thoroughly cleaned so that any cross-contamination is below the MDLs of the procedure or DQOs of the analysis.

## 12.0 DATA ANALYSIS AND CALCULATIONS

Most FPXRF instruments have software capable of storing all analytical results and spectra. The results are displayed in parts per million and can be downloaded to a PC, which can provide a hard copy printout. Individual measurements that are smaller than three times their associated SD should not be used for quantitation.

## 13.0 POLLUTION PREVENTION

13.1 Pollution prevention encompasses any technique that reduces or eliminates the quantity and/or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operation. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the Agency recommends recycling as the next best option.

13.2 For information about pollution prevention that may be applicable to laboratories and research institutions consult Less is Better: Laboratory Chemical management for Waste Reduction available from the American Chemical Society's Department of Government Relations and Science Policy, 1155 16th Street N.W., Washington D.C. 20036, (202) 872-4477.

## 14.0 WASTE MANAGEMENT

The Environmental Protection Agency requires that laboratory waste management practices be conducted consistent with all applicable rules and regulations. The Agency urges laboratories to protect the air, water, and land by minimizing and controlling all releases from hoods and bench operations, complying with the letter and spirit of any sewer discharge permits and regulations, and by complying with all solid and hazardous waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on waste management, consult The Waste Management Manual for Laboratory Personnel available from the American Chemical Society at the address listed in Sec. 13.2.

## 15.0 REFERENCES

1. Environmental Protection Agency, Test Methods for Evaluating Solid Waste: SW-846. Method 6200; Field Portable X-Ray Fluorwscence Spectrometry For The Determination Of Elemental Concentrations In Soil And Sediment. 1998.

2. Envinonmental Protection Agency, Region I Standard Operating Procedure; Elemental Analysis Using The X-Met 920 Field X-Ray Fluorescence Analyzer. 1996.

3. Environmental Protection Agency, Environmental Response Team Standard Operating Procedures; X-Met 880 Field Portable X-Ray Fluorescence Operating Procedures. 1994.

4. Environmental Protection Agency, Environmental Technology Verification Report. Field Portable X-Ray Fluorescence Analyzer. 1998.

5. Hewitt, A.D. 1994. "Screening for Metals by X-Ray Fluorescence Spectrometry/Response factor/Compton K(alpha) Peak Normalization Analysis." American Environmental Laboatory. Pages 24-32.

6. Niton Corporation Users Guide Version 5.0. North Kingstown R.I. 1997.

7. Piorek, S., and J.R. Pasmore. 1993. "Standardless, In Situ Analysis of Metallic Contaminants in the Natural Environent With a PC-Based, High Resolution Portable X-Ray Analyzer." Third International Symposium on Field Screening Methods for Hazardous Waste and Toxic Chemicals. Las Vegas, Nevada. February 24-26, 1993. Volume 2, Pages 1135-1151.

**QAPP ATTACHMENT 2:** Environmental Response Team (ERT), US EPA. *Soil Sampling*, SOP No.2012, Revision 1.0. July 11, 2001.



R2-0004191

**QAPP ATTACHMENT 3:** Environmental Response Team (ERT), US EPA. *Sediment Sampling*, SOP No.2016, Revision 0.0. November 17, 1994.



R2-0004192

**QAPP ATTACHMENT 4:** Environmental Response Team (ERT), US EPA. *Surface Water Sampling*, SOP No.2013, Revision 1.0. December 17, 2002.



R2-0004193

**QAPP ATTACHMENT 5:** Environmental Response Team (ERT), US EPA. *Sampling Decontamination*, SOP No.2006, Revision 0.0. August 11, 1994.



R2-0004194

**QAPP ATTACHMENT 6:** Site Maps



R2-0004195

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N

50 25 0 50 Feet

**DRAFT**

Figure 1
Area-03
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

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04/22/2010 9:48:49 AM

R2-0004196

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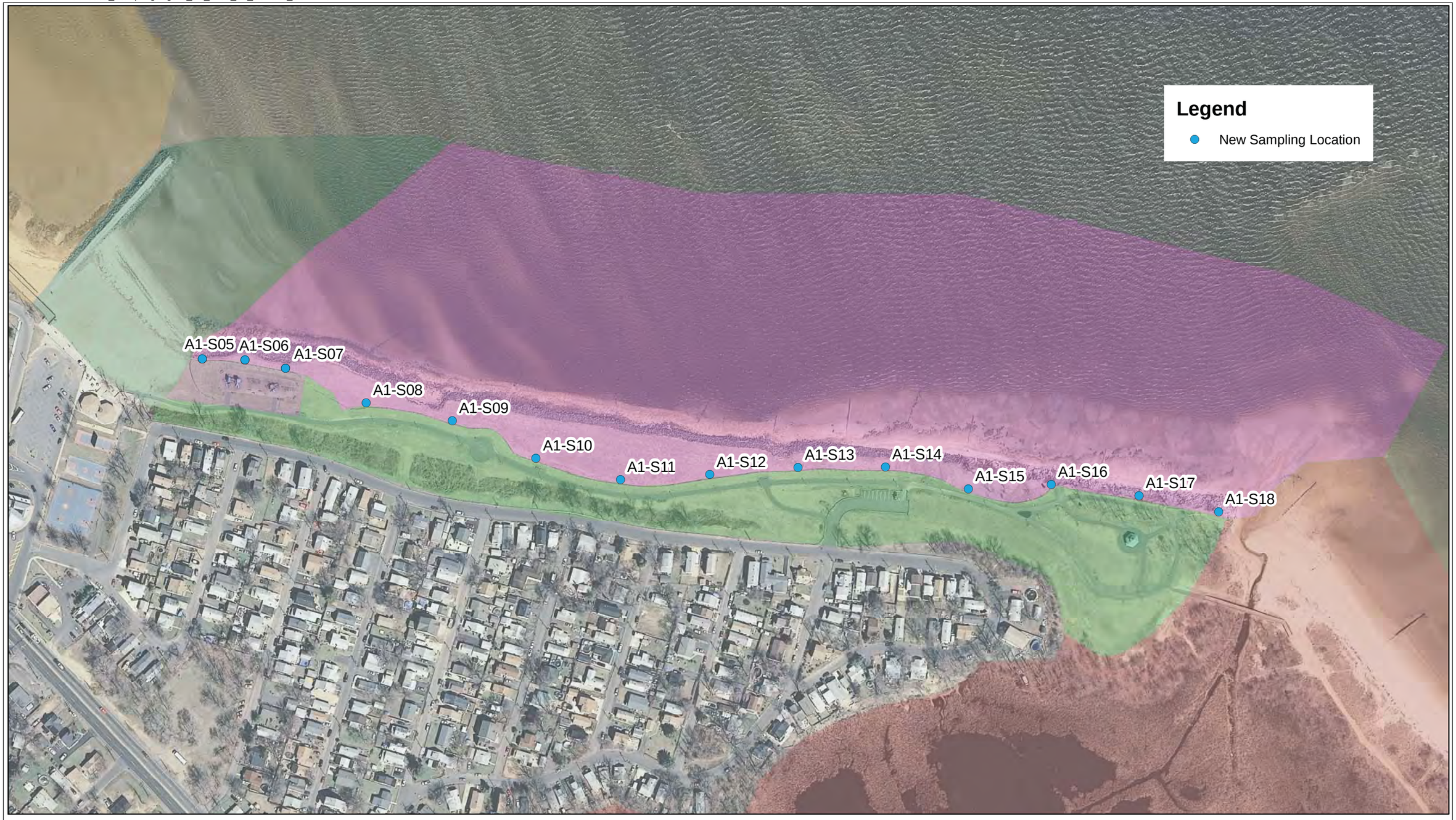


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04/22/2010 9:50:10 AM

**DRAFT**

Figure 1A
Area-01
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

R2-0004197

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**DRAFT**

Figure 2
Area-05
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey
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04/22/2010 9:51:33 AM

R2-0004198

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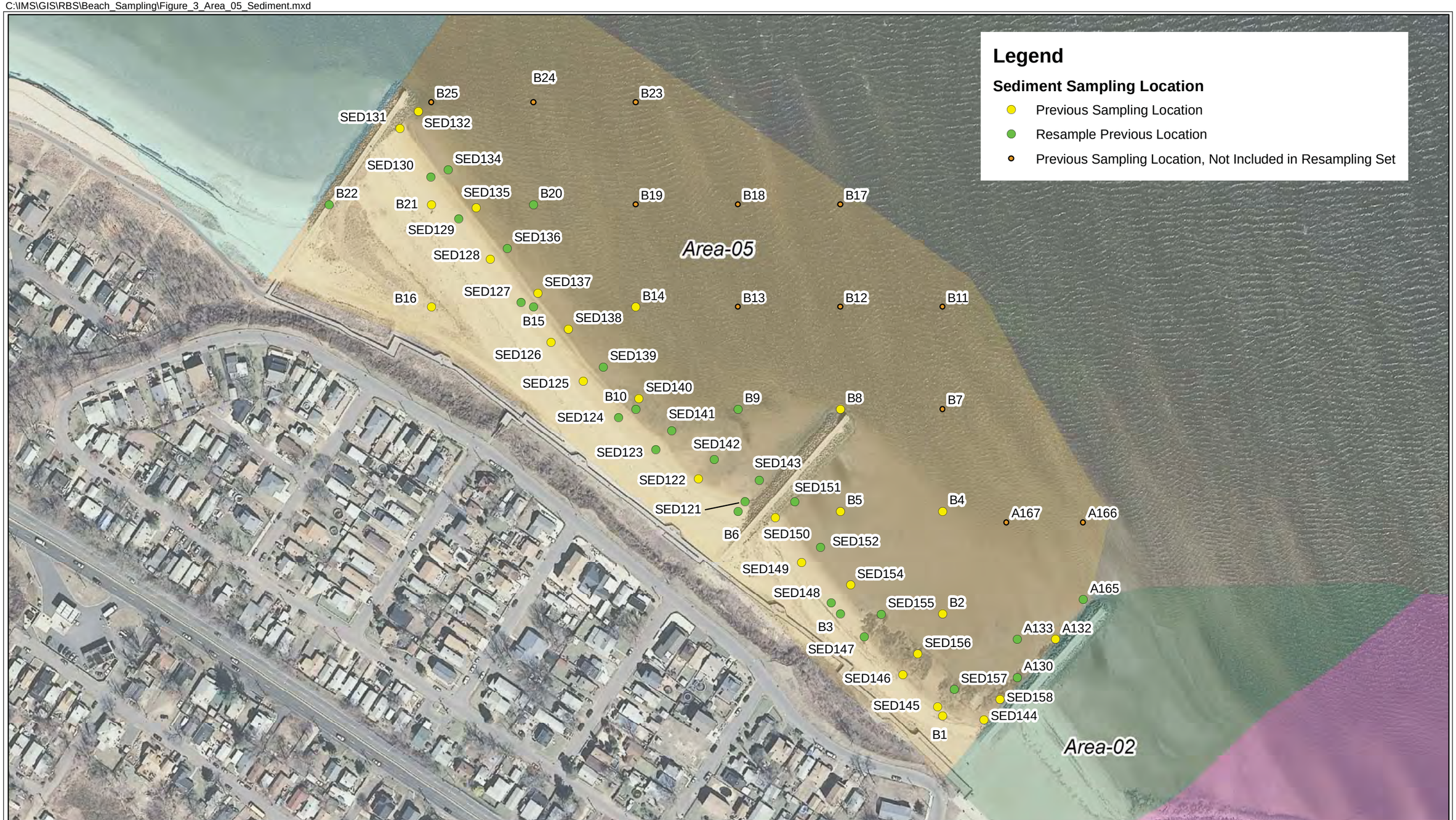


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**DRAFT**

Figure 3
Area-05
Sediment Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

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**DRAFT**

Figure 4
Area-05
Surface Water Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

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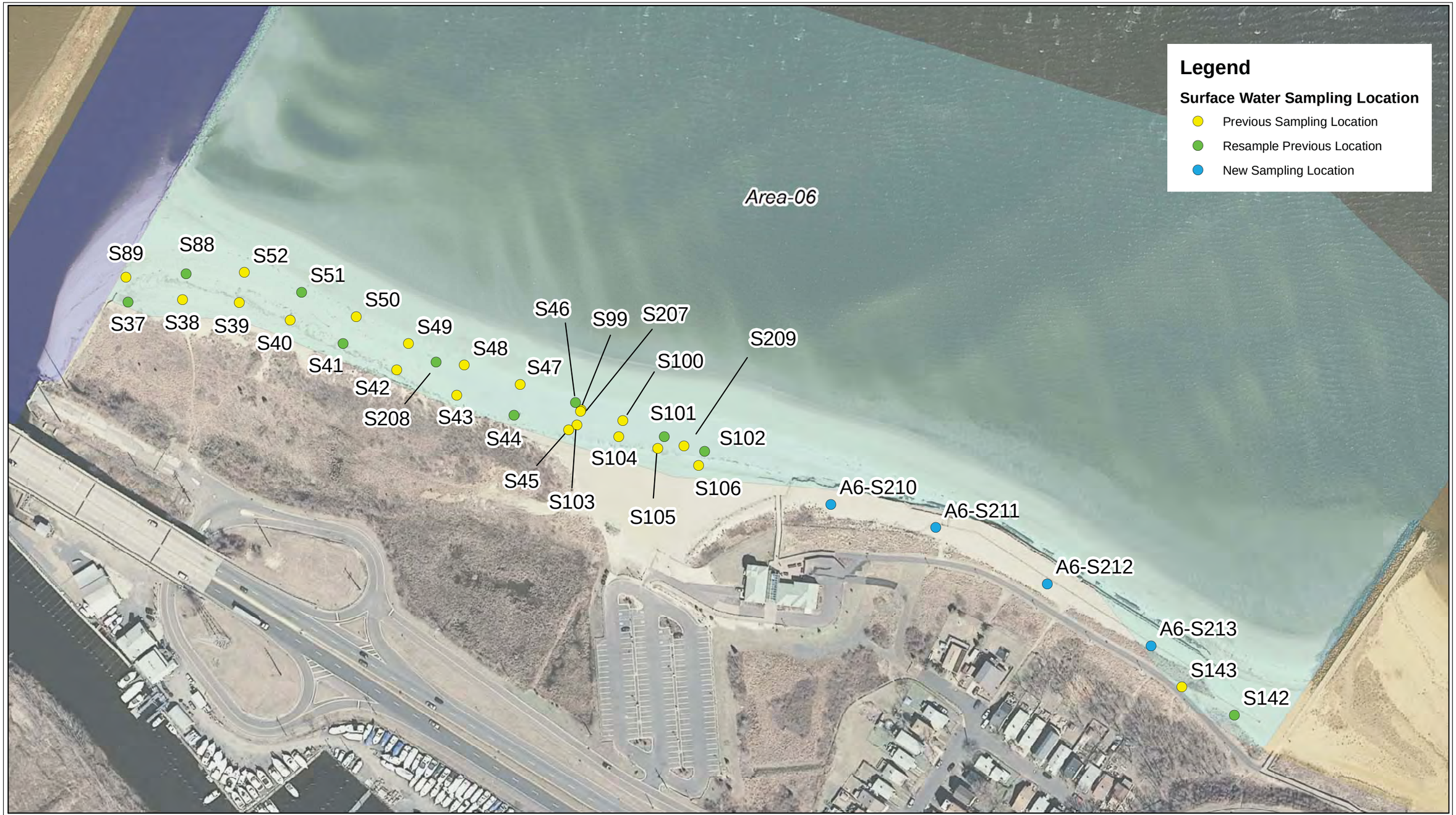


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Figure 5
Area-06
Soil Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey
CDM

R2-0004201

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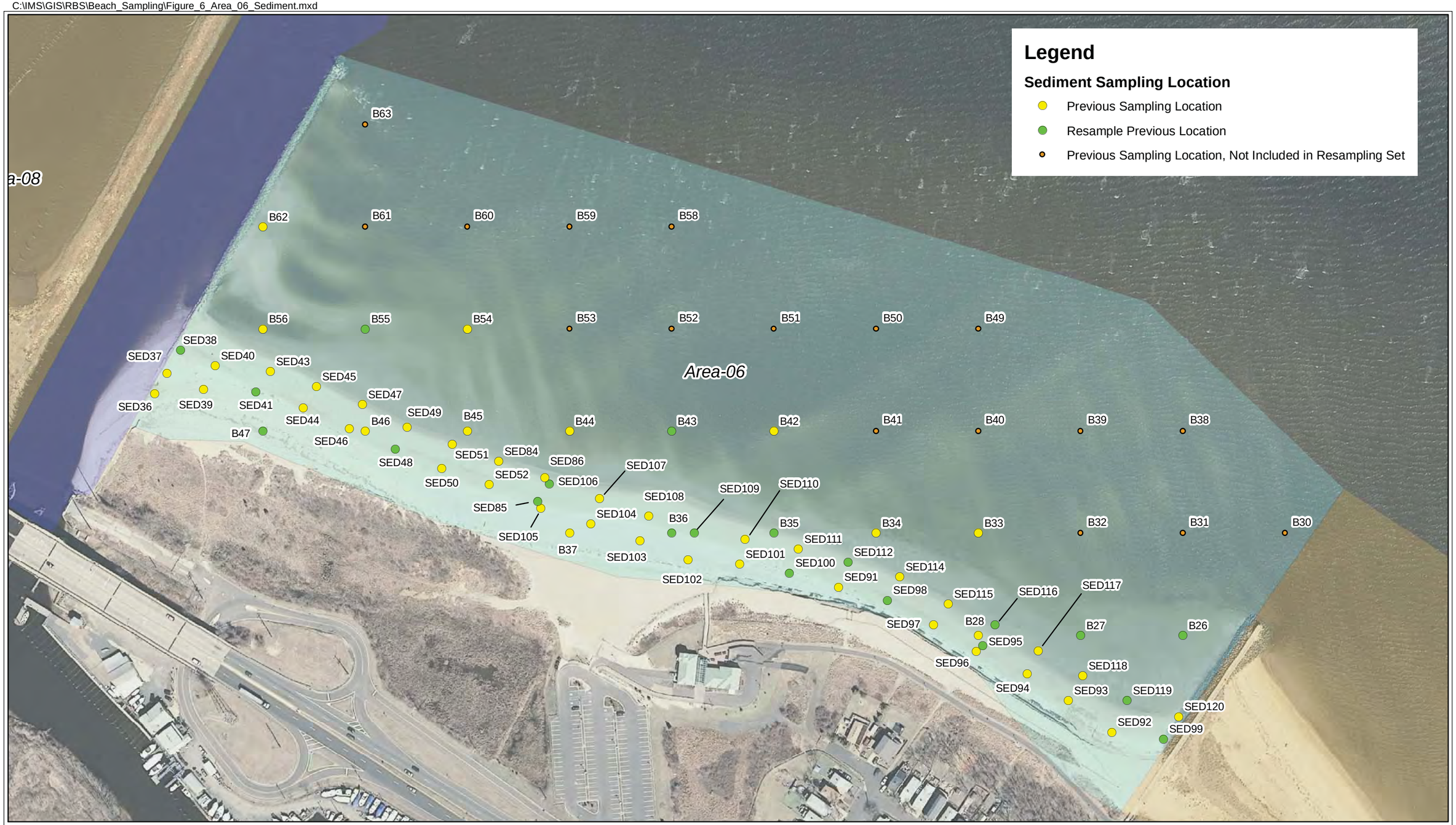


DRAFT

Figure 6
Area-06
Sediment Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

04/22/2010 9:55:44 AM

R2-0004202

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**DRAFT**

Figure 7
Area-06
Surface Water Sampling Locations
Raritan Bay Slag Site
Old Bridge, New Jersey

CDM

04/22/2010 9:47:35 AM

R2-0004203

**QAPP ATTACHMENT 7:** Field sample documentation



R2-0004204

**QAPP ATTACHMENT 8A:** New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program Soil Cleanup Criteria, May 12, 1999.



R2-0004205

**QAPP ATTACHMENT 8B:** New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards, January 4, 2010

**ATTACHMENT 9**

**UFP QAPP Worksheets**



R2-0004207

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# CROSSWALK

The following table provides a "cross-walk" between the QAPP elements outlined in the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP Manual), the necessary information, and the location of the information within the text document and corresponding QAPP Worksheet. Any QAPP elements and required information that are not applicable to the project are circled.

| QAPP Element(s) and Corresponding Section(s) of UFP-QAPP Manual | Required Information | Crosswalk to QAPP Section | Crosswalk to QAPP Worksheet No. |
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R2-0004211

## QAPP Worksheet #1
## Title and Approval Page

**Title:** Quality Assurance Project Plan
**Site Name/Project Name**: Raritan Bay Beach Sampling
**Site Location**: Old Bridge, Monmouth County, NJ
**Revision Number: 00**
**Revision Date: May 2010**

U.S. Environmental Protection Agency, Region II
**Lead Organization**

Christina Leung
U.S. EPA Region II
2890 Woodbridge Ave.
Edison, NJ 08837
(732)906-6995
Leung.christina@epa.gov

May 2010
**Preparation Date (Day/Month/Year)**

Project Officer: _____ Signature

Christina Leung, EPA Region 2
Printed Name/Organization/Date

QA Officer: _____ Signature

Patricia Sheridan, EPA Region 2
Printed Name/Organization/Date

Remedial Project Manager: _____ Signature

Tanya Mitchell, Region 2
Printed Name/Organization/Date

Document Control Number: RARITANBAYUFPQAPP-05-2010



R2-0004212

## QAPP Worksheet #2
## QAPP Identifying Information

**Title:** Quality Assurance Project Plan
**Site Name/Project Name**: Raritan Bay Beach Sampling
**Site Location**: Old Bridge, Monmouth County, NJ
**Revision Number: 00**
**Revision Date: May 2010**
**Title:** Quality Assurance Project Plan

**1. Identify guidance used to prepare QAPP:** Uniform Federal Policy for Quality Assurance Project Plans

**2. Identify regulatory program:** EPA Region 2

**3. Identify approval entity:** EPA Region 2

**4. Indicate whether the QAPP is a generic or a project-specific QAPP. (circle one)**

**5. List dates of scoping sessions that were held:** April 28, 2010

**6. List dates and titles of QAPP documents written for previous site work, if applicable:**

Quality Assurance Project Plan for Raritan Bay Slag Site, Old Bridge, New Jersey. Prepared for EPA/ERT Region 2, Edison, NJ, June 26, 2009.

**7. List organizational partners (stakeholders) and connection with lead organization:**

**8. List data users:**
EPA Region 2 (see Worksheet #4 for individuals)

**9. If any required QAPP elements and required information are not applicable to the project, then provide an explanation for their exclusion below:**

- [ Not applicable because…]

**10. Document Control Number: RARITANBAYUFPQAPP-05-2010**



R2-0004213

## QAPP Worksheet #3
## Distribution List

**[List those entities to whom copies of the approved QAPP, subsequent QAPP revisions, addenda, and amendments are sent]**

| QAPP Recipient | Title | Organization | Telephone Number | Fax Number | E-mail Address | Document Control Number |
|---|---|---|---|---|---|---|
| Tanya Mitchell | Remedial Project Manager | EPA, Region 2 | (212) 637-4362 | (212) 637- | Mitchell.Tanya@epamail.epa.gov | RARITANBAYUFPQAPP-05-2010 |
| Patricia Sheridan | QA Officer | EPA, Region 2 | (732) 321-6780 | (732) 906-6824 | Sheridan.Patricia@epa.gov | RARITANBAYUFPQAPP-05-2010 |
| Christina Leung | Project Manager | EPA, Region 2 | (732) 906-6995 | (732) 906-6824 | Leung.Christina@epa.gov | RARITANBAYUFPQAPP-05-2010 |



R2-0004214

## QAPP Worksheet #4
## Project Personnel Sign-Off Sheet

**[Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described; add additional sheets as required. Ask each organization to forward signed sheets to the central project file.]**

**Organization:** EPA Region 2

| Project Personnel | Title | Telephone Number |
|---|---|---|
| Tanya Mitchell | Remedial Project Manager | 212- 637-4362 |
| Patricia Sheridan | QA Officer | 732- 321-6780 |
| Christina Leung | Project Manager | 732- 906-6995 |
| Michael Clemetson | Field Support | 732-321-6712 |
| Steven Wall | Field Support | 732-906-6170 |
| Michael Mercado | Field Support | 732-906-6808 |
| Rachael Graham | Field Support | 732-321-4438 |
| CDM Contract Support | Field Support | |



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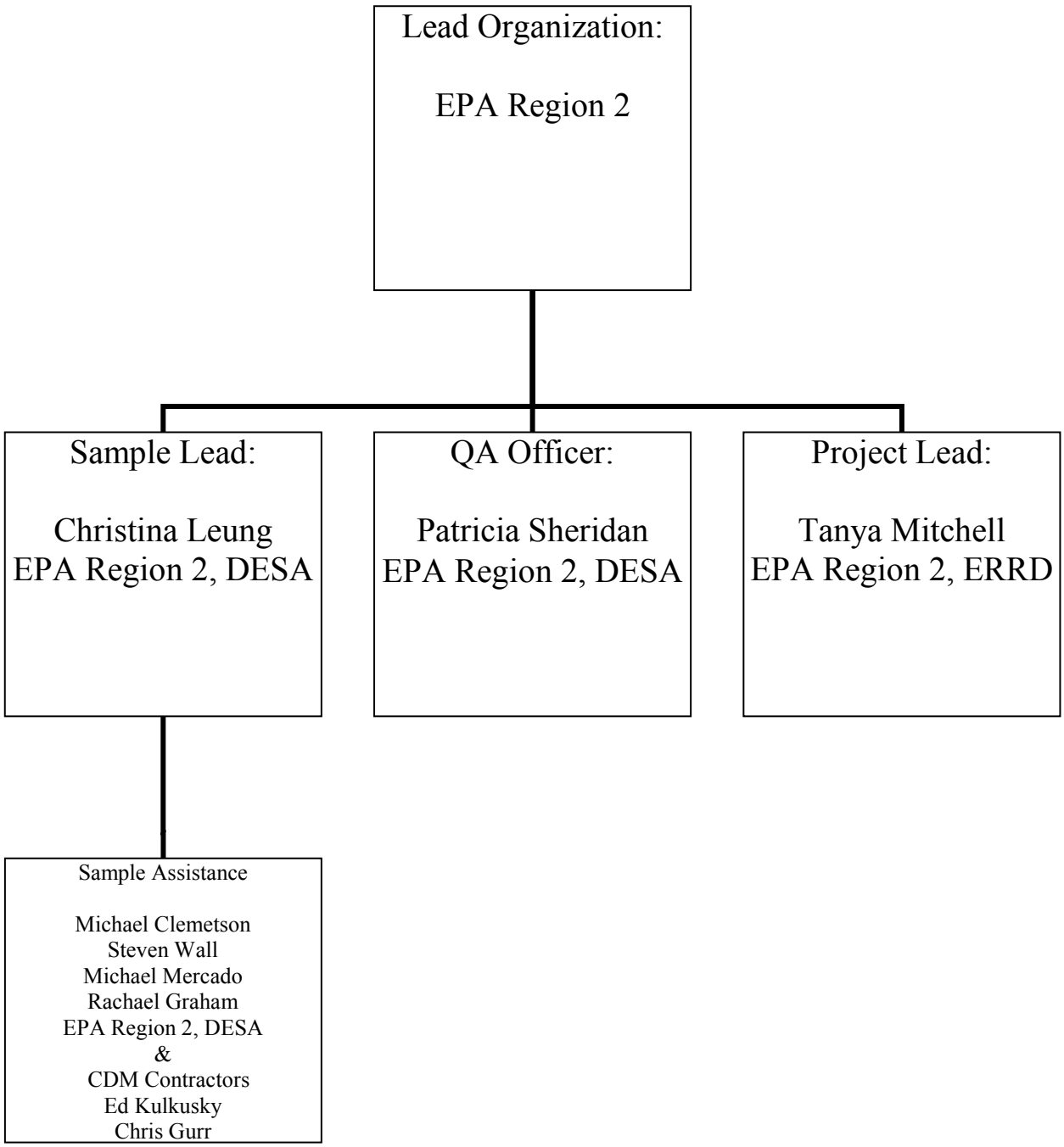
**QAPP Worksheet #5**
**Project Organizational Chart**



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## QAPP Worksheet #6
## Communication Pathways

| Communication Drivers | Responsible Entity | Name | Phone Number | Procedure (Timing, Pathways, etc.) |
|---|---|---|---|---|
| Point of contact with RPM/OSC | Sampling Project Manager | Christina Leung | (732) 906-6995 | All technical, QA and decision-making matters in regard to the project (verbal, written or electronic) |
| Sampling Request<br>Data Management Planning | Remedial Project Manager | Tanya Mitchell | (212) 637-4362 | All technical, QA and decision-making matters in regard to the project (verbal, written or electronic), RPM communicates with Sampling Project Leader. |
| Adjustments to QAPP | Quality Assurance Officer | Patricia Sheridan | (732) 321-6870 | QAPP approval dialogue |
| Field Corrective Action | Field Team | HWSB/SST | (908)420-4440 | DESA/HWSB/SST determines the need for corrective actions. |
| Analytical Data Reporting | HWSB/HWSS | Adly Michael | (732) 906-6161 | HWSB/HWSS will receive and review data packages before data is used. |
| Health and safety decisions, reporting of safety issues | HWSB/SST | Christina Leung | (732) 906-6995 | Responsible for ensuring the protocols specified in the HASP are carried out during field activities. |



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## QAPP Worksheet #7
## Personnel Responsibilities and Qualifications Table

| Name | Title | Organizational Affiliation | Responsibilities | Education and Experience Qualifications |
|---|---|---|---|---|
| Christina Leung | Sampling Project Manager | EPA/DESA/HWSB/SST | Implementing and executing the technical, QA and health and safety during sampling event | B.S. Degree in Natural Resource Management. Over 6 years experience with oversight, field investigations, and project management |
| Tanya Mitchell | Remedial Project Manager | EPA/ERRD/SPB | Overall project coordination | Project Management and coordination expert. |
| Michael Clemetson | Sampling Assistance | EPA/DESA/HWSB/SST | Sample activities and management | |
| Steven Wall | Sampling Assistance | EPA/DESA/HWSB/SST | Sample activities and management | |
| Michael Mercado | Sampling Assistance | EPA/DESA/HWSB/SST | Sample activities and management | |
| Rachael Graham | Sampling Assistance | EPA/DESA/HWSB/SST | Sample activities and management | |



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## QAPP Worksheet #8
## Special Personnel Training Requirements Table

| Project Function | Specialized Training – Title or Description of Course | Training Provider | Training Date | Personnel/Groups Receiving Training | Personnel Titles/ Organizational Affiliation | Location of Training Records/Certificates[1] |
|---|---|---|---|---|---|---|
| **[Specify location of training records and certificates for samplers]** | | | | | | |
| All Field Activities | 40-hour OSHA<br>Annual 8-hour refresher | 40-hour EPA; 8-hour web based or CDM training and on-site safety briefings | Various | All field team members | HWSB/SST staff | On-site and EPA Edison office records |
| Sample Collection | Trained in EPA CERCLA QA, sampling methods, sample shipping procedures | Office and on-site training | Various | HWSB/SST Staff | HWSB/SST Staff | EPA Region 2 in Edison, NJ |
| Sample Analysis | Trained in EPA DESA SOPs<br><br>Trained in EPA CLP Laboratory Procedures | On-site training | Various | DESA/LB analytical personnel<br><br>CLP Laboratory analytical personnel | DESA/LB staff<br><br>CLP Laboratory analytical personnel | EPA Region 2 in Edison, NJ<br><br>CLP Laboratory |
| Data Validation | CLP and non-RAS data validation | EPA | Various | EPA reviewers | Data Validators | EPA Region 2, DESA Staff |
| Data Review and Assessment | None- review performed by experienced analytical personnel | On-site EPA DESA Laboratory<br><br>CLP Laboratory | Various | Laboratory Data Management | Section Chief; Laboratory QAO; Respective Section leaders | EPA Region 2 in Edison, NJ<br><br>CLP Laboratory |

**[1]If training records and/or certificates are on file elsewhere, document their location in this column. If training records and/or certificates do not exist or are not available, then this should be noted.**



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## QAPP Worksheet #9
## Project Scoping Session Participants Sheet

**Site Name/Project Name**: Raritan Bay Beach Sampling
**Site Location**: Old Bridge, Monmouth County, NJ
**Operable Unit**: 00

**Date of Session:** April 28, 2010
**Scoping Session Purpose:** To discuss questions, comments and assumptions regarding technical sampling issues involved with the project.

| Name | Title | Affiliation | Phone # | E-mail Address |
|---|---|---|---|---|
| Tanya Mitchell | Remedial Project Manager | EPA | (212)6374362 | Mitchell.Tanya@epa.gov |
| Christina Leung | Environmental Scientist | EPA | (732)906-6995 | Leung.christina@epa.gov |

**Comments/Decisions:** _____

**Action Items:** _____

**Consensus Decisions:** _____



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## QAPP Worksheet #10
## Problem Definition

### PROBLEM DEFINITION

The purpose of the Raritan Bay Slag beach sampling is to provide data which can be used to assess potential changes in concentrations of contaminants of concern at the site after a storm event and to support ongoing assessment of the suitability of recreational use of the beaches in Areas 5 and 6 and the playground in Areas 1 and 3. Contaminants of concern at the beach Area 5 and 6 are lead, arsenic, copper, chromium, and antimony. Volatile organic compounds, semi-volatile organics, pesticides, and polychlorinated biphenols, and total metals will be analyzed at Area 3 and 1 to determine if there is a potential exposure pathway. Results will be compared to NJDEP, and used by risk assessors in making decisions regarding property access.

This sampling plan has been designed to obtain sufficient data to allow statistical analysis of the data set. If the correlation between the paired data of on-site data and XRF screening results is demonstrated, then this regression can be used to generate definitive results for future sampling events. The design included selecting from 30% to 100% of the previous sampling locations by Area for re-sampling. The final percentages were based on concentrations from previous sampling events. Area 5 contained a larger data set than Area 6 and thus respectively 50% and 30% of the previous locations were chosen for re-sampling. However, Area 6 is more heavily used for recreation than Area 5 and thus the reverse percentages were used to identify subset sampling. One hundred percent of the samples in Area 3 were selected for analysis. This data will be used to support the Remedial Investigation.

A Data Evaluation Report will describe the rationale for the data used and present any data limitations. The report will include a discussion of the accuracy, precision, representativeness, completeness and comparability of the data set and deviations from planned procedures and analysis. Tables will be prepared, including: a summary of samples collected and parameters analyzed; detections in field blanks; and comparison of field duplicates.

EPA DESA personnel have been requested by ERRD to sample the playground Area 3 and fenceline Area1 for organic and inorganic contamination in the soil. Additional sampling is requested in the beach Area 5 and Area 6 along the Raritan Bay for lead (Pb), arsenic (As), chromium (Cr), antimony (Sn), and copper (Cu) in the soil, sediment, and surface water. See Attachment 6 for site maps and sample locations. Sampling will commence the week of May 10th and be completed May 21st, 2010. The data will be compared to the NJDEP criteria for human health risk, provided in Attachment 9 worksheet 15.

### SITE HISTORY/CONDITIONS

The Raritan Bay Slag Site (RBS) (CERCLIS ID No. NJN000206276) is approximately 1.3 miles in length and consists of the Laurence Harbor seawall in Old Bridge Waterfront Park and portions of the area in and around the Cheesequake Creek inlet, both located on Raritan Bay. During the replacement of a sewer line, fill and battery casings were observed in the Margaret's



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Creek area, which is located east of the Laurence Harbor seawall. The Margaret's Creek area was proposed for acquisition by the State of New Jersey under the Green Acres Program in 2006. During a preliminary assessment phase of the Green Acres review process, historical aerial photos revealed the filling of approximately 20 acres of that area by 1974. Further investigation by the New Jersey Department of Environmental Protection (NJDEP) found slag deposits along the seawall at the Old Bridge Waterfront Park. The NJDEP referred the seawall and the area around the Cheesequake Creek inlet to EPA for a removal action, while maintaining control of the Margaret's Creek Site.

In September 1972, the NJDEP was advised by a local environmental commission member that lead-bearing waste material was being disposed of along the Laurence Harbor beachfront on Raritan Bay. Also by letter to NJDEP dated December 7, 1972, NL Industries, Inc. (NL) acknowledged that "slag which consists of non-recoverable low yield metallic waste from blast furnace and blast furnace rubble are disposed of by Liberty Trucking Company at their property in Madison Township, Route 35, New Jersey." The Liberty Trucking Company property was located in the Margaret's Creek area. Madison Township is now known as Old Bridge Township. NL used battery plates from lead/acid storage batteries as the principal feed material for the blast furnace at its plant in Perth Amboy.

On December 13, 2006, the NJDEP conducted a limited site investigation at the Margaret's Creek Site to visually characterize fill material via excavation of test pits. Waste materials were evident in numerous locations across the surface of the site, including large quantities of what appeared to be shredded automotive battery casings and refractory brick and slag. On March 14, 2007, the NJDEP collected soil samples at the Margaret's Creek Site. Lead was detected at concentrations ranging from 701 to 146,000 parts per million (ppm).

On May 23, 2007, NJDEP conducted further soil sampling at the Margaret's Creek Site and the Laurence Harbor seawall. Antimony was detected at concentrations above state criteria, ranging from 17.8 ppm to 12,900 ppm. Arsenic was detected at concentrations ranging from 23.6 ppm to 3,350 ppm. Copper was detected at concentrations ranging from 4.2 ppm to 3,590 ppm. Lead was detected at concentrations ranging from 647 ppm to 142,000 ppm.

On July 24, 2007, NJDEP conducted another round of soil sampling in a preliminary attempt to identify the boundary of contaminated soils in public areas. Thirty-one locations were sampled from the 0-6 inch depth interval in the park area including an expanse of beach east of the footbridge over Margaret's Creek. Analysis of samples collected from the RBS Site indicated antimony at concentrations ranging from 0.42 ppm to 20.2 ppm. Arsenic was detected at concentrations ranging from 1.3 ppm to 24.5 ppm. Copper was detected at concentrations ranging from 3.5 ppm to 44 ppm. Lead was detected at concentrations ranging from 3.1 ppm to 545 ppm.

From September 10 through 16, 2008, EPA-ERRD contracted WESTON Solutions, Inc. personnel to conduct an Integrated Assessment (IA) sampling program. WESTON collected a total of 48 aqueous samples (including two environmental duplicate samples), 95 surface soil samples (including five environmental duplicate samples), 10 subsurface soil samples, and 84



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sediment samples (including four environmental duplicate samples) from the Site. Lead was detected in the soil, sediment, and surface water samples.

From April 20 through 23, 2009, Weston Solutions, Inc. conducted a Phase II Sampling Program that included collection of 384 environmental samples (including duplicate samples). Weston collected 134 surface and near-surface soil samples, 116 sediment samples, and 34 surface water samples from the site. Surface soil and sediment samples were collected from 0 to 2 inches and 0 to 3 inches, respectively. Soil samples were collected at various depths including 0 to 2 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches bgs. Surface water, sediment, and surface soil samples were collected from Area 5, Area 6, and Area 9. Sediment samples were also collected from a background area (Area 10). Near-surface soil samples were collected from Area 5 and Area 6. All samples were analyzed for TAL metals (excluding mercury). Surface water samples were also analyzed for dissolved metals.

Offshore and onshore sediment core sampling was conducted by EPA REAC in June and July 2009 to evaluate the extent of contamination in offshore sediments in Raritan Bay adjacent to the Cheesequake Creek Inlet jetties, the seawall, and the coastal subtidal zone. A core sampler was used to collect sediment at depths from 0 to 6 inches, 0 to 12 inches, and 12 to 24 inches. EPA DESA SST personnel were on-site to provide sample management and processing. Each core sample was homogenized prior to sediment collection. A total of 354 sediment samples were collected and processed from Areas 1, 2, and 5 through 8. All of the sediment samples were sent to a CLP laboratory for metals analysis. An additional 34 samples collected from 0 to 6 inches were also analyzed for VOCs, SVOCs, pesticides, and PCBs. The same 34 sample locations were also analyzed for total organic carbon (TOC) from 0 to 6 inches and 12 to 24 inches.



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## QAPP Worksheet #11
## Project Quality Objectives/Systematic Planning Process Statements

Overall project objectives include:

- Derive observable trends from the data
- Investigate concentrations of lead, arsenic, antimony, copper, chromium in the soil and sediment at Raritan Bay beach site, specifically areas 5 and 6 (maps attached as Attachment 6).
- Investigate concentrations of inorganic and organic contaminants, in the soil at the Raritan Bay playground area, specifically area 1 and 3 (maps attached as Attachment 6).
- Investigate concentrations of lead, arsenic, antimony, copper, chromium in the surface water at the Raritan Bay beach area, specifically area 5 and 6 (maps attached as Attachment 6).

**Who will use the data?**
Data will be used by EPA Region 2 ERRD.

**What will the data be used for?**
The purpose of the Raritan Bay Slag beach sampling is to provide data which can be used to assess potential changes in concentrations of contaminants of concern at the site after a storm event and to support ongoing assessment of the suitability of recreational use of the beaches in Areas 5 and 6 and the playground in Areas 1 and 3.

All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. From this 0-6" paired data, a linear regression will be calculated to allow for future XRF correlations should additional data is needed to assess the suitability of property access in the area. This sampling plan has been designed to obtain sufficient data to allow statistical analysis of the data set. If the correlation between the on-site data and XRF screening results is demonstrated, then this regression can be used to generate definitive results for future sampling events.

Volatile organic compounds, semi-volatile organics, pesticides, and polychlorinated biphenols, percent moisture, and total metals will be analyzed at Area 3 and 1 to determine if there is a potential exposure pathway. Results will be compared to NJDEP, and used by risk assessors in making decisions regarding property access.

A Data Evaluation Report will describe the rationale for the data used and present any data limitations. The report will include a discussion of the accuracy, precision, representativeness, completeness and comparability of the data set and deviations from planned procedures and analysis. Tables will be prepared, including: a summary of samples collected and parameters analyzed; detections in field blanks; and comparison of field duplicates.

**What types of data are needed?**

- Tide schedule
- sediment sampling locations
- X-ray fluorescent (XRF) meter device

**How "good" do the data need to be in order to support the environmental decision?**



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Fixed-lab derived definitive data and screening level data acquired via XRF are required to meet project objectives. The quantitation limits for the samples are specified on Worksheet #15. All definitive laboratory analyses will be performed by USEPA Region 2 DESA Laboratory and CLP Laboratories. Worksheets # 12 and # 28 show the measurement performance criteria that are needed for the quality indicators. Worksheet #20 shows the quality control (QC) samples required. All data analyzed by the DESA Laboratory will be validated by DESA Laboratory staff. All data analyzed by the CLP Laboratories will be validated by DESA HWSB Laboratory staff.

**How much data are needed?**

See Section 4.1 on pages 5 to 8 for specific descriptions for each area to be sampled.

**TABLE 1. Sample Locations and Analytical Requirements**

| Matrix | Sampling Location(s) | Depth (inch) | Analytical Group(s) | Concentration Level | No. of Samples | Sampling SOP Reference | QC Samples |
|---|---|---|---|---|---|---|---|
| Soil | Area 3 19 sample locations | 0 – 2 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| Soil | Area 1 14 sample locations | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | |
| Soil | Area 5 31 sample locations | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 24 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 51 | SST #2 | |
| Sediment | Area 5 28 sample locations | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 21 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 46 | SST #2 | |
| Surface Water | Area 5 10 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2013 | 1 MS/MSD, 1 duplicate |
| Soil | Area 6 14 sample locations | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 11 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 28 | SST #2 | |
| Sediment | Area 6 20 sample locations | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 15 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 40 | SST #2 | |
| Surface Water | Area 6 12 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 12 | ERT # 2013 | 1 MS/MSD, 1 duplicate |



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**Where, when, and how should the data be collected/generated?**
All soil and sediment sample descriptions will be recorded and identified in a log fieldbook. Sample and field photographs may be captured during the duration of the project.

AREAS 1 and 3 – Soil
All soil samples in Area 3 will be collected at 0-2", 0 - 6" and 6 - 12" depths using stainless steel scoops and bowls or aluminum trays. Area 1 samples will be collected at 0 - 6" and 6 - 12" depths only. Co-located samples will be collected at 0-2"and 0 - 6" depths. The samples will be homogenized in the bowls/trays before distributing into Teflon-lined glass jars. VOC, SVOC, PCB, PEST, TM, % Moisture analysis will be collected from each sample location and depth. VOC samples will be collected using encore samplers and will not be homogenized, see Attachment 2 for SOP. Samples will be shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

AREA 5 and 6 – Soil and Sediment
All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. See Attachment 1 for EPA SOP on XRF instrument. Fixed lab samples will be collected using disposable sterile plastic scoops and placed into ziplock bags for homogenization before distributing into Teflon-lined glass jars. Pb, As, Sb, Cu, and Cr will be analyzed from each sample location and depth. Samples will be hand-delivered to DESA Laboratory for analysis within 24 hours of sample collection.

In addition, a subset of samples in Areas 5 and 6 will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24", as humans are likely to be exposed to soil down to 2 feet. The samples collected at depth (6-12" and 12-24") will be both XRFed and sampled using an acetate sleeve or stainless steel auger, see Attachment 2 and 3 for procedures. Co-located samples will be collected for DESA Laboratory at 0-2"and 0 - 6" depths. The 0-2" sample will be collected using a sterile plastic scoop and placed into ziplock bags for homogenization before distributing into Teflon-lined glass jars. The 0-2"depth will not be XRFed.

AREA 5 and 6 – Surface Water
All surface water samples will be collected using the direct-grab method, see Attachment 4 for procedure. The collection of surface water will be dependent on the tidal schedule. The samples will preserved with nitric acid and sent to DESA Laboratory for analysis of Pb, As, Sb, Cu, and Cr. The samples collected will not be XRFed.

**Who will collect and generate the data?**
EPA Region II DESA/HWSB/SST will collect the analytical samples from areas 1 and 3, and will be shipped via UPS to CLP Laboratories for analysis. EPA Region II DESA/HWSB/SST will collect the analytical samples from areas 5 and 6, and will be hand-delivered to DESA Laboratory for analysis.

**How will the data be reported?**
Analytical data will be forwarded to the RPM and the Project Lead. Within 72 hours of sampling, CLP Laboratory preliminary data results will be available electronically. Within 7 days of sampling, CLP Laboratory validated data results will be available electronically and hard copy. Within 7 days of sampling, DESA Laboratory validated data results will be available electronically and hard copy.

**How will the data be archived?**
EPA will archive CLP and DESA Laboratory data.



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## QAPP Worksheet #12a
## Measurement Performance Criteria Table

**(UFP-QAPP Manual Section 2.6.2)**
Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQI), measurement performance criteria (MPC) and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | TCL Volatiles |
| **Concentration Level** | Low/Medium (ug/kg) |

| Sampling Procedure[1] | Analytical Method/SOP[2] | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| | SOM01.2 | Precision (field) | Project-Specific %RPD | Field Duplicate | S & A |
| | | Accuracy (field) | No analyte > CRQL* | Field Blank | S & A |
| | | Precision (laboratory) | Project-Specific %RPD; List compound specific RPD | Field Duplicate; MS/MSD** | S & A; A |
| | | Accuracy (laboratory) | List compound specific %R | ***DMCs; MS/MSD** | A |

[1]Reference number from QAPP Worksheet #21.
[2]Reference number from QAPP Worksheet #23.
*Reference USEPA Region 2 SOP No. 34/Trace VOA Trace VOA - Blank Type Criteria Table
****Optional*** MS/MSD – Reference CLP SOM01.2, Exhibit D, Table 6 for Criteria
***Deuterated Monitoring Compounds (DMCs) – Reference CLP SOM01.2, Exhibit D, Table 5 for Criteria



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## QAPP Worksheet #12b
## Measurement Performance Criteria Table

**(UFP-QAPP Manual Section 2.6.2)**

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQI), measurement performance criteria (MPC) and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | TCL Semivolatiles |
| **Concentration Level** | Low/Medium (ug/kg) |

| Sampling Procedure[1] | Analytical Method/SOP[2] | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| | SOM01.2 | Precision (field) | Project-Specific %RPD | Field Duplicate | S & A |
| | | Accuracy (field) | No analyte > CRQL* | Field Blank | S & A |
| | | Precision (laboratory) | Project-Specific %RPD; List compound specific RPD | Field Duplicate; MS/MSD** | S & A; A |
| | | Accuracy (laboratory) | List compound specific %R | ***DMCs; MS/MSD** | A |

[1]Reference number from QAPP Worksheet #21.
[2]Reference number from QAPP Worksheet #23.
*Reference USEPA Region 2 SOP No. 34/Trace VOA Trace VOA - Blank Type Criteria Table
****Optional** MS/MSD – Reference CLP SOM01.2, Exhibit D, Table 6 for Criteria
***Deuterated Monitoring Compounds (DMCs) – Reference CLP SOM01.2, Exhibit D, Table 5 for Criteria



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## QAPP Worksheet #12c
## Measurement Performance Criteria Table

**(UFP-QAPP Manual Section 2.6.2)**

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQI), measurement performance criteria (MPC) and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | TCL Pesticides |
| **Concentration Level** | Low/Medium (ug/kg) |

| Sampling Procedure[1] | Analytical Method/SOP[2] | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| | SOM01.2 | Precision (field) | Project-Specific %RPD | Field Duplicate | S & A |
| | | Accuracy (field) | No analyte > CRQL* | Field Blank | S & A |
| | | Precision (laboratory) | Project-Specific %RPD; List compound specific RPD | Field Duplicate; MS/MSD** | S & A; A |
| | | Accuracy (laboratory) | List compound specific %R | ***LCS; MS/MSD** | A |

[1]Reference number from QAPP Worksheet #21.
[2]Reference number from QAPP Worksheet #23.
*Reference USEPA Region 2 SOP No. 36/Low/Medium Pesticide - Blank Type Criteria Table
**MS/MSD – Reference CLP SOM01.2, Exhibit D, Table 3 for Criteria
***Laboratory Control Sample (LCS) – Reference CLP SOM01.2, Exhibit D, Table 2 for Criteria



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## QAPP Worksheet #12d
## Measurement Performance Criteria Table

**(UFP-QAPP Manual Section 2.6.2)**

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQI), measurement performance criteria (MPC) and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | TCL Aroclors (PCBs) |
| **Concentration Level** | Low/Medium (ug/kg) |

| Sampling Procedure[1] | Analytical Method/SOP[2] | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| | SOM01.2 | Precision (field) | Project-Specific %RPD | Field Duplicate | S & A |
| | | Accuracy (field) | No analyte > CRQL* | Field Blank | S & A |
| | | Precision (laboratory) | Project-Specific %RPD; List compound specific RPD | Field Duplicate; MS/MSD** | S & A; A |
| | | Accuracy (laboratory) | List compound specific %R | ***LCS; MS/MSD** | A |

[1]Reference number from QAPP Worksheet #21.
[2]Reference number from QAPP Worksheet #23.
*Reference USEPA Region 2 SOP No. 36/Low/Medium Pesticide - Blank Type Criteria Table
**MS/MSD – Reference CLP SOM01.2, Exhibit D, Table 3 for Criteria
***Laboratory Control Sample (LCS) – Reference CLP SOM01.2, Exhibit D, Table 2 for Criteria



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## QAPP Worksheet #12e
## Measurement Performance Criteria Table

**(UFP-QAPP Manual Section 2.6.2)**

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQI), measurement performance criteria (MPC) and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

| | |
|---|---|
| **Matrix** | Aqueous |
| **Analytical Group** | TAL Metals |
| **Concentration Level** | ICP-AES (ug/L) |

| Sampling Procedure[1] | Analytical Method/SOP[2] | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| | ILM05.4 | Precision (field) | ≤ 20% RPD* | Field Duplicate | S & A |
| | | Accuracy (field) | No analyte > CRQL* | Field Blank | S & A |
| | | Precision (laboratory) | ≤ 20% RPD* | Duplicate Sample ** | A |
| | | Accuracy (laboratory) | 75–125%;<br>80–120 % | *** Matrix Spike;<br>LCSW**** | A<br>A |

[1]Reference number from QAPP Worksheet #21.
[2]Reference number from QAPP Worksheet #23.
*Reference USEPA Region 2 SOP No. HW-2, Revision 13/Evaluation of Metals Data for CLP - (include absolute difference criteria)
**Reference USEPA CLP ILM05.4, Exhibit D of ICP-AES for Duplicate Sample Criteria - (include absolute difference criteria)
***Reference USEPA CLP ILM05.4, Exhibit D of ICP-AES for Spike Sample Criteria
****Reference USEPA CLP ILM05.4, Exhibit D of ICP-AES for aqueous Laboratory Control Sample (LCSW) Criteria w/exception of Ag and S



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## QAPP Worksheet #12f
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Aqueous/Soil/Sediment |
| **Analytical Group**[1] | Pb, As, Sb, Cu, and Cr. |
| **Concentration Level** | Low |

| Sampling Procedure[2] | Analytical Method/SOP[3] | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| NA | NA | Precision | % RPD < 20( Aq), % RPD <25(Soil/sediment) | LCS Duplicate | A |
| | | Accuracy | Limits: Average Recovery ± 20% aqueous, ± 25% (Soil/sediment) | LCS | A |
| | | Accuracy | ± 20% aqueous, ± 25% (Soil/sediment) | Matrix spike | A |
| | | Precision | < RL Except for Al, Fe, Ca, K, Mg and Na | Interference Check Sample(ICP/AES) | A |
| | | Accuracy | < RL | Method Blank | A |
| | | Precision | RPD < 20 % | Serial Dilution Test( ICP/AES) | A |
| | | Accuracy | Range of 0.60-1.87 of the original response in the calibration blank | Internal Standards( ICP-MS) | A |

1 Referenced number from QAPP Worksheet #21.
2 Referenced number from QAPP Worksheet #23.
3 Referenced number from QAPP Worksheet #23 and 28.



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## QAPP Worksheet #13
## Secondary Data Criteria and Limitations Table

| Secondary Data (in µg/m$^3$) | Data Source (Originating Organization, Report Title, and Date) | Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates) | How Data May Be Used (if deemed usable during data assessment stage) | Limitations on Data Use |
|---|---|---|---|---|
| NA | | | | |



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## QAPP Worksheet #14
## Summary of Project Tasks

**Sampling Tasks**: Locations for soil and sediment sampling were selected randomly by computer from the set of existing, previously, sampled locations. In Areas 1, 3, 5 and 6, new sample locations were proposed for soils and surface water to support both this effort and potentially the upcoming remedial investigation. All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. From this 0-6" paired data, a linear regression will be calculated to allow for future XRF correlations should additional data is needed to assess the suitability of recreational use of the beaches in Areas 5 and 6. In addition, a subset (30-50%) of samples in Area 5 and Area 6 will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24" for soil and sediments as humans are likely to be exposed to soil and sediment down to 2 feet. The XRF will be utilized for the same subsets at 6-12" and 12-24" for screening purposes only. See Attachment 1, EPA SOP SST 2 for usage instructions.

Below is a detailed table depicting sample locations in Areas 1, 3, 5 and 6, the number of samples, at what depth, and what will be analyzed at each sample depth and location. See Attachment 6 for site maps and sample locations. See section 4.1 in text portion for more details.

**TABLE 1. Sample Locations and Analytical Requirements**

| Matrix | Sampling Location(s) | Depth (inch) | Analytical Group(s) | Concentration Level | No. of Samples | Sampling SOP Reference | QC Samples |
|---|---|---|---|---|---|---|---|
| Soil | Area 3 19 sample locations | 0 – 2 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| Soil | Area 1 14 sample locations | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | |
| Soil | Area 5 31 sample locations | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 24 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 51 | SST #2 | |
| Sediment | Area 5 28 sample locations | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 21 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 46 | SST #2 | |
| Surface Water | Area 5 10 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2013 | 1 MS/MSD, 1 duplicate |
| Soil | Area 6 | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 11 | ERT # 2012 | |



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| Matrix | Sampling Location(s) | Depth (inch) | Analytical Group(s) | Concentration Level | No. of Samples | Sampling SOP Reference | QC Samples |
|---|---|---|---|---|---|---|---|
| | 14 sample locations | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 28 | SST #2 | |
| Sediment | Area 6<br>20 sample locations | 0 – 2 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 15 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sb, As, Cu, Cr | Low/Medium | 40 | SST #2 | |
| Surface Water | Area 6<br>12 locations | Surface | DESA – Pb, Sb, As, Cu, Cr | Low/Medium | 12 | ERT # 2013 | 1 MS/MSD, 1 duplicate |

**Analysis Tasks**:

CLP Laboratory

Soil samples collected from the playground (Area 3) and fenceline (Area 1) sampling location will be definitively analyzed for total metals (except Mercury and Cyanide), volatile organic compounds (VOC), semi-volatile organics (BNA), pesticides, and polychlorinated biphenols (PCB). Three depths will be taken from each sampling location at Area 3: 0-2", 0-6", 6-12". Only two depths will be taken from each sampling location at Area 1: 0-6", 6-12". A total of 85 field samples, plus 10 QC samples (5 MS/MSD and 5 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors from Areas 1 and 3, and shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

DESA Laboratory

Select samples collected at Area 5 and Area 6 will be sent to DESA Laboratory for confirmation analysis for lead (Pb), arsenic (As), chromium (Cr ) antimony (Sb), and copper (Cu). A total of 201 field samples, plus 22 QC samples (11 MS/MSD and 11 duplicates) will be collected by EPA Region II DESA/HWSB/SST and CDM contractors and hand-delivered to DESA Laboratory for analysis.

XRF Screening Tool

The XRF instrument will be utilized at all soil and sediment sample locations at Area 5 and Area 6, except for 0 – 2" depth. Since 0 – 6" for all soil and sediment sample locations will be screened with the XRF instrument, additional screening will not be needed at the 0 – 2" depth. A total of 165 samples will be analyzed for lead (Pb), arsenic (As), total chromium (Cr) antimony (Sb), and copper (Cu). The results are stored in the instrument electronically and will also be recorded by hand. See Attachment 1 for details on the instrument.



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**Quality Control Tasks:** Sediment, soil, and surface water samples will have one or more of the following QC samples analyzed: field duplicates, matrix spike/matrix spike duplicate, temperature blank, rinsate blank and all other QA/QC samples as defined in the method. Area 1 - 2 MS/MSD and 2 duplicates; Area 3 - 3 MS/MSD and 3 duplicates; Area 5 - 7 MS/MSD and 7 duplicates; Area 6 - 6 MS/MSD and 6 duplicates. One rinsate blank will be collected for the decontamination process of stainless steel scoops and bowls used in Areas 1 and 3 for organic analyses. See worksheet #20 for the field quality control sample summary table.

**Data Management Tasks:** Data management tasks include data receipt, checking, uploading, usability evaluations, and the preparation of reports, tables, and figures. The sample handling and custody requirements, including field logbook and generation of sample paperwork, sample labels are discussed in worksheets #26 and #27. Analytical data collected during the field effort will be entered into an appropriate relational database management system (DBMS) software and/or standard commercial software packages. This system will include both location and environmental data. Data tables that compare the results of the various sampling efforts will be prepared and evaluated. Data tables that illustrate statistical trends from tests performed on the data will be prepared. Figures that illustrate monotonic changes will be prepared.

Data management will utilize personal computers, local area networks, and electronic communications to support the software.

**Assessment/Audit Tasks:** No performance audit of field operations is anticipated at this time. If conducted, performance and systems audits will be in accordance with the U.S. EPA Region 2, SST SOP #01, Performing Oversight of CERCLA Field Operations, Revision 0, April 2000.

**Data Review Tasks:** All data will be validated by USEPA DESA Laboratory in accordance to *USEPA SOP Guidance for Laboratory Data Review,* SOP # G-26, Revision 1, August 2008; and DESA HWSB for the CLP Laboratory generated data in accordance to *USEPA Validation of Metals for the Contract Laboratory Program (CLP) based on SOW ILMO5.3* SOP HW-2, Revision 13, September 2006*; USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Volatile Organic Compounds SOM01.2,* SOP HW-33, Revision 2, November 2008; . *Data Validation USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Semivolatile Organic Compounds SOM01.2,* SOP HW-35, Revision 3, August 2007; *Pesticide Data Validation USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Pesticide Organic Compounds SOM01.2,* SOP HW-36, Revision 2, August 2008; and *Aroclor Validation of Data USEPA Contract Laboratory Program Statement of Work for Organic Analysis of Low/Medium Concentration of Aroclor Organic Compounds SOM01.2,* SOP HW-37, Revision1, August 2007.



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## QAPP Worksheet #15
## Reference Limits and Evaluation Table

**Matrix:** Aqueous
**Analytical Group:** Metals-ICP/AES
**Concentration Level:** Low/medium

| Analyte | CAS Number | NJDEP Saline Surface water human health Standards (ug/L)* | Method CRQLs µg/l | Achievable Laboratory (DESA) Limits MDLs µg/l | RLs µg/l |
|---|---|---|---|---|---|
| Antimony | 7440-36-0 | 640 | 60 | 0.71 | 20 |
| Arsenic | 7440-38-2 | 0.061 | 10 | 2.26 | 8 |
| Chromium | 7440-47-3 | 750 | 10 | 0.22 | 6 |
| Copper | 7440-50-8 | -- | 25 | 5.89 | 10 |
| Lead | 7439-92-1 | -- | 10 | 1.18 | 7 |

*New Jersey Department of Environmental Protection (NJDEP) - SURFACE WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES, January 4, 2010.



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## QAPP Worksheet #15
## Reference Limits and Evaluation Table

**Matrix:** Soil/Sediment
**Analytical Group:** Metals - ICPAES
**Concentration Level:** Low/medium

| Analyte | CAS Number | NJDEP Residential Soil Cleanup Criteria (mg/kg)* | Method CRQLs mg/kg | Achievable Laboratory (DESA) Limits | |
|---|---|---|---|---|---|
| | | | | MDLs mg/kg | RLsmg/kg |
| Antimony | 7440-36-0 | 14 | 6 | 0.22 | 2 |
| Arsenic | 7440-38-2 | 20 | 1 | 0.35 | 0.8 |
| Chromium | 7440-47-3 | -- | 1 | 0.34 | 0.5 |
| Copper | 7440-50-8 | 600 | 2.5 | 0.26 | 1 |
| Lead | 7439-92-1 | 400 | 1 | 0.23 | 0.8 |

*New Jersey Department of Environmental Protection (NJDEP) - Direct Contact Soil Cleanup Criteria, May 12, 1999.



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# QAPP Worksheet #15
## Reference Limits and Evaluation Table

**Matrix:** Soil**
**Analytical Group:** Target Compound List Volatile Organic Compounds
**Concentration Level:** Low and Medium

| Analyte | | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 (Low) Quantitation Limits (mg/kg) | Analytical Method – SOM01.2 (Medium) Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| | | | Residential | Non-Residential | Impact to GW | | | |
| Dichlorodifluoromethane | | 75-71-8 | | | | | 0.005 | 0.25 |
| Chloromethane | | 74-87-3 | 520 | 1000 | 10 | | 0.005 | 0.25 |
| Vinyl Chloride | | 75-01-4 | 2.0 | 7.0 | 10 | | 0.005 | 0.25 |
| Bromomethane | | 74-83-9 | 79 | 1000 | 1.0 | | 0.005 | 0.25 |
| Chloroethane | | 75-00-3 | | | | | 0.005 | 0.25 |
| Trichlorofluoromethane | | 75-69-4 | | | | | 0.005 | 0.25 |
| 1,1-Dichloroethene | | 75-35-4 | 8.0 | 150 | 10 | | 0.005 | 0.25 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | | 76-13-1 | | | | | 0.005 | 0.25 |
| Acetone | | 67-64-1 | 1000 | 1000 | 100 | | 0.01 | 0.5 |
| Carbon Disulfide | | 75-15-0 | | | | | 0.005 | 0.25 |
| Methyl Acetate | | 79-20-9 | | | | | 0.005 | 0.25 |
| Methylene Chloride | | 75-09-2 | 49 | 210 | 1.0 | | 0.005 | 0.25 |
| trans-1,2-Dichloroethene | | 156-60-5 | 1000 | 1000 | 50 | | 0.005 | 0.25 |
| Methyl tert-Butyl Ether | | 1634-04-4 | | | | | 0.005 | 0.25 |
| 1,1-Dichloroethane | | 75-34-3 | 570 | 1000 | 10 | | 0.005 | 0.25 |
| cis-1,2-Dichloroethene | | 156-59-2 | 79 | 1000 | 1.0 | | 0.005 | 0.25 |
| 2-Butanone | | 78-93-3 | 1000 | 1000 | 50 | | 0.01 | 0.5 |
| Chloroform | | 67-66-3 | 19 | 28 | 1.0 | | 0.005 | 0.25 |
| 1,1,1-Trichloroethane | | 71-55-6 | 210 | 1000 | 50 | | 0.005 | 0.25 |
| Cyclohexane | | 110-82-7 | | | | | 0.005 | 0.25 |
| Carbon Tetrachloride | | 56-23-5 | 2.0 | 4.0 | 1.0 | | 0.005 | 0.25 |
| Benzene | | 71-43-2 | 3.0 | 13 | 1.0 | | 0.005 | 0.25 |
| 1,2-Dichloroethane | | 107-06-2 | 6.0 | 24 | 1.0 | | 0.005 | 0.25 |
| Trichloroethene | | 79-01-6 | 23 | 54 | 1.0 | | 0.005 | 0.25 |
| Methylcyclohexane | | 108-87-2 | | | | | 0.005 | 0.25 |
| 1,2-Dichloropropane | | 78-87-5 | 10 | 43 | | | 0.005 | 0.25 |
| Bromodichloromethane | | 75-27-4 | 11 | 46 | 1.0 | | 0.005 | 0.25 |
| cis-1,3-Dichloropropene | | 10061-01-5 | 4.0 | 5.0 | 1.0 | | 0.005 | 0.25 |
| 4-Methyl-2-Pentanone | | 108-10-1 | 1000 | 1000 | 50 | | 0.01 | 0.5 |

**For detailed references, see Footnotes below.**



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# QAPP Worksheet #15
# Reference Limits and Evaluation Table

**Matrix:** Soil **
**Analytical Group:** Target Compound List Volatile Organic Compounds - Continued
**Concentration Level:** Low and Medium

| Analyte | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 (Low) Quantitation Limits (mg/kg) | Analytical Method – SOM01.2 (Medium) Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|---|
| | | Residential | Non-Residential | Impact to GW | | | |
| Toluene | 108-88-3 | 1000 | 1000 | 500 | | 0.005 | 0.25 |
| trans-1,3-Dichloropropene | 10061-02-6 | 4.0 | 5.0 | 1.0 | | 0.005 | 0.25 |
| 1,1,2-Trichloroethane | 79-00-5 | 22 | 420 | 1.0 | | 0.005 | 0.25 |
| Tetrachloroethene | 127-18-4 | 4.0 | 6.0 | 1.0 | | 0.005 | 0.25 |
| 2-Hexanone | 591-78-6 | | | | | 0.01 | 0.5 |
| Dibromochloromethane | 124-48-1 | 110 | 1000 | 1.0 | | 0.005 | 0.25 |
| 1,2-Dibromoethane | 106-93-4 | | | | | 0.005 | 0.25 |
| Chlorobenzene | 108-90-7 | 37 | 680 | 1.0 | | 0.005 | 0.25 |
| Ethylbenzene | 100-41-4 | 1000 | 1000 | 100 | | 0.005 | 0.25 |
| Xylenes (total) | 1330-20-7 | 410 | 1000 | 67 | | 0.005 | 0.25 |
| Styrene | 100-42-5 | 23 | 97 | 100 | | 0.005 | 0.25 |
| Bromoform | 75-25-2 | 86 | 370 | 1.0 | | 0.005 | 0.25 |
| Isopropylbenzene | 98-82-8 | | | | | 0.005 | 0.25 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 34 | 70 | 1.0 | | 0.005 | 0.25 |
| 1,3-Dichlorobenzene | 541-73-1 | 5100 | 10,000 | 100 | | 0.005 | 0.25 |
| 1,4-Dichlorobenzene | 106-46-7 | 570 | 10,000 | 100 | | 0.005 | 0.25 |
| 1,2-Dichlorobenzene | 95-50-1 | 5100 | 10,000 | 50 | | 0.005 | 0.25 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | | | | | 0.005 | 0.25 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 68 | 1200 | 100 | | 0.005 | 0.25 |

*New Jersey Department of Environmental Protection (NJDEP) - Direct Contact Soil Cleanup Criteria, May 12, 1999.
** For sediment guidance values refer to the NJDEP Guidance for Sediment Quality Evaluations, November 1998.

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# QAPP Worksheet #15
## Reference Limits and Evaluation Table

**Matrix:** Soil**
**Analytical Group:** Target Compound List – Semi-Volatile Organic Compounds
**Concentration Level:** Low and Medium

| Analyte | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 (Low) Quantitation Limits (mg/kg) | Analytical Method – SOM01.2 (Medium) Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| | | Residential | Non-Residential | Impact to GW | | | | |
| 1,1'-Biphenyl | 92-52-4 | | | | | | 0.17 | 5.0 |
| 2,2'-oxybis(1-Chloropropane) | 108-60-1 | | | | | | 0.17 | 5.0 |
| 2,4,5-Trichlorophenol | 95-95-4 | 5600 | 10,000 | 50 | | | 0.17 | 5.0 |
| 2,4,6-Trichlorophenol | 88-06-2 | 62 | 270 | 10 | | | 0.17 | 5.0 |
| 2,4-Dichlorophenol | 120-83-2 | 170 | 3100 | 10 | | | 0.17 | 5.0 |
| 2,4-Dimethylphenol | 105-67-9 | 1100 | 10,000 | 10 | | | 0.17 | 5.0 |
| 2,4-Dinitrophenol | 51-28-5 | 110 | 2100 | 10 | | | 0.33 | 10 |
| 2,4-Dinitrotoluene | 121-14-2 | 1 | 4 | 10 | | | 0.17 | 5.0 |
| 2,6-Dinitrotoluene | 606-20-2 | 1 | 4 | 10 | | | 0.17 | 5.0 |
| 2-Chloronaphthalene | 91-58-7 | | | | | | 0.17 | 5.0 |
| 2-Chlorophenol | 95-57-8 | 280 | 5200 | 10 | | | 0.17 | 5.0 |
| 2-Methylnaphthalene | 91-57-6 | | | | | | 0.17 | 5.0 |
| 2-Methylphenol (o-cresol) | 95-48-7 | 2800 | 10000 | | | | 0.17 | 5.0 |
| 2-Nitroaniline | 88-74-4 | | | | | | 0.33 | 10 |
| 2-Nitrophenol | 88-75-5 | | | | | | 0.17 | 5.0 |
| 3,3'-Dichlorobenzidine | 91-94-1 | 2 | 6 | 100 | | | 0.17 | 5.0 |
| 3-Nitroaniline | 99-09-2 | | | | | | 0.33 | 10 |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | | | | | | 0.33 | 10 |
| 4-Bromophenyl-phenylether | 101-55-3 | | | | | | 0.17 | 5.0 |
| 4-Chloro-3-methylphenol | 59-50-7 | 10,000 | 10,000 | 100 | | | 0.17 | 5.0 |
| 4-Chloroaniline | 106-47-8 | 230 | 4200 | | | | 0.17 | 5.0 |
| 4-Chlorophenyl-phenyl ether | 7005-72-3 | | | | | | 0.17 | 5.0 |
| 4-Methylphenol (p-cresol) | 106-44-5 | 2800 | 10,000 | | | | 0.17 | 5.0 |
| 4-Nitroaniline | 100-01-6 | | | | | | 0.33 | 10 |
| 4-Nitrophenol | 100-02-7 | | | | | | 0.33 | 10 |
| Acenaphthene | 83-32-9 | 3400 | 10,000 | 100 | | | 0.17 | 5.0 |
| Acenaphthylene | 208-96-8 | | | | | | 0.17 | 5.0 |
| Acetophenone | 98-86-2 | | | | | | 0.17 | 5.0 |
| Anthracene | 120-12-7 | 10,000 | 10,000 | 100 | | | 0.17 | 5.0 |

**For detailed references, see Footnotes below.**



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# QAPP Worksheet #15
# Reference Limits and Evaluation Table

**Matrix:** Soil**
**Analytical Group:** Target Compound List – Semi-Volatile Organic Compounds - Continued
**Concentration Level:** Low and Medium

| Analyte | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 (Low) Quantitation Limits (mg/kg) | Analytical Method – SOM01.2 (Medium) Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| | | Residential | Non-Residential | Impact to GW | | | | |
| Atrazine | 1912-24-9 | | | | | | 0.17 | 5.0 |
| Benzaldehyde | 100-52-7 | | | | | | 0.17 | 5.0 |
| Benzo(a)anthracene | 56-55-3 | 0.9 | 4 | 500 | | | 0.17 | 5.0 |
| Benzo(a)pyrene | 50-32-8 | 0.66 | 0.66 | 100 | | | 0.17 | 5.0 |
| Benzo(b)fluoranthene | 205-99-2 | 0.9 | 4 | 50 | | | 0.17 | 5.0 |
| Benzo(g,h,i)perylene | 191-24-2 | | | | | | 0.17 | 5.0 |
| Benzo(k)fluoranthene | 207-08-9 | 0.9 | 4 | 500 | | | 0.17 | 5.0 |
| Bis(2-Chloroethoxy)methane | 111-91-1 | | | | | | 0.17 | 5.0 |
| Bis-(2-Chloroethyl) ether | 111-44-4 | 0.66 | 3 | 10 | | | 0.17 | 5.0 |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 49 | 210 | 100 | | | 0.17 | 5.0 |
| Butylbenzylphthalate | 85-68-7 | 1100 | 10,000 | 100 | | | 0.17 | 5.0 |
| Caprolactam | 105-60-2 | | | | | | 0.17 | 5.0 |
| Carbazole | 86-74-8 | | | | | | 0.17 | 5.0 |
| Chrysene | 218-01-9 | 9 | 40 | 500 | | | 0.17 | 5.0 |
| Dibenzo(a,h)anthracene | 53-70-3 | 0.66 | 0.66 | 100 | | | 0.17 | 5.0 |
| Dibenzofuran | 132-64-9 | | | | | | 0.17 | 5.0 |
| Diethylphthalate | 84-66-2 | 10,000 | 10,000 | 50 | | | 0.17 | 5.0 |
| Dimethylphthalate | 131-11-3 | 10,000 | 10,000 | 50 | | | 0.17 | 5.0 |
| Di-n-butylphthalate | 84-74-2 | 5700 | 10,000 | 100 | | | 0.17 | 5.0 |
| Di-n-octylphthalate | 117-84-0 | 1100 | 10,000 | 100 | | | 0.17 | 5.0 |
| Fluoranthene | 206-44-0 | 2300 | 10,000 | 100 | | | 0.17 | 5.0 |
| Fluorene | 86-73-7 | 2300 | 10,000 | 100 | | | 0.17 | 5.0 |
| Hexachlorobenzene | 118-74-1 | 0.66 | 2 | 100 | | | 0.17 | 5.0 |
| Hexachlorobutadiene | 87-68-3 | 1 | 21 | 100 | | | 0.17 | 5.0 |
| Hexachlorocyclopentadiene | 77-47-4 | 400 | 7300 | 100 | | | 0.17 | 5.0 |
| Hexachloroethane | 67-72-1 | 6 | 100 | 100 | | | 0.17 | 5.0 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 0.9 | 4 | 500 | | | 0.17 | 5.0 |

**For detailed references, see Footnotes below.**



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# QAPP Worksheet #15
## Reference Limits and Evaluation Table

**Matrix:** Soil**
**Analytical Group:** Target Compound List – Semi-Volatile Organic Compounds - Continued
**Concentration Level:** Low and Medium

| Analyte | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 (Low) Quantitation Limits (mg/kg) | Analytical Method – SOM01.2 (Medium) Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| | | Residential | Non-Residential | Impact to GW | | | | |
| Isophorone | 78-59-1 | 1100 | 10,000 | 50 | | | 0.17 | 5.0 |
| Naphthalene | 91-20-3 | 230 | 4200 | 100 | | | 0.17 | 5.0 |
| Nitrobenzene | 98-95-3 | 28 | 520 | 10 | | | 0.17 | 5.0 |
| N-Nitrosodiphenylamine | 86-30-6 | 140 | 600 | 100 | | | 0.17 | 5.0 |
| N-Nitroso-di-n-propylamine | 621-64-7 | 0.66 | 0.66 | 10 | | | 0.17 | 5.0 |
| Pentachlorophenol | 87-86-5 | 6 | 24 | 100 | | | 0.33 | 10 |
| Phenanthrene | 85-01-8 | | | | | | 0.17 | 5.0 |
| Phenol | 108-95-2 | 10,000 | 10,000 | 50 | | | 0.17 | 5.0 |
| Pyrene | 129-00-0 | 1700 | 10,000 | 100 | | | 0.17 | 5.0 |

*New Jersey Department of Environmental Protection (NJDEP) - Direct Contact Soil Cleanup Criteria, May 12, 1999.
** For sediment guidance values refer to the NJDEP Guidance for Sediment Quality Evaluations, November 1998.



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# QAPP Worksheet #15
## Reference Limits and Evaluation Table

**Matrix:** Soil**
**Analytical Group:** Target Compound List Pesticides
**Concentration Level:** Low

| Analyte | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|---|
| | | Residential | Non-Residential | Impact to GW | | | |
| alpha-BHC | 319-84-6 | | | | | | 0.0017 |
| beta-BHC | 319-85-7 | | | | | | 0.0017 |
| delta-BHC | 319-86-8 | | | | | | 0.0017 |
| gamma-BHC (Lindane) | 58-89-9 | 0.52 | 2.2 | 50 | | | 0.0017 |
| Heptachlor | 76-44-8 | 0.15 | 0.65 | 50 | | | 0.0017 |
| Aldrin | 309-00-2 | 0.04 | 0.17 | 50 | | | 0.0017 |
| Heptachlor epoxide | 1024-57-3 | | | | | | 0.0017 |
| Endosulfan I | 959-98-8 | | | | | | 0.0017 |
| Dieldrin | 60-57-1 | 0.042 | 0.18 | 50 | | | 0.0033 |
| 4,4'-DDE | 72-55-9 | 2 | 9 | 50 | | | 0.0033 |
| Endrin | 72-20-8 | 17 | 310 | 50 | | | 0.0033 |
| Endosulfan II | 33213-65-9 | | | | | | 0.0033 |
| 4,4'-DDD | 72-54-8 | 3 | 12 | 50 | | | 0.0033 |
| Endosulfan sulfate | 1031-07-8 | | | | | | 0.0033 |
| 4,4'-DDT | 50-29-3 | 2 | 9 | 500 | | | 0.0033 |
| Methoxychlor | 72-43-5 | 280 | 5200 | 50 | | | 0.017 |
| Endrin ketone | 53494-70-5 | | | | | | 0.0033 |
| Endrin aldehyde | 7421-93-4 | | | | | | 0.0033 |
| alpha-Chlordane | 5103-71-9 | | | | | | 0.0017 |
| gamma-Chlordane | 5103-74-2 | | | | | | 0.0017 |
| Toxaphene | 8001-35-2 | 0.10 | 0.2 | 50 | | | 0.17 |

*New Jersey Department of Environmental Protection (NJDEP) - Direct Contact Soil Cleanup Criteria, May 12, 1999.
** For sediment guidance values refer to the NJDEP Guidance for Sediment Quality Evaluations, November 1998.



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# QAPP Worksheet #15
# Reference Limits and Evaluation Table

**Matrix:** Soil**
**Analytical Group:** Target Compound List Aroclors (PCBs)
**Concentration Level:** Low

| Analyte | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|---|
| | | Residential | Non-Residential | Impact to GW | | | |
| Aroclor-1016 | 12674-11-2 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1221 | 11104-28-2 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1232 | 11141-16-5 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1242 | 53469-21-9 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1248 | 12672-29-6 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1254 | 11097-69-1 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1260 | 11096-82-5 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1262 | 37324-23-5 | 0.49 | 2 | 50 | | | 0.033 |
| Aroclor-1268 | 11100-14-4 | 0.49 | 2 | 50 | | | 0.033 |

*New Jersey Department of Environmental Protection (NJDEP) - Direct Contact Soil Cleanup Criteria, May 12, 1999.
** For sediment guidance values refer to the NJDEP Guidance for Sediment Quality Evaluations, November 1998.



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# QAPP Worksheet #15
# Reference Limits and Evaluation Table

**Matrix:** Soil**
**Analytical Group:** Target Analyte List Inorganics (except Mercury and Cyanide)
**Concentration Level:** Low

| Analyte | CAS Number | NJDEP Soil Cleanup Criteria (mg/kg)* | | | Project Quantiation Limit (mg/kg) | Analytical Method – SOM01.2 Quantitation Limits (mg/kg) |
|---|---|---|---|---|---|---|
| | | Residential | Non-Residential | | | |
| Aluminum | 7429-90-5 | | | | | 20 |
| Antimony | 7440-36-0 | 14 | 340 | | | 6 |
| Arsenic | 7440-38-2 | 20 | 20 | | | 1 |
| Barium | 7440-39-3 | 700 | 47,000 | | | 20 |
| Beryllium | 7440-41-7 | 2 | 2 | | | 0.5 |
| Cadmium | 7440-43-9 | 39 | 100 | | | 0.5 |
| Calcium | 7440-70-2 | | | | | 500 |
| Chromium | 7440-47-3 | | | | | 1 |
| Cobalt | 7440-48-4 | | | | | 5 |
| Copper | 7440-50-8 | 600 | 600 | | | 2.5 |
| Iron | 7439-89-6 | | | | | 10 |
| Lead | 7439-92-1 | 400 | 600 | | | 1 |
| Magnesium | 7439-95-4 | | | | | 500 |
| Manganese | 7439-96-5 | | | | | 1.5 |
| Nickel | 7440-02-0 | 250 | 2400 | | | 4 |
| Potassium | 7440-09-7 | | | | | 500 |
| Selenium | 7782-49-2 | 63 | 3100 | | | 3.5 |
| Silver | 7440-22-4 | 110 | 4100 | | | 1 |
| Sodium | 7440-23-5 | | | | | 500 |
| Thallium | 7440-28-0 | 2 | 2 | | | 2.5 |
| Vanadium | 7440-62-2 | 370 | 7100 | | | 5 |
| Zinc | 7440-66-6 | 1500 | 1500 | | | 6 |
| Cyanide | 57-12-5 | 1100 | 21,000 | | | 2.5 |

*New Jersey Department of Environmental Protection (NJDEP) - Direct Contact Soil Cleanup Criteria, May 12, 1999.
** For sediment guidance values refer to the NJDEP Guidance for Sediment Quality Evaluations, November 1998.



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## QAPP Worksheet #16
## Project Schedule/Timeline Table

| Activities | Organization | Dates (MM/DD/YY) | | Deliverable | Deliverable Due Date |
|---|---|---|---|---|---|
| | | Anticipated Date(s) of Initiation | Anticipated Date of Completion | | |
| Preparation of QAPP | EPA/DESA/SST | 4/28/10 | 5/05/10 | QAPP | 5/07/10 |
| Procurement of Equipment | EPA/DESA/SST | N/A | N/A | N/A | N/A |
| Laboratory Request | EPA/DESA/SST | 4/21/10 | 4/21/10 | Analytical Request Form | 4/28/10 |
| Field Reconnaissance/Access | EPA/DESA/SST | 5/10/10 | 5/10/10 | N/A | N/A |
| Collection of Field Samples | EPA/DESA/SST | 5/10/10 | 5/21/10 | N/A | N/A |
| Preliminary laboratory Results | EPA DESA and CLP Laboratory | 72 hours after sample collection | 5/26/10 | Preliminary data Packages | 5/26/10 |
| Validation of DESA Laboratory Results | EPA DESA Laboratory | 5/17/10 | 5/28/10 | Validated data Packages | 5/29/10 |
| Validation of CLP Laboratory Results | EPA/DESA/HWSS | 5/17/10 | 5/28/10 | Validated data Packages | 5/29/10 |
| Data Evaluation | EPA/ERRD/SPB | 5/20/10 | 5/26/10 | N/A | 5/28/10 |
| Preparation of Final Report | EPA/DESA/SST | 7/09/10 | 7/09/10 | Final Report | 7/09/10 |



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## QAPP Worksheet #17
## Sampling Design and Rationale

### Site Access

The EPA RPM will be responsible for providing site access to the Sampling Team.

### Field Planning

Prior to each field mobilization, each team member will review all project plans and participate in a field planning meeting. The meeting will be conducted by the EPA HWSB/SST Project Lead and attended by all field staff. The meeting objective is to allow team members to become familiar with the site history, special project requirements, and other items listed below.

-Objectives of field work
-Equipment and training needs
-Health and safety requirements
-Field operating procedures, schedules of events, communications, and individual assignments
-Required QC measures
-Documents governing field work that must be on site

### Describe and provide a rationale for choosing the approach:

All soil and sediment sample descriptions will be recorded and identified in a log fieldbook. Sample and field photographs may be captured during the duration of the project.

AREAS 1 and 3 – Soil
All soil samples in Area 3 will be collected at 0-2", 0 - 6" and 6 - 12" depths using stainless steel scoops and bowls or aluminum trays. Area 1 samples will be collected at 0 - 6" and 6 - 12" depths only. Co-located samples will be collected at 0-2"and 0 - 6" depths. The samples will be homogenized in the bowls/trays before distributing into Teflon-lined glass jars. VOC, SVOC, PCB, PEST, TM, % Moisture analysis will be collected from each sample location and depth. VOC samples will be collected using encore samplers, see Attachment 2 for SOP. Samples will be shipped via UPS to CLP Laboratories for analysis within 24 hours of sample collection.

AREA 5 and 6 – Soil and Sediment
All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. See Attachment 1 for EPA SOP on XRF instrument. Fixed lab samples will be collected using disposable sterile plastic scoops and placed into ziplock bags for homogenization before distributing into Teflon-lined glass jars. Pb, Sn, As, Cu, Cr will be analyzed from each sample location and depth. Samples will be hand-delivered to DESA Laboratory for analysis within 24 hours of sample collection.

In addition, a subset of samples in Areas 5 and 6 will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24", as humans are likely to be exposed to soil down to 2 feet. The samples collected at



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depth (6-12" and 12-24") will be both XRFed and sampled using an acetate sleeve or stainless steel auger, see Attachment 2 and 3 for procedures. Co-located samples will be collected for DESA Laboratory at 0-2"and 0 - 6" depths. The 0-2" sample will be collected using a sterile plastic scoop and placed into ziplock bags for homogenization before distributing into Teflon-lined glass jars. The 0-2"depth will not be XRFed. .

AREA 5 and 6 – Surface Water
All surface water samples will be collected using the direct-grab method, see Attachment 4 for procedure. The collection of surface water will be dependent on the tidal schedule. The samples will preserved with nitric acid and sent to DESA Laboratory for analysis of Pb, Sn, As, Cu, Cr. The samples collected will not be XRFed.

**Sample selection Rationale:**

Locations for soil and sediment sampling were selected randomly by computer from the set of existing, previously, sampled locations. In Areas 1, 3, 5 and 6, new sample locations were proposed for soils and surface water to support both this effort and potentially the upcoming remedial investigation. All soil samples in Area 3 will be collected at 0-2″, 0 - 6″ and 6 - 12″ depths for VOC, SVOC, PCB, PEST, TM, % Moisture analyses. Area 1 samples will be collected at 0 - 6″ and 6 - 12″ depths only for VOC, SVOC, PCB, PEST, TM, % Moisture analyses. All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. From this 0-6" paired data, a linear regression will be calculated to allow for future XRF correlations should additional data is needed to assess the suitability of recreational use of the beaches in Areas 5 and 6. In addition, a subset (30-50%) of samples in Area 5 and Area 6 will be analyzed by DESA Laboratory at 0-2", 6-12" and 12-24" for soil and sediments as humans are likely to be exposed to soil and sediment down to 2 feet. The XRF will be utilized for the same subsets at 6-12" and 12-24" for screening purposes only. See Attachment 1, EPA SOP SST 2 for XRF usage instructions.

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## QAPP Worksheet #18
## Sampling Locations and Methods/SOP Requirements Table

| Matrix | Sampling Location(s) | Depth (inch) | Analytical Group(s) | Concentration Level | No. of Samples | Sampling SOP Reference | QC Samples |
|---|---|---|---|---|---|---|---|
| Soil | Area 3 19 sample locations | 0 – 2 stainless steel spoon | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 19 | ERT # 2012 | |
| Soil | Area 1 14 sample locations | 0 – 6 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 6 – 12 | CLP - VOC, SVOC, PCB, PEST, TM, % Moisture | Low/Medium | 14 | ERT # 2012 | |
| Soil | Area 5 31 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 24 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 10 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sn, As, Cu, Cr | Low/Medium | 51 | SST SOP # 2 | |
| Sediment | Area 5 28 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 21 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 9 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sn, As, Cu, Cr | Low/Medium | 46 | SST SOP # 2 | |
| Surface Water | Area 5 10 locations | Surface | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 10 | ERT # 2013 | 1 MS/MSD, 1 duplicate |
| Soil | Area 6 14 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | 2 MS/MSD, 2 duplicates |
| | | 0 – 6 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 11 | ERT # 2012 | |
| | | 6 – 12 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 12 - 24 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 7 | ERT # 2012 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sn, As, Cu, Cr | Low/Medium | 28 | SST SOP # 2 | |
| Sediment | Area 6 20 sample locations | 0 – 2 disposable scoop | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | 3 MS/MSD, 3 duplicates |
| | | 0 – 6 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 15 | ERT # 2016 | |
| | | 6 – 12 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 12 - 24 | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 10 | ERT # 2016 | |
| | | 0 – 6, 6-12, 12-24 | XRF - Pb, Sn, As, Cu, Cr | Low/Medium | 40 | SST SOP # 2 | |
| Surface Water | Area 6 12 locations | Surface | DESA – Pb, Sn, As, Cu, Cr | Low/Medium | 12 | ERT # 2013 | 1 MS/MSD, 1 duplicate |



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# QAPP Worksheet #19
# Analytical SOP Requirements Table

| Matrix | Total No. of Samples, with QC* | Analytical Group [Lab Assignment] | Concentration Level | Analytical and Preparation Method/SOP Reference | Sample Volume | Containers (number, size, and type) | Preservation Requirements | Maximum Holding Time (preparation/ analysis) |
|---|---|---|---|---|---|---|---|---|
| Soil 270 total | 95 | CLP | Low | SOM01.2 ILM05.4 | 2 – 8 oz jars, 1 – 4 oz jar, 1 – 2 oz jar, 3 encores | Teflon-lined Glass or Plastic | Cool to < 6 degrees C | 6 months |
| | 96 | EPA DESA | Low | C-109 | 4 oz. | Teflon-lined Glass or Plastic | | |
| | 79 | XRF | Low | SOP SST # 2 | 5 grams | Teflon-lined Plastic | | |

| Matrix | Total No. of Samples, with QC* | Analytical Group [Lab Assignment] | Concentration Level | Analytical and Preparation Method/SOP Reference | Sample Volume | Containers (number, size, and type) | Preservation Requirements | Maximum Holding Time (preparation/ analysis) |
|---|---|---|---|---|---|---|---|---|
| Sediment | 105 | EPA DESA | Low | C-109 | 4 oz. | Teflon-lined Glass or Plastic | Cool to < 6 degrees C | 6 months |
| | 86 | XRF | Low | SOP SST # 2 | 5 grams | Teflon-lined Plastic | | |

| Matrix | Total No. of Samples, with QC* | Analytical Group [Lab Assignment] | Concentration Level | Analytical and Preparation Method/SOP Reference | Sample Volume | Containers (number, size, and type) | Preservation Requirements | Maximum Holding Time (preparation/ analysis) |
|---|---|---|---|---|---|---|---|---|
| Surface Water | 26 | EPA DESA | Low | C-109 | 125 ml. | Teflon-lined Glass or Plastic | $HNO_3$, ice | 6 months |

* QC includes MS/MSD and duplicate



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## QAPP Worksheet #20
## Field Quality Control Sample Summary Table

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation SOP Reference | No. of Samples | No. of Field Duplicate Pairs | No. of Extra Volume Laboratory QC (e.g., MS/MSD) Samples |
|---|---|---|---|---|---|---|
| Soil | CLP – VOC, SVOC, PCB, PEST, TM | Low | SOM01.2<br>ILM05.4 | 85 (+5 field duplicates) | 1/20 samples collected | 3 x 8 oz total for PCB/PEST only |
| | DESA - Metals | Low | C-109 | 86 (+ 5 field duplicates) | 1/20 samples collected | 2 x 4 oz |

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation SOP Reference | No. of Sampling Locations | No. of Field Duplicate Pairs | No. of Extra Volume Laboratory QC (e.g., MS/MSD) Samples |
|---|---|---|---|---|---|---|
| Sediment | DESA - Metals | Low | C-109 | 93 (+ 5 field duplicates) | 1/20 samples collected | 2 x 4 oz |

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation SOP Reference | No. of Sampling Locations | No. of Field Duplicate Pairs | No. of Extra Volume Laboratory QC (e.g., MS/MSD) Samples |
|---|---|---|---|---|---|---|
| Surface Water | DESA - Metals | Low | C-109 | 22 (+ 2 field duplicate) | 1/20 samples collected | 2 x 125 ml |



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# QAPP Worksheet #21
# Project Sampling SOP References Table

| Reference Number | Title, Revision Date and/or Number | Originating Organization | Equipment Type | Modified for Project Work? (Y/N) | Comments |
|---|---|---|---|---|---|
| 2016 | Environmental Response Team (ERT), US EPA. *Sediment Sampling*, SOP No.2016, Revision 0.0. November 17, 1994. | EPA/OSWER/ERT | Ziplock bags, plastic sterile scoops, acetate sleeves, Teflon-lined glass/plastic jars. | | |
| 2012 | Environmental Response Team (ERT), US EPA. *Soil Sampling*, SOP No.2012, Revision 1.0. July 11, 2001. | EPA/OSWER/ERT | Stainless steel bowls or aluminum trays, ziplock bags, plastic sterile scoops or stainless steel spoons, acetate sleeves, Teflon-lined glass/plastic jars. | | For beach areas, ziplock bags and scoops will be utilized |
| 2013 | Environmental Response Team (ERT), US EPA. *Surface Water Sampling*, SOP No.2013, Revision 1.0. November 17, 2002 | EPA/OSWER/ERT | Teflon-lined glass/plastic jars. | | |
| 2006 | Environmental Response Team (ERT), US EPA. *Sampling Decontamination*, SOP No.2006, Revision 0.0. August 11, 1994. | EPA/OSWER/ERT | Luminox soap, isopropyl alcohol, deionized water | | |
| SST 2 | *Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment,* SOP # SST 2, Revision 1.0, May 2010. | EPA/DESA/HWSB/SST | XRF Meter<br>250 um sieve, 5 grams<br>plastic sample cups | | |



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## QAPP Worksheet #22
## Field Equipment Calibration, Maintenance, Testing, and Inspection Table

| Field Equipment | Calibration Activity | Maintenance Activity | Testing/ Inspection Activity | Frequency | Acceptance Criteria | Corrective Action | Responsible Person | SOP Reference |
|---|---|---|---|---|---|---|---|---|
| XRF Model #XL3t600 | Internal per manufacturer's instructions | | | | | | | SST SOP # 2 |



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## QAPP Worksheet #23
## Analytical SOP References Table

| Reference Number | Title, Revision Date, and/or Number | Definitive or Screening Data | Analytical Group | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N)* |
|---|---|---|---|---|---|---|
| SOM01.2 | USEPA Contract Laboratory Program Statement of Work for Multi-Media, Multi-Concentration Organic Analysis,; October 2006 | Definitive | Target Compound List Volatile Organics | GC/MS | CLP RAS Laboratory | |
| SOM01.2 | USEPA Contract Laboratory Program Statement of Work for Multi-Media, Multi-Concentration Organic Analysis,; October 2006 | Definitive | Target Compound List Semi-Volatile Organics | GC/MS | CLP RAS Laboratory | |
| SOM01.2 | USEPA Contract Laboratory Program Statement of Work for Multi-Media, Multi-Concentration Organic Analysis,; October 2006 | Definitive | Target Compound List Pesticides | GC/ECD | CLP RAS Laboratory | |
| SOM01.2 | USEPA Contract Laboratory Program Statement of Work for Multi-Media, Multi-Concentration Organic Analysis,; October 2006 | Definitive | Target Compound List PCBs | GC/ECD | CLP RAS Laboratory | |
| ILM05.4 | USEPA Contract Laboratory Program Statement of Work for Multi-Media, Multi-Concentration Inorganic Analysis,; December 2006 | Definitive | Target Analyte List Metals | ICP-AES / ICP-MS, no Mercury or Cyanide | CLP RAS Laboratory | |
| C-109 | Determination of Trace Elements in Aqueous Trace Metals in Aqueous, Soil/Sediment/Sludge-ICP-AES, Rev 2.0, 3/07 | Definitive | Pb, As, Sn, Cu, Cr | ICP-AES | DESA LAB | |
| SST SOP # 2 | *Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment,* SOP # SST 2, Revision 1.0, May 2010. | Screening | Pb, As, Sn, Cu, Cr | XRF Model #XL3t600 | DESA-HWSB-SST | |



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## QAPP Worksheet #24
## Analytical Instrument Calibration Table

| Instrument | Calibration Procedure | Frequency of Calibration | Acceptance Criteria | Corrective Action (CA) | Person Responsible for CA | SOP Reference |
|---|---|---|---|---|---|---|
| GC/MS | See SOM01.2 | Initial calibration: upon award of the contract, whenever the laboratory takes corrective action which may change or affect the initial calibration criteria (e.g., ion source cleaning or repair, column replacement, etc.), or if the continuing calibration acceptance criteria have not been met. Continuing calibration: Once every 12 hours | Initial calibration/ Continuing calibration: relative response factor (RRF) greater than or equal to minimum acceptable response factor listed in Table 5 of procedure; %RSD must be less than or equal to value listed in Table 5 of procedure. | Initial calibration: inspect system for problems (e.g., clean ion source, change the column, service the purge and trap device), correct problem, re-calibrate. Continuing calibration: inspect system, recalibrate the instrument, reanalyze samples. | EPA CLP RAS Laboratory GC/MS Technician | SOM01.2 |
| GC/ECD | See SOM01.2 | Initial calibration: upon award of the contract, whenever major instrument maintenance or modification is performed or if the calibration verification technical acceptance criteria have not been met. Calibration verification: Once every 12 hours | Initial calibration/ Calibration verification: resolution between two adjacent peaks must be greater than or equal to 60.0 percent, single components must be greater than or equal to 90.0 percent resolved, RTs within the RT window, %D must be greater than or equal to -25 percent and less than or equal to 25 percent, %RSD must be less than or equal to 20.0 percent. | Initial calibration: inspect the system (e.g., change the column, bake out the detector, clean the injection port) , correct problem, re-calibrate. Calibration verification: inspect system, recalibrate the instrument, reanalyze samples. | EPA CLP RAS Laboratory GC/ECD Technician | SOM01.2 |
| ICP-AES / ICP-MS | See ILM05.4; as per instrument manufacturer's recommended procedures | ICP-AES or ICP-MS Initial calibration: daily or once every 24 hours and each time the instrument is set up. ICP-AES or ICP-MS Continuing calibration: beginning and end of run, and frequency of 10% or every 2 hours during an analysis run. | ICP-AES: As per instrument manufacturer's recommended procedures, with at least 2 standards. ICP-MS: As per instrument manufacturer's recommended procedures, with at least 2 standards. A minimum of three replicate integrations are required for data acquisition. | ICP-AES or ICP-MS: inspect the system, correct problem, re-calibrate, re-analyze samples. | EPA CLP RAS Laboratory ICP-AES / ICP-MS Technician | ILM05.4 |
| ICP-AES | See SOP C-109 | See SOP C-109 | See SOP C-109 | See SOP C-109 | Assigned Lab personnel | SOP C-109 |



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# QAPP Worksheet #25
## Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

| Instrument/ Equipment | Maintenance Activity | Testing/Inspection Activity | Frequency | Acceptance Criteria | Corrective Action | Responsible Person | SOP Reference[1] |
|---|---|---|---|---|---|---|---|
| GC/MS | See SOM01.2; as per instrument manufacturer's recommendations | See SOM01.2; as per instrument manufacturer's recommendations | See SOM01.2; as per instrument manufacturer's recommendations | Acceptable re-calibration; see SOM01.2 | Inspect the system, correct problem, re-calibrate and/or reanalyze samples. | EPA CLP RAS Laboratory GC/MS Technician | SOM01.2 |
| GC/ECD | See SOM01.2; as per instrument manufacturer's recommendations | See SOM01.2; as per instrument manufacturer's recommendations | See SOM01.2; as per instrument manufacturer's recommendations | Acceptable re-calibration; see SOM01.2 | Inspect the system, correct problem, re-calibrate and/or reanalyze samples. | EPA CLP RAS Laboratory GC/ECD Technician | SOM01.2 |
| ICP-AES / ICP-MS | As per instrument manufacturer's recommendations | As per instrument manufacturer's recommendations; check connections | As per instrument manufacturer's recommendations | Acceptable re-calibration; see ILM05.4 | Inspect the system, correct problem, re-calibrate and/or reanalyze samples. | EPA CLP RAS Laboratory ICP-AES / ICP-MS Technician | ILM05.4 |
| See list of Instrument given in Worksheet #24 | See LQMP, G-10, G-11, G-12, G-19 | See LQMP, G-10, G-11, G-12, G-19 | See LQMP, G-10, G-11, G-12, G-19 | See LQMP, G-10, G-11, G-12, G-19 | See LQMP, G-10, G-11, G-12, G-19 | See LQMP, G-10, G-11, G-12, G-19 | See LQMP, G-10, G-11, G-12, G-19 |



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## QAPP Worksheet #26
## Sample Handling System

| SAMPLE COLLECTION, PACKAGING, AND SHIPMENT |
|---|
| **Sample Collection (Personnel/Organization):** EPA DESA HWSB SST |
| **Sample Packaging (Personnel/Organization):** EPA DESA HWSB SST |
| **Coordination of Shipment (Personnel/Organization):** EPA DESA HWSB SST |
| **Type of Shipment/Carrier:** hand-delivered or UPS |
| **SAMPLE RECEIPT AND ANALYSIS** |
| **Sample Receipt (Personnel/Organization):** Sample Custodian, DESA Laboratory or CLP Laboratory |
| **Sample Custody and Storage (Personnel/Organization):** Sample Custodian, DESA Laboratory or CLP Laboratory |
| **Sample Preparation (Personnel/Organization):** Sample Technicians, DESA Laboratory or CLP Laboratory |
| **Sample Determinative Analysis (Personnel/Organization):** Sample Technicians, DESA Laboratory or CLP Laboratory |
| **SAMPLE ARCHIVING** |
| **Field Sample Storage (No. of days from sample collection):** Samples to be shipped or hand-delivered within 24hours, and arrive at laboratory within 24 hours (1 day) of sample shipment |
| **Sample Extract/Dig estate Storage (No. of days from extraction/digestion):** As per analytical methodology; see Worksheet #19 |
| **SAMPLE DISPOSAL** |
| **Personnel/Organization:** Sample Technicians, DESA Laboratory or CLP Laboratory |
| **Number of Days from Analysis:** Until analysis and QA/QC checks are completed; as per analytical methodology; see Worksheet #19. |



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## QAPP Worksheet #27
## Sample Custody Requirements

**Sample Identification Procedures:** Each sample going to DESA Laboratory will be labeled with an area #, a sample media type letter code (ex: SS for Soil; SD for Sediment; SW for surface water), followed by number that depicts a specific location. The depth of soil will also be identified at the end of sample ID (ex: -02 for 0 – 2 inches; -06 for 0 – 6 inches; -12 for 6 – 12 inches; -24 for 12 – 24 inches). For samples that are analyzed by CLP, each sample will be labeled with a CLP assigned number. Additional information such as date, time, analysis, preservatives, etc. will be added. Example is provided below.

**Sample ID: A3-SS85-02**
**03/17/08 at 1300**
**Semi-Volatile Organic Compound**
**1 of 1 – 8 oz glass jar preserved with ice**

**Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory):** Each sample will be individually identified and labeled after collection, and packed into a cooler with wet ice. The sample information will be recorded on chain-of-custody (COC) forms, and the samples shipped via UPS to the CLP Laboratory or hand-delivered to DESA Laboratory within twenty-four hours of sample collection.

**Laboratory Sample Custody Procedures (receipt of samples, archiving, disposal):**

A sample custodian at the laboratory will accept custody of the shipped samples, and check them for discrepancies, proper preservation, integrity, etc. If noted, issues will be forwarded to the laboratory manager for corrective action. The sample custodian will relinquish custody to the appropriate department for analysis. At this time, no samples will be archived at the laboratory. Disposal of the samples will occur only after analyses and QA/QC checks are completed.



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**QAPP Worksheet #28a**
**QC Samples Table**

| | |
|---|---|
| Matrix | Aqueous/Soil |
| Analytical Group | Metals & Mercury |
| Concentration Level | Trace/Low |
| Sampling SOP | |
| Analytical Method/ SOP Reference | C-109,C-112, C-110 (Ref: EPA 200.7, 200.8, 245.1) |
| Sampler's Name | |
| Field Sampling Organization | |
| Analytical Organization | USEPA Region 2 Lab |
| No. of Sample Locations | |

| QC Sample: | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Tuning/System Stability(ICP-MS) | As per C-112 | Pass all the tune/stability criteria | Check Instrument Reanalyze, Retune | Lab personnel | Sensitivity | Pass all the tune/stability criteria |
| Initial Calibration Verification | Immediately following each calibration ,after every 10 samples and at the end of each analytical run | 90%-110% | Check Instrument, Reanalyze | Lab personnel | Accuracy | 90%-110% |
| Continuing Calibration Check Standard (Alternate check standard) | Every 10 samples and at the end of each analytical run | 80%-120% | Reanalyze, Qualify data | Lab personnel | Accuracy | 80%-120% |
| Initial Calibration Blank(ICB) | After ICV | < RL | Investigate source of contamination | Lab personnel | Sensitivity Contamination | < RL |
| Continuing Calibration Blank(CCB) | After every CCV | < RL | Investigate source of contamination | Lab personnel | Sensitivity Contamination | < RL |
| Low Level Check Standard | At Beginning and end of each analytical run | ± 30% of the true value | Check Instrument, Re-calibrate | Lab personnel | Accuracy | ± 30% of the true value |
| Interference Check Sample( ICP-200.7) | At Beginning and end of each analytical run | < RL Except Al ,Fe, Ca, K, Mg and Na | As per C-109 | Lab personnel | Precision | < RL Except Al ,Fe, Ca, K, Mg and Na |
| Method blank | 1 per extraction batch of ≤ 20 samples | < RL | Investigate source of contamination | Lab personnel | Sensitivity Contamination | < RL |
| LCS/LFB | 2 per extraction batch of ≤ 20 samples | Limits: Average Recovery ± 20% aqueous, ± 25% Soil) % RPD < 20( Aq), % RPD <25(Soil) | Qualify data | Lab personnel | Accuracy/ Precision | Limits: Average Recovery ± 20% aqueous, ± 25% Solids) % RPD < 20( Aq), % RPD <25(Soil |
| Laboratory Matrix spikes | 1 per extraction batch of ≤ 20 samples | Limits ± 20% aqueous, ± 25% Soil) | Qualify data | Lab personnel | Accuracy | Limits ± 20% aqueous, ± 25% Soil) |
| Serial Dilution Test( ICP-200.7) | Matrix spike sample | RPD < 20 % | Qualify data | Lab personnel | Precision | RPD < 20 % |
| Internal Standards( ICP-MS 200.8) | Each sample, standard, blank | Range of 0.60-1.87 of the original response in the calibration blank | Check Instrument Analyze / Qualify data | Lab personnel | Quantitation | Range of 0.60-1.87 of the original response in the calibration blank |



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## QAPP Worksheet #28b
## QC Samples Table

### (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Volatile Organics |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Method Blank | 1 every 12 hours | No analyte > CRQL* | | Suspend analysis unit source recertified | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | No analyte > CRQL* | |
| Matrix Spike (Not Required) | 1 per ≤ 20 samples; if requested | 1,1-Dichloroethene | 59-172 %R | Flag outliers | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | 1,1-Dichloroethene | 59-172 %R |
| | | Trichloroethene | 62-137 %R | | | | Trichloroethene | 62-137 %R |
| | | Benzene | 66-142 %R | | | | Benzene | 66-142 %R |
| | | Toluene | 59-139 %R | | | | Toluene | 59-139 %R |
| | | Chlorobenzene | 60-133 %R | | | | Chlorobenzene | 60-133 %R |
| Matrix Spike Duplicate (Not Required) | 1 per ≤ 20 samples; if requested | 1,1-Dichloroethene | 0-22 %RPD | Flag outliers | EPA CLP RAS Laboratory GC/MS Technician | Precision | 1,1-Dichloroethene | 0-22 %RPD |
| | | Trichloroethene | 0-24 %RPD | | | | Trichloroethene | 0-24 %RPD |
| | | Benzene | 0-21 %RPD | | | | Benzene | 0-21 %RPD |
| | | Toluene | 0-21 %RPD | | | | Toluene | 0-21 %RPD |
| | | Chlorobenzene | 0-21 %RPD | | | | Chlorobenzene | 0-21 %RPD |
| Deuterated Monitoring Compounds | all samples | Vinyl chloride-d3 | 68-122 %R | Check calculations and instruments, reanalyze affected samples up to 3 DMCs per sample may fail to meet necessary limits (Section 11.3.4, Page D45/SOM01.2) | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | Vinyl chloride-d3 | 68-122 %R |
| | | Chloroethane-d5 | 61-130 %R | | | | Chloroethane-d5 | 61-130 %R |

*with the exception of methylene chloride, 2-butanone & acetone which can be up to 2 times the CRQL. (USEPA CLP Nat'l Fuctional Guidelines, Final, July 2007)



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## QAPP Worksheet #28b
## QC Samples Table

### (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Volatile Organics [cont'd] |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Deuterated Monitoring Compounds [cont'd] | all samples | 1,1-Dichloroethene-d2 | 45-132 %R | Check calculations and instruments, reanalyze affected samples; up to 3 DMCs per sample may fail to meet necessary limits (Section 11.3.4, Page D45 of SOM01.2) | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | 1,1-Dichloroethene-d2 | 45-132 %R |
| | | 2-Butanone-d5 | 20-182 %R | | | | 2-Butanone-d5 | 20-182 %R |
| | | Chloroform-d | 72-123 %R | | | | Chloroform-d | 72-123 %R |
| | | 1,2-Dichloroethane-d4 | 79-122 %R | | | | 1,2-Dichloroethane-d4 | 79-122 %R |
| | | Benzene-d6 | 80-121 %R | | | | Benzene-d6 | 80-121 %R |
| | | 1,2-Dichloropropane-d6 | 74-124 %R | | | | 1,2-Dichloropropane-d6 | 74-124 %R |
| | | Toluene-d8 | 78-121 %R | | | | Toluene-d8 | 78-121 %R |
| | | trans-1,3-Dichloropropene-d4 | 72-130 %R | | | | trans-1,3-Dichloropropene-d4 | 72-130 %R |
| | | 2-Hexanone-d5 | 17-184 %R | | | | 2-Hexanone-d5 | 17-184 %R |
| | | 1,4-Dioxane-d8 | 50-150 %R | | | | 1,4-Dioxane-d8 | 50-150 %R |
| | | 1,1,2,2-Tetrachloroethane-d2 | 56-161 %R | | | | 1,1,2,2-Tetrachloroethane-d2 | 56-161 %R |



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## QAPP Worksheet #28b
## QC Samples Table

### (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Volatile Organics [cont'd] |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Deuterated Monitoring Compounds [cont'd] | all samples | 1,2-Dichlorobenzene-d4 | 70-131 %R | Check calculations and instruments, reanalyze affected samples; up to 3 DMCs per sample may fail to meet necessary limits (Section 11.3.4, Page D45/VOC of SOM01.2) | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | 1,2-Dichlorobenzene-d4 | 70-131 %R |
| Internal Standards | all samples | 50-200% of area, ± 30 sec retention time shift | | Check calculations and instruments, reanalyze affected samples; up to 3 DMCs per sample may fail to meet necessary limits (Section 11.3.4, Page D45/VOC of SOM01.2) | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | 50-100% of area, ± 30 sec retention time shift | |



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## QAPP Worksheet #28c
## QC Samples Table

### (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Semi-Volatile Organics |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Method Blank | 1 per ≤ 20 samples or whenever samples extracted | No analyte > CRQL* | | Suspend analysis unit source recertified | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | No analyte > CRQL* | |
| Matrix Spike (Not Required) | 1 per ≤ 20 samples; if requested | Phenol | 26-90 %R | Flag outliers | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | Phenol | 26-90 %R |
| | | 2-Chlorophenol | 25-102 %R | | | | 2-Chlorophenol | 25-102 %R |
| | | N-Nitroso-di-n-propylamine | 41-126 %R | | | | N-Nitroso-di-n-propylamine | 41-126 %R |
| | | 4-Chloro-3-methylphenol | 26-103 %R | | | | 4-Chloro-3-methylphenol | 26-103 %R |
| | | Acenaphthene | 31-137 %R | | | | Acenaphthene | 31-137 %R |
| | | 4-Nitrophenol | 11-114 %R | | | | 4-Nitrophenol | 11-114 %R |
| | | 2,4-Dinitrotoluene | 28-89 %R | | | | 2,4-Dinitrotoluene | 28-89 %R |
| | | Pentachloro-phenol | 17-109 %R | | | | Pentachloro-phenol | 17-109 %R |
| | | Pyrene | 35-142 %R | | | | Pyrene | 35-142 %R |
| Matrix Spike Duplicate (Not Required) | 1 per ≤ 20 samples; if requested | Phenol | 0-35 %RPD | Flag outliers | EPA CLP RAS Laboratory GC/MS Technician | Precision | Phenol | 0-35 %RPD |
| | | 2-Chlorophenol | 0-50 %RPD | | | | 2-Chlorophenol | 0-50 %RPD |
| | | N-Nitroso-di-n-propylamine | 0-38 %RPD | | | | N-Nitroso-di-n-propylamine | 0-38 %RPD |

*with the exception of bis (2-Etheylhexyl) phthalate which can be up to 5 times the CRQL. (USEPA CLP Nat'l Fuctional Guidelines, Final, July 2007)



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## QAPP Worksheet #28c
## QC Samples Table

### (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Semi-Volatile Organics [cont'd] |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Matrix Spike Duplicate (Not Required) [cont'd] | 1 per ≤ 20 samples; if requested | 4-Chloro-3-methylphenol | 0-33 %RPD | Flag outliers | EPA CLP RAS Laboratory GC/MS Technician | Precision | 4-Chloro-3-methylphenol | 0-33 %RPD |
| | | Acenaphthene | 0-19 %RPD | | | | Acenaphthene | 0-19 %RPD |
| | | 4-Nitrophenol | 0-50 %RPD | | | | 4-Nitrophenol | 0-50 %RPD |
| | | 2,4-Dinitrotoluene | 0-47 %RPD | | | | 2,4-Dinitrotoluene | 0-47 %RPD |
| | | Pentachloro-phenol | 0-47 %RPD | | | | Pentachloro-phenol | 0-47 %RPD |
| | | Pyrene | 0-36 %RPD | | | | Pyrene | 0-36 %RPD |
| Deuterated Monitoring Compounds | all samples | Phenol-d5 | 17-103 %R | Check calculations and instruments, reanalyze affected samples; up to 4 DMCs may fail to meet recovery limits (Section 11.3.4, Page D48/SVOC of SOM01.2) | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | Phenol-d5 | 17-103 %R |
| | | Bis(2-chloroethyl)ether-d8 | 12-98 %R | | | | Bis(2-chloroethyl)ether-d8 | 12-98 %R |
| | | 2-Chlorophenol-d4 | 13-101 %R | | | | 2-Chlorophenol-d4 | 13-101 %R |
| | | 4-Methylphenol-d8 | 8-100 %R | | | | 4-Methylphenol-d8 | 8-100 %R |
| | | Nitrobenzene-d5 | 16-103 %R | | | | Nitrobenzene-d5 | 16-103 %R |
| | | 2-Nitrophenol-d4 | 16-104 %R | | | | 2-Nitrophenol-d4 | 16-104 %R |



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## QAPP Worksheet #28c
## QC Samples Table

### (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Semi-Volatile Organics [cont'd] |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Deuterated Monitoring Compounds [cont'd] | all samples | 2,4-Dichlorophenol-d3 | 23-104 %R | Check calculations and instruments, reanalyze affected samples; up to 4 DMCs may fail to meet recovery limits (Section 11.3.4, Page D48/SVOC of SOM01.2) | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | 2,4-Dichlorophenol-d3 | 23-104 %R |
| | | 4-Chloroaniline-d4 | 1-145 %R | | | | 4-Chloroaniline-d4 | 1-145 %R |
| | | Dimethylphthalate-d6 | 43-111 %R | | | | Dimethylphthalate-d6 | 43-111 %R |
| | | Acenaphthylene-d8 | 20-97 %R | | | | Acenaphthylene-d8 | 20-97 %R |
| | | 4-Nitrophenol-d4 | 16-166 %R | | | | 4-Nitrophenol-d4 | 16-166 %R |
| | | Fluorene-d10 | 40-108 %R | | | | Fluorene-d10 | 40-108 %R |
| | | 4,6-Dinitro-2-methylphenol-d2 | 1-121 %R | | | | 4,6-Dinitro-2-methylphenol-d2 | 1-121 %R |
| | | Anthracene-d10 | 22-98 %R | | | | Anthracene-d10 | 22-98 %R |
| | | Pyrene-d10 | 51-120 %R | | | | Pyrene-d10 | 51-120 %R |
| | | Benzo(a)pyrene-d12 | 43-111 %R | | | | Benzo(a)pyrene-d12 | 43-111 %R |



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## QAPP Worksheet #28c
## QC Samples Table

**(UFP-QAPP Manual Section 3.4)**
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Semi-Volatile Organics [cont'd] |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Internal Standards | all samples | 50-200% of area, ± 30 sec retention time shift | Check calculations and instruments, reanalyze affected samples | EPA CLP RAS Laboratory GC/MS Technician | Accuracy | 50-200% of area, ± 30 sec retention time shift |



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# QAPP Worksheet #28d
# QC Samples Table

## (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Pesticides |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM012 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Method Blank | 1 per ≤ 20 samples or whenever samples extracted | No analyte > CRQL | | Suspend analysis unit source recertified | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | No analyte > CRQL | |
| Matrix Spike | 1 per ≤ 20 samples | gamma-BHC (Lindane) | 46-127 %R | Flag outliers | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | gamma-BHC (Lindane) | 46-127 %R |
| | | Heptachlor | 35-130 %R | | | | Heptachlor | 35-130 %R |
| | | Aldrin | 34-132 %R | | | | Aldrin | 34-132 %R |
| | | Dieldrin | 31-134 %R | | | | Dieldrin | 31-134 %R |
| | | Endrin | 42-139 %R | | | | Endrin | 42-139 %R |
| | | 4,4-DDT | 23-134 %R | | | | 4,4-DDT | 23-134 %R |
| Matrix Spike Duplicate | 1 per ≤ 20 samples | gamma-BHC | 0-50 %RPD | Flag outliers | EPA CLP RAS Laboratory GC/ECD Technician | Precision | gamma-BHC | 0-50 %RPD |
| | | Heptachlor | 0-31 %RPD | | | | Heptachlor | 0-31 %RPD |
| | | Aldrin | 0-43 %RPD | | | | Aldrin | 0-43 %RPD |
| | | Dieldrin | 0-38 %RPD | | | | Dieldrin | 0-38 %RPD |
| | | Endrin | 0-45 %RPD | | | | Endrin | 0-45 %RPD |
| | | 4,4-DDT | 0-50 %RPD | | | | 4,4-DDT | 0-50 %RPD |



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## QAPP Worksheet #28d
## QC Samples Table

**(UFP-QAPP Manual Section 3.4)**

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List Pesticides [cont'd] |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Laboratory Control Sample | all samples | gamma-BHC | 50-120 %R | Check calculations and instruments, reanalyze affected samples | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | gamma-BHC | 50-120 %R |
| | | Heptachlor epoxide | 50-150 %R | | | | Heptachlor epoxide | 50-150 %R |
| | | Dieldrin | 30-130 %R | | | | Dieldrin | 30-130 %R |
| | | 4,4'-DDE | 50-150 %R | | | | 4,4'-DDE | 50-150 %R |
| | | Endrin | 50-120 %R | | | | Endrin | 50-120 %R |
| | | Endosulfan sulfate | 50-120 %R | | | | Endosulfan sulfate | 50-120 %R |
| | | gamma-Chlordane | 30-130 %R | | | | gamma-Chlordane | 30-130 %R |
| Surrogate | all samples | | 30–150 %R | Check calculations and instruments, reanalyze affected samples | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | | 30-150 %R |



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## QAPP Worksheet #28e
## QC Samples Table

**(UFP-QAPP Manual Section 3.4)**

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Compound List PCBs |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | SOM01.2 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/ Number | Method/SOP QC Acceptance Limits | | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria | |
|---|---|---|---|---|---|---|---|---|
| Method Blank | 1 per ≤ 20 samples or whenever samples extracted | No analyte > CRQL | | Suspend analysis unit source recertified | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | No analyte > CRQL | |
| Matrix Spike | 1 per ≤ 20 samples | Aroclor-1016 | 29-135 %R | EPA CLP RAS Laboratory GC/ECD Technician | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | Aroclor-1016 | 29-135 %R |
| | | Aroclor-1260 | 29-135 %R | | | | Aroclor-1260 | 29-135 %R |
| Matrix Spike Duplicate | 1 per ≤ 20 samples | Aroclor-1016 | 0-15 %RPD | EPA CLP RAS Laboratory GCECD Technician | EPA CLP RAS Laboratory GC/ECD Technician | Precision | Aroclor-1016 | 0-15 %RPD |
| | | Aroclor-1260 | 0-20 %RPD | | | | Aroclor-1260 | 0-20 %RPD |
| Laboratory Control Sample | all samples | Aroclor-1016 | 50-150 %R | EPA CLP RAS Laboratory GC/ECD Technician | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | Aroclor-1016 | 50-150 %R |
| | | Aroclor-1260 | 50-150 %R | | | | Aroclor-1260 | 50-150 %R |
| Surrogate | all samples | | 30-150%R | EPA CLP RAS Laboratory GC/ECD Technician | EPA CLP RAS Laboratory GC/ECD Technician | Accuracy | | 30-150%R |



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## QAPP Worksheet #28f
## QC Samples Table

### (UFP-QAPP Manual Section 3.4)

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Analyte List Inorganics – Metals |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | ILM05.4 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Preparation Blank | 1 per ≤ 20 samples | No constituent > CRQL | Suspend analysis until source rectified; redigest and reanalyze affected samples | EPA CLP RAS Laboratory ICP-AES/ICP-MS Technician | Accuracy | No constituent > CRQL |
| Spike | 1 per ≤ 20 samples | 75-125%R* | Flag outliers | EPA CLP RAS Laboratory ICP-AES/ICP-MS Technician | Accuracy | 75-125%R* |
| Duplicate | 1 per ≤ 20 samples | ± 20% RPD** | Flag outliers | EPA CLP RAS Laboratory ICP-AES/ICP-MS Technician | Precision | ± 20% RPD** |
| Post-Digestion Spike | after any analyte (except Ag and Hg) fails spike %R | 75-125%R | Flag outliers | EPA CLP RAS Laboratory ICP-AES/ICP-MS Technician | Accuracy | 75-125%R |
| Interference Check Sample [ICP Analysis Only] | beginning, end and periodically during run (2 times every 8 hours) | Within ± 2 times CRQL of true value or ± 20% of true value, whichever is greater | Check calculations and instruments, reanalyze affected samples | EPA CLP RAS Laboratory ICP-AES/ICP-MS Technician | Sensitivity | Within ± 2 times CRQL of true value or ± 20% of true value, whichever is greater |

*except when the sample concentration is greater than 4 times the spike concentration, then disregard the recoveries; no data validation action taken
**Reference USEPA Region 2 SOP No. HW-2, Revision 13/Evaluation of Metals Data for CLP - (include absolute difference criteria)
**except when the sample and/or duplicate concentration is less than 5 times the CRQL, then ± CRQL.



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## QAPP Worksheet #28f
## QC Samples Table

**(UFP-QAPP Manual Section 3.4)**

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

| | |
|---|---|
| **Matrix** | Soil |
| **Analytical Group** | Target Analyte List Inorganics- Metals [cont'd] |
| **Concentration Level** | Low/Medium (mg/kg) |
| **Sampling SOP(s)** | |
| **Analytical Method/SOP Reference** | ILM05.4 |
| **Sampler's Name** | |
| **Field Sampling Organization** | |
| **Analytical Organization** | EPA CLP RAS Laboratory |
| **No. of Sample Locations** | |

| Lab QC Sample: | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Laboratory Control Sample | 1 per $\leq$ 20 samples | Control limits established by EPA* | Suspend analysis until source rectified; redigest and reanalyze affected samples | EPA CLP RAS Laboratory ICP-AES/ICP-MS Technician | Accuracy | Control limits established by EPA* |

* If the EPA LCS is unavailable, other EPA QC samples or other certified materials may be used. In such cases, control limits for the LCS must be documented and provided.



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## QAPP Worksheet #29a
## Project Documents and Records Table

| Sample Collection Documents and Records | Analysis Documents and Records | Data Assessment Documents and Records | Other |
|---|---|---|---|
| • Site and field logbooks<br>• COC forms<br>• Field Data Sheets<br>• Site map<br>• Signed QAPP<br>• HASP<br>• Project Data Evaluation Report | • Sample receipt logs<br>• Internal and external COC forms<br>• Sample preparation worksheets/logs<br>• Sample labels<br>• Sample analysis worksheets/run logs<br>• Telephone/email logs<br>• Corrective action documentation | • Data validation reports<br>• Field inspection checklist(s)<br>• Laboratory Audit checklist (if performed)<br>• Review forms for electronic entry of data into database<br>• Corrective action documentation | • GPS map layers |



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## QAPP Worksheet #29b
## Project Documents and Records Table

| Sample Collection Documents and Records | On-site Analysis Documents and Records | Off-site Analysis Documents and Records | Data Assessment Documents and Records | Other |
|---|---|---|---|---|
| Field Chains-of-Custody | Internal Chains-of-Custody | | Sample acceptance checklist | Customer Service Survey Cards |
| Packing Slips and Sample Tags | Sample Preparation Log | | PT Sample Results | Telephone Logs |
| Request Forms and Associated Correspondence | Standard Traceability Record | | Training Records | Procurement Request Forms |
| | Instrument Analysis Log | | | |
| Sample Acceptance Checklist | QC summary checklist with all relevant information | | MDL Study Records | Equipment Maintenance Logs |
| Sample Receipts | Sample Analysis Data | | Initial DOC / CDOC Records | Validated Computer Software Records |
| Laboratory sample identification numbers | Instrument Calibration Data | | Internal Audit Reports | |
| | Instrument/ Computer Printouts | | Corrective Action Reports | |
| | Definition of Qualifiers | | External Laboratory Assessment | |
| | Cover Letter | | | |
| | Approval Form | | | |
| | Case Narrative | | | |
| | Final Report | | | |
| | | | | |



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# QAPP Worksheet #30
# Analytical Services Table

| Matrix | Analytical Group | Concentration Level | Analytical SOP | Data Package Turnaround Time | Laboratory/Organization (Name and Address, Contact Person and Telephone Number) | Backup Laboratory/Organization (Name and Address, Contact Person and Telephone Number) |
|---|---|---|---|---|---|---|
| Soil | Low Conc. VOCs | Low | SOM01.2 | 7 | Mitkem Corporation<br>175 Metro Center Blvd<br>Warwick, RI 02886<br>401-732-3400 x316<br>Agnes Huntley<br><br>Shealy Environmental Services<br>106 Vantage Point Drive<br>West Columbia, SC 29172<br>803-791-9700<br>Kelly Maberry | NA |
| | SVOCs | Low | SOM01.2 | 7 | | |
| | PCBs | Low | SOM01.2 | 7 | | |
| | Pesticides | Low | SOM01.2 | 7 | | |
| | TAL Metals except Hg and Cyanide | Low | ILM05.4 | 7 | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary, NC 27513<br>919-379-4100<br>Bob Meierer | NA |
| Soil/Sediment/ Surface Water | TAL Total Metals | Low | C-109 | 7 | USEPA DESA Laboratory<br>2890 Woodbridge Avenue<br>Edison, NJ 08837<br>732-906-6886<br>John Birri | NA |



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## QAPP Worksheet #31
## Planned Project Assessments Table

- There are no planned assessments for this project.



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## QAPP Worksheet #32
## Assessment Findings and Corrective Action Responses

| Assessment Type | Nature of Deficiencies Documentation | Individual(s) Notified of Findings | Timeframe of Notification | Nature of Corrective Action Response Documentation | Individual(s) Receiving Corrective Action Response (Name, Title, Org.) | Timeframe for Response |
|---|---|---|---|---|---|---|
| Project Readiness Review | Checklist or logbook entry | Christina Leung, Project Sampling Lead | Immediately to within 24 hours of review | Checklist or logbook entry | Christina Leung, Project Sampling Lead | Immediately to within 24 hours of review |
| Field Observations/ Deviations from Work Plan | Logbook | Christina Leung, Project Sampling Lead, and Tanya Mitchell, Remedial Project Manager | Immediately to within 24 hours of deviation | Logbook | Christina Leung, Project Sampling Lead, and Tanya Mitchell, Remedial Project Manager | Immediately to within 24 hours of deviation |
| Laboratory Technical Systems/ Performance Audits | Written Report | EPA CLP Laboratory and DESA Laboratory | 30 days | Letter | EPA CLP Laboratory | 14 days |
| On-Site Field Inspection | Written Report | Christina Leung, Project Sampling Lead | 7 calendar days after completion of the audit | Letter/Internal Memorandum | Christina Leung, Project Sampling Lead, and Tanya Mitchell, Remedial Project Manager | To be identified in the cover letter of the report |
| Performance Evaluation Samples | Electronic Report | EPA CLP Laboratory | 30 days | Letter or Written Report | EPA CLP Laboratory | 14 days |



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## QAPP Worksheet #33
## QA Management Reports Table

| Type of Report | Frequency (daily, weekly, monthly, quarterly, annually, etc.) | Projected Delivery Date(s) | Person(s) Responsible for Report Preparation (Title and Organizational Affiliation) | Report Recipient(s) (Title and Organizational Affiliation) |
|---|---|---|---|---|
| EPA CLP RAS Laboratory Data (unvalidated) | As performed | 72 hours after sample collection | EPA CLP RAS Laboratory | Adly Michael, RSCC, EPA Region 2 and Christina Leung, Project Sampling Lead |
| EPA CLP RAS Laboratory Data (validated) | As performed | Up to 60 days after receipt of unvalidated data | EPA Region 2 | Christina Leung, Project Sampling Lead Project Leader [ ] |
| Laboratory Technical Systems/ Performance Audits | As performed | Unknown | EPA or other Regulatory Agency | EPA CLP RAS Laboratory |
| Performance Evaluation Samples | As performed | Unknown | EPA or other Regulatory Agency | EPA CLP RAS Laboratory |
| On-Site Field Inspection | As performed | 7 calendar days after completion of the inspection | Christina Leung, Project Sampling Lead | Christina Leung, Project Sampling Lead |
| Field Change Request | As required per field change | Three days after identification of need for field change | Christina Leung, Project Sampling Lead | EPA RPM |
| Final Report | July 9, 2010 | 2 weeks after receipt of EPA approval of data package | Christina Leung, Project Sampling Lead | EPA RPM |



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## QAPP Worksheet #34
## Verification (Step I) Process Table

| Verification Input | Description | Internal/ External | Responsible for Verification (Name, Organization) |
|---|---|---|---|
| Site/field logbooks | Field notes will be prepared daily by the EPA Sample Leader and will be complete, appropriate, legible and pertinent. Upon completion of field work, logbooks will be placed in the project files. | I | EPA SST Sample Leader |
| Chains of custody | COC forms will be reviewed against the samples packed in the specific cooler prior to delivery. The reviewer will initial the form. An original COC will be sent with the samples to the laboratory, while copies are retained for (1) the Sampling Trip Report and (2) the project files. | I | EPA SST Sample Leader |
| Sampling Trip Reports | STRs will be prepared for each week of field sampling for which samples are sent to an EPA laboratory. Information in the STR will be reviewed against the COC forms, and potential discrepancies will be discussed with field personnel to verify locations, dates, etc. | I | EPA SST Sample Leader |
| Laboratory analytical data package | Data packages will be reviewed/verified internally by the laboratory performing the work for completeness and technical accuracy prior to submittal. | I | CLP and DESA Laboratory |
| Laboratory analytical data package | Data packages will be reviewed as to content and sample information upon receipt by EPA. | I | EPA SST Sample Leader |
| Final Sample Report | The project data results will be compiled in a sample report for the project. Entries will be reviewed/verified against hardcopy information. | I | EPA SST Sample Leader |



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## QAPP Worksheet #35
## Validation (Steps IIa and IIb) Process Table

| Step IIa/IIb | Validation Input | Description | Responsible for Validation (Name, Organization) |
|---|---|---|---|
| IIa | SOPs | Ensure that the sampling methods/procedures outlined in QAPP were followed, and that any deviations were noted/approved. | EPA SST Project Leader |
| IIb | SOPs | Determine potential impacts from noted/approved deviations, in regard to PQOs. | EPA SST Project Leader |
| IIa | Chains of custody | Examine COC forms against laboratory requirements (e.g., analytical methods, sample identification, etc.). | DESA Laboratory or CLP Laboratory |
| IIa | Laboratory data package | Examine packages against QAPP and laboratory contract requirements, and against COC forms (e.g., holding times, sample handling, analytical methods, sample identification, data qualifiers, QC samples, etc.). | DESA Laboratory or CLP Laboratory |
| IIb | Laboratory data package | Determine potential impacts from noted/approved deviations, in regard to PQOs. Examples include PQLs and QC sample limits (precision/accuracy). | DESA Laboratory or CLP Laboratory<br>EPA SST Project Leader |
| IIb | Field duplicates | Compare results of field duplicate (or replicate) analyses with RPD criteria | EPA SST Project Leader |



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## QAPP Worksheet #36
## Validation (Steps IIa and IIb) Summary Table

| Step IIa/IIb | Matrix | Analytical Group | Concentration Level | Validation Criteria | Data Validator (title and organizational affiliation) |
|---|---|---|---|---|---|
| IIa / IIb | Soil | VOCs | Low and Medium | Data Validation SOP for Organic Analysis of Low/Medium Concentration VOCs under SOW SOM01.2 | ESAT Data Validation Personnel, EPA Region 2 Data Validation Personnel |
| IIa / IIb | Soil | SVOCs | Low and Medium | Data Validation SOP for Organic Analysis of Low/Medium Concern. SVOCs under SOW SOM01.2 | ESAT Data Validation Personnel, EPA Region 2 Data Validation Personnel |
| IIb | Soil | Pesticides | Low and Medium | Data Validation SOP for Organic Analysis of Low/Medium Concentration Pesticides under SOW SOM01.2 | ESAT Data Validation Personnel, EPA Region 2 Data Validation Personnel |
| IIa / IIb | Soil | PCBs | Low and Medium | Data Validation SOP for Organic Analysis of Low/Medium Concentration Aroclors under SOW SOM01.2 | ESAT Data Validation Personnel, EPA Region 2 Data Validation Personnel |
| IIa / IIb | Soil | Total Metals, no Mercury or Cyanide | Low and Medium | Data Validation SOP for Inorganic Analysis of Low/Medium Concentration Total Metals under SOW ILM05.4 | ESAT Data Validation Personnel, EPA Region 2 Data Validation Personnel |
| IIa / IIb | Aqueous/Soil/Sediment | Pb, As, Sn, Cu, $Cr^{3+}$ and $Cr^{6+}$ | Low and Medium | EPA DESA LB SOP Guidance for Laboratory Data Review | DESA Laboratory Staff |



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# QAPP Worksheet #37
# Usability Assessment

**Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used:**

-**Precision:** Results of laboratory duplicates will be assessed during data validation and data will be qualified according to the data validation procedures cited in worksheet# 36. Field duplicates will be assessed during by matrix using the RPD for each pair of results above the QL for the performed analyses. RPD acceptance criteria, presented in worksheet #12, will be used to access field sampling precision. Absolute difference will be used for low results as described in worksheet # #28. A discussion summarizing the results of laboratory and field precision and any limitations on the use of the data will be described.

-**Accuracy/Bias Contamination:** Results for all laboratory blanks will be assessed as part of the data validation. During the data validation process, the validating personnel will qualify the data following the procedures described on worksheet #36. A discussion summarizing the results of the laboratory accuracy and bias based on contamination will be presented and any limitations on the use of the data will be described.

-**Overall Accuracy/Bias**: The results of instrument calibration and matrix spike recoveries will be reviewed and data will be qualified according to the data validation procedures cited on worksheet #36. A discussion summarizing the results of laboratory accuracy and any limitations on the use of the data will be described.

-**Sensitivity:** Data results will be compared to criteria provided in worksheet #15. A discussion summarizing any conclusions about the sensitivity of the analyses will be presented and any limitations on the use of the data will be described.

-**Representativeness:** Data representativeness will be assessed by collecting field replicate samples. The field replicates are by definition equally representative of a given point and space and time. Representativeness is a qualitative parameter which is dependent upon the proper design of the sampling program and proper laboratory protocol. Therefore, data representativeness will be satisfied by ensuring that:

The sampling program is followed according to:

U.S. EPA (Environmental Protection Agency). October 1989. *Region II CERCLA Quality Assurance Manual.* Final Copy, Revision 1. Division of Environmental Services and Assessment, Edison, NJ; and

U.S. EPA (Environmental Protection Agency). December 1995. *Superfund Program Representative Sampling Guidance.* OSWER Directive 9360.4-10. Interim Final. EPA/540/R-95/141. Office of Emergency and Remedial Response (OERR). Washington, D.C.



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# QAPP Worksheet #37
# Usability Assessment

U.S. EPA Environmental Response Team. *Sediment Sampling*, SOP No.2016, Revision 0.0. November 17, 1994.
U.S. EPA Environmental Response Team. *Soil Sampling*, SOP No.2012, Revision 0.0. February 18, 2000.
U.S. EPA Environmental Response Team. *Surface Water Sampling*, SOP No.2013, Revision 1.0. November 17, 2002.
U.S. EPA Environmental Response Team. *Sampling Decontamination*, SOP No.2006, Revision 0.0. August 11, 1994.

-**Comparability:** To ensure data comparability, sampling and analysis for all samples will be performed using standardized analytical methods and adherence to the quality control procedures outlined in the methods and this QAPP. Therefore, the data will be comparable.

-**Reconciliation:** The PQOs presented in worksheet #11 will be examined against the data quality to determine if the objectives were met. This examination will include a combined overall assessment of the results of each analysis pertinent to an objective. Each analysis will first be evaluated separately in terms of major impacts observed from data validation, data quality indicators, and measurement performance criteria assessments. Based on the results of these assessments, the quality of the data will be determined. Based on the quality determined, the usability of the data for each analysis will be determined. Based on the combined usability of the data from all analyses for an objective, it will be determined if the PQOs were met and whether project goals are being achieved. Conclusions will be drawn and any limitations on the usability of the data will be described.

-**Completeness**: 1. To calculate field precision: $RPD = 100 \times \left( \frac{|X_1 - X_2|}{(X_1 + X_2)/2} \right)$ where X1 and X2 are the reported concentrations for each duplicate or replicate.

2. Calculate completeness: Data completeness will be expressed as the percentage of valid data obtained from measurement system. In other words, every well or location that was initially intended to be sampled, was sampled. For data to be considered valid, it must meet all the acceptable criteria including accuracy and precision, as well as any other criteria specified by the analytical method used. Therefore, all data points critical to the sampling program in terms of completeness will be 100% validated by USEPA NAREL Laboratory according to the appropriate and current US EPA Data Validation SOPs. With 100% validation, the rationale for considering data points non-critical is not required.

**Describe the evaluative procedures used to assess overall measurement error associated with the project:**

**Identify the personnel responsible for performing the usability assessment:**

U.S. EPA DESA HWSB-SST.



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## QAPP Worksheet #37
## Usability Assessment

**Describe the documentation that will be generated during usability assessment and how usability assessment results will be presented so that they identify trends, relationships (correlations), and anomalies:**

The purpose of the Raritan Bay Slag beach sampling is to provide data which can be used to assess potential changes in concentrations of contaminants of concern at the site after a storm event and to support ongoing assessment of the suitability of recreational use of the beaches in Areas 5 and 6 and the playground in Areas 1 and 3.

All samples in Areas 5 and 6 will be analyzed by XRF at 0-6" and seventy-five 75% of these samples will be sent to DESA Laboratory for confirmation. From this 0-6" paired data, a linear regression will be calculated to allow for future XRF correlations should additional data is needed to assess the suitability of property access in the area. This sampling plan has been designed to obtain sufficient data to allow statistical analysis of the data set. If the correlation between the on-site data and XRF screening results is demonstrated, then this regression can be used to generate definitive results for future sampling events.

Volatile organic compounds, semi-volatile organics, pesticides, and polychlorinated biphenols, percent moisture, and total metals will be analyzed at Area 3 and 1 to determine if there is a potential exposure pathway. Results will be compared to NJDEP, and used by risk assessors in making decisions regarding property access.

A Data Evaluation Report will describe the rationale for the data used and present any data limitations. The report will include a discussion of the accuracy, precision, representativeness, completeness and comparability of the data set and deviations from planned procedures and analysis. Tables will be prepared, including: a summary of samples collected and parameters analyzed; detections in field and trip blanks; and comparison of field duplicates.



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URL's for Attachments referenced in this QAPP:

Attachment 2

http://yosemite.epa.gov/sab/SABPRODUCT.nsf/91518E98928ADE0B85257126007FE911/$File/soil_sampling_sop2012_r10ert.pdf

Attachment 3

http://www.dem.ri.gov/pubs/sops/wmsr2016.pdf

Attachment 4

http://loostrom.com/kosov/separatasidor/usepasurfacewatersampling.pdf

Attachment 5

http://www.epaosc.org/sites/2107/files/2006-r00.pdf

Attachment 8a

http://www.nj.gov/dep/srp/guidance/scc/scc_0599.pdf

Attachment 8b

http://www.nj.gov/dep/rules/rules/njac7_9b.pdf

# APPENDIX C

## Raritan Bay Slag Sampling Site Trip Report

# SAMPLING TRIP REPORT

**Site Name:** Raritan Bay Slag Sampling Site
**CERCLIS ID Number:** NJN000206276
**Sampling Date:** May 10 - 20, 2010
**CLP Case Number:** 40102

## 1. Site Location:

Old Bridge, Monmouth County, New Jersey

## 2. Sample Descriptions:

Refer to Table 1 for samples.

## 3. Laboratories Receiving Samples:

| Case Number | Sample Type | Laboratory Code | Name and Address of Laboratory |
|---|---|---|---|
| 40102 | Soil – Volatile Organic Compounds (VOC), Semi-volatile Organic (SVOA), Pesticides (PEST), Polychlorinated Biphenols (PCB), Total Metals (TM) | MITKEM (organic) | Mitkem Corporation<br>175 Metro Center Blvd<br>Warwick, RI 02886<br>Agnes Huntley<br>401-732-3400 x316 |
| | | DATAC (organic) | ALC Laboratory Group (Datachem)<br>960 West LeVoy Drive<br>Salt Lake City, UT 81423<br>Roxy Olson<br>801-266-7700 x314 |
| | | LIBRTY (inorganic) | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary, NC 27513<br>Bob Meierer<br>919-379-4004 |
| NA | Soil, Sediment, Surface Water – Lead (Pb), Antimony (Sb), Arsenic (As), Copper (Cu), Chromium (Cr) | DESA | USEPA DESA Laboratory<br>2890 Woodbridge Avenue<br>Edison, NJ 08837<br>John Birri<br>732-906-6886 |
| NA | Soil, Sediment – Lead (Pb), Antimony (Sb), Arsenic (As), Copper (Cu), Chromium (Cr) | XRF | On-site screening only |

**4. Sample Dispatch Data:**

All CLP Laboratory samples were shipped via UPS to the U.S. Environmental Protection Agency CLP Laboratory within 24 hours of sampling time. All soil samples in Area 3 and Area 1 were analyzed for Volatile Organic Compounds (VOC), Semi-volatile Organic (SVOA), Pesticides (PEST), Polychlorinated Biphenols (PCB), Total Metals except Mercury and Cyanide (TM). All soil, sediment and surface water samples from Area 5 and Area 6 were hand-delivered to DESA Laboratory within 48 hours of sampling time. All samples from Area 5 and Area 6 were analyzed for Lead (Pb), Antimony (Sb), Arsenic (As), Copper (Cu), Chromium (Cr) only.

All samples were labeled as follows: Area location-MatrixLocation# - Depth Interval (Ex: A1-SS05-06). Area sample locations comprised of A1, A3, A5, and A6. Matrixes were soil (SS), sediment (SD) or surface water (SW). Depth intervals were 0 – 2 inches (-02), 0 – 6 inches (-06), 6 – 12 inches (-12), or 12 – 24 inches (-24).

On May 10, 2010, sixty (60) soil samples from nineteen locations and three depth intervals in Area 3 were collected. This included three (3) field duplicates and three (3) MS/MSDs for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 2, 0 – 6, and 6 - 12 inch intervals. The US EPA CLP Region 2 Chain of Custody Record is presented in Appendix A and CLP sample descriptions are presented in Table 1.

On May 11, 2010, twenty-six soil/sediment samples from twenty-four depths/locations in Area 6, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were collected and hand-delivered to DESA Lab. Twelve (12) surface water samples from twelve locations were also collected. The US EPA Region 2 Chain of Custody Record is presented in Appendix B.

On May 12, 2010, seventy-four soil/sediment samples from seventy- two depths/locations in Area 6, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were processed and hand-delivered to DESA Lab. The US EPA Region 2 Chain of Custody Record is presented in Appendix B.

On May 13, 2010, forty-two (42) soil/sediment samples from forty depths/locations in Area 5, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were processed and hand-delivered to DESA Lab. The US EPA Region 2 Chain of Custody Record is presented in Appendix B.

On May 14, 2010, forty-three (43) soil/sediment samples from forty-one depths/locations in Area 5, which included two (2) field duplicates and two (2) MS/MSDs for field quality control (QC) purposes were processed and hand-delivered to DESA Lab. The US EPA Region 2 Chain of Custody Record is presented in Appendix B. Twelve (12) soil samples from five locations and two depth intervals in Area 1 were collected. This included one (1) field duplicate and one (1) MS/MSD for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 6, and 6 - 12 inch intervals. The US EPA Region 2 CLP Chain of Custody Record is presented in Appendix A and CLP sample descriptions are presented in Table 1.

VOCs and inorganic samples that were shipped on Friday May 14, 2010 arrived on Monday May 17, 2010 morning, instead of Saturday delivery May 15, 2010 (EPA checked off Saturday delivery on UPS airbill). As a result, samples exceeded 4 degrees Celsius and will be re-sampled on Tuesday 18, 2010.

On May 17, 2010, nineteen (19) soil samples from nine locations and two depth intervals in Area 1 were collected. This included one (1) field duplicate and one (1) MS/MSD for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 6, and 6 - 12 inch intervals. The US EPA Region 2 CLP Chain of Custody Record is presented in Appendix A and CLP sample descriptions are presented in Table 1. Eleven (11) surface water samples from ten locations, which included one (1) field duplicate and one (1) MS/MSD for field quality control (QC) purposes were collected and hand-delivered to DESA laboratory.

On May 18, 2010, twelve (12) soil samples from five locations and two depth intervals in Area 1 were re-sampled for VOCs, percent moisture, and TM only. This included one (1) field duplicate for field quality control (QC) purposes. Soil samples were collected from each sample location at 0 – 6, and 6 - 12 inch intervals. The US EPA Region 2 CLP Chain of Custody Record is presented in Appendix A and CLP sample descriptions are presented in Table 1.

On May 17 - 20, 2010, XRF samples were analyzed for screening purposes only.

**5. Sampling Personnel:**

| Name | Organization | Site Duties |
|---|---|---|
| Christina Leung | USEPA Region II DESA/HWSB Superfund Support Team | Project Manager/Sample Management |
| Michael Clemetson | USEPA Region II DESA/HWSB Superfund Support Team | Field Personnel |
| Michael Mercado | USEPA Region II DESA/HWSB Superfund Support Team | Field Personnel |
| Steven Wall | USEPA Region II DESA/HWSB Superfund Support Team | Field Personnel |
| Rachael Graham | USEPA Region II DESA/HWSB Superfund Support Team | Field Personnel |
| Ed Kulkusky<br>Chris Gurr | CDM Contractors | Field Personnel |
| Pat Sheridan | USEPA Region II DESA/HWSB Superfund Support Team | Quality Assurance Officer |

## 6. Additional Comments:

The following Sample Numbers were used for laboratory and/or field quality control:

| Laboratory Quality Control (QC) Samples | | Field Quality Control (QC) Samples |
|---|---|---|
| **Matrix Spike (MS)/ Matrix Spike Duplicate (MSD)** | **Field Duplicate** | **Rinsate Blank** |
| PCB, PEST, TM ONLY<br><br>A3-SS85-06 (B5SS6)<br>A3-SS88-12 (B5ST5)<br>A3-SS90-06 (B5SW0)<br>A1-SS18-06 (B5SZ1)<br>A1-SS12-12 (B5SY0) | Z3-SS75-02 (B5SW2) is a duplicate of A3-SS75-02 (B5SP8)<br>Z3-SS89-02 (B5SW3) is a duplicate of A3-SS89-02 (B5ST6)<br>Z3-SS90-06 (B5SW4) is a duplicate of A3-SS90-06 (B5SW0)<br>Z1-SS13-06 (B5SZ5) is a duplicate of A1-SS13-06 (B5SY1)<br><br>SVOA, PCB, PEST<br>Z1-SS17-12 (B5SZ3) is a duplicate of A1- SS17-12 (B5SZ0)<br>VOA & TM<br>Z1-SS118-06 (B5SZ6) is a duplicate of A1-SS118-06 (B5T04) | SVOA, PCB, PEST<br>RB-01 (B5SZ4 )<br><br>VOA & TM<br>RB-01 (B5T07 ) |
| A6-SS210-02<br>A6-SD95-02<br>A6-SD95-06<br>A5-SS140-06<br>A5-SD139-06<br>A5-SDB10-02<br>A5-SDA130-12<br>A5-SS155-06 | Z6-SD41-06 is a duplicate of A6-SD41-06<br>Z6-SS212-02 is a duplicate of A6-SS212-02<br>Z6-SS212-24 is a duplicate of A6-SS212-24<br>Z5-SS113-06 is a duplicate of A5-SS113-06<br>Z5-SDB10-24 is a duplicate of A5-SDB10-24<br>Z5-SDB20-24 is a duplicate of A5-SDB20-24<br>Z5-SD121-06 is a duplicate of A5-SD121-06<br>Z5-SS35-24 is a duplicate of A5-SS35-24 | NA |

**Report Prepared By:** Christina Leung Date June 20, 2010

**TABLE 1**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A3-SS70-02 (B5SN5) | Soil 0 – 2” | 5/10/10 | 1155 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS70-06 (B5SN7) | Soil 0 – 6” | 5/10/10 | 1200 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS70-12 (B5SN8) | Soil 6 – 12” | 5/10/10 | 1210 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS71-02 (B5SN9) | Soil 0 – 2” | 5/10/10 | 1030 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS71-06 (B5SP0) | Soil 0 – 6” | 5/10/10 | 1045 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS71-12 (B5SP1) | Soil 6 – 12” | 5/10/10 | 1055 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS73-02 (B5SP2) | Soil 0 – 2” | 5/10/10 | 1026 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS73-06 (B5SP3) | Soil 0 – 6” | 5/10/10 | 1100 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS73-12 (B5SP4) | Soil 6 – 12” | 5/10/10 | 1130 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A3-SS74-02 (B5SP5) | Soil 0 – 2" | 5/10/10 | 1055 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS74-06 (B5SP6) | Soil 0 – 6" | 5/10/10 | 1115 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS74-12 (B5SP7) | Soil 6 – 12" | 5/10/10 | 1130 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS75-02 (B5SP8) | Soil 0 – 2" | 5/10/10 | 1127 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS75-06 (B5SP9) | Soil 0 – 6" | 5/10/10 | 1144 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS75-12 (B5SQ0) | Soil 6 – 12" | 5/10/10 | 1158 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS76-02 (B5SQ1) | Soil 0 – 2" | 5/10/10 | 1220 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS76-06 (B5SQ2) | Soil 0 – 6" | 5/10/10 | 1240 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS76-12 (B5SQ3) | Soil 6 – 12" | 5/10/10 | 1255 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS77-02 (B5SQ4) | Soil 0 – 2" | 5/10/10 | 1031 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A3-SS77-06 (B5SQ5) | Soil 0 – 6" | 5/10/10 | 1045 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS77-12 (B5SQ6) | Soil 6 – 12" | 5/10/10 | 1107 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS79-02 (B5SQ7) | Soil 0 – 2" | 5/10/10 | 1350 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS79-06 (B5SQ8) | Soil 0 – 6" | 5/10/10 | 1400 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS79-12 (B5SQ9) | Soil 6 – 12" | 5/10/10 | 1445 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS80-02 (B5SR0) | Soil 0 – 2" | 5/10/10 | 1230 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS80-06 (B5SR1) | Soil 0 – 6" | 5/10/10 | 1235 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS80-12 (B5SR2) | Soil 6 – 12" | 5/10/10 | 1245 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS81-02 (B5SR3) | Soil 0 – 2" | 5/10/10 | 1520 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS81-06 (B5SR4) | Soil 0 – 6" | 5/10/10 | 1530 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| | | | | | | | |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A3-SS81-12 (B5SR5) | Soil 6 – 12" | 5/10/10 | 1545 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS82-02 (B5SR6) | Soil 0 – 2" | 5/10/10 | 1047 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS82-06 (B5SR7) | Soil 0 – 6" | 5/10/10 | 1058 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS82-12 (B5SR8) | Soil 6 – 12" | 5/10/10 | 1105 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS83-02 (B5SR9) | Soil 0 – 2" | 5/10/10 | 1210 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS83-06 (B5SS0) | Soil 0 – 6" | 5/10/10 | 1220 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS83-12 (B5SS1) | Soil 6 – 12" | 5/10/10 | 1230 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS84-02 (B5SS2) | Soil 0 – 2" | 5/10/10 | 1240 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS84-06 (B5SS3) | Soil 0 – 6" | 5/10/10 | 1255 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS84-12 (B5SS4) | Soil 6 – 12" | 5/10/10 | 1305 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| | | | | | | | |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A3-SS85-02 (B5SS5) | Soil 0 – 2" | 5/10/10 | 1330 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS85-06 (B5SS6) MS/MSD | Soil 0 – 6" | 5/10/10 | 1345 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS85-12 (B5SS7) | Soil 6 – 12" | 5/10/10 | 1355 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS86-02 (B5SS8) | Soil 0 – 2" | 5/10/10 | 1500 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS86-06 (B5SS9) | Soil 0 – 6" | 5/10/10 | 1525 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS86-12 (B5ST0) | Soil 6 – 12" | 5/10/10 | 1540 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS87-02 (B5ST1) | Soil 0 – 2" | 5/10/10 | 1430 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS87-06 (B5ST2) | Soil 0 – 6" | 5/10/10 | 1445 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS87-12 (B5ST3) | Soil 6 – 12" | 5/10/10 | 1500 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS88-02 (B5SN6) | Soil 0 – 2" | 5/10/10 | 1115 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS88-06 (B5ST4) | Soil 0 – 6" | 5/10/10 | 1120 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A3-SS88-12<br>(B5ST5)<br>MS/MSD | Soil<br>6 – 12" | 5/10/10 | 1125 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS89-02<br>(B5ST6) | Soil<br>0 – 2" | 5/10/10 | 1330 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS89-06<br>(B5ST7) | Soil<br>0 – 6" | 5/10/10 | 1340 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS89-12<br>(B5ST8) | Soil<br>6 – 12" | 5/10/10 | 1400 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS90-02<br>(B5ST9) | Soil<br>0 – 2" | 5/10/10 | 1400 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS90-06<br>(B5SW0)<br>MS/MSD | Soil<br>0 – 6" | 5/10/10 | 1345 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A3-SS90-12<br>(B5SW1) | Soil<br>6 – 12" | 5/10/10 | 1410 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| Z3-SS75-02<br>(B5SW2)<br>Duplicate of A3- SS75-02 | Soil<br>0 – 2" | 5/10/10 | 1127 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| Z3-SS89-02<br>(B5SW3)<br>Duplicate of A3- SS89-02 | Soil<br>0 – 2" | 5/10/10 | 1330 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| Z3-SS90-06<br>(B5SW4)<br>Duplicate of A3- SS90-06 | Soil<br>0 – 6" | 5/10/10 | 1345 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A1-SS05-06 (B5SZ2) | Soil 0 - 6" | 5/17/10 | 1440 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS05-12 (B5SW6) | Soil 6 - 12" | 5/17/10 | 1445 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS06-06 (B5SW7) | Soil 0 - 6" | 5/17/10 | 1420 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS06-12 (B5SW8) | Soil 6 - 12" | 5/17/10 | 1425 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS07-06 (B5S W9) | Soil 0 - 6" | 5/17/10 | 1405 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS07-12 (B5SX0) | Soil 6 - 12" | 5/17/10 | 1410 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS08-06 (B5SX1) | Soil 0 - 6" | 5/17/10 | 1345 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS08-12 (B5SX2) | Soil 6 - 12" | 5/17/10 | 1350 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS09-06 (B5SX3) | Soil 0 - 6" | 5/17/10 | 1320 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS09-12 (B5SX4) | Soil 6 - 12" | 5/17/10 | 1325 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| | | | | | | | |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A1-SS10-06 (B5SX5) | Soil 0 - 6" | 5/17/10 | 1135 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>1140(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS10-12 (B5SX6) | Soil 6 - 12" | 5/17/10 | 1140 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS11-06 (B5SX7) | Soil 0 – 6" | 5/17/10 | 1115 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS11-12 (B5SX8) | Soil 6 – 12" | 5/17/10 | 1120 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS12-06 (B5SX9) | Soil 0 – 6" | 5/17/10 | 1055 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS12-12 (B5SY0) MS/MSD | Soil 6 – 12" | 5/17/10 | 1100 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS13-06 (B5SY1) | Soil 0 – 6" | 5/17/10 | 1040 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS13-12 (B5SY2) | Soil 6 – 12" | 5/17/10 | 1045 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| A1-SS14-06 (B5SY3) | Soil 0 – 6" | 5/14/10 | 1130 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS14-06 (B5T06) | Soil 0 – 6" | 5/18/10 | 1500 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS14-12 (B5SY4) | Soil 6 – 12" | 5/14/10 | 1135 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS14-12 (B5SZ7) | Soil 6 – 12" | 5/18/10 | 1505 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| | | | | | | | |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A1-SS15-06 (B5SY5) | Soil 0 – 6" | 5/14/10 | 1115 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS15-06 (B5SZ8) | Soil 0 – 6" | 5/18/10 | 1450 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS15-12 (B5SY6) | Soil 6 – 12" | 5/14/10 | 1120 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS15-12 (B5SZ9) | Soil 6 – 12" | 5/18/10 | 1455 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS16-06 (B5SY7) | Soil 0 – 6" | 5/14/10 | 1045 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS16-06 (B5T00) | Soil 0 – 6" | 5/18/10 | 1440 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS16-12 (B5SY8) | Soil 6 – 12" | 5/14/10 | 1050 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS16-12 (B5T01) | Soil 6 – 12" | 5/18/10 | 1445 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS17-06 (B5SY9) | Soil 0 – 6" | 5/14/10 | 1020 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS17-06 (B5T02) | Soil 0 – 6" | 5/18/10 | 1430 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS17-12 (B5SZ0) | Soil 6 – 12" | 5/14/10 | 1030 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS17-12 (B5T03) | Soil 6 – 12" | 5/18/10 | 1435 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS18-06 (B5SZ1) MS/MSD | Soil 0 – 6" | 5/14/10 | 957 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| A1-SS18-06 (B5T04) | Soil 0 – 6" | 5/18/10 | 1415 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| A1-SS18-12 (B5SW5) | Soil 6 – 12" | 5/14/10 | 1010 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| | | | | | | | |

**TABLE 1 , Cont'd**
**CLP SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Type | Sample Collection | | Analysis Requested | Sample Container | Required Sample Volume | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A1-SS18-12 (B5T05) | Soil 6 – 12" | 5/18/10 | 1420 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| Z1- SS17-12 (B5SZ3) Duplicate of A1- SS17-12 | Soil 6 – 12" | 5/14/10 | 1030 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| Z1- SS13-06 (B5SZ5) Duplicate of A1- SS13-06 | Soil 0 – 6" | 5/17/10 | 1040 | VOC, SVOA, BNA, PEST, TM, %Moist | (2) 8 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 22 oz., 15 grams | Cool to 4°C |
| Z1- SS18-06 (B5SZ6) Duplicate of A1- SS18-06 | Soil 0 – 6" | 5/18/10 | 1415 | VOC, TM, %Moist | (1) 4 oz. glass with Teflon- lined cap<br>(1) 2 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Cool to 4°C |
| RB-01 (B5SZ4) | Aqueous" | 5/14/10 | 1000 | SVOA, BNA, PEST | (2) 8 oz. glass with Teflon- lined cap | 16 oz | Cool to 4°C |
| RB-01 VOC only (B5T07) | Aqueous" | 5/18/10 | 1400 | VOC, TM, %Moist | (1) 2 oz. glass with Teflon- lined cap<br>(1) 4 oz. glass with Teflon- lined cap<br>(3) 5 gram Encores | 8 oz., 15 grams | Nitric acid for TM, HCl for VOC, cool to 4°C |

**TABLE 2**
**AREA 5 and AREA 6 SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Interval | Sample Collection | | Analysis Requested | Sample Type | Sample Container | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A6-SS213-06 | 0-6 | 5/11/10 | 1055 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS142-06 | 0-6 | 5/11/10 | 1050 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD100-06 | 0-6 | 5/11/10 | 1011 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD98-06 | 0-6 | 5/11/10 | 1030 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS101-06 | 0-6 | 5/11/10 | 1000 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD41-06 | 0-6 | 5/11/10 | 852 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z6-SD41-06 Duplicate of A6- SD41-06 | 0-6 | 5/11/10 | 852 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS41-06 | 0-6 | 5/11/10 | 911 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS37-02 | 0-2 | 5/11/10 | 847 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS210-02 MS/MSD | 0-2 | 5/11/10 | 1000 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS211-02 | 0-2 | 5/11/10 | 1027 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS44-02 | 0-2 | 5/11/10 | 827 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS46-02 | 0-2 | 5/11/10 | 931 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS88-02 | 0-2 | 5/11/10 | 850 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB47-02 | 0-2 | 5/11/10 | 904 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB26-02 | 0-2 | 5/11/10 | 1330 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB35-02 | 0-2 | 5/11/10 | 1405 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB27-06 | 0-6 | 5/11/10 | 1325 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD112-02 | 0-2 | 5/11/10 | 1340 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD38-02 | 0-2 | 5/11/10 | 1455 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD48-02 | 0-2 | 5/11/10 | 1436 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB43-02 | 0-2 | 5/11/10 | 1313 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD106-02 | 0-2 | 5/11/10 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD95-02 MS/MSD | 0-2 | 5/11/10 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS212-02 | 0-2 | 5/11/10 | 1550 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z6-SS212-02 Duplicate of A6- SS212-02 | 0-2 | 5/11/10 | 1550 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS37-06 | 0-6 | 5/11/10 | 847 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS37-12 | 6-12 | 5/11/10 | 847 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS37-24 | 12-24 | 5/11/10 | 847 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS210-06 | 0-6 | 5/11/10 | 1000 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS210-12 | 6-12 | 5/11/10 | 1000 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS210-24 | 12-24 | 5/11/10 | 1000 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |

**TABLE 2, cont'd**
**AREA 5 and AREA 6 SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Interval | Sample Collection | | Analysis Requested | Sample Type | Sample Container | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A6-SS211-06 | 0-6 | 5/11/10 | 1027 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS211-12 | 6-12 | 5/11/10 | 1027 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS211-24 | 12-24 | 5/11/10 | 1027 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS44-06 | 0-6 | 5/11/10 | 827 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS44-12 | 6-12 | 5/11/10 | 827 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS44-24 | 12-24 | 5/11/10 | 827 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS46-06 | 0-6 | 5/11/10 | 931 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS46-12 | 6-12 | 5/11/10 | 931 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS46-24 | 12-24 | 5/11/10 | 931 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS88-06 | 0-6 | 5/11/10 | 850 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS88-12 | 6-12 | 5/11/10 | 850 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS88-24 | 12-24 | 5/11/10 | 850 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB47-06 | 0-6 | 5/11/10 | 904 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB47-12 | 6-12 | 5/11/10 | 904 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB47-24 | 12-24 | 5/11/10 | 904 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB26-06 | 0-6 | 5/11/10 | 1330 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB26-12 | 6-12 | 5/11/10 | 1330 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB26-24 | 12-24 | 5/11/10 | 1330 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB35-06 | 0-6 | 5/11/10 | 1405 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB35-12 | 6-12 | 5/11/10 | 1405 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB35-24 | 12-24 | 5/11/10 | 1405 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD112-06 | 0-6 | 5/11/10 | 1340 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD112-12 | 6-12 | 5/11/10 | 1340 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD112-24 | 12-24 | 5/11/10 | 1340 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD38-06 | 0-6 | 5/11/10 | 1455 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD38-12 | 6-12 | 5/11/10 | 1455 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD38-24 | 12-24 | 5/11/10 | 1455 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD48-06 | 0-6 | 5/11/10 | 1436 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD48-12 | 6-12 | 5/11/10 | 1436 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD48-24 | 12-24 | 5/11/10 | 1436 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB43-06 | 0-6 | 5/11/10 | 1313 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB43-12 | 6-12 | 5/11/10 | 1313 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |

**TABLE 2, cont'd**
**AREA 5 and AREA 6 SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Interval | Sample Collection | | Analysis Requested | Sample Type | Sample Container | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A6-SDB43-24 | 12-24 | 5/11/10 | 1313 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD106-06 | 0-6 | 5/11/10 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD106-12 | 6-12 | 5/11/10 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD106-24 | 12-24 | 5/11/10 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD95-06 MS/MSD | 0-6 | 5/11/10 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD95-12 | 6-12 | 5/11/10 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD95-24 | 12-24 | 5/11/10 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS212-06 | 0-6 | 5/11/10 | 1550 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS212-12 | 6-12 | 5/11/10 | 1550 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SS212-24 | 12-24 | 5/11/10 | 1550 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z6-SS212-24 Duplicate of A6- SS212-24 | 12-24 | 5/11/10 | 1550 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS107-02 | 0-2 | 5/12/2010 | 1046 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS107-06 | 0-6 | 5/12/2010 | 1046 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS107-12 | 6-12 | 5/12/2010 | 1046 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS107-24 | 12-24 | 5/12/2010 | 1046 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS109-02 | 0-2 | 5/12/2010 | 1117 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS109-06 | 0-6 | 5/12/2010 | 1117 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS109-12 | 6-12 | 5/12/2010 | 1117 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS109-24 | 12-24 | 5/12/2010 | 1117 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS111-02 | 0-2 | 5/12/2010 | 1144 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS111-06 | 0-6 | 5/12/2010 | 1144 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS111-12 | 6-12 | 5/12/2010 | 1144 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS111-24 | 12-24 | 5/12/2010 | 1144 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS112-02 | 0-2 | 5/12/2010 | 1200 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS112-06 | 0-6 | 5/12/2010 | 1200 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS112-12 | 6-12 | 5/12/2010 | 1200 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS112-24 | 12-24 | 5/12/2010 | 1200 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS140-06 MS/MSD | 0-6 | 5/12/2010 | 1105 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS139-06 | 0-6 | 5/12/2010 | 1111 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB22-06 | 0-6 | 5/12/2010 | 1057 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS113-06 | 0-6 | 5/12/2010 | 1212 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z5-SS113-06 Duplicate of A5- SS113-06 | 0-6 | 5/12/2010 | 1212 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |

**TABLE 2, cont'd**
**AREA 5 and AREA 6 SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Interval | Sample Collection | | Analysis Requested | Sample Type | Sample Container | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A5-SD127-06 | 0-6 | 5/12/2010 | 1200 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD129-06 | 0-6 | 5/12/2010 | 1140 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS132-06 | 0-6 | 5/12/2010 | 1120 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS211-06 | 0-6 | 5/12/2010 | 1215 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD123-06 | 0-6 | 5/12/2010 | 1550 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS115-06 | 0-6 | 5/12/2010 | 1553 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS123-06 | 0-6 | 5/12/2010 | 1555 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS117-06 | 0-6 | 5/12/2010 | 1558 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS119-06 | 0-6 | 5/12/2010 | 1604 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD147-06 | 0-6 | 5/12/2010 | 1610 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS213-06 | 0-6 | 5/12/2010 | 1611 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS33-06 | 0-6 | 5/12/2010 | 1613 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS159-06 | 0-6 | 5/12/2010 | 1615 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS160-06 | 0-6 | 5/12/2010 | 1616 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS29-06 | 0-6 | 5/12/2010 | 1618 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS125-02 | 0-2 | 5/12/2010 | 1445 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS125-06 | 0-6 | 5/12/2010 | 1445 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS125-12 | 6-12 | 5/12/2010 | 1445 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS125-24 | 12-24 | 5/12/2010 | 1445 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB20-02 | 0-2 | 5/12/2010 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB20-06 | 0-6 | 5/12/2010 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB20-12 | 6-12 | 5/12/2010 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB20-24 | 12-24 | 5/12/2010 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z5-SDB20-24<br>Duplicate of A5- SDB20-24 | 12-24 | 5/12/2010 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD139-02 | 0-2 | 5/12/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD139-06<br>MS/MSD | 0-6 | 5/12/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD139-12 | 6-12 | 5/12/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD139-24 | 12-24 | 5/12/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD124-02 | 0-2 | 5/12/2010 | 1520 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD124-06 | 0-6 | 5/12/2010 | 1520 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD124-12 | 6-12 | 5/12/2010 | 1520 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD124-24 | 12-24 | 5/12/2010 | 1520 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |

**TABLE 2, cont'd**
**AREA 5 and AREA 6 SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Interval | Sample Collection | | Analysis Requested | Sample Type | Sample Container | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A5-SDB10-02 MS/MSD | 0-2 | 5/12/2010 | 1510 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB10-06 | 0-6 | 5/12/2010 | 1510 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB10-12 | 6-12 | 5/12/2010 | 1510 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB10-24 | 12-24 | 5/12/2010 | 1510 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z5-SDB10-24 Duplicate of A5- SDB10-24 | 12-24 | 5/12/2010 | 1510 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD141-02 | 0-2 | 5/12/2010 | 1550 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD141-06 | 0-6 | 5/12/2010 | 1550 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD141-12 | 6-12 | 5/12/2010 | 1550 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD141-24 | 12-24 | 5/12/2010 | 1550 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS118-02 | 0-2 | 5/12/2010 | 1610 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS118-06 | 0-6 | 5/12/2010 | 1610 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS118-12 | 6-12 | 5/12/2010 | 1610 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS118-24 | 12-24 | 5/12/2010 | 1610 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SDB55-06 | 0-6 | 5/13/2010 | 1350 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDA165-06 | 0-6 | 5/13/2010 | 1407 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDA133-06 | 0-6 | 5/13/2010 | 1410 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD152-06 | 0-6 | 5/13/2010 | 1415 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD121-06 | 0-6 | 5/13/2010 | 1420 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD142-06 | 0-6 | 5/13/2010 | 1423 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD136-06 | 0-6 | 5/13/2010 | 1430 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDA130-02 | 0-2 | 5/13/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDA130-06 | 0-6 | 5/13/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDA130-12 MS/MSD | 6-12 | 5/13/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDA130-24 | 12-24 | 5/13/2010 | 1500 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS162-02 | 0-2 | 5/13/2010 | 1525 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS162-06 | 0-6 | 5/13/2010 | 1525 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD157-02 | 0-2 | 5/13/2010 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD157-06 | 0-6 | 5/13/2010 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD157-12 | 6-12 | 5/13/2010 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SD157-24 | 12-24 | 5/13/2010 | 1515 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB3-02 | 0-2 | 5/13/2010 | 1533 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB3-06 | 0-6 | 5/13/2010 | 1533 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |

**TABLE 2, cont'd**
**AREA 5 and AREA 6 SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Interval | Sample Collection | | Analysis Requested | Sample Type | Sample Container | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A5-SDB3-12 | 6-12 | 5/13/2010 | 1533 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB3-24 | 12-24 | 5/13/2010 | 1533 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD99-02 | 0-2 | 5/13/2010 | 1415 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD99-06 | 0-6 | 5/13/2010 | 1415 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD99-12 | 6-12 | 5/13/2010 | 1415 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A6-SD99-24 | 12-24 | 5/13/2010 | 1415 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS153-02 | 0-2 | 5/13/2010 | 1546 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS153-06 | 0-6 | 5/13/2010 | 1546 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS153-12 | 6-12 | 5/13/2010 | 1546 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS153-24 | 12-24 | 5/13/2010 | 1546 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS155-02 | 0-2 | 5/13/2010 | 1555 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS155-06 MS/MSD | 0-6 | 5/13/2010 | 1555 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS155-12 | 6-12 | 5/13/2010 | 1555 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS155-24 | 12-24 | 5/13/2010 | 1555 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB6-02 | 0-2 | 5/13/2010 | 1605 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB6-06 | 0-6 | 5/13/2010 | 1605 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB6-12 | 6-12 | 5/13/2010 | 1605 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB6-24 | 12-24 | 5/13/2010 | 1605 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS35-02 | 0-2 | 5/13/2010 | 1525 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS35-06 | 0-6 | 5/13/2010 | 1525 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS35-12 | 6-12 | 5/13/2010 | 1525 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SS35-24 | 12-24 | 5/13/2010 | 1525 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z5-SD121-06 Duplicate of A5-SD121-06 | 0-6 | 5/13/2010 | 1420 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| A5-SDB9-06 | 0-6 | 5/13/2010 | 1405 | As, Pb, Sb, Cu, Cr | Sediment | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |
| Z5-SS35-24 Duplicate of A5- SS35-24 | 12-24 | 5/13/2010 | 1525 | As, Pb, Sb, Cu, Cr | Soil | (1) 4 oz. glass with Teflon- lined cap | Cool to 4°C |

**TABLE 3**
**AQUEOUS SAMPLE DESCRIPTIONS**
**RARITAN BAY SLAG SAMPLING SITE**
**OLD BRIDGE, MONMOUTH COUNTY, NEW JERSEY**

| Sample Location Identifier | Sample Interval | Sample Collection | | Analysis Requested | Sample Type | Sample Container | Sample Preservation |
|---|---|---|---|---|---|---|---|
| | | Date | Time | Parameter | | | |
| A5-SW30 | Surface | 5/17/2010 | 1047 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW31 | Surface | 5/17/2010 | 1051 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW32 | Surface | 5/17/2010 | 1054 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW33 | Surface | 5/17/2010 | 1056 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW34 | Surface | 5/17/2010 | 1107 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW35 | Surface | 5/17/2010 | 1105 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW36 | Surface | 5/17/2010 | 1058 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW37 | Surface | 5/17/2010 | 1045 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW38 | Surface | 5/17/2010 | 1049 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A5-SW39 | Surface | 5/17/2010 | 1104 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| Z5-SW37<br>Duplicate of A5- SW37 | Surface | 5/17/2010 | 1045 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW12 | Surface | 5/11/2010 | 847 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW13 | Surface | 5/11/2010 | 849 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW14 | Surface | 5/11/2010 | 1405 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW30 | Surface | 5/11/2010 | 918 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW31 | Surface | 5/11/2010 | 933 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW32 | Surface | 5/11/2010 | 1002 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW33 | Surface | 5/11/2010 | 1009 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW34<br>MS/MSD | Surface | 5/11/2010 | 1031 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW35 | Surface | 5/11/2010 | 1041 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW36 | Surface | 5/11/2010 | 1046 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW37 | Surface | 5/11/2010 | 1035 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |
| A6-SW38 | Surface | 5/11/2010 | 1410 | As, Pb, Sb, Cu, Cr | Aqueous | (1) 125 ml plastic bottle | Nitric Acid, Cool to 4°C |

**APPENDIX A**

**US ENVIRONMENTAL PROTECTION AGENCY**

**CLP LABORATORY**

**CHAIN OF CUSTODY RECORD**

# USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102
DAS No:

**R**

| | | | |
|---|---|---|---|
| **Region:** 2 | **Date Shipped:** 5/10/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | **Carrier Name:** UPS | **Relinquished By (Date / Time)** | **Received By (Date / Time)** |
| **Account Code:** | **Airbill:** 1Z0615472210034879 | 1 [signature] 5/10/10 at 1830 | |
| **CERCLIS ID:** | **Shipped to:** Liberty Analytical Corporation | 2 | |
| **Spill ID:** | 501 Madison Avenue | 3 | |
| **Site Name/State:** Raritan Bay Slag Sampling Site/NJ | Cary NC 27513 | 4 | |
| **Project Leader:** Christina Leung | (919) 379-4100 | | |
| **Action:** | | | |
| **Sampling Co:** | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| MB5SN5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS70-02 | S: 5/10/2010 | 11:55 | B5SN5 | -- |
| MB5SN6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS88-02 | S: 5/10/2010 | 11:15 | B5SN6 | -- |
| MB5SN7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS70-06 | S: 5/10/2010 | 12:00 | B5SN7 | -- |
| MB5SN8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS70-12 | S: 5/10/2010 | 12:10 | B5SN8 | -- |
| MB5SN9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS71-02 | S: 5/10/2010 | 10:30 | B5SN9 | -- |
| MB5SP0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS71-06 | S: 5/10/2010 | 10:45 | B5SP0 | -- |
| MB5SP1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS71-12 | S: 5/10/2010 | 10:55 | B5SP1 | -- |
| MB5SP2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS73-02 | S: 5/10/2010 | 10:26 | B5SP2 | -- |
| MB5SP3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS73-06 | S: 5/10/2010 | 11:00 | B5SP3 | -- |
| MB5SP4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS73-12 | S: 5/10/2010 | 11:30 | B5SP4 | -- |
| MB5SP5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS74-02 | S: 5/10/2010 | 10:55 | B5SP5 | -- |

| | | | |
|---|---|---|---|
| **Shipment for Case Complete? N** | **Sample(s) to be used for laboratory QC:** MB5SS6, MB5ST5, MB5SW0 | **Additional Sampler Signature(s):** | **Chain of Custody Seal Number:** |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051010-0001**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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REGION COPY

# EPA USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| Region: | 2 | Date Shipped: | 5/10/2010 | Chain of Custody Record | Sampler Signature: |
| Project Code: | | Carrier Name: | UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | | Airbill: | 1Z0615472210034879 | 1 5/10/10 AT 1630 | |
| CERCLIS ID: | | Shipped to: | Liberty Analytical Corporation | 2 | |
| Spill ID: | | | 501 Madison Avenue | 3 | |
| Site Name/State: | Raritan Bay Slag Sampling Site/NJ | | Cary NC 27513 | 4 | |
| Project Leader: | Christina Leung | | (919) 379-4100 | | |
| Action: | | | | | |
| Sampling Co: | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| MB5SP6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS74-06 | S: 5/10/2010 11:15 | B5SP6 | -- |
| MB5SP7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS74-12 | S: 5/10/2010 11:30 | B5SP7 | -- |
| MB5SP8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS75-02 | S: 5/10/2010 11:27 | B5SP8 | -- |
| MB5SP9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS75-06 | S: 5/10/2010 11:44 | B5SP9 | -- |
| MB5SQ0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS75-12 | S: 5/10/2010 11:58 | B5SQ0 | -- |
| MB5SQ1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS76-02 | S: 5/10/2010 12:20 | B5SQ1 | -- |
| MB5SQ2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS76-06 | S: 5/10/2010 12:40 | B5SQ2 | -- |
| MB5SQ3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS76-12 | S: 5/10/2010 12:55 | B5SQ3 | -- |
| MB5SQ4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS77-02 | S: 5/10/2010 10:31 | B5SQ4 | -- |
| MB5SQ5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS77-06 | S: 5/10/2010 10:45 | B5SQ5 | -- |
| MB5SQ6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS77-12 | S: 5/10/2010 11:07 | B5SQ6 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SS6, MB5ST5, MB5SW0 | | |
| Analysis Key: | Concentration: L = Low, M = Low/Medium, H = High | Type/Designate: Composite = C, Grab = G | Shipment Iced? _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051010-0001**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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R2-0004310

# USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102
DAS No:

**R**

| | | | | | |
|---|---|---|---|---|---|
| Region: 2 | Date Shipped: 5/10/2010 | Chain of Custody Record | | Sampler Signature: | |
| Project Code: | Carrier Name: UPS | Relinquished By | (Date / Time) | Received By | (Date / Time) |
| Account Code: | Airbill: 1Z0615472210034879 | 1 | 5/10/10 at 1830 | | |
| CERCLIS ID: | Shipped to: Liberty Analytical Corporation | 2 | | | |
| Spill ID: | 501 Madison Avenue | 3 | | | |
| Site Name/State: Raritan Bay Slag Sampling Site/NJ | Cary NC 27513 | 4 | | | |
| Project Leader: Christina Leung | (919) 379-4100 | | | | |
| Action: | | | | | |
| Sampling Co: | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| MB5SQ7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS79-02 | S: 5/10/2010 | 13:50 | B5SQ7 | -- |
| MB5SQ8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS79-06 | S: 5/10/2010 | 14:00 | B5SQ8 | -- |
| MB5SQ9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS79-12 | S: 5/10/2010 | 14:45 | B5SQ9 | -- |
| MB5SR0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS80-02 | S: 5/10/2010 | 12:30 | B5SR0 | -- |
| MB5SR1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS80-06 | S: 5/10/2010 | 12:35 | B5SR1 | -- |
| MB5SR2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS80-12 | S: 5/10/2010 | 12:45 | B5SR2 | -- |
| MB5SR3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS81-02 | S: 5/10/2010 | 15:20 | B5SR3 | -- |
| MB5SR4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS81-06 | S: 5/10/2010 | 15:30 | B5SR4 | -- |
| MB5SR5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS81-12 | S: 5/10/2010 | 15:45 | B5SR5 | -- |
| MB5SR6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS82-02 | S: 5/10/2010 | 10:47 | B5SR6 | -- |
| MB5SR7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS82-06 | S: 5/10/2010 | 10:58 | B5SR7 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SS6, MB5ST5, MB5SW0 | | |
| Analysis Key: | Concentration: L = Low, M = Low/Medium, H = High | Type/Designate: Composite = C, Grab = G | Shipment Iced? _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051010-0001**

R provides preliminary results. Requests for preliminary results will increase analytical costs.

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# USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/10/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | | **Carrier Name:** | UPS | **Relinquished By (Date / Time)** | **Received By (Date / Time)** |
| **Account Code:** | | **Airbill:** | 1Z0615472210034879 | 1 5/10/10 at 1630 | |
| **CERCLIS ID:** | | **Shipped to:** | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary NC 27513<br>(919) 379-4100 | 2 | |
| **Spill ID:** | | | | 3 | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| **Project Leader:** | Christina Leung | | | | |
| **Action:** | | | | | |
| **Sampling Co:** | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| MB5SR8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS82-12 | S: 5/10/2010 | 11:05 | B5SR8 | -- |
| MB5SR9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS83-02 | S: 5/10/2010 | 12:10 | B5SR9 | -- |
| MB5SS0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS83-06 | S: 5/10/2010 | 12:20 | B5SS0 | -- |
| MB5SS1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS83-12 | S: 5/10/2010 | 12:30 | B5SS1 | -- |
| MB5SS2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS84-02 | S: 5/10/2010 | 12:40 | B5SS2 | -- |
| MB5SS3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS84-06 | S: 5/10/2010 | 12:55 | B5SS3 | -- |
| MB5SS4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS84-12 | S: 5/10/2010 | 13:05 | B5SS4 | -- |
| MB5SS5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS85-02 | S: 5/10/2010 | 13:30 | B5SS5 | -- |
| MB5SS6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS85-06 | S: 5/10/2010 | 13:45 | B5SS6 | -- |
| MB5SS7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS85-12 | S: 5/10/2010 | 13:55 | B5SS7 | -- |
| MB5SS8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS86-02 | S: 5/10/2010 | 15:00 | B5SS8 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SS6, MB5ST5, MB5SW0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051010-0001**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602

# USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/10/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | | **Carrier Name:** | UPS | **Relinquished By** (Date / Time) | **Received By** (Date / Time) |
| **Account Code:** | | **Airbill:** | 1Z0615472210034879 | 1 5/10/10 1910 | |
| **CERCLIS ID:** | | **Shipped to:** | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary NC 27513<br>(919) 379-4100 | 2 | |
| **Spill ID:** | | | | 3 | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| **Project Leader:** | Christina Leung | | | | |
| **Action:** | | | | | |
| **Sampling Co:** | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| MB5SS9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS86-06 | S: 5/10/2010 15:25 | B5SS9 | -- |
| MB5ST0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS86-12 | S: 5/10/2010 15:40 | B5ST0 | -- |
| MB5ST1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS87-02 | S: 5/10/2010 14:30 | B5ST1 | -- |
| MB5ST2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS87-06 | S: 5/10/2010 14:45 | B5ST2 | -- |
| MB5ST3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS87-12 | S: 5/10/2010 15:00 | B5ST3 | -- |
| MB5ST4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS88-06 | S: 5/10/2010 11:20 | B5ST4 | -- |
| MB5ST5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS88-12 | S: 5/10/2010 11:25 | B5ST5 | -- |
| MB5ST6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS89-02 | S: 5/10/2010 13:30 | B5ST6 | -- |
| MB5ST7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS89-06 | S: 5/10/2010 13:40 | B5ST7 | -- |
| MB5ST8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS89-12 | S: 5/10/2010 14:00 | B5ST8 | -- |
| MB5ST9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS90-02 | S: 5/10/2010 14:00 | B5ST9 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SS6, MB5ST5, MB5SW0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051010-0001**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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# EPA USEPA Contract Laboratory Program
## Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/10/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | | **Carrier Name:** | UPS | **Relinquished By (Date / Time)** | **Received By (Date / Time)** |
| **Account Code** | | **Airbill:** | 1Z0615472210034879 | 1 5/10/10 at 1230 | |
| **CERCLIS ID:** | | **Shipped to:** | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary NC 27513<br>(919) 379-4100 | 2 | |
| **Spill ID:** | | | | 3 | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| **Project Leader:** | Christina Leung | | | | |
| **Action:** | | | | | |
| **Sampling Co:** | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| MB5SW0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS90-06 | S: 5/10/2010 13:45 | B5SW0 | -- |
| MB5SW1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A3-SS90-12 | S: 5/10/2010 14:10 | B5SW1 | -- |
| MB5SW2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | Z3-SS75-02 | S: 5/10/2010 11:27 | B5SW2 | Field Duplicate |
| MB5SW3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | Z3-SS89-02 | S: 5/10/2010 13:30 | B5SW3 | Field Duplicate |
| MB5SW4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | Z3-SS90-06 | S: 5/10/2010 13:45 | B5SW4 | Field Duplicate |

| | | | |
|---|---|---|---|
| **Shipment for Case Complete? N** | **Sample(s) to be used for laboratory QC:** MB5SS6, MB5ST5, MB5SW0 | **Additional Sampler Signature(s):** | **Chain of Custody Seal Number:** |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051010-0001**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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# EPA USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/10/2010 |
| **Project Code:** | | **Carrier Name:** | UPS |
| **Account Code:** | | **Airbill:** | 1Z0615472210034888 |
| **CERCLIS ID:** | | **Shipped to:** | Mitkem Corporation<br>175 Metro Center Blvd.<br>Warwick RI 02886<br>(401) 732-3400 |
| **Spill ID:** | | | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | |
| **Project Leader:** | Christina Leung | | |
| **Action:** | | | |
| **Sampling Co:** | | | |

**Chain of Custody Record**

| Relinquished By | (Date / Time) | Received By | (Date / Time) |
|---|---|---|---|
| 1 | 5/10/10 at 1830 | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

Sampler Signature:

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| B5SN5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS70-02 | S: 5/10/2010 11:55 | MB5SN5 | -- |
| B5SN6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS88-02 | S: 5/10/2010 11:15 | MB5SN6 | -- |
| B5SN7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS70-06 | S: 5/10/2010 12:00 | MB5SN7 | -- |
| B5SN8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS70-12 | S: 5/10/2010 12:10 | MB5SN8 | -- |
| B5SN9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS71-02 | S: 5/10/2010 10:30 | MB5SN9 | -- |
| B5SP0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS71-06 | S: 5/10/2010 10:45 | MB5SP0 | -- |
| B5SP1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS71-12 | S: 5/10/2010 10:55 | MB5SP1 | -- |
| B5SP2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS73-02 | S: 5/10/2010 10:26 | MB5SP2 | -- |
| B5SP3 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS73-06 | S: 5/10/2010 11:00 | MB5SP3 | -- |
| B5SP4 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS73-12 | S: 5/10/2010 11:30 | MB5SP4 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SS6, B5ST5, B5SW0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051010-0002**

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R provides preliminary results. Requests for preliminary results will increase analytical costs.

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# EPA USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| **Region:** 2 | **Date Shipped:** 5/10/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | **Carrier Name:** UPS | **Relinquished By** (Date / Time) | **Received By** (Date / Time) |
| **Account Code:** | **Airbill:** 1Z0615472210034888 | 1 5/10/10 at 12:10 | |
| **CERCLIS ID:** | **Shipped to:** Mitkem Corporation 175 Metro Center Blvd. Warwick RI 02886 (401) 732-3400 | 2 | |
| **Spill ID:** | | 3 | |
| **Site Name/State:** Raritan Bay Slag Sampling Site/NJ | | 4 | |
| **Project Leader:** Christina Leung | | | |
| **Action:** | | | |
| **Sampling Co:** | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SP5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS74-02 | S: 5/10/2010 | 10:55 | MB5SP5 | -- |
| B5SP6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS74-06 | S: 5/10/2010 | 11:15 | MB5SP6 | -- |
| B5SP7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS74-12 | S: 5/10/2010 | 11:30 | MB5SP7 | -- |
| B5SP8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS75-02 | S: 5/10/2010 | 11:27 | MB5SP8 | -- |
| B5SP9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS75-06 | S: 5/10/2010 | 11:44 | MB5SP9 | -- |
| B5SQ0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS75-12 | S: 5/10/2010 | 11:58 | MB5SQ0 | -- |
| B5SQ1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS76-02 | S: 5/10/2010 | 12:20 | MB5SQ1 | -- |
| B5SQ2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS76-06 | S: 5/10/2010 | 12:40 | MB5SQ2 | -- |
| B5SQ3 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS76-12 | S: 5/10/2010 | 12:55 | MB5SQ3 | -- |
| B5SQ4 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS77-02 | S: 5/10/2010 | 10:31 | MB5SQ4 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SS6, B5ST5, B5SW0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051010-0002**

R provides preliminary results. Requests for preliminary results will increase analytical costs.

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R2-0004316

# EPA USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| Region: | 2 | Date Shipped: | 5/10/2010 | Chain of Custody Record | Sampler Signature: |
| Project Code: | | Carrier Name: | UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | | Airbill: | 1Z0615472210034888 | 1 [signature] 5/10/10 at 15:30 | |
| CERCLIS ID: | | Shipped to: | Mitkem Corporation<br>175 Metro Center Blvd.<br>Warwick RI 02886<br>(401) 732-3400 | 2 | |
| Spill ID: | | | | 3 | |
| Site Name/State: | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| Project Leader: | Christina Leung | | | | |
| Action: | | | | | |
| Sampling Co: | | | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| B5SQ5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS77-06 | S: 5/10/2010 10:45 | MB5SQ5 | -- |
| B5SQ6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS77-12 | S: 5/10/2010 11:07 | MB5SQ6 | -- |
| B5SQ7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS79-02 | S: 5/10/2010 13:50 | MB5SQ7 | -- |
| B5SQ8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS79-06 | S: 5/10/2010 14:00 | MB5SQ8 | -- |
| B5SQ9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS79-12 | S: 5/10/2010 14:45 | MB5SQ9 | -- |
| B5SR0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS80-02 | S: 5/10/2010 12:30 | MB5SR0 | -- |
| B5SR1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS80-06 | S: 5/10/2010 12:35 | MB5SR1 | -- |
| B5SR2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS80-12 | S: 5/10/2010 12:45 | MB5SR2 | -- |
| B5SR3 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS81-02 | S: 5/10/2010 15:20 | MB5SR3 | -- |
| B5SR4 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS81-06 | S: 5/10/2010 15:30 | MB5SR4 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SS6, B5ST5, B5SW0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051010-0002**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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R2-0004317

# EPA USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

| Case No: | 40102 | R |
|---|---|---|
| DAS No: | | |

| | | | | | |
|---|---|---|---|---|---|
| Region: | 2 | Date Shipped: | 5/10/2010 | Chain of Custody Record | Sampler Signature: |
| Project Code: | | Carrier Name: | UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | | Airbill: | 1Z0615472210034888 | [signature] 5/10/10 at 1630 | |
| CERCLIS ID: | | Shipped to: | Mitkem Corporation<br>175 Metro Center Blvd.<br>Warwick RI 02886<br>(401) 732-3400 | 2 | |
| Spill ID: | | | | 3 | |
| Site Name/State: | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| Project Leader: | Christina Leung | | | | |
| Action: | | | | | |
| Sampling Co: | | | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SR5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS81-12 | S: 5/10/2010 | 15:45 | MB5SR5 | -- |
| B5SR6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS82-02 | S: 5/10/2010 | 10:47 | MB5SR6 | -- |
| B5SR7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS82-06 | S: 5/10/2010 | 10:58 | MB5SR7 | -- |
| B5SR8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS82-12 | S: 5/10/2010 | 11:05 | MB5SR8 | -- |
| B5SR9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS83-02 | S: 5/10/2010 | 12:10 | MB5SR9 | -- |
| B5SS0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS83-06 | S: 5/10/2010 | 12:20 | MB5SS0 | -- |
| B5SS1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS83-12 | S: 5/10/2010 | 12:30 | MB5SS1 | -- |
| B5SS2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS84-02 | S: 5/10/2010 | 12:40 | MB5SS2 | -- |
| B5SS3 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS84-06 | S: 5/10/2010 | 12:55 | MB5SS3 | -- |
| B5SS4 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS84-12 | S: 5/10/2010 | 13:05 | MB5SS4 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SS6, B5ST5, B5SW0 | | |
| Analysis Key: | Concentration: L = Low, M = Low/Medium, H = High | Type/Designate: Composite = C, Grab = G | Shipment Iced? _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051010-0002**

R provides preliminary results. Requests for preliminary results will increase analytical costs.

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# USEPA Contract Laboratory Program
## Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| Region: | 2 | Date Shipped: | 5/10/2010 |
| Project Code: | | Carrier Name: | UPS |
| Account Code: | | Airbill: | 1Z0615472210034888 |
| CERCLIS ID: | | Shipped to: | Mitkem Corporation<br>175 Metro Center Blvd.<br>Warwick RI 02886<br>(401) 732-3400 |
| Spill ID: | | | |
| Site Name/State: | Raritan Bay Slag Sampling Site/NJ | | |
| Project Leader: | Christina Leung | | |
| Action: | | | |
| Sampling Co: | | | |

**Chain of Custody Record**

Sampler Signature:

| Relinquished By | (Date / Time) | Received By | (Date / Time) |
|---|---|---|---|
| 1 [signature] | 5/10/10 at 1830 | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SS5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS85-02 | S: 5/10/2010 | 13:30 | MB5SS5 | -- |
| B5SS6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (8) | A3-SS85-06 | S: 5/10/2010 | 13:45 | MB5SS6 | -- |
| B5SS7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS85-12 | S: 5/10/2010 | 13:55 | MB5SS7 | -- |
| B5SS8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS86-02 | S: 5/10/2010 | 15:00 | MB5SS8 | -- |
| B5SS9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS86-06 | S: 5/10/2010 | 15:25 | MB5SS9 | -- |
| B5ST0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS86-12 | S: 5/10/2010 | 15:40 | MB5ST0 | -- |
| B5ST1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS87-02 | S: 5/10/2010 | 14:30 | MB5ST1 | -- |
| B5ST2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS87-06 | S: 5/10/2010 | 14:45 | MB5ST2 | -- |
| B5ST3 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS87-12 | S: 5/10/2010 | 15:00 | MB5ST3 | -- |
| B5ST4 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS88-06 | S: 5/10/2010 | 11:20 | MB5ST4 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SS6, B5ST5, B5SW0 | | |
| Analysis Key: | Concentration: L = Low, M = Low/Medium, H = High | Type/Designate: Composite = C, Grab = G | Shipment Iced? _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051010-0002**

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R provides preliminary results. Requests for preliminary results will increase analytical costs.

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# USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| **Region:** 2 | **Date Shipped:** 5/10/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | **Carrier Name:** UPS | **Relinquished By** (Date / Time) | **Received By** (Date / Time) |
| **Account Code:** | **Airbill:** 1Z0615472210034888 | 5/10/10 at 1830 | |
| **CERCLIS ID:** | **Shipped to:** Mitkem Corporation | 2 | |
| **Spill ID:** | 175 Metro Center Blvd. | 3 | |
| **Site Name/State:** Raritan Bay Slag Sampling Site/NJ | Warwick RI 02886 | 4 | |
| **Project Leader:** Christina Leung | (401) 732-3400 | | |
| **Action:** | | | |
| **Sampling Co:** | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5ST5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (8) | A3-SS88-12 | S: 5/10/2010 | 11:25 | MB5ST5 | -- |
| B5ST6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS89-02 | S: 5/10/2010 | 13:30 | MB5ST6 | -- |
| B5ST7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS89-06 | S: 5/10/2010 | 13:40 | MB5ST7 | -- |
| B5ST8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS89-12 | S: 5/10/2010 | 14:00 | MB5ST8 | -- |
| B5ST9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS90-02 | S: 5/10/2010 | 14:00 | MB5ST9 | -- |
| B5SW0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (8) | A3-SS90-06 | S: 5/10/2010 | 13:45 | MB5SW0 | -- |
| B5SW1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A3-SS90-12 | S: 5/10/2010 | 14:10 | MB5SW1 | -- |
| B5SW2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only), 1 (Ice Only) (6) | Z3-SS75-02 | S: 5/10/2010 | 11:27 | MB5SW2 | Field Duplicate |
| B5SW3 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | Z3-SS89-02 | S: 5/10/2010 | 13:30 | MB5SW3 | Field Duplicate |
| B5SW4 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | Z3-SS90-06 | S: 5/10/2010 | 13:45 | MB5SW4 | Field Duplicate |

| | | | |
|---|---|---|---|
| **Shipment for Case Complete? N** | **Sample(s) to be used for laboratory QC:** B5SS6, B5ST5, B5SW0 | **Additional Sampler Signature(s):** | **Chain of Custody Seal Number:** |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051010-0002**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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R2-0004320

# EPA USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| Region: 2 | Date Shipped: 5/14/2010 | Chain of Custody Record | Sampler Signature: |
| Project Code: | Carrier Name: UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | Airbill: 1Z0615472210034673 | 1 [signature] 5/14/10 at 1800 | |
| CERCLIS ID: | Shipped to: Liberty Analytical Corporation | 2 | |
| Spill ID: | 501 Madison Avenue | 3 | |
| Site Name/State: Raritan Bay Slag Sampling Site/NJ | Cary NC 27513 | 4 | |
| Project Leader: Christina Leung | (919) 379-4100 | | |
| Action: | | | |
| Sampling Co: | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| MB5SW5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS18-12 | S: 5/14/2010 10:10 | B5SW5 | -- |
| MB5SY3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS14-06 | S: 5/14/2010 11:30 | B5SY3 | -- |
| MB5SY4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS14-12 | S: 5/14/2010 11:35 | B5SY4 | -- |
| MB5SY5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS15-06 | S: 5/14/2010 11:15 | B5SY5 | -- |
| MB5SY6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS15-12 | S: 5/14/2010 11:20 | B5SY6 | -- |
| MB5SY7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS16-06 | S: 5/14/2010 10:45 | B5SY7 | -- |
| MB5SY8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS16-12 | S: 5/14/2010 10:50 | B5SY8 | -- |
| MB5SY9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS17-06 | S: 5/14/2010 10:20 | B5SY9 | -- |
| MB5SZ0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS17-12 | S: 5/14/2010 10:30 | B5SZ0 | -- |
| MB5SZ1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS18-06 | S: 5/14/2010 9:57 | B5SZ1 | -- |
| MB5SZ3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | Z1-SS17-12 | S: 5/14/2010 10:30 | B5SZ3 | Field Duplicate |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SZ1 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | Shipment Iced? _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051410-0003**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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# EPA USEPA Contract Laboratory Program
## Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| Region: | 2 | Date Shipped: | 5/14/2010 | **Chain of Custody Record** | Sampler Signature: |
| Project Code: | | Carrier Name: | UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | | Airbill: | 1Z0615472210034673 | 1 5/14/10 1500 | |
| CERCLIS ID: | | Shipped to: | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary NC 27513<br>(919) 379-4100 | 2 | |
| Spill ID: | | | | 3 | |
| Site Name/State: | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| Project Leader: | Christina Leung | | | | |
| Action: | | | | | |
| Sampling Co: | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| MB5SZ4 | Field QC/ Christina Leung | L/G | TM (No Hg) (7) | (HNO3) (1) | RB-01 | S: 5/14/2010 10:00 | B5SZ4 | Rinsate |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SZ1 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051410-0003**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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# EPA USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| Region: 2 | Date Shipped: 5/14/2010 | Chain of Custody Record | Sampler Signature: |
| Project Code: | Carrier Name: UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | Airbill: 1Z0615472210034664 | 1 [signature] 5/14/10 at 1800 | |
| CERCLIS ID: | Shipped to: Shealy Environmental 106 Vantage Point Drive Cayce SC 29033 (803) 791-9700 | 2 | |
| Spill ID: | | 3 | |
| Site Name/State: Raritan Bay Slag Sampling Site/NJ | | 4 | |
| Project Leader: Christina Leung | | | |
| Action: | | | |
| Sampling Co: | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SW5 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS18-12 | S: 5/14/2010 | 10:10 | MB5SW5 | -- |
| B5SY3 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS14-06 | S: 5/14/2010 | 11:30 | MB5SY3 | -- |
| B5SY4 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS14-12 | S: 5/14/2010 | 11:35 | MB5SY4 | -- |
| B5SY5 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS15-06 | S: 5/14/2010 | 11:15 | MB5SY5 | -- |
| B5SY6 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS15-12 | S: 5/14/2010 | 11:20 | MB5SY6 | -- |
| B5SY7 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS16-06 | S: 5/14/2010 | 10:45 | MB5SY7 | -- |
| B5SY8 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS16-12 | S: 5/14/2010 | 10:50 | MB5SY8 | -- |
| B5SY9 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS17-06 | S: 5/14/2010 | 10:20 | MB5SY9 | -- |
| B5SZ0 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (6) | A1-SS17-12 | S: 5/14/2010 | 10:30 | MB5SZ0 | -- |
| B5SZ1 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA~~ (7), PEST (7) | (Ice Only) (8) | A1-SS18-06 | S: 5/14/2010 | 9:57 | MB5SZ1 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SZ1 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051410-0004**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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# EPA USEPA Contract Laboratory Program
## Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/14/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | | **Carrier Name:** | UPS | **Relinquished By (Date / Time)** | **Received By (Date / Time)** |
| **Account Code:** | | **Airbill:** | 1Z0615472210034664 | 5/14/10 CT 1600 | |
| **CERCLIS ID:** | | **Shipped to:** | Shealy Environmental 106 Vantage Point Drive Cayce SC 29033 (803) 791-9700 | 2 | |
| **Spill ID:** | | | | 3 | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| **Project Leader:** | Christina Leung | | | | |
| **Action:** | | | | | |
| **Sampling Co:** | | | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SZ3 | Soil/Sediment/ Christina Leung | L/G | ~~% Moist~~ (7), CLP SVOA (7), ~~CLP VOA (7)~~, PEST (7) | (Ice Only) (6) | Z1-SS17-12 | S: 5/14/2010 | 10:30 | MB5SZ3 | Field Duplicate |
| B5SZ4 | Field QC/ Christina Leung | L/G | ~~CLP SVOA~~ (7), ~~CLP VOA (7)~~, PEST (7) | (Ice Only) (7) | RB-01 | S: 5/14/2010 | 10:00 | MB5SZ4 | Rinsate |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SZ1 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051410-0004**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602

# USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/17/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | | **Carrier Name:** | UPS | **Relinquished By (Date / Time)** | **Received By (Date / Time)** |
| **Account Code:** | | **Airbill:** | 1Z0615472210034824 | 1 [signature] 5/17/10 1900 | |
| **CERCLIS ID:** | | **Shipped to:** | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary NC 27513<br>(919) 379-4100 | 2 | |
| **Spill ID:** | | | | 3 | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| **Project Leader:** | Christina Leung | | | | |
| **Action:** | | | | | |
| **Sampling Co:** | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| MB5SW6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS05-12 | S: 5/17/2010 14:45 | B5SW6 | -- |
| MB5SW7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS06-06 | S: 5/17/2010 14:20 | B5SW7 | -- |
| MB5SW8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS06-12 | S: 5/17/2010 14:25 | B5SW8 | -- |
| MB5SW9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS07-06 | S: 5/17/2010 14:05 | B5SW9 | -- |
| MB5SX0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS07-12 | S: 5/17/2010 14:10 | B5SX0 | -- |
| MB5SX1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS08-06 | S: 5/17/2010 13:45 | B5SX1 | -- |
| MB5SX2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS08-12 | S: 5/17/2010 13:50 | B5SX2 | -- |
| MB5SX3 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS09-06 | S: 5/17/2010 13:20 | B5SX3 | -- |
| MB5SX4 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS09-12 | S: 5/17/2010 13:25 | B5SX4 | -- |
| MB5SX5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS10-06 | S: 5/17/2010 11:35 | B5SX5 | -- |
| MB5SX6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS10-12 | S: 5/17/2010 11:40 | B5SX6 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SY0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051710-0001**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602

# EPA USEPA Contract Laboratory Program
## Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102
DAS No:
**R**

| | | | |
|---|---|---|---|
| **Region:** 2 | **Date Shipped:** 5/17/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | **Carrier Name:** UPS | **Relinquished By** (Date / Time) | **Received By** (Date / Time) |
| **Account Code:** | **Airbill:** 1Z0615472210034824 | 1 [signature] 5/17/10 1900 | |
| **CERCLIS ID:** | **Shipped to:** Liberty Analytical Corporation | 2 | |
| **Spill ID:** | 501 Madison Avenue | 3 | |
| **Site Name/State:** Raritan Bay Slag Sampling Site/NJ | Cary NC 27513 | 4 | |
| **Project Leader:** Christina Leung | (919) 379-4100 | | |
| **Action:** | | | |
| **Sampling Co:** | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| MB5SX7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS11-06 | S: 5/17/2010 | 11:15 | B5SX7 | -- |
| MB5SX8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS11-12 | S: 5/17/2010 | 11:20 | B5SX8 | -- |
| MB5SX9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS12-06 | S: 5/17/2010 | 10:55 | B5SX9 | -- |
| MB5SY0 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS12-12 | S: 5/17/2010 | 11:00 | B5SY0 | -- |
| MB5SY1 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS13-06 | S: 5/17/2010 | 10:40 | B5SY1 | -- |
| MB5SY2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS13-12 | S: 5/17/2010 | 10:45 | B5SY2 | -- |
| MB5SZ2 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS05-06 | S: 5/17/2010 | 14:40 | B5SZ2 | -- |
| MB5SZ5 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | Z1-SS13-06 | S: 5/17/2010 | 10:40 | B5SZ5 | Field Duplicate |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | MB5SY0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051710-0001**

R provides preliminary results. Requests for preliminary results will increase analytical costs.

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602

# USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102
DAS No:
**R**

| | | | | | |
|---|---|---|---|---|---|
| Region: | 2 | Date Shipped: | 5/17/2010 | Chain of Custody Record | Sampler Signature: |
| Project Code: | | Carrier Name: | UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | | Airbill: | 1Z0615472210034833 | 1 5/17/10 1900 | |
| CERCLIS ID: | | Shipped to: | Datachem Laboratories, Inc. 960 West LeVoy Drive Salt Lake City UT 84123 (801) 266-7700 | 2 | |
| Spill ID: | | | | 3 | |
| Site Name/State: | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| Project Leader: | Christina Leung | | | | |
| Action: | | | | | |
| Sampling Co: | | | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SW6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS05-12 | S: 5/17/2010 | 14:45 | MB5SW6 | -- |
| B5SW7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS06-06 | S: 5/17/2010 | 14:20 | MB5SW7 | -- |
| B5SW8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS06-12 | S: 5/17/2010 | 14:25 | MB5SW8 | -- |
| B5SW9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS07-06 | S: 5/17/2010 | 14:05 | MB5SW9 | -- |
| B5SX0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS07-12 | S: 5/17/2010 | 14:10 | MB5SX0 | -- |
| B5SX1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS08-06 | S: 5/17/2010 | 13:45 | MB5SX1 | -- |
| B5SX2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS08-12 | S: 5/17/2010 | 13:50 | MB5SX2 | -- |
| B5SX3 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS09-06 | S: 5/17/2010 | 13:20 | MB5SX3 | -- |
| B5SX4 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS09-12 | S: 5/17/2010 | 13:25 | MB5SX4 | -- |
| B5SX5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS10-06 | S: 5/17/2010 | 11:35 | MB5SX5 | -- |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SY0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051710-0002**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602



R2-0004327

# EPA USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/17/2010 |
| **Project Code:** | | **Carrier Name:** | UPS |
| **Account Code:** | | **Airbill:** | 1Z0615472210034833 |
| **CERCLIS ID:** | | **Shipped to:** | Datachem Laboratories, Inc.<br>960 West LeVoy Drive<br>Salt Lake City UT 84123<br>(801) 266-7700 |
| **Spill ID:** | | | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | |
| **Project Leader:** | Christina Leung | | |
| **Action:** | | | |
| **Sampling Co:** | | | |

**Chain of Custody Record**

| Relinquished By | (Date / Time) | Received By | (Date / Time) |
|---|---|---|---|
| 1 | 5/17/10 at 1900 | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

**Sampler Signature:**

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SX6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS10-12 | S: 5/17/2010 | 11:40 | MB5SX6 | -- |
| B5SX7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS11-06 | S: 5/17/2010 | 11:15 | MB5SX7 | -- |
| B5SX8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS11-12 | S: 5/17/2010 | 11:20 | MB5SX8 | -- |
| B5SX9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS12-06 | S: 5/17/2010 | 10:55 | MB5SX9 | -- |
| B5SY0 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (8) | A1-SS12-12 | S: 5/17/2010 | 11:00 | MB5SY0 | -- |
| B5SY1 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS13-06 | S: 5/17/2010 | 10:40 | MB5SY1 | -- |
| B5SY2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS13-12 | S: 5/17/2010 | 10:45 | MB5SY2 | -- |
| B5SZ2 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | A1-SS05-06 | S: 5/17/2010 | 14:40 | MB5SZ2 | -- |
| B5SZ5 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP SVOA (7), CLP VOA (7), PEST (7) | (Ice Only) (6) | Z1-SS13-06 | S: 5/17/2010 | 10:40 | MB5SZ5 | Field Duplicate |

| Shipment for Case Complete? N | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| | B5SY0 | | |
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP SVOA = CLP TCL Semivolatiles, CLP VOA = CLP TCL Volatiles, PEST = CLP TCL Pesticide/PCBs

**R Number: 2-063358346-051710-0002**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

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R2-0004328

# USEPA Contract Laboratory Program
## Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| Region: 2 | Date Shipped: 5/18/2010 | **Chain of Custody Record** | Sampler Signature: |
| Project Code: | Carrier Name: UPS | Relinquished By (Date / Time) | Received By (Date / Time) |
| Account Code: | Airbill: 1Z0615472210034806 | 1 [signature] 5/18/10 [illegible] | |
| CERCLIS ID: | Shipped to: Liberty Analytical Corporation 501 Madison Avenue Cary NC 27513 (919) 379-4100 | 2 | |
| Spill ID: | | 3 | |
| Site Name/State: Raritan Bay Slag Sampling Site/NJ | | 4 | |
| Project Leader: Christina Leung | | | |
| Action: | | | |
| Sampling Co: | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| MB5SZ6 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | Z1-SS18-06 | S: 5/18/2010 | 14:15 | B5SZ6 | Field Duplicate |
| MB5SZ7 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS14-12 | S: 5/18/2010 | 15:05 | B5SZ7 | -- |
| MB5SZ8 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS15-06 | S: 5/18/2010 | 14:50 | B5SZ8 | -- |
| MB5SZ9 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS15-12 | S: 5/18/2010 | 14:55 | B5SZ9 | -- |
| MB5T00 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS16-06 | S: 5/18/2010 | 14:40 | B5T00 | -- |
| MB5T01 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS16-12 | S: 5/18/2010 | 14:45 | B5T01 | -- |
| MB5T02 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS17-06 | S: 5/18/2010 | 14:30 | B5T02 | -- |
| MB5T03 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS17-12 | S: 5/18/2010 | 14:35 | B5T03 | -- |
| MB5T04 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS18-06 | S: 5/18/2010 | 14:15 | B5T04 | -- |
| MB5T05 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS18-12 | S: 5/18/2010 | 14:20 | B5T05 | -- |
| MB5T06 | Soil/Sediment/ Christina Leung | L/G | TM (No Hg) (7) | (Ice Only) (1) | A1-SS14-06 | S: 5/18/2010 | 15:00 | B5T06 | -- |

| | | | |
|---|---|---|---|
| Shipment for Case Complete? Y | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
| Analysis Key: | Concentration: L = Low, M = Low/Medium, H = High | Type/Designate: Composite = C, Grab = G | Shipment Iced? _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number: 2-063358346-051810-0003**

R provides preliminary results. Requests for preliminary results will increase analytical costs.

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602



R2-0004329

# USEPA Contract Laboratory Program
# Inorganic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| **Region:** | 2 | **Date Shipped:** | 5/18/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | | **Carrier Name:** | UPS | **Relinquished By** (Date / Time) | **Received By** (Date / Time) |
| **Account Code:** | | **Airbill:** | 1Z0615472210034806 | 1 [signature] 5/18/10, 1700 | |
| **CERCLIS ID:** | | **Shipped to:** | Liberty Analytical Corporation<br>501 Madison Avenue<br>Cary NC 27513<br>(919) 379-4100 | 2 | |
| **Spill ID:** | | | | 3 | |
| **Site Name/State:** | Raritan Bay Slag Sampling Site/NJ | | | 4 | |
| **Project Leader:** | Christina Leung | | | | |
| **Action:** | | | | | |
| **Sampling Co:** | | | | | |

| INORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | ORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| MB5T07 | Field QC/ Christina Leung | L/G | TM (No Hg) (7) | (HNO3) (1) | RB-01 | S: 5/18/2010 14:00 | B5T07 | Rinsate |

| Shipment for Case Complete? Y | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| Analysis Key: | Concentration: L = Low, M = Low/Medium, H = High | Type/Designate: Composite = C, Grab = G | Shipment Iced? _____ |

TM (No Hg) = CLP TAL Total Metals (No Hg)

**R Number:** 2-063358346-051810-0003

R provides preliminary results. Requests for preliminary results will increase analytical costs.

and Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602

# EPA USEPA Contract Laboratory Program
## Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | | | |
|---|---|---|---|---|---|
| Region: 2 | Date Shipped: 5/18/2010 | Chain of Custody Record | | Sampler Signature: | |
| Project Code: | Carrier Name: UPS | Relinquished By | (Date / Time) | Received By | (Date / Time) |
| Account Code: | Airbill: 1Z0615472210034815 | 1 | 5/18/10 AT 1700 | | |
| CERCLIS ID: | Shipped to: Datachem Laboratories, Inc. | 2 | | | |
| Spill ID: | 960 West LeVoy Drive | 3 | | | |
| Site Name/State: Raritan Bay Slag Sampling Site/NJ | Salt Lake City UT 84123 | 4 | | | |
| Project Leader: Christina Leung | (801) 266-7700 | | | | |
| Action: | | | | | |
| Sampling Co: | | | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|---|
| B5SZ6 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | Z1-SS18-06 | S: 5/18/2010 | 14:15 | MB5SZ6 | Field Duplicate |
| B5SZ7 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS14-12 | S: 5/18/2010 | 15:05 | MB5SZ7 | -- |
| B5SZ8 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS15-06 | S: 5/18/2010 | 14:50 | MB5SZ8 | -- |
| B5SZ9 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS15-12 | S: 5/18/2010 | 14:55 | MB5SZ9 | -- |
| B5T00 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS16-06 | S: 5/18/2010 | 14:40 | MB5T00 | -- |
| B5T01 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS16-12 | S: 5/18/2010 | 14:45 | MB5T01 | -- |
| B5T02 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS17-06 | S: 5/18/2010 | 14:30 | MB5T02 | -- |
| B5T03 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS17-12 | S: 5/18/2010 | 14:35 | MB5T03 | -- |
| B5T04 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS18-06 | S: 5/18/2010 | 14:15 | MB5T04 | -- |
| B5T05 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS18-12 | S: 5/18/2010 | 14:20 | MB5T05 | -- |
| B5T06 | Soil/Sediment/ Christina Leung | L/G | % Moist (7), CLP VOA (7) | (Ice Only) (4) | A1-SS14-06 | S: 5/18/2010 | 15:00 | MB5T06 | -- |

| Shipment for Case Complete? Y | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| Analysis Key: | Concentration: L = Low, M = Low/Medium, H = High | Type/Designate: Composite = C, Grab = G | Shipment Iced? _____ |

% Moist = CLP Percent Moisture, CLP VOA = CLP TCL Volatiles

**R Number: 2-063358346-051810-0004**

R provides preliminary results. Requests for preliminary results will increase analytical costs.

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602

# EPA USEPA Contract Laboratory Program
# Organic Traffic Report & Chain of Custody Record

**Case No:** 40102 **R**
DAS No:

| | | | |
|---|---|---|---|
| **Region:** 2 | **Date Shipped:** 5/18/2010 | **Chain of Custody Record** | **Sampler Signature:** |
| **Project Code:** | **Carrier Name:** UPS | **Relinquished By** (Date / Time) | **Received By** (Date / Time) |
| **Account Code:** | **Airbill:** 1Z0615472210034815 | 1 [signature] SIGNED AT 1700 | |
| **CERCLIS ID:** | **Shipped to:** Datachem Laboratories, Inc. | 2 | |
| **Spill ID:** | 960 West LeVoy Drive | 3 | |
| **Site Name/State:** Raritan Bay Slag Sampling Site/NJ | Salt Lake City UT 84123 | 4 | |
| **Project Leader:** Christina Leung | (801) 266-7700 | | |
| **Action:** | | | |
| **Sampling Co:** | | | |

| ORGANIC SAMPLE No. | MATRIX/ SAMPLER | CONC/ TYPE | ANALYSIS/ TURNAROUND | TAG No./ PRESERVATIVE/ Bottles | STATION LOCATION | SAMPLE COLLECT DATE/TIME | INORGANIC SAMPLE No. | QC Type |
|---|---|---|---|---|---|---|---|---|
| B5T07 | Field QC/ Christina Leung | L/G | CLP VOA (7) | (HCL) (3) | RB-01 ~ | S: 5/18/2010 14:00 | MB5T07 | Rinsate |

| Shipment for Case Complete? Y | Sample(s) to be used for laboratory QC: | Additional Sampler Signature(s): | Chain of Custody Seal Number: |
|---|---|---|---|
| **Analysis Key:** | **Concentration:** L = Low, M = Low/Medium, H = High | **Type/Designate:** Composite = C, Grab = G | **Shipment Iced?** _____ |

% Moist = CLP Percent Moisture, CLP VOA = CLP TCL Volatiles

**R Number: 2-063358346-051810-0004**

**R provides preliminary results. Requests for preliminary results will increase analytical costs.**

end Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA, 20151-3819 Phone 703/818-4200; Fax 703/818-4602

**APPENDIX B**

**US ENVIRONMENTAL PROTECTION AGENCY**

**DESA LABORATORY**

**CHAIN OF CUSTODY RECORD**

US EPA REGION 2

# CHAIN OF CUSTODY/FIELD DATA FORM

Survey Name and Locality: Raritan Bay Slag Sampling Site



Project Leader: Christina Leung

Date: May 11, 2010

| LAB ID/FIELD ID | # container | Interval (inch) | Matrix | Description and Instructions | Preservative | Collection Time | Collection Day |
|---|---|---|---|---|---|---|---|
| A6-SS213-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1055 | 5/11/2010 |
| A6-SS142-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1050 | 5/11/2010 |
| A6-SD100-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1011 | 5/11/2010 |
| A6-SD98-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1030 | 5/11/2010 |
| A6-SS101-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1000 | 5/11/2010 |
| A6-SD41-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 852 | 5/11/2010 |
| Z6-SD41-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 852 | 5/11/2010 |
| A6-SS41-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 911 | 5/11/2010 |
| A6-SS37-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 847 | 5/11/2010 |
| A6-SS210-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1000 | 5/11/2010 |
| A6-SS211-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1027 | 5/11/2010 |
| A6-SS44-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 827 | 5/11/2010 |
| A6-SS46-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 931 | 5/11/2010 |
| A6-SS88-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 850 | 5/11/2010 |
| A6-SDB47-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 904 | 5/11/2010 |
| A6-SDB26-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1330 | 5/11/2010 |
| A6-SDB35-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1405 | 5/11/2010 |
| A6-SDB27-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1325 | 5/11/2010 |
| A6-SD112-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1340 | 5/11/2010 |
| A6-SD38-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1455 | 5/11/2010 |
| A6-SD48-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1436 | 5/11/2010 |
| A6-SDB43-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1313 | 5/11/2010 |
| A6-SD106-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/11/2010 |
| A6-SD95-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/11/2010 |
| A6-SS212-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/11/2010 |
| Z6-SS212-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/11/2010 |

COMMENTS AND SPECIAL REQUIREMENTS:

MS/MSD sample: A6-SS210-02 and A6-SD95-02

SURVEY COMPLETE? NO

| Person Assuming Responsibility for sample(s): | Time/Date |
|---|---|
| | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

R2-0004334

| Relinquished by: | Received by: | Time/Date |
| --- | --- | --- |
| | | |

US EPA REGION 2

# CHAIN OF CUSTODY/FIELD DATA FORM

Survey Name and Locality: Raritan Bay Slag Sampling Site
Project Leader: Christina Leung



| LAB ID/FIELD ID | # container | Matrix | Description and Instructions | Preservative | Collection Time | Collection Day |
|---|---|---|---|---|---|---|
| A6-SW12 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 847 | 5/11/2010 |
| A6-SW13 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 849 | 5/11/2010 |
| A6-SW14 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1405 | 5/11/2010 |
| A6-SW30 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 918 | 5/11/2010 |
| A6-SW31 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 933 | 5/11/2010 |
| A6-SW32 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1002 | 5/11/2010 |
| A6-SW33 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1009 | 5/11/2010 |
| A6-SW34 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1031 | 5/11/2010 |
| A6-SW35 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1041 | 5/11/2010 |
| A6-SW36 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1046 | 5/11/2010 |
| A6-SW37 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1035 | 5/11/2010 |
| A6-SW38 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1410 | 5/11/2010 |

| COMMENTS AND SPECIAL REQUIREMENTS: |
|---|
| |

SURVEY COMPLETE? NO

| Person Assuming Responsibility for sample(s): | Time/Date |
|---|---|
| | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

US EPA REGION 2

# CHAIN OF CUSTODY/FIELD DATA FORM

Survey Name and Locality: Raritan Bay Slag Sampling Site



Project Leader: Christina Leung

Date: May 12, 2010

| | | | | | | Collection | |
|---|---|---|---|---|---|---|---|
| LAB ID/FIELD ID | # container | Interval (inch) | Matrix | Description and Instructions | Preservative | Time | Day |
| A6-SS37-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 847 | 5/11/2010 |
| A6-SS37-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 847 | 5/11/2010 |
| A6-SS37-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 847 | 5/11/2010 |
| A6-SS210-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1000 | 5/11/2010 |
| A6-SS210-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1000 | 5/11/2010 |
| A6-SS210-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1000 | 5/11/2010 |
| A6-SS211-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1027 | 5/11/2010 |
| A6-SS211-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1027 | 5/11/2010 |
| A6-SS211-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1027 | 5/11/2010 |
| A6-SS44-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 827 | 5/11/2010 |
| A6-SS44-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 827 | 5/11/2010 |
| A6-SS44-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 827 | 5/11/2010 |
| A6-SS46-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 931 | 5/11/2010 |
| A6-SS46-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 931 | 5/11/2010 |
| A6-SS46-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 931 | 5/11/2010 |
| A6-SS88-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 850 | 5/11/2010 |
| A6-SS88-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 850 | 5/11/2010 |
| A6-SS88-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 850 | 5/11/2010 |
| A6-SDB47-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 904 | 5/11/2010 |
| A6-SDB47-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 904 | 5/11/2010 |
| A6-SDB47-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 904 | 5/11/2010 |
| A6-SDB26-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1330 | 5/11/2010 |
| A6-SDB26-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1330 | 5/11/2010 |
| A6-SDB26-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1330 | 5/11/2010 |
| A6-SDB35-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1405 | 5/11/2010 |
| A6-SDB35-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1405 | 5/11/2010 |
| A6-SDB35-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1405 | 5/11/2010 |
| A6-SD112-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1340 | 5/11/2010 |
| A6-SD112-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1340 | 5/11/2010 |
| A6-SD112-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1340 | 5/11/2010 |
| A6-SD38-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1455 | 5/11/2010 |
| A6-SD38-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1455 | 5/11/2010 |
| A6-SD38-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1455 | 5/11/2010 |
| A6-SD48-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1436 | 5/11/2010 |
| A6-SD48-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1436 | 5/11/2010 |
| A6-SD48-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1436 | 5/11/2010 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A6-SDB43-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1313 | 5/11/2010 |
| A6-SDB43-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1313 | 5/11/2010 |
| A6-SDB43-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1313 | 5/11/2010 |
| A6-SD106-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/11/2010 |
| A6-SD106-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/11/2010 |
| A6-SD106-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/11/2010 |
| A6-SD95-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/11/2010 |
| A6-SD95-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/11/2010 |
| A6-SD95-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/11/2010 |
| A6-SS212-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/11/2010 |
| A6-SS212-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/11/2010 |
| A6-SS212-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/11/2010 |
| Z6-SS212-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/11/2010 |

COMMENTS AND SPECIAL REQUIREMENTS:

MS/MSD sample: A6-SD95-06 and A5-SS140-06

SURVEY COMPLETE? NO

| Person Assuming Responsibility for sample(s): | Time/Date |
|---|---|
| | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

US EPA REGION 2

# CHAIN OF CUSTODY/FIELD DATA FORM

Survey Name and Locality: Raritan Bay Slag Sampling Site



Project Leader: Christina Leung

Date: May 12, 2010

| | | | | | | Collection | |
|---|---|---|---|---|---|---|---|
| LAB ID/FIELD ID | # container | Interval (inch) | Matrix | Description and Instructions | Preservative | Time | Day |
| A5-SS107-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1046 | 5/12/2010 |
| A5-SS107-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1046 | 5/12/2010 |
| A5-SS107-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1046 | 5/12/2010 |
| A5-SS107-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1046 | 5/12/2010 |
| A5-SS109-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1117 | 5/12/2010 |
| A5-SS109-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1117 | 5/12/2010 |
| A5-SS109-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1117 | 5/12/2010 |
| A5-SS109-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1117 | 5/12/2010 |
| A5-SS111-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1144 | 5/12/2010 |
| A5-SS111-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1144 | 5/12/2010 |
| A5-SS111-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1144 | 5/12/2010 |
| A5-SS111-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1144 | 5/12/2010 |
| A5-SS112-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1200 | 5/12/2010 |
| A5-SS112-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1200 | 5/12/2010 |
| A5-SS112-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1200 | 5/12/2010 |
| A5-SS112-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1200 | 5/12/2010 |
| A5-SS140-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1105 | 5/12/2010 |
| A5-SS139-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1111 | 5/12/2010 |
| A5-SDB22-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1057 | 5/12/2010 |
| A5-SS113-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1212 | 5/12/2010 |
| Z5-SS113-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1212 | 5/12/2010 |
| A5-SD127-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1200 | 5/12/2010 |
| A5-SD129-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1140 | 5/12/2010 |
| A5-SS132-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1120 | 5/12/2010 |
| A5-SS211-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1215 | 5/12/2010 |

COMMENTS AND SPECIAL REQUIREMENTS:

MS/MSD sample: A6-SD95-06 and A5-SS140-06

SURVEY COMPLETE? NO

| Person Assuming Responsibility for sample(s): | Time/Date |
|---|---|
| | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

US EPA REGION 2

# CHAIN OF CUSTODY/FIELD DATA FORM

Survey Name and Locality: Raritan Bay Slag Sampling Site



Project Leader: Christina Leung

Date: May 13, 2010

| | | | | | | Collection | |
|---|---|---|---|---|---|---|---|
| LAB ID/FIELD ID | # container | Interval (inch) | Matrix | Description and Instructions | Preservative | Time | Day |
| A5-SD123-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/12/2010 |
| A5-SS115-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1553 | 5/12/2010 |
| A5-SS123-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1555 | 5/12/2010 |
| A5-SS117-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1558 | 5/12/2010 |
| A5-SS119-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1604 | 5/12/2010 |
| A5-SD147-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1610 | 5/12/2010 |
| A5-SS213-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1611 | 5/12/2010 |
| A5-SS33-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1613 | 5/12/2010 |
| A5-SS159-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1615 | 5/12/2010 |
| A5-SS160-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1616 | 5/12/2010 |
| A5-SS29-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1618 | 5/12/2010 |
| A5-SS125-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1445 | 5/12/2010 |
| A5-SS125-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1445 | 5/12/2010 |
| A5-SS125-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1445 | 5/12/2010 |
| A5-SS125-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1445 | 5/12/2010 |
| A5-SDB20-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/12/2010 |
| A5-SDB20-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/12/2010 |
| A5-SDB20-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/12/2010 |
| A5-SDB20-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/12/2010 |
| Z5-SDB20-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/12/2010 |
| A5-SD139-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/12/2010 |
| A5-SD139-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/12/2010 |
| A5-SD139-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/12/2010 |
| A5-SD139-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/12/2010 |
| A5-SD124-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1520 | 5/12/2010 |
| A5-SD124-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1520 | 5/12/2010 |
| A5-SD124-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1520 | 5/12/2010 |
| A5-SD124-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1520 | 5/12/2010 |
| A5-SDB10-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1510 | 5/12/2010 |
| A5-SDB10-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1510 | 5/12/2010 |
| A5-SDB10-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1510 | 5/12/2010 |
| A5-SDB10-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1510 | 5/12/2010 |
| Z5-SDB10-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1510 | 5/12/2010 |
| A5-SD141-02 | 1 - 4 oz glass | 0-2 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/12/2010 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A5-SD141-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/12/2010 |
| A5-SD141-12 | 1 - 4 oz glass | 6-12 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/12/2010 |
| A5-SD141-24 | 1 - 4 oz glass | 12-24 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1550 | 5/12/2010 |
| A5-SS118-02 | 1 - 4 oz glass | 0-2 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1610 | 5/12/2010 |
| A5-SS118-06 | 1 - 4 oz glass | 0-6 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1610 | 5/12/2010 |
| A5-SS118-12 | 1 - 4 oz glass | 6-12 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1610 | 5/12/2010 |
| A5-SS118-24 | 1 - 4 oz glass | 12-24 | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1610 | 5/12/2010 |
| A6-SDB55-06 | 1 - 4 oz glass | 0-6 | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1350 | 5/13/2010 |

COMMENTS AND SPECIAL REQUIREMENTS:

MS/MSD sample: A5-SD139-06 AND A5-SDB10-02

SURVEY COMPLETE? NO

| Person Assuming Responsibility for sample(s): | Time/Date |
|---|---|
| | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

US EPA REGION 2

# CHAIN OF CUSTODY/FIELD DATA FORM

Survey Name and Locality: Raritan Bay Slag Sampling Site



Project Leader: Christina Leung

Date: May 14, 2010

| | | | | | Collection | |
|---|---|---|---|---|---|---|
| LAB ID/FIELD ID | # container | Matrix | Description and Instructions | Preservative | Time | Day |
| A5-SDA165-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1407 | 5/13/2010 |
| A5-SDA133-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1410 | 5/13/2010 |
| A5-SD152-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1415 | 5/13/2010 |
| A5-SD121-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1420 | 5/13/2010 |
| A5-SD142-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1423 | 5/13/2010 |
| A5-SD136-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1430 | 5/13/2010 |
| A5-SDA130-02 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/13/2010 |
| A5-SDA130-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/13/2010 |
| A5-SDA130-12 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/13/2010 |
| A5-SDA130-24 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1500 | 5/13/2010 |
| A5-SS162-02 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1525 | 5/13/2010 |
| A5-SS162-06 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1525 | 5/13/2010 |
| A5-SD157-02 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/13/2010 |
| A5-SD157-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/13/2010 |
| A5-SD157-12 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/13/2010 |
| A5-SD157-24 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1515 | 5/13/2010 |
| A5-SDB3-02 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1533 | 5/13/2010 |
| A5-SDB3-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1533 | 5/13/2010 |
| A5-SDB3-12 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1533 | 5/13/2010 |
| A5-SDB3-24 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1533 | 5/13/2010 |
| A6-SD99-02 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1415 | 5/13/2010 |
| A6-SD99-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1415 | 5/13/2010 |
| A6-SD99-12 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1415 | 5/13/2010 |
| A6-SD99-24 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1415 | 5/13/2010 |
| A5-SS153-02 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1546 | 5/13/2010 |
| A5-SS153-06 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1546 | 5/13/2010 |
| A5-SS153-12 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1546 | 5/13/2010 |
| A5-SS153-24 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1546 | 5/13/2010 |
| A5-SS155-02 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1555 | 5/13/2010 |
| A5-SS155-06 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1555 | 5/13/2010 |
| A5-SS155-12 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1555 | 5/13/2010 |
| A5-SS155-24 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1555 | 5/13/2010 |
| A5-SDB6-02 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1605 | 5/13/2010 |
| A5-SDB6-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1605 | 5/13/2010 |

| | | | | | | |
|---|---|---|---|---|---|---|
| A5-SDB6-12 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1605 | 5/13/2010 |
| A5-SDB6-24 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1605 | 5/13/2010 |
| A5-SS35-02 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1525 | 5/13/2010 |
| A5-SS35-06 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1525 | 5/13/2010 |
| A5-SS35-12 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1525 | 5/13/2010 |
| A5-SS35-24 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1525 | 5/13/2010 |
| Z5-SD121-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1420 | 5/13/2010 |
| A5-SDB9-06 | 1 - 4 oz glass | Sediment | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1405 | 5/14/2010 |
| Z5-SS35-24 | 1 - 4 oz glass | Soil | One 4 oz glass analyzed for Pb, Sb, Cr, Cu, As only | Ice | 1525 | 5/13/2010 |

COMMENTS AND SPECIAL REQUIREMENTS:

MS/MSD sample: A5-SDA130-12 AND A5-SS155-06

SURVEY COMPLETE? NO

| Person Assuming Responsibility for sample(s): | Time/Date |
|---|---|
| | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

US EPA REGION 2

# CHAIN OF CUSTODY/FIELD DATA FORM

Survey Name and Locality: Raritan Bay Slag Sampling Site



Project Leader: Christina Leung

Date: May 17, 2010

| LAB ID/FIELD ID | # container | Matrix | Description and Instructions | Preservative | Collection Time | Collection Day |
|---|---|---|---|---|---|---|
| A5-SW30 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1047 | 5/17/2010 |
| A5-SW31 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1051 | 5/17/2010 |
| A5-SW32 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1054 | 5/17/2010 |
| A5-SW33 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1056 | 5/17/2010 |
| A5-SW34 | 2 - 125 ml plastic | Aqueous | Tw0 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1107 | 5/17/2010 |
| A5-SW35 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1105 | 5/17/2010 |
| A5-SW36 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1058 | 5/17/2010 |
| A5-SW37 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1045 | 5/17/2010 |
| A5-SW38 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1049 | 5/17/2010 |
| A5-SW39 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1104 | 5/17/2010 |
| Z5-SW37 | 1 - 125 ml plastic | Aqueous | One 125 ml plastic analyzed for Pb, Sb, Cr, Cu, As only | nitric acid | 1045 | 5/17/2010 |

COMMENTS AND SPECIAL REQUIREMENTS:

MS/MSD sample: A5-SW34

SURVEY COMPLETE? YES

| Person Assuming Responsibility for sample(s): | Time/Date |
|---|---|
| | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
| | | |

| Relinquished by: | Received by: | Time/Date |
|---|---|---|
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| Relinquished by: | Received by: | Time/Date |
| --- | --- | --- |
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**APPENDIX D**

**Data Tables 1 - 5**

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS70-02 | B5SN5 | Benzo(a)anthracene | 36 | J | 0.9 |
| A3-SS70-02 | B5SN5 | Benzo(b)fluoranthene | 50 | J | 0.9 |
| A3-SS70-02 | B5SN5 | Benzo(k)fluoranthene | 37 | J | 0.9 |
| A3-SS70-02 | B5SN5 | Butylbenzylphthalate | 39 | J | 1100 |
| A3-SS70-02 | B5SN5 | Chrysene | 47 | J | 9 |
| A3-SS70-02 | B5SN5 | Fluoranthene | 87 | J | 2300 |
| A3-SS70-02 | B5SN5 | Phenanthrene | 36 | J | NA |
| A3-SS70-02 | B5SN5 | Pyrene | 74 | J | 1700 |
| A3-SS88-02 | B5SN6 | Benzo(a)anthracene | 43 | J | 0.9 |
| A3-SS88-02 | B5SN6 | Benzo(a)pyrene | 42 | J | 0.66 |
| A3-SS88-02 | B5SN6 | Benzo(b)fluoranthene | 87 | J | 0.9 |
| A3-SS88-02 | B5SN6 | Chrysene | 69 | J | 9 |
| A3-SS88-02 | B5SN6 | Fluoranthene | 110 | J | 2300 |
| A3-SS88-02 | B5SN6 | Phenanthrene | 38 | J | NA |
| A3-SS88-02 | B5SN6 | Pyrene | 88 | J | 1700 |
| A3-SS70-06 | B5SN7 | 4,4'-DDT | 3.7 | -- | 2 |
| A3-SS70-06 | B5SN7 | Benzo(a)anthracene | 49 | J | 0.9 |
| A3-SS70-06 | B5SN7 | Benzo(a)pyrene | 35 | J | 0.66 |
| A3-SS70-06 | B5SN7 | Benzo(b)fluoranthene | 78 | J | 0.9 |
| A3-SS70-06 | B5SN7 | Chrysene | 55 | J | 9 |
| A3-SS70-06 | B5SN7 | Fluoranthene | 91 | J | 2300 |
| A3-SS70-06 | B5SN7 | gamma-Chlordane | 2.1 | J | NA |
| A3-SS70-06 | B5SN7 | Phenanthrene | 39 | J | NA |
| A3-SS70-06 | B5SN7 | Pyrene | 79 | J | 1700 |
| A3-SS70-12 | B5SN8 | 4,4'-DDD | 4.8 | J | 3 |
| A3-SS70-12 | B5SN8 | 4,4'-DDT | 7.9 | -- | 2 |
| A3-SS70-12 | B5SN8 | alpha-Chlordane | 1.1 | J | NA |
| A3-SS70-12 | B5SN8 | Aroclor-1254 | 160 | -- | 0.49 |
| A3-SS70-12 | B5SN8 | Fluoranthene | 37 | J | 2300 |
| A3-SS70-12 | B5SN8 | Heptachlor epoxide | 3.1 | J | NA |
| A3-SS71-02 | B5SN9 | Bis(2-ethylhexyl)phthalate | 2300 | -- | 49 |
| A3-SS71-02 | B5SN9 | Di-n-octylphthalate | 500 | -- | 1100 |
| A3-SS71-06 | B5SP0 | Benzo(b)fluoranthene | 63 | J | 0.9 |
| A3-SS71-06 | B5SP0 | Chrysene | 44 | J | 9 |
| A3-SS71-06 | B5SP0 | Fluoranthene | 71 | J | 2300 |
| A3-SS71-06 | B5SP0 | Pyrene | 52 | J | 1700 |
| A3-SS71-12 | B5SP1 | Benzo(a)anthracene | 40 | J | 0.9 |
| A3-SS71-12 | B5SP1 | Benzo(a)pyrene | 40 | J | 0.66 |
| A3-SS71-12 | B5SP1 | Benzo(b)fluoranthene | 66 | J | 0.9 |
| A3-SS71-12 | B5SP1 | Benzo(k)fluoranthene | 49 | J | 0.9 |
| A3-SS71-12 | B5SP1 | Bis(2-ethylhexyl)phthalate | 90 | J | 49 |
| A3-SS71-12 | B5SP1 | Chrysene | 54 | J | 9 |
| A3-SS71-12 | B5SP1 | Fluoranthene | 100 | J | 2300 |
| A3-SS71-12 | B5SP1 | Pyrene | 75 | J | 1700 |
| A3-SS73-02 | B5SP2 | Benzo(b)fluoranthene | 140 | J | 0.9 |
| A3-SS73-02 | B5SP2 | Bis(2-ethylhexyl)phthalate | 260 | J | 49 |
| A3-SS73-02 | B5SP2 | Endosulfan sulfate | 8.6 | J | NA |
| A3-SS73-02 | B5SP2 | Fluoranthene | 280 | J | 2300 |
| A3-SS73-02 | B5SP2 | Pyrene | 210 | J | 1700 |
| A3-SS73-06 | B5SP3 | Bis(2-ethylhexyl)phthalate | 470 | -- | 49 |
| A3-SS73-06 | B5SP3 | Di-n-octylphthalate | 57 | J | 1100 |
| A3-SS73-12 | B5SP4 | Acetone | 35 | -- | 1000 |
| A3-SS73-12 | B5SP4 | Benzo(a)anthracene | 75 | J | 0.9 |
| A3-SS73-12 | B5SP4 | Benzo(a)pyrene | 68 | J | 0.66 |
| A3-SS73-12 | B5SP4 | Benzo(b)fluoranthene | 110 | J | 0.9 |
| A3-SS73-12 | B5SP4 | Benzo(k)fluoranthene | 74 | J | 0.9 |
| A3-SS73-12 | B5SP4 | Chrysene | 75 | J | 9 |
| A3-SS73-12 | B5SP4 | Fluoranthene | 170 | J | 2300 |
| A3-SS73-12 | B5SP4 | Indeno(1,2,3-cd)pyrene | 43 | J | 0.9 |
| A3-SS73-12 | B5SP4 | Phenanthrene | 47 | J | NA |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS73-12 | B5SP4 | Pyrene | 110 | J | 1700 |
| A3-SS74-02 | B5SP5 | Bis(2-ethylhexyl)phthalate | 320 | J | 49 |
| A3-SS74-06 | B5SP6 | Benzo(b)fluoranthene | 61 | J | 0.9 |
| A3-SS74-06 | B5SP6 | Chrysene | 39 | J | 9 |
| A3-SS74-06 | B5SP6 | Fluoranthene | 65 | J | 2300 |
| A3-SS74-06 | B5SP6 | Pyrene | 56 | J | 1700 |
| A3-SS74-12 | B5SP7 | Acetone | 34 | -- | 1000 |
| A3-SS75-02 | B5SP8 | Bis(2-ethylhexyl)phthalate | 520 | J | 49 |
| A3-SS75-06 | B5SP9 | Benzo(b)fluoranthene | 100 | J | 0.9 |
| A3-SS75-06 | B5SP9 | Chrysene | 77 | J | 9 |
| A3-SS75-06 | B5SP9 | Endosulfan sulfate | 5.6 | J | NA |
| A3-SS75-06 | B5SP9 | Fluoranthene | 130 | J | 2300 |
| A3-SS75-06 | B5SP9 | Pyrene | 130 | J | 1700 |
| A3-SS75-12 | B5SQ0 | Acetone | 110 | -- | 1000 |
| A3-SS75-12 | B5SQ0 | Benzo(a)anthracene | 120 | J | 0.9 |
| A3-SS75-12 | B5SQ0 | Benzo(a)pyrene | 110 | J | 0.66 |
| A3-SS75-12 | B5SQ0 | Benzo(b)fluoranthene | 220 | -- | 0.9 |
| A3-SS75-12 | B5SQ0 | Benzo(g,h,i)perylene | 84 | J | NA |
| A3-SS75-12 | B5SQ0 | Benzo(k)fluoranthene | 95 | J | 0.9 |
| A3-SS75-12 | B5SQ0 | Chrysene | 130 | J | 9 |
| A3-SS75-12 | B5SQ0 | Fluoranthene | 250 | -- | 2300 |
| A3-SS75-12 | B5SQ0 | Indeno(1,2,3-cd)pyrene | 74 | J | 0.9 |
| A3-SS75-12 | B5SQ0 | Phenanthrene | 60 | J | NA |
| A3-SS75-12 | B5SQ0 | Pyrene | 170 | J | 1700 |
| A3-SS76-02 | B5SQ1 | Bis(2-ethylhexyl)phthalate | 1400 | J | 49 |
| A3-SS76-02 | B5SQ1 | Di-n-octylphthalate | 790 | J | 1100 |
| A3-SS76-06 | B5SQ2 | 4,4'-DDE | 2 | J | 2 |
| A3-SS76-06 | B5SQ2 | Acenaphthene | 61 | J | 3400 |
| A3-SS76-06 | B5SQ2 | alpha-Chlordane | 1.4 | J | NA |
| A3-SS76-06 | B5SQ2 | Anthracene | 120 | J | 10000 |
| A3-SS76-06 | B5SQ2 | Benzo(a)anthracene | 290 | -- | 0.9 |
| A3-SS76-06 | B5SQ2 | Benzo(a)pyrene | 240 | -- | 0.66 |
| A3-SS76-06 | B5SQ2 | Benzo(b)fluoranthene | 340 | -- | 0.9 |
| A3-SS76-06 | B5SQ2 | Benzo(g,h,i)perylene | 140 | J | NA |
| A3-SS76-06 | B5SQ2 | Benzo(k)fluoranthene | 200 | J | 0.9 |
| A3-SS76-06 | B5SQ2 | Chrysene | 280 | -- | 9 |
| A3-SS76-06 | B5SQ2 | Fluoranthene | 730 | -- | 2300 |
| A3-SS76-06 | B5SQ2 | Fluorene | 67 | J | 0.52 |
| A3-SS76-06 | B5SQ2 | Heptachlor | 1.5 | J | 0.15 |
| A3-SS76-06 | B5SQ2 | Indeno(1,2,3-cd)pyrene | 120 | J | 0.9 |
| A3-SS76-06 | B5SQ2 | Phenanthrene | 460 | -- | NA |
| A3-SS76-06 | B5SQ2 | Pyrene | 580 | -- | 1700 |
| A3-SS76-12 | B5SQ3 | Acetone | 99 | -- | 1000 |
| A3-SS76-12 | B5SQ3 | alpha-Chlordane | 1.6 | J | NA |
| A3-SS76-12 | B5SQ3 | Benzo(a)anthracene | 45 | J | 0.9 |
| A3-SS76-12 | B5SQ3 | Benzo(b)fluoranthene | 75 | J | 0.9 |
| A3-SS76-12 | B5SQ3 | Bis(2-ethylhexyl)phthalate | 240 | -- | 49 |
| A3-SS76-12 | B5SQ3 | Chrysene | 43 | J | 9 |
| A3-SS76-12 | B5SQ3 | Fluoranthene | 85 | J | 2300 |
| A3-SS76-12 | B5SQ3 | Fluoranthene | 85 | J | 2300 |
| A3-SS76-12 | B5SQ3 | Pyrene | 77 | J | 1700 |
| A3-SS76-12 | B5SQ3 | Pyrene | 77 | J | 1700 |
| A3-SS77-02 | B5SQ4 | 1,4-Dioxane | 420 | -- | NA |
| A3-SS77-02 | B5SQ4 | Fluoranthene | 220 | J | 2300 |
| A3-SS77-02 | B5SQ4 | Pyrene | 150 | J | 1700 |
| A3-SS77-06 | B5SQ5 | Fluoranthene | 160 | J | 2300 |
| A3-SS77-12 | B5SQ6 | Acetone | 63 | -- | 1000 |
| A3-SS77-12 | B5SQ6 | Acetone | 63 | -- | 1000 |
| A3-SS77-12 | B5SQ6 | Benzo(b)fluoranthene | 62 | J | 0.9 |
| A3-SS77-12 | B5SQ6 | Chrysene | 46 | J | 9 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS77-12 | B5SQ6 | Fluoranthene | 84 | J | 2300 |
| A3-SS77-12 | B5SQ6 | Pyrene | 59 | J | 1700 |
| A3-SS79-02 | B5SQ7 | alpha-BHC | 13 | J | NA |
| A3-SS79-02 | B5SQ7 | gamma-Chlordane | 21 | J | NA |
| A3-SS79-06 | B5SQ8 | alpha-BHC | 2.2 | J | NA |
| A3-SS79-06 | B5SQ8 | gamma-Chlordane | 2.8 | J | NA |
| A3-SS79-12 | B5SQ9 | Acetone | 40 | -- | 1000 |
| A3-SS79-12 | B5SQ9 | Acetone | 40 | -- | 1000 |
| A3-SS79-12 | B5SQ9 | Fluoranthene | 41 | J | 2300 |
| A3-SS80-06 | B5SR1 | alpha-Chlordane | 1.3 | J | NA |
| A3-SS80-06 | B5SR1 | Benzo(b)fluoranthene | 49 | J | 0.9 |
| A3-SS80-06 | B5SR1 | Fluoranthene | 61 | J | 2300 |
| A3-SS80-06 | B5SR1 | Pyrene | 45 | J | 1700 |
| A3-SS80-12 | B5SR2 | Benzo(a)anthracene | 45 | J | 0.9 |
| A3-SS80-12 | B5SR2 | Benzo(a)pyrene | 48 | J | 0.66 |
| A3-SS80-12 | B5SR2 | Benzo(b)fluoranthene | 83 | J | 0.9 |
| A3-SS80-12 | B5SR2 | Benzo(k)fluoranthene | 55 | J | 0.9 |
| A3-SS80-12 | B5SR2 | Chrysene | 63 | J | 9 |
| A3-SS80-12 | B5SR2 | Fluoranthene | 120 | J | 2300 |
| A3-SS80-12 | B5SR2 | gamma-Chlordane | 8.7 | -- | NA |
| A3-SS80-12 | B5SR2 | Indeno(1,2,3-cd)pyrene | 36 | J | 0.9 |
| A3-SS80-12 | B5SR2 | Pyrene | 81 | J | 1700 |
| A3-SS81-06 | B5SR4 | Benzo(a)anthracene | 92 | J | 0.9 |
| A3-SS81-06 | B5SR4 | Benzo(a)pyrene | 66 | J | 0.66 |
| A3-SS81-06 | B5SR4 | Benzo(b)fluoranthene | 100 | J | 0.9 |
| A3-SS81-06 | B5SR4 | Benzo(k)fluoranthene | 80 | J | 0.9 |
| A3-SS81-06 | B5SR4 | Chrysene | 76 | J | 9 |
| A3-SS81-06 | B5SR4 | Fluoranthene | 170 | J | 2300 |
| A3-SS81-06 | B5SR4 | Phenanthrene | 88 | J | NA |
| A3-SS81-06 | B5SR4 | Pyrene | 120 | J | 1700 |
| A3-SS81-12 | B5SR5 | Benzo(a)anthracene | 42 | J | 0.9 |
| A3-SS81-12 | B5SR5 | Benzo(a)pyrene | 46 | J | 0.66 |
| A3-SS81-12 | B5SR5 | Benzo(b)fluoranthene | 68 | J | 0.9 |
| A3-SS81-12 | B5SR5 | Benzo(k)fluoranthene | 59 | J | 0.9 |
| A3-SS81-12 | B5SR5 | Chrysene | 59 | J | 9 |
| A3-SS81-12 | B5SR5 | Fluoranthene | 88 | J | 2300 |
| A3-SS81-12 | B5SR5 | Pyrene | 86 | J | 1700 |
| A3-SS82-12 | B5SR8 | 4,4'-DDD | 4.7 | J | 3 |
| A3-SS82-12 | B5SR8 | Benzo(a)anthracene | 47 | J | 0.9 |
| A3-SS82-12 | B5SR8 | Benzo(b)fluoranthene | 70 | J | 0.9 |
| A3-SS82-12 | B5SR8 | Chrysene | 55 | J | 9 |
| A3-SS82-12 | B5SR8 | Fluoranthene | 90 | J | 2300 |
| A3-SS82-12 | B5SR8 | Pyrene | 81 | J | 1700 |
| A3-SS83-12 | B5SS1 | Acetone | 21 | -- | 1000 |
| A3-SS83-12 | B5SS1 | Acetone | 21 | -- | 1000 |
| A3-SS83-12 | B5SS1 | Benzo(a)anthracene | 86 | J | 0.9 |
| A3-SS83-12 | B5SS1 | Benzo(a)pyrene | 87 | J | 0.66 |
| A3-SS83-12 | B5SS1 | Benzo(b)fluoranthene | 140 | J | 0.9 |
| A3-SS83-12 | B5SS1 | Benzo(g,h,i)perylene | 77 | J | NA |
| A3-SS83-12 | B5SS1 | Benzo(k)fluoranthene | 97 | J | 0.9 |
| A3-SS83-12 | B5SS1 | Chrysene | 94 | J | 9 |
| A3-SS83-12 | B5SS1 | Fluoranthene | 180 | J | 2300 |
| A3-SS83-12 | B5SS1 | Indeno(1,2,3-cd)pyrene | 62 | J | 0.9 |
| A3-SS83-12 | B5SS1 | Phenanthrene | 46 | J | NA |
| A3-SS83-12 | B5SS1 | Pyrene | 160 | J | 1700 |
| A3-SS84-02 | B5SS2 | alpha-BHC | 7.4 | J | NA |
| A3-SS84-02 | B5SS2 | Endrin ketone | 6.8 | J | NA |
| A3-SS84-06 | B5SS3 | Benzo(a)anthracene | 190 | J | 0.9 |
| A3-SS84-06 | B5SS3 | Benzo(a)pyrene | 180 | J | 0.66 |
| A3-SS84-06 | B5SS3 | Benzo(b)fluoranthene | 210 | J | 0.9 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS84-06 | B5SS3 | Benzo(g,h,i)perylene | 150 | J | NA |
| A3-SS84-06 | B5SS3 | Benzo(k)fluoranthene | 160 | J | 0.9 |
| A3-SS84-06 | B5SS3 | Bis(2-ethylhexyl)phthalate | 110 | J | 49 |
| A3-SS84-06 | B5SS3 | Chrysene | 200 | J | 9 |
| A3-SS84-06 | B5SS3 | Fluoranthene | 360 | -- | 2300 |
| A3-SS84-06 | B5SS3 | Indeno(1,2,3-cd)pyrene | 130 | J | 0.9 |
| A3-SS84-06 | B5SS3 | Pyrene | 300 | -- | 1700 |
| A3-SS84-12 | B5SS4 | Benzo(a)anthracene | 110 | J | 0.9 |
| A3-SS84-12 | B5SS4 | Benzo(a)pyrene | 110 | J | 0.66 |
| A3-SS84-12 | B5SS4 | Benzo(b)fluoranthene | 150 | J | 0.9 |
| A3-SS84-12 | B5SS4 | Benzo(g,h,i)perylene | 98 | J | NA |
| A3-SS84-12 | B5SS4 | Benzo(k)fluoranthene | 100 | J | 0.9 |
| A3-SS84-12 | B5SS4 | Chrysene | 120 | J | 9 |
| A3-SS84-12 | B5SS4 | Fluoranthene | 200 | -- | 2300 |
| A3-SS84-12 | B5SS4 | Indeno(1,2,3-cd)pyrene | 88 | J | 0.9 |
| A3-SS84-12 | B5SS4 | Phenanthrene | 45 | J | NA |
| A3-SS84-12 | B5SS4 | Pyrene | 170 | J | 1700 |
| A3-SS85-06 | B5SS6 | Benzo(a)anthracene | 190 | J | 0.9 |
| A3-SS85-06 | B5SS6 | Benzo(a)pyrene | 150 | J | 0.66 |
| A3-SS85-06 | B5SS6 | Benzo(b)fluoranthene | 270 | -- | 0.9 |
| A3-SS85-06 | B5SS6 | Benzo(g,h,i)perylene | 110 | J | NA |
| A3-SS85-06 | B5SS6 | Benzo(k)fluoranthene | 130 | J | 0.9 |
| A3-SS85-06 | B5SS6 | Chrysene | 170 | J | 9 |
| A3-SS85-06 | B5SS6 | Fluoranthene | 360 | -- | 2300 |
| A3-SS85-06 | B5SS6 | Indeno(1,2,3-cd)pyrene | 110 | J | 0.9 |
| A3-SS85-06 | B5SS6 | Phenanthrene | 110 | J | NA |
| A3-SS85-06 | B5SS6 | Pyrene | 260 | -- | 1700 |
| A3-SS85-12 | B5SS7 | Benzo(a)anthracene | 65 | J | 0.9 |
| A3-SS85-12 | B5SS7 | Benzo(a)pyrene | 76 | J | 0.66 |
| A3-SS85-12 | B5SS7 | Benzo(b)fluoranthene | 100 | J | 0.9 |
| A3-SS85-12 | B5SS7 | Benzo(g,h,i)perylene | 61 | J | NA |
| A3-SS85-12 | B5SS7 | Benzo(k)fluoranthene | 45 | J | 0.9 |
| A3-SS85-12 | B5SS7 | Chrysene | 86 | J | 9 |
| A3-SS85-12 | B5SS7 | Fluoranthene | 150 | J | 2300 |
| A3-SS85-12 | B5SS7 | Indeno(1,2,3-cd)pyrene | 61 | J | 0.9 |
| A3-SS85-12 | B5SS7 | Phenanthrene | 49 | J | NA |
| A3-SS85-12 | B5SS7 | Pyrene | 120 | J | 1700 |
| A3-SS86-02 | B5SS8 | Benzo(a)anthracene | 37 | J | 0.9 |
| A3-SS86-02 | B5SS8 | Benzo(a)pyrene | 46 | J | 0.66 |
| A3-SS86-02 | B5SS8 | Benzo(b)fluoranthene | 60 | J | 0.9 |
| A3-SS86-02 | B5SS8 | Benzo(k)fluoranthene | 25 | J | 0.9 |
| A3-SS86-02 | B5SS8 | Chrysene | 46 | J | 9 |
| A3-SS86-02 | B5SS8 | Fluoranthene | 62 | J | 2300 |
| A3-SS86-02 | B5SS8 | Indeno(1,2,3-cd)pyrene | 35 | J | 0.9 |
| A3-SS86-02 | B5SS8 | Pyrene | 58 | J | 1700 |
| A3-SS86-06 | B5SS9 | Benzo(b)fluoranthene | 35 | J | 0.9 |
| A3-SS86-06 | B5SS9 | Fluoranthene | 40 | J | 2300 |
| A3-SS86-06 | B5SS9 | Pyrene | 39 | J | 1700 |
| A3-SS86-12 | B5ST0 | Benzo(a)pyrene | 44 | J | 0.66 |
| A3-SS86-12 | B5ST0 | Benzo(b)fluoranthene | 51 | J | 0.9 |
| A3-SS86-12 | B5ST0 | Benzo(k)fluoranthene | 22 | J | 0.9 |
| A3-SS86-12 | B5ST0 | Chrysene | 49 | J | 9 |
| A3-SS86-12 | B5ST0 | Fluoranthene | 75 | J | 2300 |
| A3-SS86-12 | B5ST0 | gamma-Chlordane | 2.7 | -- | NA |
| A3-SS86-12 | B5ST0 | Pyrene | 67 | J | 1700 |
| A3-SS87-02 | B5ST1 | Benzo(a)anthracene | 50 | J | 0.9 |
| A3-SS87-02 | B5ST1 | Benzo(a)pyrene | 57 | J | 0.66 |
| A3-SS87-02 | B5ST1 | Benzo(b)fluoranthene | 73 | J | 0.9 |
| A3-SS87-02 | B5ST1 | Benzo(k)fluoranthene | 31 | J | 0.9 |
| A3-SS87-02 | B5ST1 | Chrysene | 66 | J | 9 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS87-02 | B5ST1 | Fluoranthene | 120 | J | 2300 |
| A3-SS87-02 | B5ST1 | Indeno(1,2,3-cd)pyrene | 39 | J | 0.9 |
| A3-SS87-02 | B5ST1 | Phenanthrene | 35 | J | NA |
| A3-SS87-02 | B5ST1 | Pyrene | 94 | J | 1700 |
| A3-SS87-06 | B5ST2 | 4,4'-DDE | 1.9 | J | 2 |
| A3-SS87-06 | B5ST2 | 4,4'-DDT | 2 | J | 2 |
| A3-SS87-06 | B5ST2 | Benzo(a)pyrene | 47 | J | 0.66 |
| A3-SS87-06 | B5ST2 | Benzo(b)fluoranthene | 61 | J | 0.9 |
| A3-SS87-06 | B5ST2 | Benzo(k)fluoranthene | 28 | J | 0.9 |
| A3-SS87-06 | B5ST2 | Chrysene | 51 | J | 9 |
| A3-SS87-06 | B5ST2 | Fluoranthene | 78 | J | 2300 |
| A3-SS87-06 | B5ST2 | Pyrene | 63 | J | 1700 |
| A3-SS87-12 | B5ST3 | 4,4'-DDT | 2.3 | J | 2 |
| A3-SS87-12 | B5ST3 | Benzo(a)anthracene | 53 | J | 0.9 |
| A3-SS87-12 | B5ST3 | Benzo(a)pyrene | 66 | J | 0.66 |
| A3-SS87-12 | B5ST3 | Benzo(b)fluoranthene | 77 | J | 0.9 |
| A3-SS87-12 | B5ST3 | Benzo(g,h,i)perylene | 53 | J | NA |
| A3-SS87-12 | B5ST3 | Benzo(k)fluoranthene | 30 | J | 0.9 |
| A3-SS87-12 | B5ST3 | Chrysene | 71 | J | 9 |
| A3-SS87-12 | B5ST3 | Fluoranthene | 110 | J | 2300 |
| A3-SS87-12 | B5ST3 | Indeno(1,2,3-cd)pyrene | 49 | J | 0.9 |
| A3-SS87-12 | B5ST3 | Pyrene | 98 | J | 1700 |
| A3-SS88-06 | B5ST4 | 4,4'-DDT | 3.2 | J | 2 |
| A3-SS88-06 | B5ST4 | alpha-Chlordane | 4.9 | J | NA |
| A3-SS88-06 | B5ST4 | Benzo(a)anthracene | 50 | J | 0.9 |
| A3-SS88-06 | B5ST4 | Benzo(b)fluoranthene | 72 | J | 0.9 |
| A3-SS88-06 | B5ST4 | Benzo(k)fluoranthene | 29 | J | 0.9 |
| A3-SS88-06 | B5ST4 | Bis(2-ethylhexyl)phthalate | 63 | J | 49 |
| A3-SS88-06 | B5ST4 | Chrysene | 70 | J | 9 |
| A3-SS88-06 | B5ST4 | Fluoranthene | 100 | J | 2300 |
| A3-SS88-06 | B5ST4 | gamma-Chlordane | 1.7 | J | NA |
| A3-SS88-06 | B5ST4 | Indeno(1,2,3-cd)pyrene | 44 | J | 0.9 |
| A3-SS88-06 | B5ST4 | Pyrene | 95 | J | 1700 |
| A3-SS88-12 | B5ST5 | Benzo(b)fluoranthene | 36 | J | 0.9 |
| A3-SS88-12 | B5ST5 | Endrin ketone | 4 | -- | NA |
| A3-SS88-12 | B5ST5 | Fluoranthene | 44 | J | 2300 |
| A3-SS88-12 | B5ST5 | Pyrene | 46 | J | 1700 |
| A3-SS89-02 | B5ST6 | Benzo(a)anthracene | 37 | J | 0.9 |
| A3-SS89-02 | B5ST6 | Benzo(a)pyrene | 49 | J | 0.66 |
| A3-SS89-02 | B5ST6 | Benzo(b)fluoranthene | 62 | J | 0.9 |
| A3-SS89-02 | B5ST6 | Benzo(k)fluoranthene | 31 | J | 0.9 |
| A3-SS89-02 | B5ST6 | Chrysene | 60 | J | 9 |
| A3-SS89-02 | B5ST6 | Fluoranthene | 89 | J | 2300 |
| A3-SS89-02 | B5ST6 | Pyrene | 78 | J | 1700 |
| A3-SS89-06 | B5ST7 | 4,4'-DDE | 1.8 | J | 2 |
| A3-SS89-06 | B5ST7 | 4,4'-DDT | 2.4 | J | 2 |
| A3-SS89-06 | B5ST7 | Benzo(a)anthracene | 47 | J | 0.9 |
| A3-SS89-06 | B5ST7 | Benzo(a)pyrene | 56 | J | 0.66 |
| A3-SS89-06 | B5ST7 | Benzo(b)fluoranthene | 72 | J | 0.9 |
| A3-SS89-06 | B5ST7 | Benzo(k)fluoranthene | 34 | J | 0.9 |
| A3-SS89-06 | B5ST7 | Chrysene | 69 | J | 9 |
| A3-SS89-06 | B5ST7 | Fluoranthene | 100 | J | 2300 |
| A3-SS89-06 | B5ST7 | gamma-Chlordane | 5.8 | -- | NA |
| A3-SS89-06 | B5ST7 | Phenanthrene | 36 | J | NA |
| A3-SS89-06 | B5ST7 | Pyrene | 87 | J | 1700 |
| A3-SS89-12 | B5ST8 | 2-Methylnaphthalene | 62 | J | NA |
| A3-SS89-12 | B5ST8 | Acenaphthene | 39 | J | 3400 |
| A3-SS89-12 | B5ST8 | Anthracene | 52 | J | 10000 |
| A3-SS89-12 | B5ST8 | Benzo(a)anthracene | 79 | J | 0.9 |
| A3-SS89-12 | B5ST8 | Benzo(a)pyrene | 77 | J | 0.66 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS89-12 | B5ST8 | Benzo(b)fluoranthene | 91 | J | 0.9 |
| A3-SS89-12 | B5ST8 | Benzo(k)fluoranthene | 48 | J | 0.9 |
| A3-SS89-12 | B5ST8 | Chrysene | 110 | J | 9 |
| A3-SS89-12 | B5ST8 | Fluoranthene | 210 | -- | 2300 |
| A3-SS89-12 | B5ST8 | Fluorene | 37 | J | 2300 |
| A3-SS89-12 | B5ST8 | gamma-Chlordane | 9.6 | -- | NA |
| A3-SS89-12 | B5ST8 | Indeno(1,2,3-cd)pyrene | 48 | J | 0.9 |
| A3-SS89-12 | B5ST8 | Phenanthrene | 180 | J | NA |
| A3-SS89-12 | B5ST8 | Pyrene | 150 | J | 1700 |
| A3-SS90-02 | B5ST9 | alpha-Chlordane | 0.93 | J | NA |
| A3-SS90-02 | B5ST9 | Benzo(a)anthracene | 50 | J | 0.9 |
| A3-SS90-02 | B5ST9 | Benzo(a)pyrene | 61 | J | 0.66 |
| A3-SS90-02 | B5ST9 | Benzo(b)fluoranthene | 77 | J | 0.9 |
| A3-SS90-02 | B5ST9 | Benzo(k)fluoranthene | 43 | J | 0.9 |
| A3-SS90-02 | B5ST9 | Chrysene | 84 | J | 9 |
| A3-SS90-02 | B5ST9 | Fluoranthene | 110 | J | 2300 |
| A3-SS90-02 | B5ST9 | Indeno(1,2,3-cd)pyrene | 43 | J | 0.9 |
| A3-SS90-02 | B5ST9 | Phenanthrene | 37 | J | NA |
| A3-SS90-02 | B5ST9 | Pyrene | 98 | J | 1700 |
| A3-SS90-06 | B5SW0 | 4,4'-DDT | 2.2 | J | 2 |
| A3-SS90-06 | B5SW0 | Benzo(a)anthracene | 51 | J | 0.9 |
| A3-SS90-06 | B5SW0 | Benzo(a)pyrene | 61 | J | 0.66 |
| A3-SS90-06 | B5SW0 | Benzo(b)fluoranthene | 76 | J | 0.9 |
| A3-SS90-06 | B5SW0 | Benzo(k)fluoranthene | 41 | J | 0.9 |
| A3-SS90-06 | B5SW0 | Chrysene | 81 | J | 9 |
| A3-SS90-06 | B5SW0 | Fluoranthene | 120 | J | 2300 |
| A3-SS90-06 | B5SW0 | gamma-Chlordane | 0.96 | J | NA |
| A3-SS90-06 | B5SW0 | Indeno(1,2,3-cd)pyrene | 40 | J | 0.9 |
| A3-SS90-06 | B5SW0 | Phenanthrene | 56 | J | NA |
| A3-SS90-06 | B5SW0 | Pyrene | 100 | J | 1700 |
| A3-SS90-06 | B5SW0 | Trichloroethene | 7.9 | -- | 23 |
| A3-SS90-12 | B5SW1 | 4,4'-DDT | 3.3 | J | 2 |
| A3-SS90-12 | B5SW1 | Benzo(a)anthracene | 87 | J | 0.9 |
| A3-SS90-12 | B5SW1 | Benzo(a)pyrene | 83 | J | 0.66 |
| A3-SS90-12 | B5SW1 | Benzo(b)fluoranthene | 100 | J | 0.9 |
| A3-SS90-12 | B5SW1 | Benzo(g,h,i)perylene | 68 | J | NA |
| A3-SS90-12 | B5SW1 | Benzo(k)fluoranthene | 74 | J | 0.9 |
| A3-SS90-12 | B5SW1 | Bis(2-ethylhexyl)phthalate | 170 | J | 49 |
| A3-SS90-12 | B5SW1 | Chrysene | 97 | J | 9 |
| A3-SS90-12 | B5SW1 | Fluoranthene | 150 | J | 2300 |
| A3-SS90-12 | B5SW1 | gamma-Chlordane | 25 | -- | NA |
| A3-SS90-12 | B5SW1 | Heptachlor | 1.5 | J | 0.15 |
| A3-SS90-12 | B5SW1 | Indeno(1,2,3-cd)pyrene | 58 | J | 0.9 |
| A3-SS90-12 | B5SW1 | Phenanthrene | 46 | J | NA |
| A3-SS90-12 | B5SW1 | Pyrene | 130 | J | 1700 |
| Z3-SS75-02 | B5SW2 | alpha-BHC | 4 | J | NA |
| Z3-SS75-02 | B5SW2 | Endosulfan sulfate | 43 | J | NA |
| Z3-SS89-02 | B5SW3 | Benzo(a)anthracene | 61 | J | 0.9 |
| Z3-SS89-02 | B5SW3 | Benzo(a)pyrene | 62 | J | 0.66 |
| Z3-SS89-02 | B5SW3 | Benzo(b)fluoranthene | 74 | J | 0.9 |
| Z3-SS89-02 | B5SW3 | Benzo(g,h,i)perylene | 52 | J | NA |
| Z3-SS89-02 | B5SW3 | Benzo(k)fluoranthene | 59 | J | 0.9 |
| Z3-SS89-02 | B5SW3 | Chrysene | 74 | J | 9 |
| Z3-SS89-02 | B5SW3 | Fluoranthene | 110 | J | 2300 |
| Z3-SS89-02 | B5SW3 | Indeno(1,2,3-cd)pyrene | 43 | J | 0.9 |
| Z3-SS89-02 | B5SW3 | Pyrene | 100 | J | 1700 |
| Z3-SS90-06 | B5SW4 | 4,4'-DDT | 2.7 | J | 2 |
| Z3-SS90-06 | B5SW4 | Benzo(a)anthracene | 77 | J | 0.9 |
| Z3-SS90-06 | B5SW4 | Benzo(a)pyrene | 93 | J | 0.66 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| Z3-SS90-06 | B5SW4 | Benzo(b)fluoranthene | 120 | J | 0.9 |
| Z3-SS90-06 | B5SW4 | Benzo(g,h,i)perylene | 85 | J | NA |
| Z3-SS90-06 | B5SW4 | Benzo(k)fluoranthene | 64 | J | 0.9 |
| Z3-SS90-06 | B5SW4 | Chrysene | 120 | J | 9 |
| Z3-SS90-06 | B5SW4 | Fluoranthene | 180 | -- | 2300 |
| Z3-SS90-06 | B5SW4 | gamma-Chlordane | 1.5 | J | NA |
| Z3-SS90-06 | B5SW4 | Indeno(1,2,3-cd)pyrene | 69 | J | 0.9 |
| Z3-SS90-06 | B5SW4 | Phenanthrene | 65 | J | NA |
| Z3-SS90-06 | B5SW4 | Pyrene | 160 | J | 1700 |
| A1-SS18-12 | B5SW5 | 4,4'-DDT | 0.2 | J | 2 |
| A1-SS18-12 | B5SW5 | Acetophenone | 40 | J | NA |
| A1-SS18-12 | B5SW5 | Benzaldehyde | 37 | J | NA |
| A1-SS18-12 | B5SW5 | Benzo(a)anthracene | 16 | J | 0.9 |
| A1-SS18-12 | B5SW5 | Benzo(a)pyrene | 11 | J | 0.66 |
| A1-SS18-12 | B5SW5 | Benzo(b)fluoranthene | 11 | J | 0.9 |
| A1-SS18-12 | B5SW5 | Benzo(k)fluoranthene | 11 | J | 0.9 |
| A1-SS18-12 | B5SW5 | Bis(2-ethylhexyl)phthalate | 8.9 | J | 49 |
| A1-SS18-12 | B5SW5 | Chrysene | 16 | J | 9 |
| A1-SS18-12 | B5SW5 | Fluoranthene | 38 | J | 2300 |
| A1-SS18-12 | B5SW5 | gamma-BHC (Lindane) | 0.059 | J | 0.52 |
| A1-SS18-12 | B5SW5 | gamma-Chlordane | 0.25 | J | NA |
| A1-SS18-12 | B5SW5 | Phenanthrene | 8.4 | J | NA |
| A1-SS18-12 | B5SW5 | Phenol | 7.9 | J | 10000 |
| A1-SS18-12 | B5SW5 | Pyrene | 31 | J | 1700 |
| A1-SS18-12 | B5SW5 | Total Alkanes | 500 | J | NA |
| A1-SS05-12 | B5SW6 | 1,1'-Biphenyl | 13 | J | NA |
| A1-SS05-12 | B5SW6 | 2-Methylnaphthalene | 21 | J | NA |
| A1-SS05-12 | B5SW6 | 4,4'-DDE | 1.8 | J | 2 |
| A1-SS05-12 | B5SW6 | 4,4'-DDT | 3 | J | 2 |
| A1-SS05-12 | B5SW6 | Acenaphthene | 6.6 | J | 3400 |
| A1-SS05-12 | B5SW6 | Acetophenone | 130 | J | NA |
| A1-SS05-12 | B5SW6 | Anthracene | 14 | J | 10000 |
| A1-SS05-12 | B5SW6 | Benzaldehyde | 160 | J | NA |
| A1-SS05-12 | B5SW6 | Benzo(a)anthracene | 82 | J | 0.9 |
| A1-SS05-12 | B5SW6 | Benzo(a)pyrene | 80 | J | 0.66 |
| A1-SS05-12 | B5SW6 | Benzo(b)fluoranthene | 150 | J | 0.9 |
| A1-SS05-12 | B5SW6 | Benzo(g,h,i)perylene | 51 | J | NA |
| A1-SS05-12 | B5SW6 | Benzo(k)fluoranthene | 47 | J | 0.9 |
| A1-SS05-12 | B5SW6 | Bis(2-ethylhexyl)phthalate | 150 | J | 49 |
| A1-SS05-12 | B5SW6 | Carbazole | 9.3 | J | NA |
| A1-SS05-12 | B5SW6 | Chrysene | 96 | J | 9 |
| A1-SS05-12 | B5SW6 | Dibenzo(a,h)anthracene | 17 | J | 0.66 |
| A1-SS05-12 | B5SW6 | Dibenzofuran | 8.6 | J | NA |
| A1-SS05-12 | B5SW6 | Di-n-butylphthalate | 6.4 | J | 5700 |
| A1-SS05-12 | B5SW6 | Fluoranthene | 160 | J | 2300 |
| A1-SS05-12 | B5SW6 | Fluorene | 9.3 | J | 2300 |
| A1-SS05-12 | B5SW6 | gamma-Chlordane | 22 | J | NA |
| A1-SS05-12 | B5SW6 | Heptachlor | 1.4 | J | 0.15 |
| A1-SS05-12 | B5SW6 | Indeno(1,2,3-cd)pyrene | 60 | J | 0.9 |
| A1-SS05-12 | B5SW6 | Naphthalene | 19 | J | 230 |
| A1-SS05-12 | B5SW6 | Phenanthrene | 90 | J | NA |
| A1-SS05-12 | B5SW6 | Phenol | 22 | J | 10000 |
| A1-SS05-12 | B5SW6 | Pyrene | 180 | -- | 1700 |
| A1-SS06-06 | B5SW7 | 2-Methylnaphthalene | 8.5 | J | NA |
| A1-SS06-06 | B5SW7 | 4,4'-DDE | 3.2 | J | 2 |
| A1-SS06-06 | B5SW7 | Acetophenone | 63 | J | NA |
| A1-SS06-06 | B5SW7 | Anthracene | 10 | J | 10000 |
| A1-SS06-06 | B5SW7 | Benzaldehyde | 120 | J | NA |
| A1-SS06-06 | B5SW7 | Benzo(a)anthracene | 64 | J | 0.9 |
| A1-SS06-06 | B5SW7 | Benzo(a)pyrene | 96 | J | 0.66 |



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# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS06-06 | B5SW7 | Benzo(b)fluoranthene | 120 | J | 0.9 |
| A1-SS06-06 | B5SW7 | Benzo(g,h,i)perylene | 72 | J | NA |
| A1-SS06-06 | B5SW7 | Benzo(k)fluoranthene | 39 | J | 0.9 |
| A1-SS06-06 | B5SW7 | Bis(2-ethylhexyl)phthalate | 82 | J | 49 |
| A1-SS06-06 | B5SW7 | Butylbenzylphthalate | 11 | J | 1100 |
| A1-SS06-06 | B5SW7 | Carbazole | 7.4 | J | NA |
| A1-SS06-06 | B5SW7 | Chrysene | 95 | J | 9 |
| A1-SS06-06 | B5SW7 | Dibenzo(a,h)anthracene | 21 | J | 0.66 |
| A1-SS06-06 | B5SW7 | Di-n-butylphthalate | 10 | J | 5700 |
| A1-SS06-06 | B5SW7 | Fluoranthene | 150 | J | 2300 |
| A1-SS06-06 | B5SW7 | gamma-Chlordane | 8.7 | -- | NA |
| A1-SS06-06 | B5SW7 | Heptachlor epoxide | 3.3 | -- | NA |
| A1-SS06-06 | B5SW7 | Indeno(1,2,3-cd)pyrene | 77 | J | 0.9 |
| A1-SS06-06 | B5SW7 | Naphthalene | 11 | J | 230 |
| A1-SS06-06 | B5SW7 | Phenanthrene | 64 | J | NA |
| A1-SS06-06 | B5SW7 | Phenol | 23 | J | 10000 |
| A1-SS06-06 | B5SW7 | Pyrene | 160 | J | 1700 |
| A1-SS06-06 | B5SW7 | Total Alkanes | 2500 | J | NA |
| A1-SS06-12 | B5SW8 | Acetophenone | 52 | J | NA |
| A1-SS06-12 | B5SW8 | Benzaldehyde | 66 | J | NA |
| A1-SS06-12 | B5SW8 | Bis(2-ethylhexyl)phthalate | 450 | -- | 49 |
| A1-SS06-12 | B5SW8 | Phenol | 15 | J | 10000 |
| A1-SS07-06 | B5SW9 | 2-Methylnaphthalene | 23 | J | NA |
| A1-SS07-06 | B5SW9 | 4,4'-DDE | 2.7 | J | 2 |
| A1-SS07-06 | B5SW9 | 4,4'-DDT | 4.4 | J | 2 |
| A1-SS07-06 | B5SW9 | Acenaphthene | 12 | J | 3400 |
| A1-SS07-06 | B5SW9 | Acetophenone | 51 | J | NA |
| A1-SS07-06 | B5SW9 | Anthracene | 17 | J | 10000 |
| A1-SS07-06 | B5SW9 | Benzaldehyde | 88 | J | NA |
| A1-SS07-06 | B5SW9 | Benzo(a)anthracene | 96 | J | 0.9 |
| A1-SS07-06 | B5SW9 | Benzo(a)pyrene | 110 | J | 0.66 |
| A1-SS07-06 | B5SW9 | Benzo(b)fluoranthene | 150 | J | 0.9 |
| A1-SS07-06 | B5SW9 | Benzo(g,h,i)perylene | 88 | J | NA |
| A1-SS07-06 | B5SW9 | Benzo(k)fluoranthene | 57 | J | 0.9 |
| A1-SS07-06 | B5SW9 | Bis(2-ethylhexyl)phthalate | 130 | J | 49 |
| A1-SS07-06 | B5SW9 | Butylbenzylphthalate | 10 | J | 1100 |
| A1-SS07-06 | B5SW9 | Carbazole | 10 | J | NA |
| A1-SS07-06 | B5SW9 | Chrysene | 93 | J | 9 |
| A1-SS07-06 | B5SW9 | delta-BHC | 2 | J | NA |
| A1-SS07-06 | B5SW9 | Dibenzo(a,h)anthracene | 24 | J | 0.66 |
| A1-SS07-06 | B5SW9 | Dibenzofuran | 8.5 | J | NA |
| A1-SS07-06 | B5SW9 | Di-n-butylphthalate | 8.9 | J | 5700 |
| A1-SS07-06 | B5SW9 | Fluoranthene | 160 | J | 2300 |
| A1-SS07-06 | B5SW9 | Fluorene | 11 | J | 2300 |
| A1-SS07-06 | B5SW9 | gamma-Chlordane | 8.6 | J | NA |
| A1-SS07-06 | B5SW9 | Indeno(1,2,3-cd)pyrene | 91 | J | 0.9 |
| A1-SS07-06 | B5SW9 | Naphthalene | 19 | J | 230 |
| A1-SS07-06 | B5SW9 | Phenanthrene | 98 | J | NA |
| A1-SS07-06 | B5SW9 | Phenol | 17 | J | 10000 |
| A1-SS07-06 | B5SW9 | Pyrene | 210 | -- | 1700 |
| A1-SS07-06 | B5SW9 | Tetrachloroethene | 0.41 | J | 4 |
| A1-SS07-06 | B5SW9 | Total Alkanes | 2600 | J | NA |
| A1-SS07-12 | B5SX0 | 4,4'-DDE | 2.1 | J | 2 |
| A1-SS07-12 | B5SX0 | 4,4'-DDT | 5.7 | J | 2 |
| A1-SS07-12 | B5SX0 | Acetophenone | 46 | J | NA |
| A1-SS07-12 | B5SX0 | Aroclor-1254 | 100 | J | 0.49 |
| A1-SS07-12 | B5SX0 | Benzaldehyde | 110 | J | NA |
| A1-SS07-12 | B5SX0 | Benzo(a)anthracene | 48 | J | 0.9 |
| A1-SS07-12 | B5SX0 | Benzo(a)pyrene | 56 | J | 0.66 |
| A1-SS07-12 | B5SX0 | Benzo(b)fluoranthene | 73 | J | 0.9 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS07-12 | B5SX0 | Benzo(g,h,i)perylene | 41 | J | NA |
| A1-SS07-12 | B5SX0 | Bis(2-ethylhexyl)phthalate | 140 | J | 49 |
| A1-SS07-12 | B5SX0 | Chrysene | 56 | J | 9 |
| A1-SS07-12 | B5SX0 | Endrin | 0.21 | J | 17 |
| A1-SS07-12 | B5SX0 | Fluoranthene | 88 | J | 2300 |
| A1-SS07-12 | B5SX0 | gamma-Chlordane | 3.3 | J | NA |
| A1-SS07-12 | B5SX0 | Heptachlor | 1.8 | J | 0.15 |
| A1-SS07-12 | B5SX0 | Phenanthrene | 37 | J | NA |
| A1-SS07-12 | B5SX0 | Pyrene | 84 | J | 1700 |
| A1-SS07-12 | B5SX0 | Total Alkanes | 750 | J | NA |
| A1-SS08-06 | B5SX1 | 2-Methylnaphthalene | 6.3 | J | NA |
| A1-SS08-06 | B5SX1 | 4,4'-DDE | 4.3 | -- | 2 |
| A1-SS08-06 | B5SX1 | 4,4'-DDT | 11 | J | 2 |
| A1-SS08-06 | B5SX1 | Acetophenone | 48 | J | NA |
| A1-SS08-06 | B5SX1 | Anthracene | 13 | J | 10000 |
| A1-SS08-06 | B5SX1 | Benzaldehyde | 80 | J | NA |
| A1-SS08-06 | B5SX1 | Benzo(a)anthracene | 81 | J | 0.9 |
| A1-SS08-06 | B5SX1 | Benzo(a)pyrene | 92 | J | 0.66 |
| A1-SS08-06 | B5SX1 | Benzo(b)fluoranthene | 120 | J | 0.9 |
| A1-SS08-06 | B5SX1 | Benzo(g,h,i)perylene | 74 | J | NA |
| A1-SS08-06 | B5SX1 | Benzo(k)fluoranthene | 46 | J | 0.9 |
| A1-SS08-06 | B5SX1 | Bis(2-ethylhexyl)phthalate | 130 | J | 49 |
| A1-SS08-06 | B5SX1 | Carbazole | 6.1 | J | NA |
| A1-SS08-06 | B5SX1 | Chrysene | 77 | J | 9 |
| A1-SS08-06 | B5SX1 | Dibenzo(a,h)anthracene | 19 | J | 0.66 |
| A1-SS08-06 | B5SX1 | Di-n-butylphthalate | 7.4 | J | 5700 |
| A1-SS08-06 | B5SX1 | Fluoranthene | 140 | J | 2300 |
| A1-SS08-06 | B5SX1 | gamma-Chlordane | 6 | J | NA |
| A1-SS08-06 | B5SX1 | Heptachlor | 0.33 | J | 0.15 |
| A1-SS08-06 | B5SX1 | Indeno(1,2,3-cd)pyrene | 82 | J | 0.9 |
| A1-SS08-06 | B5SX1 | Naphthalene | 11 | J | 230 |
| A1-SS08-06 | B5SX1 | Phenanthrene | 66 | J | NA |
| A1-SS08-06 | B5SX1 | Phenol | 14 | J | 10000 |
| A1-SS08-06 | B5SX1 | Polycyclic hydrocarbon | 83 | J | NA |
| A1-SS08-06 | B5SX1 | Polycyclic hydrocarbon | 120 | J | NA |
| A1-SS08-06 | B5SX1 | Pyrene | 150 | J | 1700 |
| A1-SS08-06 | B5SX1 | Trichlorofluoromethane | 0.38 | J | NA |
| A1-SS08-12 | B5SX2 | 2-Methylnaphthalene | 29 | J | NA |
| A1-SS08-12 | B5SX2 | 4,4'-DDE | 2.6 | J | 2 |
| A1-SS08-12 | B5SX2 | Acenaphthene | 18 | J | 3400 |
| A1-SS08-12 | B5SX2 | Acetophenone | 52 | J | NA |
| A1-SS08-12 | B5SX2 | Anthracene | 25 | J | 10000 |
| A1-SS08-12 | B5SX2 | Benzaldehyde | 85 | J | NA |
| A1-SS08-12 | B5SX2 | Benzo(a)anthracene | 56 | J | 0.9 |
| A1-SS08-12 | B5SX2 | Benzo(a)pyrene | 59 | J | 0.66 |
| A1-SS08-12 | B5SX2 | Benzo(b)fluoranthene | 73 | J | 0.9 |
| A1-SS08-12 | B5SX2 | Benzo(g,h,i)perylene | 40 | J | NA |
| A1-SS08-12 | B5SX2 | Benzo(k)fluoranthene | 33 | J | 0.9 |
| A1-SS08-12 | B5SX2 | Bis(2-ethylhexyl)phthalate | 200 | -- | 49 |
| A1-SS08-12 | B5SX2 | Butylbenzylphthalate | 6.2 | J | 1100 |
| A1-SS08-12 | B5SX2 | Carbazole | 11 | J | NA |
| A1-SS08-12 | B5SX2 | Chrysene | 61 | J | 9 |
| A1-SS08-12 | B5SX2 | delta-BHC | 1.2 | J | NA |
| A1-SS08-12 | B5SX2 | Dibenzo(a,h)anthracene | 9.4 | J | 0.66 |
| A1-SS08-12 | B5SX2 | Dibenzofuran | 12 | J | NA |
| A1-SS08-12 | B5SX2 | Di-n-butylphthalate | 6.3 | J | 5700 |
| A1-SS08-12 | B5SX2 | Fluoranthene | 120 | J | 2300 |
| A1-SS08-12 | B5SX2 | Fluorene | 17 | J | 2300 |
| A1-SS08-12 | B5SX2 | gamma-Chlordane | 15 | J | NA |
| A1-SS08-12 | B5SX2 | Heptachlor | 1.5 | J | 0.15 |



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# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS08-12 | B5SX2 | Indeno(1,2,3-cd)pyrene | 41 | J | 0.9 |
| A1-SS08-12 | B5SX2 | Naphthalene | 16 | J | 230 |
| A1-SS08-12 | B5SX2 | Phenanthrene | 99 | J | NA |
| A1-SS08-12 | B5SX2 | Phenol | 15 | J | 10000 |
| A1-SS08-12 | B5SX2 | Pyrene | 120 | J | 1700 |
| A1-SS08-12 | B5SX2 | Total Alkanes | 770 | J | NA |
| A1-SS09-06 | B5SX3 | 2-Methylnaphthalene | 57 | J | NA |
| A1-SS09-06 | B5SX3 | 4,4'-DDT | 13 | J | 2 |
| A1-SS09-06 | B5SX3 | Acetophenone | 36 | J | NA |
| A1-SS09-06 | B5SX3 | alpha-Chlordane | 1.4 | J | NA |
| A1-SS09-06 | B5SX3 | Anthracene | 33 | J | 10000 |
| A1-SS09-06 | B5SX3 | Aroclor-1254 | 210 | -- | 0.49 |
| A1-SS09-06 | B5SX3 | Benzaldehyde | 85 | J | NA |
| A1-SS09-06 | B5SX3 | Benzo(a)anthracene | 160 | J | 0.9 |
| A1-SS09-06 | B5SX3 | Benzo(a)pyrene | 180 | J | 0.66 |
| A1-SS09-06 | B5SX3 | Benzo(b)fluoranthene | 240 | J | 0.9 |
| A1-SS09-06 | B5SX3 | Benzo(g,h,i)perylene | 130 | J | NA |
| A1-SS09-06 | B5SX3 | Benzo(k)fluoranthene | 75 | J | 0.9 |
| A1-SS09-06 | B5SX3 | Bis(2-ethylhexyl)phthalate | 320 | J | 49 |
| A1-SS09-06 | B5SX3 | Chrysene | 180 | J | 9 |
| A1-SS09-06 | B5SX3 | Dibenzo(a,h)anthracene | 31 | J | 0.66 |
| A1-SS09-06 | B5SX3 | Fluoranthene | 290 | J | 2300 |
| A1-SS09-06 | B5SX3 | Indeno(1,2,3-cd)pyrene | 140 | J | 0.9 |
| A1-SS09-06 | B5SX3 | Naphthalene | 54 | J | 230 |
| A1-SS09-06 | B5SX3 | Phenanthrene | 150 | J | NA |
| A1-SS09-06 | B5SX3 | Pyrene | 280 | J | 1700 |
| A1-SS09-06 | B5SX3 | Total Alkanes | 2800 | J | NA |
| A1-SS09-12 | B5SX4 | 1,1'-Biphenyl | 6.4 | J | NA |
| A1-SS09-12 | B5SX4 | 2-Methylnaphthalene | 21 | J | NA |
| A1-SS09-12 | B5SX4 | 4,4'-DDE | 11 | -- | 2 |
| A1-SS09-12 | B5SX4 | Acenaphthene | 6.5 | J | 3400 |
| A1-SS09-12 | B5SX4 | Acetophenone | 34 | J | NA |
| A1-SS09-12 | B5SX4 | Anthracene | 14 | J | 10000 |
| A1-SS09-12 | B5SX4 | Aroclor-1254 | 360 | -- | 0.49 |
| A1-SS09-12 | B5SX4 | Benzaldehyde | 57 | J | NA |
| A1-SS09-12 | B5SX4 | Benzo(a)anthracene | 53 | J | 0.9 |
| A1-SS09-12 | B5SX4 | Benzo(a)pyrene | 51 | J | 0.66 |
| A1-SS09-12 | B5SX4 | Benzo(b)fluoranthene | 79 | J | 0.9 |
| A1-SS09-12 | B5SX4 | Benzo(g,h,i)perylene | 49 | J | NA |
| A1-SS09-12 | B5SX4 | Benzo(k)fluoranthene | 20 | J | 0.9 |
| A1-SS09-12 | B5SX4 | Bis(2-ethylhexyl)phthalate | 100 | J | 49 |
| A1-SS09-12 | B5SX4 | Carbazole | 7.3 | J | NA |
| A1-SS09-12 | B5SX4 | Chrysene | 67 | J | 9 |
| A1-SS09-12 | B5SX4 | Dibenzo(a,h)anthracene | 15 | J | 0.66 |
| A1-SS09-12 | B5SX4 | Dibenzofuran | 10 | J | NA |
| A1-SS09-12 | B5SX4 | Di-n-butylphthalate | 5.9 | J | 5700 |
| A1-SS09-12 | B5SX4 | Fluoranthene | 93 | J | 2300 |
| A1-SS09-12 | B5SX4 | Fluorene | 5.4 | J | 2300 |
| A1-SS09-12 | B5SX4 | Indeno(1,2,3-cd)pyrene | 47 | J | 0.9 |
| A1-SS09-12 | B5SX4 | Naphthalene | 31 | J | 230 |
| A1-SS09-12 | B5SX4 | Phenanthrene | 64 | J | NA |
| A1-SS09-12 | B5SX4 | Phenol | 12 | J | 10000 |
| A1-SS09-12 | B5SX4 | Polycyclic hydrocarbon | 410 | J | NA |
| A1-SS09-12 | B5SX4 | Pyrene | 82 | J | 1700 |
| A1-SS09-12 | B5SX4 | Total Alkanes | 1700 | J | NA |
| A1-SS10-06 | B5SX5 | Acetophenone | 37 | J | NA |
| A1-SS10-06 | B5SX5 | Anthracene | 35 | J | 10000 |
| A1-SS10-06 | B5SX5 | Aroclor-1254 | 190 | -- | 0.49 |
| A1-SS10-06 | B5SX5 | Benzaldehyde | 99 | J | NA |
| A1-SS10-06 | B5SX5 | Benzo(a)anthracene | 180 | J | 0.9 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS10-06 | B5SX5 | Benzo(a)pyrene | 180 | J | 0.66 |
| A1-SS10-06 | B5SX5 | Benzo(b)fluoranthene | 240 | J | 0.9 |
| A1-SS10-06 | B5SX5 | Benzo(g,h,i)perylene | 120 | J | NA |
| A1-SS10-06 | B5SX5 | Benzo(k)fluoranthene | 92 | J | 0.9 |
| A1-SS10-06 | B5SX5 | Bis(2-ethylhexyl)phthalate | 720 | J | 49 |
| A1-SS10-06 | B5SX5 | Chrysene | 210 | J | 9 |
| A1-SS10-06 | B5SX5 | Dibenzo(a,h)anthracene | 30 | J | 0.66 |
| A1-SS10-06 | B5SX5 | Fluoranthene | 410 | J | 2300 |
| A1-SS10-06 | B5SX5 | Indeno(1,2,3-cd)pyrene | 130 | J | 0.9 |
| A1-SS10-06 | B5SX5 | Phenanthrene | 220 | J | NA |
| A1-SS10-06 | B5SX5 | Pyrene | 360 | J | 1700 |
| A1-SS10-06 | B5SX5 | Total Alkanes | 2500 | J | NA |
| A1-SS10-12 | B5SX6 | Acetophenone | 48 | J | NA |
| A1-SS10-12 | B5SX6 | alpha-Chlordane | 0.37 | J | NA |
| A1-SS10-12 | B5SX6 | Aroclor-1254 | 34 | J | 0.49 |
| A1-SS10-12 | B5SX6 | Benzaldehyde | 83 | J | NA |
| A1-SS10-12 | B5SX6 | Benzo(a)anthracene | 31 | J | 0.9 |
| A1-SS10-12 | B5SX6 | Benzo(b)fluoranthene | 35 | J | 0.9 |
| A1-SS10-12 | B5SX6 | Bis(2-ethylhexyl)phthalate | 160 | J | 49 |
| A1-SS10-12 | B5SX6 | Chrysene | 33 | J | 9 |
| A1-SS10-12 | B5SX6 | Fluoranthene | 43 | J | 2300 |
| A1-SS10-12 | B5SX6 | Pyrene | 45 | J | 1700 |
| A1-SS10-12 | B5SX6 | Total Alkanes | 7 | J | NA |
| A1-SS10-12 | B5SX6 | Trichloroethene | 0.77 | J | 23 |
| A1-SS11-06 | B5SX7 | 4,4'-DDD | 4 | -- | 3 |
| A1-SS11-06 | B5SX7 | 4,4'-DDT | 9.4 | -- | 2 |
| A1-SS11-06 | B5SX7 | Acenaphthylene | 28 | J | 3400 |
| A1-SS11-06 | B5SX7 | Acetophenone | 40 | J | NA |
| A1-SS11-06 | B5SX7 | Anthracene | 28 | J | 10000 |
| A1-SS11-06 | B5SX7 | Benzaldehyde | 100 | J | NA |
| A1-SS11-06 | B5SX7 | Benzo(a)anthracene | 270 | J | 0.9 |
| A1-SS11-06 | B5SX7 | Benzo(a)pyrene | 230 | J | 0.66 |
| A1-SS11-06 | B5SX7 | Benzo(b)fluoranthene | 270 | J | 0.9 |
| A1-SS11-06 | B5SX7 | Benzo(g,h,i)perylene | 150 | J | NA |
| A1-SS11-06 | B5SX7 | Benzo(k)fluoranthene | 120 | J | 0.9 |
| A1-SS11-06 | B5SX7 | Bis(2-ethylhexyl)phthalate | 560 | J | 49 |
| A1-SS11-06 | B5SX7 | Chrysene | 270 | J | 9 |
| A1-SS11-06 | B5SX7 | Dibenzo(a,h)anthracene | 37 | J | 0.66 |
| A1-SS11-06 | B5SX7 | Endrin ketone | 1.2 | J | NA |
| A1-SS11-06 | B5SX7 | Fluoranthene | 530 | J | 2300 |
| A1-SS11-06 | B5SX7 | gamma-Chlordane | 3.9 | -- | NA |
| A1-SS11-06 | B5SX7 | Indeno(1,2,3-cd)pyrene | 150 | J | 0.9 |
| A1-SS11-06 | B5SX7 | Phenanthrene | 170 | J | NA |
| A1-SS11-06 | B5SX7 | Pyrene | 440 | J | 1700 |
| A1-SS11-06 | B5SX7 | Total Alkanes | 12 | J | NA |
| A1-SS11-06 | B5SX7 | Total Alkanes | 1600 | J | NA |
| A1-SS11-12 | B5SX8 | 2-Methylnaphthalene | 7.4 | J | NA |
| A1-SS11-12 | B5SX8 | 4,4'-DDE | 1.8 | J | 2 |
| A1-SS11-12 | B5SX8 | 4,4'-DDT | 3.4 | J | 2 |
| A1-SS11-12 | B5SX8 | Acenaphthylene | 6.5 | J | 3400 |
| A1-SS11-12 | B5SX8 | Acetophenone | 42 | J | NA |
| A1-SS11-12 | B5SX8 | alpha-BHC | 0.29 | J | NA |
| A1-SS11-12 | B5SX8 | Anthracene | 9.9 | J | 10000 |
| A1-SS11-12 | B5SX8 | Benzaldehyde | 71 | J | NA |
| A1-SS11-12 | B5SX8 | Benzo(a)anthracene | 80 | J | 0.9 |
| A1-SS11-12 | B5SX8 | Benzo(a)pyrene | 76 | J | 0.66 |
| A1-SS11-12 | B5SX8 | Benzo(b)fluoranthene | 100 | J | 0.9 |
| A1-SS11-12 | B5SX8 | Benzo(g,h,i)perylene | 58 | J | NA |
| A1-SS11-12 | B5SX8 | Benzo(k)fluoranthene | 39 | J | 0.9 |
| A1-SS11-12 | B5SX8 | Bis(2-ethylhexyl)phthalate | 1700 | -- | 49 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS11-12 | B5SX8 | Butylbenzylphthalate | 12 | J | 1100 |
| A1-SS11-12 | B5SX8 | Carbazole | 6.3 | J | NA |
| A1-SS11-12 | B5SX8 | Chrysene | 94 | J | 9 |
| A1-SS11-12 | B5SX8 | Dibenzo(a,h)anthracene | 18 | J | 0.66 |
| A1-SS11-12 | B5SX8 | Di-n-butylphthalate | 6 | J | 5700 |
| A1-SS11-12 | B5SX8 | Fluoranthene | 130 | J | 2300 |
| A1-SS11-12 | B5SX8 | gamma-Chlordane | 2.9 | J | NA |
| A1-SS11-12 | B5SX8 | Heptachlor | 1.1 | J | 0.15 |
| A1-SS11-12 | B5SX8 | Indeno(1,2,3-cd)pyrene | 62 | J | 0.9 |
| A1-SS11-12 | B5SX8 | Naphthalene | 10 | J | 230 |
| A1-SS11-12 | B5SX8 | Phenanthrene | 60 | J | NA |
| A1-SS11-12 | B5SX8 | Phenol | 14 | J | 10000 |
| A1-SS11-12 | B5SX8 | Pyrene | 140 | J | 1700 |
| A1-SS11-12 | B5SX8 | Total Alkanes | 1400 | J | NA |
| A1-SS12-06 | B5SX9 | 2-Methylnaphthalene | 5.7 | J | NA |
| A1-SS12-06 | B5SX9 | 4,4'-DDE | 1.4 | J | 2 |
| A1-SS12-06 | B5SX9 | 4,4'-DDT | 3.5 | -- | 2 |
| A1-SS12-06 | B5SX9 | Acetophenone | 39 | J | NA |
| A1-SS12-06 | B5SX9 | Anthracene | 6 | J | 10000 |
| A1-SS12-06 | B5SX9 | Benzaldehyde | 88 | J | NA |
| A1-SS12-06 | B5SX9 | Benzo(a)anthracene | 56 | J | 0.9 |
| A1-SS12-06 | B5SX9 | Benzo(a)pyrene | 77 | J | 0.66 |
| A1-SS12-06 | B5SX9 | Benzo(b)fluoranthene | 110 | J | 0.9 |
| A1-SS12-06 | B5SX9 | Benzo(g,h,i)perylene | 61 | J | NA |
| A1-SS12-06 | B5SX9 | Benzo(k)fluoranthene | 34 | J | 0.9 |
| A1-SS12-06 | B5SX9 | Bis(2-ethylhexyl)phthalate | 630 | -- | 49 |
| A1-SS12-06 | B5SX9 | Butylbenzylphthalate | 7.1 | J | 1100 |
| A1-SS12-06 | B5SX9 | Carbazole | 5.7 | J | NA |
| A1-SS12-06 | B5SX9 | Chrysene | 63 | J | 9 |
| A1-SS12-06 | B5SX9 | Dibenzo(a,h)anthracene | 16 | J | 0.66 |
| A1-SS12-06 | B5SX9 | Di-n-butylphthalate | 9.1 | J | 5700 |
| A1-SS12-06 | B5SX9 | Fluoranthene | 130 | J | 2300 |
| A1-SS12-06 | B5SX9 | gamma-Chlordane | 1.7 | J | NA |
| A1-SS12-06 | B5SX9 | Heptachlor epoxide | 1.9 | -- | NA |
| A1-SS12-06 | B5SX9 | Indeno(1,2,3-cd)pyrene | 60 | J | 0.9 |
| A1-SS12-06 | B5SX9 | Naphthalene | 10 | J | 230 |
| A1-SS12-06 | B5SX9 | Phenanthrene | 51 | J | NA |
| A1-SS12-06 | B5SX9 | Phenol | 13 | J | 10000 |
| A1-SS12-06 | B5SX9 | Pyrene | 110 | J | 1700 |
| A1-SS12-06 | B5SX9 | Total Alkanes | 3200 | J | NA |
| A1-SS12-12 | B5SY0 | 4,4'-DDT | 0.61 | J | 2 |
| A1-SS12-12 | B5SY0 | Acetophenone | 48 | J | NA |
| A1-SS12-12 | B5SY0 | Benzaldehyde | 72 | J | NA |
| A1-SS12-12 | B5SY0 | Benzo(a)anthracene | 13 | J | 0.9 |
| A1-SS12-12 | B5SY0 | Benzo(a)pyrene | 15 | J | 0.66 |
| A1-SS12-12 | B5SY0 | Benzo(b)fluoranthene | 21 | J | 0.9 |
| A1-SS12-12 | B5SY0 | Benzo(k)fluoranthene | 10 | J | 0.9 |
| A1-SS12-12 | B5SY0 | Bis(2-ethylhexyl)phthalate | 890 | -- | 49 |
| A1-SS12-12 | B5SY0 | Butylbenzylphthalate | 25 | J | 1100 |
| A1-SS12-12 | B5SY0 | Chrysene | 14 | J | 9 |
| A1-SS12-12 | B5SY0 | Fluoranthene | 25 | J | 2300 |
| A1-SS12-12 | B5SY0 | Naphthalene | 5.9 | J | 230 |
| A1-SS12-12 | B5SY0 | Phenanthrene | 9.7 | J | NA |
| A1-SS12-12 | B5SY0 | Phenol | 12 | J | 10000 |
| A1-SS12-12 | B5SY0 | Pyrene | 27 | J | 1700 |
| A1-SS12-12 | B5SY0 | Total Alkanes | 450 | J | NA |
| A1-SS13-06 | B5SY1 | 4,4'-DDT | 12 | J | 2 |
| A1-SS13-06 | B5SY1 | Acetone | 13 | -- | 1000 |
| A1-SS13-06 | B5SY1 | Acetophenone | 36 | J | NA |
| A1-SS13-06 | B5SY1 | Aroclor-1254 | 150 | -- | 0.49 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS13-06 | B5SY1 | Benzaldehyde | 92 | J | NA |
| A1-SS13-06 | B5SY1 | Benzo(a)anthracene | 110 | J | 0.9 |
| A1-SS13-06 | B5SY1 | Benzo(a)pyrene | 140 | J | 0.66 |
| A1-SS13-06 | B5SY1 | Benzo(b)fluoranthene | 210 | J | 0.9 |
| A1-SS13-06 | B5SY1 | Benzo(g,h,i)perylene | 110 | J | NA |
| A1-SS13-06 | B5SY1 | Benzo(k)fluoranthene | 53 | J | 0.9 |
| A1-SS13-06 | B5SY1 | Bis(2-ethylhexyl)phthalate | 240 | J | 49 |
| A1-SS13-06 | B5SY1 | Chrysene | 140 | J | 9 |
| A1-SS13-06 | B5SY1 | Fluoranthene | 200 | J | 2300 |
| A1-SS13-06 | B5SY1 | gamma-Chlordane | 4.6 | J | NA |
| A1-SS13-06 | B5SY1 | Indeno(1,2,3-cd)pyrene | 100 | J | 0.9 |
| A1-SS13-06 | B5SY1 | Phenanthrene | 88 | J | NA |
| A1-SS13-06 | B5SY1 | Pyrene | 200 | J | 1700 |
| A1-SS13-06 | B5SY1 | Total Alkanes | 140 | J | NA |
| A1-SS13-06 | B5SY1 | Total Alkanes | 2900 | J | NA |
| A1-SS13-12 | B5SY2 | 2-Methylnaphthalene | 8.7 | J | NA |
| A1-SS13-12 | B5SY2 | 4,4'-DDE | 3.9 | -- | 2 |
| A1-SS13-12 | B5SY2 | Acenaphthene | 13 | J | 3400 |
| A1-SS13-12 | B5SY2 | Acetophenone | 40 | J | NA |
| A1-SS13-12 | B5SY2 | Anthracene | 36 | J | 10000 |
| A1-SS13-12 | B5SY2 | Aroclor-1254 | 100 | -- | 0.49 |
| A1-SS13-12 | B5SY2 | Benzaldehyde | 66 | J | NA |
| A1-SS13-12 | B5SY2 | Benzo(a)anthracene | 99 | J | 0.9 |
| A1-SS13-12 | B5SY2 | Benzo(a)pyrene | 100 | J | 0.66 |
| A1-SS13-12 | B5SY2 | Benzo(b)fluoranthene | 150 | J | 0.9 |
| A1-SS13-12 | B5SY2 | Benzo(g,h,i)perylene | 78 | J | NA |
| A1-SS13-12 | B5SY2 | Benzo(k)fluoranthene | 59 | J | 0.9 |
| A1-SS13-12 | B5SY2 | Bis(2-ethylhexyl)phthalate | 180 | -- | 49 |
| A1-SS13-12 | B5SY2 | Butylbenzylphthalate | 7.3 | J | 1100 |
| A1-SS13-12 | B5SY2 | Carbazole | 19 | J | NA |
| A1-SS13-12 | B5SY2 | Chrysene | 120 | J | 9 |
| A1-SS13-12 | B5SY2 | Dibenzo(a,h)anthracene | 23 | J | 0.66 |
| A1-SS13-12 | B5SY2 | Dibenzofuran | 6.1 | J | NA |
| A1-SS13-12 | B5SY2 | Di-n-butylphthalate | 6.1 | J | 5700 |
| A1-SS13-12 | B5SY2 | Fluoranthene | 220 | -- | 2300 |
| A1-SS13-12 | B5SY2 | Fluorene | 12 | J | 2300 |
| A1-SS13-12 | B5SY2 | Indeno(1,2,3-cd)pyrene | 77 | J | 0.9 |
| A1-SS13-12 | B5SY2 | Naphthalene | 15 | J | 230 |
| A1-SS13-12 | B5SY2 | Phenanthrene | 150 | J | NA |
| A1-SS13-12 | B5SY2 | Phenol | 12 | J | 10000 |
| A1-SS13-12 | B5SY2 | Pyrene | 200 | -- | 1700 |
| A1-SS13-12 | B5SY2 | Total Alkanes | 1100 | J | NA |
| A1-SS14-06 | B5SY3 | 1,1'-Biphenyl | 15 | J | NA |
| A1-SS14-06 | B5SY3 | 2-Methylnaphthalene | 59 | J | NA |
| A1-SS14-06 | B5SY3 | Acenaphthene | 68 | J | 3400 |
| A1-SS14-06 | B5SY3 | Acenaphthylene | 9.4 | J | 3400 |
| A1-SS14-06 | B5SY3 | Acetophenone | 40 | J | NA |
| A1-SS14-06 | B5SY3 | Anthracene | 150 | J | 10000 |
| A1-SS14-06 | B5SY3 | Aroclor-1254 | 110 | J | 0.49 |
| A1-SS14-06 | B5SY3 | Benzaldehyde | 39 | J | NA |
| A1-SS14-06 | B5SY3 | Benzo(a)anthracene | 600 | -- | 0.9 |
| A1-SS14-06 | B5SY3 | Benzo(a)pyrene | 530 | -- | 0.66 |
| A1-SS14-06 | B5SY3 | Benzo(b)fluoranthene | 580 | -- | 0.9 |
| A1-SS14-06 | B5SY3 | Benzo(g,h,i)perylene | 290 | -- | NA |
| A1-SS14-06 | B5SY3 | Benzo(k)fluoranthene | 450 | -- | 0.9 |
| A1-SS14-06 | B5SY3 | Bis(2-ethylhexyl)phthalate | 230 | -- | 49 |
| A1-SS14-06 | B5SY3 | Caprolactam | 12 | J | NA |
| A1-SS14-06 | B5SY3 | Carbazole | 53 | J | NA |
| A1-SS14-06 | B5SY3 | Chrysene | 550 | -- | 9 |
| A1-SS14-06 | B5SY3 | delta-BHC | 0.13 | J | NA |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS14-06 | B5SY3 | Dibenzo(a,h)anthracene | 110 | J | 0.66 |
| A1-SS14-06 | B5SY3 | Dibenzofuran | 96 | J | NA |
| A1-SS14-06 | B5SY3 | Di-n-butylphthalate | 5.6 | J | 5700 |
| A1-SS14-06 | B5SY3 | Endrin | 0.65 | J | 17 |
| A1-SS14-06 | B5SY3 | Endrin ketone | 1.4 | J | NA |
| A1-SS14-06 | B5SY3 | Fluoranthene | 1100 | -- | 2300 |
| A1-SS14-06 | B5SY3 | Fluorene | 130 | J | 2300 |
| A1-SS14-06 | B5SY3 | Heptachlor | 0.15 | J | 0.15 |
| A1-SS14-06 | B5SY3 | Indeno(1,2,3-cd)pyrene | 290 | -- | 0.9 |
| A1-SS14-06 | B5SY3 | Naphthalene | 58 | J | 230 |
| A1-SS14-06 | B5SY3 | N-Nitrosodiphenylamine | 25 | J | 140 |
| A1-SS14-06 | B5SY3 | Phenanthrene | 960 | -- | NA |
| A1-SS14-06 | B5SY3 | Phenol | 8.2 | J | 10000 |
| A1-SS14-06 | B5SY3 | Pyrene | 990 | -- | 1700 |
| A1-SS14-06 | B5SY3 | Total Alkanes | 1200 | J | NA |
| A1-SS14-12 | B5SY4 | 1,1'-Biphenyl | 15 | J | NA |
| A1-SS14-12 | B5SY4 | 2-Methylnaphthalene | 74 | J | NA |
| A1-SS14-12 | B5SY4 | 4,4'-DDE | 7.9 | -- | 2 |
| A1-SS14-12 | B5SY4 | Acetophenone | 77 | J | NA |
| A1-SS14-12 | B5SY4 | Anthracene | 12 | J | 10000 |
| A1-SS14-12 | B5SY4 | Aroclor-1254 | 270 | -- | 0.49 |
| A1-SS14-12 | B5SY4 | Benzaldehyde | 92 | J | NA |
| A1-SS14-12 | B5SY4 | Benzo(a)anthracene | 71 | J | 0.9 |
| A1-SS14-12 | B5SY4 | Benzo(a)pyrene | 88 | J | 0.66 |
| A1-SS14-12 | B5SY4 | Benzo(b)fluoranthene | 120 | J | 0.9 |
| A1-SS14-12 | B5SY4 | Benzo(g,h,i)perylene | 78 | J | NA |
| A1-SS14-12 | B5SY4 | Benzo(k)fluoranthene | 84 | J | 0.9 |
| A1-SS14-12 | B5SY4 | Bis(2-chloroethoxy)methane | 11 | J | NA |
| A1-SS14-12 | B5SY4 | Bis(2-chloroethyl)ether | 11 | J | 0.66 |
| A1-SS14-12 | B5SY4 | Bis(2-ethylhexyl)phthalate | 40 | J | 49 |
| A1-SS14-12 | B5SY4 | Carbazole | 11 | J | NA |
| A1-SS14-12 | B5SY4 | Chrysene | 120 | J | 9 |
| A1-SS14-12 | B5SY4 | Dibenzo(a,h)anthracene | 20 | J | 0.66 |
| A1-SS14-12 | B5SY4 | Dibenzofuran | 10 | J | NA |
| A1-SS14-12 | B5SY4 | Di-n-butylphthalate | 17 | J | 5700 |
| A1-SS14-12 | B5SY4 | Fluoranthene | 130 | J | 2300 |
| A1-SS14-12 | B5SY4 | Fluorene | 9.6 | J | 2300 |
| A1-SS14-12 | B5SY4 | Indeno(1,2,3-cd)pyrene | 59 | J | 0.9 |
| A1-SS14-12 | B5SY4 | Methoxychlor | 6.5 | J | 280 |
| A1-SS14-12 | B5SY4 | Naphthalene | 95 | J | 230 |
| A1-SS14-12 | B5SY4 | N-Nitrosodiphenylamine | 110 | J | 140 |
| A1-SS14-12 | B5SY4 | Phenanthrene | 100 | J | NA |
| A1-SS14-12 | B5SY4 | Phenol | 15 | J | 10000 |
| A1-SS14-12 | B5SY4 | Pyrene | 130 | J | 1700 |
| A1-SS15-06 | B5SY5 | 4,4'-DDE | 130 | -- | 2 |
| A1-SS15-06 | B5SY5 | Acenaphthylene | 9.7 | J | 3400 |
| A1-SS15-06 | B5SY5 | Acetophenone | 38 | J | NA |
| A1-SS15-06 | B5SY5 | Anthracene | 11 | J | 10000 |
| A1-SS15-06 | B5SY5 | Aroclor-1254 | 3100 | -- | 0.49 |
| A1-SS15-06 | B5SY5 | Benzaldehyde | 42 | J | NA |
| A1-SS15-06 | B5SY5 | Benzo(a)anthracene | 99 | J | 0.9 |
| A1-SS15-06 | B5SY5 | Benzo(a)pyrene | 89 | J | 0.66 |
| A1-SS15-06 | B5SY5 | Benzo(b)fluoranthene | 100 | J | 0.9 |
| A1-SS15-06 | B5SY5 | Benzo(g,h,i)perylene | 67 | J | NA |
| A1-SS15-06 | B5SY5 | Benzo(k)fluoranthene | 90 | J | 0.9 |
| A1-SS15-06 | B5SY5 | Bis(2-ethylhexyl)phthalate | 28 | J | 49 |
| A1-SS15-06 | B5SY5 | Butylbenzylphthalate | 6 | J | 1100 |
| A1-SS15-06 | B5SY5 | Carbazole | 6.8 | J | NA |
| A1-SS15-06 | B5SY5 | Chrysene | 110 | J | 9 |
| A1-SS15-06 | B5SY5 | Dibenzo(a,h)anthracene | 19 | J | 0.66 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS15-06 | B5SY5 | Fluoranthene | 200 | -- | 2300 |
| A1-SS15-06 | B5SY5 | Indeno(1,2,3-cd)pyrene | 56 | J | 0.9 |
| A1-SS15-06 | B5SY5 | Naphthalene | 5.6 | J | 230 |
| A1-SS15-06 | B5SY5 | Phenanthrene | 88 | J | NA |
| A1-SS15-06 | B5SY5 | Phenol | 8.6 | J | 10000 |
| A1-SS15-06 | B5SY5 | Pyrene | 190 | -- | 1700 |
| A1-SS15-06 | B5SY5 | Total Alkanes | 560 | J | NA |
| A1-SS15-12 | B5SY6 | 1,1'-Biphenyl | 14 | J | NA |
| A1-SS15-12 | B5SY6 | 2-Methylnaphthalene | 52 | J | NA |
| A1-SS15-12 | B5SY6 | Acenaphthene | 130 | J | 3400 |
| A1-SS15-12 | B5SY6 | Acenaphthylene | 60 | J | 3400 |
| A1-SS15-12 | B5SY6 | Acetophenone | 54 | J | NA |
| A1-SS15-12 | B5SY6 | Anthracene | 370 | -- | 10000 |
| A1-SS15-12 | B5SY6 | Benzaldehyde | 63 | J | NA |
| A1-SS15-12 | B5SY6 | Benzo(a)anthracene | 1500 | -- | 0.9 |
| A1-SS15-12 | B5SY6 | Benzo(a)pyrene | 1000 | -- | 0.66 |
| A1-SS15-12 | B5SY6 | Benzo(b)fluoranthene | 1100 | -- | 0.9 |
| A1-SS15-12 | B5SY6 | Benzo(g,h,i)perylene | 600 | -- | NA |
| A1-SS15-12 | B5SY6 | Benzo(k)fluoranthene | 980 | -- | 0.9 |
| A1-SS15-12 | B5SY6 | Bis(2-ethylhexyl)phthalate | 48 | J | 49 |
| A1-SS15-12 | B5SY6 | Carbazole | 110 | J | NA |
| A1-SS15-12 | B5SY6 | Chrysene | 1600 | -- | 9 |
| A1-SS15-12 | B5SY6 | Dibenzo(a,h)anthracene | 200 | J | 0.66 |
| A1-SS15-12 | B5SY6 | Dibenzofuran | 120 | J | NA |
| A1-SS15-12 | B5SY6 | Endrin | 1.4 | J | 17 |
| A1-SS15-12 | B5SY6 | Fluoranthene | 4500 | -- | 2300 |
| A1-SS15-12 | B5SY6 | Fluorene | 170 | J | 2300 |
| A1-SS15-12 | B5SY6 | Indeno(1,2,3-cd)pyrene | 530 | -- | 0.9 |
| A1-SS15-12 | B5SY6 | Naphthalene | 35 | J | 230 |
| A1-SS15-12 | B5SY6 | Phenanthrene | 3500 | -- | NA |
| A1-SS15-12 | B5SY6 | Phenol | 13 | J | 10000 |
| A1-SS15-12 | B5SY6 | Pyrene | 3500 | -- | 1700 |
| A1-SS15-12 | B5SY6 | Total Alkanes | 1200 | J | NA |
| A1-SS16-06 | B5SY7 | 4,4'-DDE | 35 | -- | 2 |
| A1-SS16-06 | B5SY7 | Acetophenone | 31 | J | NA |
| A1-SS16-06 | B5SY7 | Aroclor-1254 | 1300 | J | 0.49 |
| A1-SS16-06 | B5SY7 | Benzaldehyde | 33 | J | NA |
| A1-SS16-06 | B5SY7 | Benzo(a)anthracene | 21 | J | 0.9 |
| A1-SS16-06 | B5SY7 | Benzo(a)pyrene | 30 | J | 0.66 |
| A1-SS16-06 | B5SY7 | Benzo(b)fluoranthene | 30 | J | 0.9 |
| A1-SS16-06 | B5SY7 | Benzo(g,h,i)perylene | 32 | J | NA |
| A1-SS16-06 | B5SY7 | Benzo(k)fluoranthene | 24 | J | 0.9 |
| A1-SS16-06 | B5SY7 | beta-BHC | 0.72 | J | NA |
| A1-SS16-06 | B5SY7 | Bis(2-ethylhexyl)phthalate | 58 | J | 49 |
| A1-SS16-06 | B5SY7 | Chrysene | 24 | J | 9 |
| A1-SS16-06 | B5SY7 | Fluoranthene | 27 | J | 2300 |
| A1-SS16-06 | B5SY7 | Indeno(1,2,3-cd)pyrene | 25 | J | 0.9 |
| A1-SS16-06 | B5SY7 | Naphthalene | 6.8 | J | 230 |
| A1-SS16-06 | B5SY7 | Phenanthrene | 16 | J | NA |
| A1-SS16-06 | B5SY7 | Phenol | 7.1 | J | 10000 |
| A1-SS16-06 | B5SY7 | Pyrene | 31 | J | 1700 |
| A1-SS16-06 | B5SY7 | Total Alkanes | 370 | J | NA |
| A1-SS16-12 | B5SY8 | 4,4'-DDE | 0.51 | J | 2 |
| A1-SS16-12 | B5SY8 | Acenaphthene | 9.7 | J | 3400 |
| A1-SS16-12 | B5SY8 | Acetophenone | 25 | J | NA |
| A1-SS16-12 | B5SY8 | Anthracene | 31 | J | 10000 |
| A1-SS16-12 | B5SY8 | Aroclor-1254 | 22 | J | 0.49 |
| A1-SS16-12 | B5SY8 | Benzaldehyde | 24 | J | NA |
| A1-SS16-12 | B5SY8 | Benzo(a)anthracene | 110 | J | 0.9 |
| A1-SS16-12 | B5SY8 | Benzo(a)pyrene | 86 | J | 0.66 |

# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS16-12 | B5SY8 | Benzo(b)fluoranthene | 76 | J | 0.9 |
| A1-SS16-12 | B5SY8 | Benzo(g,h,i)perylene | 46 | J | NA |
| A1-SS16-12 | B5SY8 | Benzo(k)fluoranthene | 65 | J | 0.9 |
| A1-SS16-12 | B5SY8 | Bis(2-ethylhexyl)phthalate | 21 | J | 49 |
| A1-SS16-12 | B5SY8 | Carbazole | 8.1 | J | NA |
| A1-SS16-12 | B5SY8 | Chrysene | 110 | J | 9 |
| A1-SS16-12 | B5SY8 | Dibenzo(a,h)anthracene | 17 | J | 0.66 |
| A1-SS16-12 | B5SY8 | Endrin | 0.22 | J | 17 |
| A1-SS16-12 | B5SY8 | Fluoranthene | 220 | -- | 2300 |
| A1-SS16-12 | B5SY8 | Fluorene | 10 | J | 2300 |
| A1-SS16-12 | B5SY8 | Heptachlor | 0.1 | J | 0.15 |
| A1-SS16-12 | B5SY8 | Indeno(1,2,3-cd)pyrene | 41 | J | 0.9 |
| A1-SS16-12 | B5SY8 | Methoxychlor | 0.65 | J | 280 |
| A1-SS16-12 | B5SY8 | Phenanthrene | 170 | J | NA |
| A1-SS16-12 | B5SY8 | Phenol | 5.9 | J | 10000 |
| A1-SS16-12 | B5SY8 | Pyrene | 210 | -- | 1700 |
| A1-SS16-12 | B5SY8 | Total Alkanes | 270 | J | NA |
| A1-SS17-06 | B5SY9 | Acetophenone | 29 | J | NA |
| A1-SS17-06 | B5SY9 | Benzaldehyde | 22 | J | NA |
| A1-SS17-06 | B5SY9 | Bis(2-ethylhexyl)phthalate | 24 | J | 49 |
| A1-SS17-06 | B5SY9 | Endosulfan II | 4.9 | J | 340 |
| A1-SS17-06 | B5SY9 | Phenol | 6.1 | J | 10000 |
| A1-SS17-06 | B5SY9 | Total Alkanes | 85 | J | NA |
| A1-SS17-12 | B5SZ0 | 4,4'-DDT | 0.19 | J | 2 |
| A1-SS17-12 | B5SZ0 | Acetophenone | 31 | J | NA |
| A1-SS17-12 | B5SZ0 | Benzaldehyde | 32 | J | NA |
| A1-SS17-12 | B5SZ0 | Bis(2-ethylhexyl)phthalate | 8.1 | J | 49 |
| A1-SS17-12 | B5SZ0 | Butylbenzylphthalate | 8.2 | J | 1100 |
| A1-SS17-12 | B5SZ0 | Phenol | 6.5 | J | 10000 |
| A1-SS17-12 | B5SZ0 | Total Alkanes | 85 | J | NA |
| A1-SS18-06 | B5SZ1 | Acetophenone | 24 | J | NA |
| A1-SS18-06 | B5SZ1 | Benzaldehyde | 22 | J | NA |
| A1-SS18-06 | B5SZ1 | Bis(2-ethylhexyl)phthalate | 10 | J | 49 |
| A1-SS05-06 | B5SZ2 | 2-Methylnaphthalene | 5.7 | J | NA |
| A1-SS05-06 | B5SZ2 | 4,4'-DDE | 7.3 | J | 2 |
| A1-SS05-06 | B5SZ2 | 4,4'-DDT | 11 | -- | 2 |
| A1-SS05-06 | B5SZ2 | Acetophenone | 37 | J | NA |
| A1-SS05-06 | B5SZ2 | Anthracene | 13 | J | 10000 |
| A1-SS05-06 | B5SZ2 | Benzaldehyde | 91 | J | NA |
| A1-SS05-06 | B5SZ2 | Benzo(a)anthracene | 74 | J | 0.9 |
| A1-SS05-06 | B5SZ2 | Benzo(a)pyrene | 95 | J | 0.66 |
| A1-SS05-06 | B5SZ2 | Benzo(b)fluoranthene | 140 | J | 0.9 |
| A1-SS05-06 | B5SZ2 | Benzo(g,h,i)perylene | 72 | J | NA |
| A1-SS05-06 | B5SZ2 | Benzo(k)fluoranthene | 42 | J | 0.9 |
| A1-SS05-06 | B5SZ2 | Bis(2-ethylhexyl)phthalate | 730 | -- | 49 |
| A1-SS05-06 | B5SZ2 | Butylbenzylphthalate | 9.6 | J | 1100 |
| A1-SS05-06 | B5SZ2 | Carbazole | 5.7 | J | NA |
| A1-SS05-06 | B5SZ2 | Chrysene | 100 | J | 9 |
| A1-SS05-06 | B5SZ2 | Dibenzo(a,h)anthracene | 22 | J | 0.66 |
| A1-SS05-06 | B5SZ2 | Di-n-butylphthalate | 6.3 | J | 5700 |
| A1-SS05-06 | B5SZ2 | Fluoranthene | 160 | J | 2300 |
| A1-SS05-06 | B5SZ2 | gamma-Chlordane | 52 | -- | NA |
| A1-SS05-06 | B5SZ2 | Heptachlor | 3.6 | -- | 0.15 |
| A1-SS05-06 | B5SZ2 | Indeno(1,2,3-cd)pyrene | 77 | J | 0.9 |
| A1-SS05-06 | B5SZ2 | Methoxychlor | 3.3 | J | 280 |
| A1-SS05-06 | B5SZ2 | Naphthalene | 9 | J | |
| A1-SS05-06 | B5SZ2 | Phenanthrene | 83 | J | NA |
| A1-SS05-06 | B5SZ2 | Phenol | 13 | J | 10000 |
| A1-SS05-06 | B5SZ2 | Pyrene | 160 | J | 1700 |
| A1-SS05-06 | B5SZ2 | Total Alkanes | 3000 | J | NA |



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# TABLE #1

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB ORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| Z1-SS17-12 | B5SZ3 | 4,4'-DDT | 0.23 | J | 2 |
| Z1-SS17-12 | B5SZ3 | Acetophenone | 45 | J | NA |
| Z1-SS17-12 | B5SZ3 | Benzaldehyde | 49 | J | NA |
| Z1-SS17-12 | B5SZ3 | Bis(2-ethylhexyl)phthalate | 13 | J | 49 |
| Z1-SS17-12 | B5SZ3 | Caprolactam | 17 | J | NA |
| Z1-SS17-12 | B5SZ3 | Phenol | 9 | J | 10000 |
| Z1-SS17-12 | B5SZ3 | Total Alkanes | 180 | J | NA |
| RB-01 | B5SZ4 | Acetophenone | 0.49 | J | NA |
| RB-01 | B5SZ4 | Benzaldehyde | 0.77 | J | NA |
| RB-01 | B5SZ4 | Bis(2-ethylhexyl)phthalate | 0.31 | J | 49 |
| RB-01 | B5SZ4 | Butylbenzylphthalate | 0.41 | J | 1100 |
| RB-01 | B5SZ4 | Caprolactam | 0.4 | J | NA |
| RB-01 | B5SZ4 | Diethylphthalate | 0.45 | J | 10000 |
| RB-01 | B5SZ4 | Di-n-butylphthalate | 0.65 | J | 5700 |
| RB-01 | B5SZ4 | Phenol | 0.16 | J | 10000 |
| Z1-SS13-06 | B5SZ5 | 4,4'-DDT | 13 | -- | 2 |
| Z1-SS13-06 | B5SZ5 | Acetophenone | 40 | J | NA |
| Z1-SS13-06 | B5SZ5 | Benzaldehyde | 90 | J | NA |
| Z1-SS13-06 | B5SZ5 | Benzo(a)anthracene | 160 | J | 0.9 |
| Z1-SS13-06 | B5SZ5 | Benzo(a)pyrene | 200 | J | 0.66 |
| Z1-SS13-06 | B5SZ5 | Benzo(b)fluoranthene | 250 | J | 0.9 |
| Z1-SS13-06 | B5SZ5 | Benzo(g,h,i)perylene | 150 | J | NA |
| Z1-SS13-06 | B5SZ5 | Benzo(k)fluoranthene | 89 | J | 0.9 |
| Z1-SS13-06 | B5SZ5 | Bis(2-ethylhexyl)phthalate | 2000 | -- | 49 |
| Z1-SS13-06 | B5SZ5 | Chrysene | 170 | J | 9 |
| Z1-SS13-06 | B5SZ5 | Fluoranthene | 260 | J | 2300 |
| Z1-SS13-06 | B5SZ5 | gamma-Chlordane | 8.4 | J | NA |
| Z1-SS13-06 | B5SZ5 | Heptachlor epoxide | 3 | -- | NA |
| Z1-SS13-06 | B5SZ5 | Indeno(1,2,3-cd)pyrene | 150 | J | 0.9 |
| Z1-SS13-06 | B5SZ5 | Phenanthrene | 97 | J | NA |
| Z1-SS13-06 | B5SZ5 | Pyrene | 290 | J | 1700 |
| Z1-SS13-06 | B5SZ5 | Total Alkanes | 3600 | J | NA |
| A1-SS14-06 | B5T06 | Acetone | 14 | -- | 1000 |

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS70-02 | MB5SN5 | ALUMINUM | 2230 | -- | NA |
| A3-SS70-02 | MB5SN5 | ANTIMONY | 1.5 | J | 14 |
| A3-SS70-02 | MB5SN5 | ARSENIC | 4.6 | -- | 20 |
| A3-SS70-02 | MB5SN5 | BARIUM | 13.6 | J | 700 |
| A3-SS70-02 | MB5SN5 | CALCIUM | 758 | -- | NA |
| A3-SS70-02 | MB5SN5 | CHROMIUM | 6 | -- | 240 |
| A3-SS70-02 | MB5SN5 | COPPER | 6.5 | -- | 600 |
| A3-SS70-02 | MB5SN5 | IRON | 7850 | -- | NA |
| A3-SS70-02 | MB5SN5 | LEAD | 41.8 | -- | 400 |
| A3-SS70-02 | MB5SN5 | MANGANESE | 55.5 | -- | NA |
| A3-SS70-02 | MB5SN5 | NICKEL | 2.5 | J | 250 |
| A3-SS70-02 | MB5SN5 | POTASSIUM | 291 | J | NA |
| A3-SS70-02 | MB5SN5 | SODIUM | 37.5 | J | NA |
| A3-SS70-02 | MB5SN5 | VANADIUM | 14.1 | -- | 370 |
| A3-SS70-02 | MB5SN5 | ZINC | 22.5 | J | 1500 |
| A3-SS88-02 | MB5SN6 | ALUMINUM | 2130 | -- | NA |
| A3-SS88-02 | MB5SN6 | ANTIMONY | 1 | J | 14 |
| A3-SS88-02 | MB5SN6 | ARSENIC | 4.2 | -- | 20 |
| A3-SS88-02 | MB5SN6 | BARIUM | 13.3 | J | 700 |
| A3-SS88-02 | MB5SN6 | CALCIUM | 818 | -- | NA |
| A3-SS88-02 | MB5SN6 | CHROMIUM | 6.3 | -- | 240 |
| A3-SS88-02 | MB5SN6 | COPPER | 7.5 | -- | 600 |
| A3-SS88-02 | MB5SN6 | IRON | 7350 | -- | NA |
| A3-SS88-02 | MB5SN6 | LEAD | 34.2 | -- | 400 |
| A3-SS88-02 | MB5SN6 | MANGANESE | 64 | -- | NA |
| A3-SS88-02 | MB5SN6 | NICKEL | 2.3 | J | 250 |
| A3-SS88-02 | MB5SN6 | POTASSIUM | 267 | J | NA |
| A3-SS88-02 | MB5SN6 | SODIUM | 43.1 | J | NA |
| A3-SS88-02 | MB5SN6 | VANADIUM | 14.1 | -- | 370 |
| A3-SS88-02 | MB5SN6 | ZINC | 20.8 | J | 1500 |
| A3-SS70-06 | MB5SN7 | ALUMINUM | 2190 | -- | NA |
| A3-SS70-06 | MB5SN7 | ANTIMONY | 1.4 | J | 14 |
| A3-SS70-06 | MB5SN7 | ARSENIC | 4.3 | -- | 20 |
| A3-SS70-06 | MB5SN7 | BARIUM | 11.9 | J | 700 |
| A3-SS70-06 | MB5SN7 | CALCIUM | 542 | -- | NA |
| A3-SS70-06 | MB5SN7 | CHROMIUM | 6.6 | -- | 240 |
| A3-SS70-06 | MB5SN7 | COPPER | 10 | -- | 600 |
| A3-SS70-06 | MB5SN7 | IRON | 8020 | -- | NA |
| A3-SS70-06 | MB5SN7 | LEAD | 47.9 | -- | 400 |
| A3-SS70-06 | MB5SN7 | MANGANESE | 49.7 | -- | NA |
| A3-SS70-06 | MB5SN7 | NICKEL | 3.8 | J | 250 |
| A3-SS70-06 | MB5SN7 | POTASSIUM | 274 | J | NA |
| A3-SS70-06 | MB5SN7 | SODIUM | 37.3 | J | NA |
| A3-SS70-06 | MB5SN7 | VANADIUM | 14.6 | -- | 370 |
| A3-SS70-06 | MB5SN7 | ZINC | 20.9 | J | 1500 |
| A3-SS70-12 | MB5SN8 | ALUMINUM | 1070 | -- | NA |
| A3-SS70-12 | MB5SN8 | ANTIMONY | 1.6 | J | 14 |
| A3-SS70-12 | MB5SN8 | ARSENIC | 2.3 | -- | 20 |
| A3-SS70-12 | MB5SN8 | BARIUM | 6.9 | J | 700 |
| A3-SS70-12 | MB5SN8 | CHROMIUM | 4 | -- | 240 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS70-12 | MB5SN8 | COPPER | 5.6 | -- | 600 |
| A3-SS70-12 | MB5SN8 | IRON | 4550 | -- | NA |
| A3-SS70-12 | MB5SN8 | LEAD | 120 | -- | 400 |
| A3-SS70-12 | MB5SN8 | MANGANESE | 25.8 | -- | NA |
| A3-SS70-12 | MB5SN8 | NICKEL | 1.9 | J | 250 |
| A3-SS70-12 | MB5SN8 | POTASSIUM | 146 | J | NA |
| A3-SS70-12 | MB5SN8 | SODIUM | 36.8 | J | NA |
| A3-SS70-12 | MB5SN8 | VANADIUM | 8.1 | -- | 370 |
| A3-SS70-12 | MB5SN8 | ZINC | 13.9 | J | 1500 |
| A3-SS71-02 | MB5SN9 | ALUMINUM | 1130 | -- | NA |
| A3-SS71-02 | MB5SN9 | ANTIMONY | 2.8 | J | 14 |
| A3-SS71-02 | MB5SN9 | ARSENIC | 3.2 | -- | 20 |
| A3-SS71-02 | MB5SN9 | BARIUM | 75 | -- | 700 |
| A3-SS71-02 | MB5SN9 | CALCIUM | 10300 | -- | NA |
| A3-SS71-02 | MB5SN9 | CHROMIUM | 6.1 | -- | 240 |
| A3-SS71-02 | MB5SN9 | COPPER | 18 | -- | 600 |
| A3-SS71-02 | MB5SN9 | IRON | 7660 | -- | NA |
| A3-SS71-02 | MB5SN9 | LEAD | 33.3 | -- | 400 |
| A3-SS71-02 | MB5SN9 | MANGANESE | 335 | -- | NA |
| A3-SS71-02 | MB5SN9 | NICKEL | 3.4 | J | 250 |
| A3-SS71-02 | MB5SN9 | POTASSIUM | 522 | J | NA |
| A3-SS71-02 | MB5SN9 | SELENIUM | 1.3 | J | 63 |
| A3-SS71-02 | MB5SN9 | SODIUM | 202 | J | NA |
| A3-SS71-02 | MB5SN9 | ZINC | 71.4 | J | 1500 |
| A3-SS71-06 | MB5SP0 | ALUMINUM | 5770 | -- | NA |
| A3-SS71-06 | MB5SP0 | ARSENIC | 6.2 | -- | 20 |
| A3-SS71-06 | MB5SP0 | BARIUM | 14.8 | J | 700 |
| A3-SS71-06 | MB5SP0 | CHROMIUM | 17.9 | -- | 240 |
| A3-SS71-06 | MB5SP0 | COPPER | 6.6 | -- | 600 |
| A3-SS71-06 | MB5SP0 | IRON | 17300 | -- | NA |
| A3-SS71-06 | MB5SP0 | LEAD | 10.2 | -- | 400 |
| A3-SS71-06 | MB5SP0 | MANGANESE | 41.9 | -- | NA |
| A3-SS71-06 | MB5SP0 | NICKEL | 2.8 | J | 250 |
| A3-SS71-06 | MB5SP0 | POTASSIUM | 601 | J | NA |
| A3-SS71-06 | MB5SP0 | SODIUM | 44.9 | J | NA |
| A3-SS71-06 | MB5SP0 | VANADIUM | 27.2 | -- | 370 |
| A3-SS71-06 | MB5SP0 | ZINC | 14.3 | J | 1500 |
| A3-SS71-12 | MB5SP1 | ALUMINUM | 8190 | -- | NA |
| A3-SS71-12 | MB5SP1 | ARSENIC | 7.8 | -- | 20 |
| A3-SS71-12 | MB5SP1 | BARIUM | 19.1 | J | 700 |
| A3-SS71-12 | MB5SP1 | CHROMIUM | 25.6 | -- | 240 |
| A3-SS71-12 | MB5SP1 | COPPER | 7.4 | -- | 600 |
| A3-SS71-12 | MB5SP1 | IRON | 25100 | -- | NA |
| A3-SS71-12 | MB5SP1 | LEAD | 11 | -- | 400 |
| A3-SS71-12 | MB5SP1 | MANGANESE | 55.9 | -- | NA |
| A3-SS71-12 | MB5SP1 | NICKEL | 3.8 | J | 250 |
| A3-SS71-12 | MB5SP1 | POTASSIUM | 943 | J | NA |
| A3-SS71-12 | MB5SP1 | SODIUM | 30.5 | J | NA |
| A3-SS71-12 | MB5SP1 | VANADIUM | 35.9 | -- | 370 |
| A3-SS71-12 | MB5SP1 | ZINC | 18.6 | J | 1500 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS73-02 | MB5SP2 | ALUMINUM | 1700 | J | NA |
| A3-SS73-02 | MB5SP2 | ANTIMONY | 3.1 | J | 14 |
| A3-SS73-02 | MB5SP2 | ARSENIC | 4.3 | J | 20 |
| A3-SS73-02 | MB5SP2 | BARIUM | 89.8 | J | 700 |
| A3-SS73-02 | MB5SP2 | CALCIUM | 9380 | J | NA |
| A3-SS73-02 | MB5SP2 | CHROMIUM | 7.3 | J | 240 |
| A3-SS73-02 | MB5SP2 | COPPER | 38.8 | J | 600 |
| A3-SS73-02 | MB5SP2 | IRON | 5180 | J | NA |
| A3-SS73-02 | MB5SP2 | LEAD | 52.6 | J | 400 |
| A3-SS73-02 | MB5SP2 | MANGANESE | 294 | J | NA |
| A3-SS73-02 | MB5SP2 | NICKEL | 3.8 | J | 250 |
| A3-SS73-02 | MB5SP2 | POTASSIUM | 467 | J | NA |
| A3-SS73-02 | MB5SP2 | SODIUM | 235 | J | NA |
| A3-SS73-02 | MB5SP2 | ZINC | 114 | J | 1500 |
| A3-SS73-06 | MB5SP3 | ALUMINUM | 7320 | -- | NA |
| A3-SS73-06 | MB5SP3 | ANTIMONY | 1.5 | J | 14 |
| A3-SS73-06 | MB5SP3 | ARSENIC | 7.2 | -- | 20 |
| A3-SS73-06 | MB5SP3 | BARIUM | 40.5 | -- | 700 |
| A3-SS73-06 | MB5SP3 | CALCIUM | 2790 | -- | NA |
| A3-SS73-06 | MB5SP3 | CHROMIUM | 19 | -- | 240 |
| A3-SS73-06 | MB5SP3 | COPPER | 13.1 | -- | 600 |
| A3-SS73-06 | MB5SP3 | IRON | 18500 | -- | NA |
| A3-SS73-06 | MB5SP3 | LEAD | 25.7 | -- | 400 |
| A3-SS73-06 | MB5SP3 | MANGANESE | 110 | -- | NA |
| A3-SS73-06 | MB5SP3 | NICKEL | 4.4 | J | 250 |
| A3-SS73-06 | MB5SP3 | POTASSIUM | 1030 | J | NA |
| A3-SS73-06 | MB5SP3 | SELENIUM | 1 | J | 63 |
| A3-SS73-06 | MB5SP3 | SODIUM | 90.7 | J | NA |
| A3-SS73-06 | MB5SP3 | VANADIUM | 30.7 | -- | 370 |
| A3-SS73-06 | MB5SP3 | ZINC | 39.3 | J | 1500 |
| A3-SS73-12 | MB5SP4 | ALUMINUM | 8820 | -- | NA |
| A3-SS73-12 | MB5SP4 | ARSENIC | 8.5 | -- | 20 |
| A3-SS73-12 | MB5SP4 | BARIUM | 17.4 | J | 700 |
| A3-SS73-12 | MB5SP4 | CHROMIUM | 26.8 | -- | 240 |
| A3-SS73-12 | MB5SP4 | COPPER | 7 | -- | 600 |
| A3-SS73-12 | MB5SP4 | IRON | 25000 | -- | NA |
| A3-SS73-12 | MB5SP4 | LEAD | 17.9 | -- | 400 |
| A3-SS73-12 | MB5SP4 | MANGANESE | 51.1 | -- | NA |
| A3-SS73-12 | MB5SP4 | NICKEL | 4.3 | J | 250 |
| A3-SS73-12 | MB5SP4 | POTASSIUM | 1080 | J | NA |
| A3-SS73-12 | MB5SP4 | SELENIUM | 0.62 | J | 63 |
| A3-SS73-12 | MB5SP4 | SODIUM | 19.8 | J | NA |
| A3-SS73-12 | MB5SP4 | VANADIUM | 41.9 | -- | 370 |
| A3-SS73-12 | MB5SP4 | ZINC | 21.1 | J | 1500 |
| A3-SS74-02 | MB5SP5 | ALUMINUM | 1130 | J | NA |
| A3-SS74-02 | MB5SP5 | ANTIMONY | 2.8 | J | 14 |
| A3-SS74-02 | MB5SP5 | ARSENIC | 2 | J | 20 |
| A3-SS74-02 | MB5SP5 | BARIUM | 52.9 | J | 700 |
| A3-SS74-02 | MB5SP5 | CALCIUM | 7120 | J | NA |
| A3-SS74-02 | MB5SP5 | CHROMIUM | 8.3 | J | 240 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS74-02 | MB5SP5 | COPPER | 11.3 | J | 600 |
| A3-SS74-02 | MB5SP5 | IRON | 5210 | J | NA |
| A3-SS74-02 | MB5SP5 | LEAD | 19.9 | J | 400 |
| A3-SS74-02 | MB5SP5 | MANGANESE | 268 | J | NA |
| A3-SS74-02 | MB5SP5 | NICKEL | 2.9 | J | 250 |
| A3-SS74-02 | MB5SP5 | POTASSIUM | 434 | J | NA |
| A3-SS74-02 | MB5SP5 | SODIUM | 301 | J | NA |
| A3-SS74-02 | MB5SP5 | ZINC | 67.9 | J | 1500 |
| A3-SS74-06 | MB5SP6 | ALUMINUM | 11000 | -- | NA |
| A3-SS74-06 | MB5SP6 | ARSENIC | 7.9 | -- | 20 |
| A3-SS74-06 | MB5SP6 | BARIUM | 25.1 | -- | 700 |
| A3-SS74-06 | MB5SP6 | CHROMIUM | 27.4 | -- | 240 |
| A3-SS74-06 | MB5SP6 | COPPER | 7.9 | -- | 600 |
| A3-SS74-06 | MB5SP6 | IRON | 23900 | -- | NA |
| A3-SS74-06 | MB5SP6 | LEAD | 9.9 | -- | 400 |
| A3-SS74-06 | MB5SP6 | MAGNESIUM | 723 | -- | NA |
| A3-SS74-06 | MB5SP6 | MANGANESE | 50.5 | -- | NA |
| A3-SS74-06 | MB5SP6 | NICKEL | 5 | -- | 250 |
| A3-SS74-06 | MB5SP6 | POTASSIUM | 1120 | J | NA |
| A3-SS74-06 | MB5SP6 | SODIUM | 36.8 | J | NA |
| A3-SS74-06 | MB5SP6 | VANADIUM | 43 | -- | 370 |
| A3-SS74-06 | MB5SP6 | ZINC | 45.4 | J | 1500 |
| A3-SS74-12 | MB5SP7 | ALUMINUM | 8850 | -- | NA |
| A3-SS74-12 | MB5SP7 | ARSENIC | 7.4 | -- | 20 |
| A3-SS74-12 | MB5SP7 | BARIUM | 17.7 | J | 700 |
| A3-SS74-12 | MB5SP7 | CHROMIUM | 23.4 | -- | 240 |
| A3-SS74-12 | MB5SP7 | COPPER | 6.6 | -- | 600 |
| A3-SS74-12 | MB5SP7 | IRON | 23200 | -- | NA |
| A3-SS74-12 | MB5SP7 | LEAD | 9.1 | -- | 400 |
| A3-SS74-12 | MB5SP7 | MAGNESIUM | 579 | -- | NA |
| A3-SS74-12 | MB5SP7 | MANGANESE | 50.9 | -- | NA |
| A3-SS74-12 | MB5SP7 | NICKEL | 3.9 | J | 250 |
| A3-SS74-12 | MB5SP7 | POTASSIUM | 909 | J | NA |
| A3-SS74-12 | MB5SP7 | SELENIUM | 0.45 | J | 63 |
| A3-SS74-12 | MB5SP7 | SODIUM | 37.7 | J | NA |
| A3-SS74-12 | MB5SP7 | VANADIUM | 35.8 | -- | 370 |
| A3-SS74-12 | MB5SP7 | ZINC | 19 | J | 1500 |
| A3-SS75-02 | MB5SP8 | ALUMINUM | 302 | J | NA |
| A3-SS75-02 | MB5SP8 | BARIUM | 52.3 | J | 700 |
| A3-SS75-02 | MB5SP8 | CALCIUM | 7200 | J | NA |
| A3-SS75-02 | MB5SP8 | COPPER | 7.9 | J | 600 |
| A3-SS75-02 | MB5SP8 | IRON | 912 | J | NA |
| A3-SS75-02 | MB5SP8 | LEAD | 8.6 | J | 400 |
| A3-SS75-02 | MB5SP8 | MANGANESE | 393 | J | NA |
| A3-SS75-02 | MB5SP8 | POTASSIUM | 350 | J | NA |
| A3-SS75-02 | MB5SP8 | SODIUM | 177 | J | NA |
| A3-SS75-02 | MB5SP8 | ZINC | 61.7 | J | 1500 |
| A3-SS75-06 | MB5SP9 | ALUMINUM | 7290 | -- | NA |
| A3-SS75-06 | MB5SP9 | ARSENIC | 8.3 | -- | 20 |
| A3-SS75-06 | MB5SP9 | BARIUM | 25.1 | J | 700 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS75-06 | MB5SP9 | CALCIUM | 1190 | -- | NA |
| A3-SS75-06 | MB5SP9 | CHROMIUM | 26.3 | -- | 240 |
| A3-SS75-06 | MB5SP9 | COPPER | 9.7 | -- | 600 |
| A3-SS75-06 | MB5SP9 | IRON | 22700 | -- | NA |
| A3-SS75-06 | MB5SP9 | LEAD | 16.3 | -- | 400 |
| A3-SS75-06 | MB5SP9 | MANGANESE | 78.7 | -- | NA |
| A3-SS75-06 | MB5SP9 | NICKEL | 4.9 | J | 250 |
| A3-SS75-06 | MB5SP9 | POTASSIUM | 1060 | J | NA |
| A3-SS75-06 | MB5SP9 | SELENIUM | 0.68 | J | 63 |
| A3-SS75-06 | MB5SP9 | SODIUM | 70.6 | J | NA |
| A3-SS75-06 | MB5SP9 | VANADIUM | 43 | -- | 370 |
| A3-SS75-06 | MB5SP9 | ZINC | 32.2 | J | 1500 |
| A3-SS75-12 | MB5SQ0 | ALUMINUM | 30400 | J | NA |
| A3-SS75-12 | MB5SQ0 | ARSENIC | 26.2 | J | 20 |
| A3-SS75-12 | MB5SQ0 | BARIUM | 74 | J | 700 |
| A3-SS75-12 | MB5SQ0 | CHROMIUM | 73.6 | J | 240 |
| A3-SS75-12 | MB5SQ0 | COPPER | 25.5 | J | 600 |
| A3-SS75-12 | MB5SQ0 | IRON | 73800 | J | NA |
| A3-SS75-12 | MB5SQ0 | LEAD | 39.5 | J | 400 |
| A3-SS75-12 | MB5SQ0 | MAGNESIUM | 2330 | J | NA |
| A3-SS75-12 | MB5SQ0 | MANGANESE | 180 | J | NA |
| A3-SS75-12 | MB5SQ0 | NICKEL | 15.1 | J | 250 |
| A3-SS75-12 | MB5SQ0 | POTASSIUM | 3110 | J | NA |
| A3-SS75-12 | MB5SQ0 | SELENIUM | 1.5 | J | 63 |
| A3-SS75-12 | MB5SQ0 | SODIUM | 112 | J | NA |
| A3-SS75-12 | MB5SQ0 | VANADIUM | 121 | J | 370 |
| A3-SS75-12 | MB5SQ0 | ZINC | 76.3 | J | 1500 |
| A3-SS76-02 | MB5SQ1 | ALUMINUM | 881 | J | NA |
| A3-SS76-02 | MB5SQ1 | ANTIMONY | 2.9 | J | 14 |
| A3-SS76-02 | MB5SQ1 | ARSENIC | 1.9 | J | 20 |
| A3-SS76-02 | MB5SQ1 | BARIUM | 86.8 | J | 700 |
| A3-SS76-02 | MB5SQ1 | CADMIUM | 2.4 | J | 39 |
| A3-SS76-02 | MB5SQ1 | CALCIUM | 10200 | J | NA |
| A3-SS76-02 | MB5SQ1 | CHROMIUM | 4.4 | J | 240 |
| A3-SS76-02 | MB5SQ1 | COPPER | 17.6 | J | 600 |
| A3-SS76-02 | MB5SQ1 | IRON | 4950 | J | NA |
| A3-SS76-02 | MB5SQ1 | LEAD | 38.3 | J | 400 |
| A3-SS76-02 | MB5SQ1 | MANGANESE | 383 | J | NA |
| A3-SS76-02 | MB5SQ1 | NICKEL | 3.3 | J | 250 |
| A3-SS76-02 | MB5SQ1 | POTASSIUM | 467 | J | NA |
| A3-SS76-02 | MB5SQ1 | SODIUM | 396 | J | NA |
| A3-SS76-02 | MB5SQ1 | ZINC | 75.9 | J | 1500 |
| A3-SS76-06 | MB5SQ2 | ALUMINUM | 7800 | -- | NA |
| A3-SS76-06 | MB5SQ2 | ARSENIC | 7 | -- | 20 |
| A3-SS76-06 | MB5SQ2 | CADMIUM | 0.52 | J | 39 |
| A3-SS76-06 | MB5SQ2 | CHROMIUM | 23.5 | -- | 240 |
| A3-SS76-06 | MB5SQ2 | COPPER | 7.8 | -- | 600 |
| A3-SS76-06 | MB5SQ2 | IRON | 21800 | -- | NA |
| A3-SS76-06 | MB5SQ2 | LEAD | 10.6 | -- | 400 |
| A3-SS76-06 | MB5SQ2 | MANGANESE | 53.5 | -- | NA |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS76-06 | MB5SQ2 | NICKEL | 3.7 | J | 250 |
| A3-SS76-06 | MB5SQ2 | POTASSIUM | 887 | J | NA |
| A3-SS76-06 | MB5SQ2 | SODIUM | 46.6 | J | NA |
| A3-SS76-06 | MB5SQ2 | VANADIUM | 36.3 | -- | 370 |
| A3-SS76-06 | MB5SQ2 | ZINC | 19.3 | J | 1500 |
| A3-SS76-12 | MB5SQ3 | ALUMINUM | 4010 | -- | NA |
| A3-SS76-12 | MB5SQ3 | ARSENIC | 5.9 | -- | 20 |
| A3-SS76-12 | MB5SQ3 | CADMIUM | 0.32 | J | 39 |
| A3-SS76-12 | MB5SQ3 | CHROMIUM | 10.5 | -- | 240 |
| A3-SS76-12 | MB5SQ3 | COPPER | 8.9 | -- | 600 |
| A3-SS76-12 | MB5SQ3 | IRON | 14700 | -- | NA |
| A3-SS76-12 | MB5SQ3 | LEAD | 20.9 | -- | 400 |
| A3-SS76-12 | MB5SQ3 | MANGANESE | 47.2 | -- | NA |
| A3-SS76-12 | MB5SQ3 | NICKEL | 2.9 | J | 250 |
| A3-SS76-12 | MB5SQ3 | POTASSIUM | 461 | J | NA |
| A3-SS76-12 | MB5SQ3 | SODIUM | 48 | J | NA |
| A3-SS76-12 | MB5SQ3 | VANADIUM | 29.2 | -- | 370 |
| A3-SS76-12 | MB5SQ3 | ZINC | 24.2 | J | 1500 |
| A3-SS77-02 | MB5SQ4 | ALUMINUM | 1210 | J | NA |
| A3-SS77-02 | MB5SQ4 | ANTIMONY | 5 | J | 14 |
| A3-SS77-02 | MB5SQ4 | ARSENIC | 10.4 | J | 20 |
| A3-SS77-02 | MB5SQ4 | BARIUM | 52.6 | J | 700 |
| A3-SS77-02 | MB5SQ4 | CADMIUM | 0.62 | J | 39 |
| A3-SS77-02 | MB5SQ4 | CALCIUM | 7850 | J | NA |
| A3-SS77-02 | MB5SQ4 | CHROMIUM | 10.3 | J | 240 |
| A3-SS77-02 | MB5SQ4 | COPPER | 17.2 | J | 600 |
| A3-SS77-02 | MB5SQ4 | IRON | 3460 | J | NA |
| A3-SS77-02 | MB5SQ4 | LEAD | 35.5 | J | 400 |
| A3-SS77-02 | MB5SQ4 | MANGANESE | 257 | J | NA |
| A3-SS77-02 | MB5SQ4 | NICKEL | 3 | J | 250 |
| A3-SS77-02 | MB5SQ4 | POTASSIUM | 415 | J | NA |
| A3-SS77-02 | MB5SQ4 | SODIUM | 202 | J | NA |
| A3-SS77-02 | MB5SQ4 | VANADIUM | 5.4 | J | 370 |
| A3-SS77-02 | MB5SQ4 | ZINC | 58.8 | J | 1500 |
| A3-SS77-06 | MB5SQ5 | ALUMINUM | 27600 | J | NA |
| A3-SS77-06 | MB5SQ5 | ARSENIC | 26.5 | J | 20 |
| A3-SS77-06 | MB5SQ5 | CADMIUM | 3.3 | J | 39 |
| A3-SS77-06 | MB5SQ5 | CALCIUM | 2660 | J | NA |
| A3-SS77-06 | MB5SQ5 | CHROMIUM | 81.3 | J | 240 |
| A3-SS77-06 | MB5SQ5 | COPPER | 24.6 | J | 600 |
| A3-SS77-06 | MB5SQ5 | IRON | 62800 | J | NA |
| A3-SS77-06 | MB5SQ5 | LEAD | 37.8 | J | 400 |
| A3-SS77-06 | MB5SQ5 | MAGNESIUM | 2080 | J | NA |
| A3-SS77-06 | MB5SQ5 | MANGANESE | 166 | J | NA |
| A3-SS77-06 | MB5SQ5 | NICKEL | 13.8 | J | 250 |
| A3-SS77-06 | MB5SQ5 | POTASSIUM | 3410 | J | NA |
| A3-SS77-06 | MB5SQ5 | SELENIUM | 4.1 | J | 63 |
| A3-SS77-06 | MB5SQ5 | SODIUM | 101 | J | NA |
| A3-SS77-06 | MB5SQ5 | THALLIUM | 2 | J | 2 |
| A3-SS77-06 | MB5SQ5 | VANADIUM | 112 | J | 370 |

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS77-06 | MB5SQ5 | ZINC | 67 | J | 1500 |
| A3-SS77-12 | MB5SQ6 | ALUMINUM | 7780 | -- | NA |
| A3-SS77-12 | MB5SQ6 | ARSENIC | 7.2 | -- | 20 |
| A3-SS77-12 | MB5SQ6 | CADMIUM | 0.99 | -- | 39 |
| A3-SS77-12 | MB5SQ6 | CHROMIUM | 21.1 | -- | 240 |
| A3-SS77-12 | MB5SQ6 | COPPER | 8.1 | -- | 600 |
| A3-SS77-12 | MB5SQ6 | IRON | 19100 | -- | NA |
| A3-SS77-12 | MB5SQ6 | LEAD | 14.7 | -- | 400 |
| A3-SS77-12 | MB5SQ6 | MANGANESE | 42.5 | J | NA |
| A3-SS77-12 | MB5SQ6 | NICKEL | 4.1 | J | 250 |
| A3-SS77-12 | MB5SQ6 | POTASSIUM | 962 | J | NA |
| A3-SS77-12 | MB5SQ6 | SELENIUM | 1.1 | J | 63 |
| A3-SS77-12 | MB5SQ6 | SODIUM | 40.8 | J | NA |
| A3-SS77-12 | MB5SQ6 | THALLIUM | 1.6 | J | 2 |
| A3-SS77-12 | MB5SQ6 | VANADIUM | 33.4 | -- | 370 |
| A3-SS77-12 | MB5SQ6 | ZINC | 22.5 | -- | 1500 |
| A3-SS79-02 | MB5SQ7 | ALUMINUM | 781 | J | NA |
| A3-SS79-02 | MB5SQ7 | ANTIMONY | 4.6 | J | 14 |
| A3-SS79-02 | MB5SQ7 | ARSENIC | 2.2 | J | 20 |
| A3-SS79-02 | MB5SQ7 | CALCIUM | 9410 | J | NA |
| A3-SS79-02 | MB5SQ7 | CHROMIUM | 6.2 | J | 240 |
| A3-SS79-02 | MB5SQ7 | COPPER | 18 | J | 600 |
| A3-SS79-02 | MB5SQ7 | IRON | 2180 | J | NA |
| A3-SS79-02 | MB5SQ7 | LEAD | 26 | J | 400 |
| A3-SS79-02 | MB5SQ7 | MANGANESE | 231 | J | NA |
| A3-SS79-02 | MB5SQ7 | POTASSIUM | 406 | J | NA |
| A3-SS79-02 | MB5SQ7 | SELENIUM | 2 | J | 63 |
| A3-SS79-02 | MB5SQ7 | SODIUM | 318 | J | NA |
| A3-SS79-02 | MB5SQ7 | VANADIUM | 3.2 | J | 370 |
| A3-SS79-02 | MB5SQ7 | ZINC | 88 | J | 1500 |
| A3-SS79-06 | MB5SQ8 | ALUMINUM | 8020 | -- | NA |
| A3-SS79-06 | MB5SQ8 | ARSENIC | 5.8 | -- | 20 |
| A3-SS79-06 | MB5SQ8 | CALCIUM | 2830 | -- | NA |
| A3-SS79-06 | MB5SQ8 | CHROMIUM | 22 | -- | 240 |
| A3-SS79-06 | MB5SQ8 | COPPER | 9.8 | -- | 600 |
| A3-SS79-06 | MB5SQ8 | IRON | 15600 | -- | NA |
| A3-SS79-06 | MB5SQ8 | LEAD | 13.4 | -- | 400 |
| A3-SS79-06 | MB5SQ8 | MANGANESE | 92 | J | NA |
| A3-SS79-06 | MB5SQ8 | NICKEL | 4.6 | J | 250 |
| A3-SS79-06 | MB5SQ8 | POTASSIUM | 1100 | J | NA |
| A3-SS79-06 | MB5SQ8 | SELENIUM | 1.6 | J | 63 |
| A3-SS79-06 | MB5SQ8 | SODIUM | 111 | J | NA |
| A3-SS79-06 | MB5SQ8 | VANADIUM | 26.9 | -- | 370 |
| A3-SS79-06 | MB5SQ8 | ZINC | 39.9 | -- | 1500 |
| A3-SS79-12 | MB5SQ9 | ALUMINUM | 11500 | -- | NA |
| A3-SS79-12 | MB5SQ9 | ARSENIC | 8.3 | -- | 20 |
| A3-SS79-12 | MB5SQ9 | CADMIUM | 1.2 | -- | 39 |
| A3-SS79-12 | MB5SQ9 | CHROMIUM | 27.6 | -- | 240 |
| A3-SS79-12 | MB5SQ9 | COPPER | 7.5 | -- | 600 |
| A3-SS79-12 | MB5SQ9 | IRON | 23100 | -- | NA |

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS79-12 | MB5SQ9 | LEAD | 9.6 | -- | 400 |
| A3-SS79-12 | MB5SQ9 | MAGNESIUM | 634 | -- | NA |
| A3-SS79-12 | MB5SQ9 | MANGANESE | 42.5 | J | NA |
| A3-SS79-12 | MB5SQ9 | NICKEL | 4.5 | J | 250 |
| A3-SS79-12 | MB5SQ9 | POTASSIUM | 1090 | J | NA |
| A3-SS79-12 | MB5SQ9 | SELENIUM | 1 | J | 63 |
| A3-SS79-12 | MB5SQ9 | SODIUM | 29.5 | J | NA |
| A3-SS79-12 | MB5SQ9 | THALLIUM | 2.3 | J | 2 |
| A3-SS79-12 | MB5SQ9 | VANADIUM | 35.7 | -- | 370 |
| A3-SS79-12 | MB5SQ9 | ZINC | 17.1 | -- | 1500 |
| A3-SS80-02 | MB5SR0 | ALUMINUM | 6220 | -- | NA |
| A3-SS80-02 | MB5SR0 | ARSENIC | 7.7 | -- | 20 |
| A3-SS80-02 | MB5SR0 | BARIUM | 25.9 | -- | 700 |
| A3-SS80-02 | MB5SR0 | BERYLLIUM | 0.88 | -- | NA |
| A3-SS80-02 | MB5SR0 | CADMIUM | 1.7 | -- | 39 |
| A3-SS80-02 | MB5SR0 | CALCIUM | 681 | -- | NA |
| A3-SS80-02 | MB5SR0 | CHROMIUM | 36.2 | -- | 240 |
| A3-SS80-02 | MB5SR0 | COPPER | 7.8 | -- | 600 |
| A3-SS80-02 | MB5SR0 | IRON | 33600 | -- | NA |
| A3-SS80-02 | MB5SR0 | LEAD | 16.3 | -- | 400 |
| A3-SS80-02 | MB5SR0 | MAGNESIUM | 853 | -- | NA |
| A3-SS80-02 | MB5SR0 | MANGANESE | 227 | J | NA |
| A3-SS80-02 | MB5SR0 | NICKEL | 6.1 | -- | 250 |
| A3-SS80-02 | MB5SR0 | POTASSIUM | 1430 | J | NA |
| A3-SS80-02 | MB5SR0 | SELENIUM | 1.4 | J | 63 |
| A3-SS80-02 | MB5SR0 | SODIUM | 40.9 | J | NA |
| A3-SS80-02 | MB5SR0 | THALLIUM | 2.8 | -- | 2 |
| A3-SS80-02 | MB5SR0 | VANADIUM | 35.8 | -- | 370 |
| A3-SS80-02 | MB5SR0 | ZINC | 45.9 | -- | 1500 |
| A3-SS80-06 | MB5SR1 | ALUMINUM | 3680 | -- | NA |
| A3-SS80-06 | MB5SR1 | ARSENIC | 6 | -- | 20 |
| A3-SS80-06 | MB5SR1 | CADMIUM | 1 | -- | 39 |
| A3-SS80-06 | MB5SR1 | CHROMIUM | 16.9 | -- | 240 |
| A3-SS80-06 | MB5SR1 | COPPER | 5.3 | -- | 600 |
| A3-SS80-06 | MB5SR1 | IRON | 21500 | -- | NA |
| A3-SS80-06 | MB5SR1 | LEAD | 12 | -- | 400 |
| A3-SS80-06 | MB5SR1 | MANGANESE | 101 | J | NA |
| A3-SS80-06 | MB5SR1 | NICKEL | 5.1 | -- | 250 |
| A3-SS80-06 | MB5SR1 | POTASSIUM | 981 | J | NA |
| A3-SS80-06 | MB5SR1 | SELENIUM | 0.95 | J | 63 |
| A3-SS80-06 | MB5SR1 | SODIUM | 30.8 | J | NA |
| A3-SS80-06 | MB5SR1 | THALLIUM | 1.3 | J | 2 |
| A3-SS80-06 | MB5SR1 | VANADIUM | 26.5 | -- | 370 |
| A3-SS80-06 | MB5SR1 | ZINC | 32.2 | -- | 1500 |
| A3-SS80-12 | MB5SR2 | ALUMINUM | 3800 | -- | NA |
| A3-SS80-12 | MB5SR2 | ANTIMONY | 1.1 | J | 14 |
| A3-SS80-12 | MB5SR2 | ARSENIC | 4.7 | -- | 20 |
| A3-SS80-12 | MB5SR2 | CADMIUM | 0.59 | -- | 39 |
| A3-SS80-12 | MB5SR2 | CALCIUM | 687 | -- | NA |
| A3-SS80-12 | MB5SR2 | CHROMIUM | 10.3 | -- | 240 |

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS80-12 | MB5SR2 | COPPER | 15.5 | -- | 600 |
| A3-SS80-12 | MB5SR2 | IRON | 11000 | -- | NA |
| A3-SS80-12 | MB5SR2 | LEAD | 33.2 | -- | 400 |
| A3-SS80-12 | MB5SR2 | MANGANESE | 65.6 | J | NA |
| A3-SS80-12 | MB5SR2 | NICKEL | 3.7 | J | 250 |
| A3-SS80-12 | MB5SR2 | POTASSIUM | 524 | J | NA |
| A3-SS80-12 | MB5SR2 | SELENIUM | 0.85 | J | 63 |
| A3-SS80-12 | MB5SR2 | SILVER | 0.093 | J | 110 |
| A3-SS80-12 | MB5SR2 | SODIUM | 36.5 | J | NA |
| A3-SS80-12 | MB5SR2 | VANADIUM | 18.3 | -- | 370 |
| A3-SS80-12 | MB5SR2 | ZINC | 42.8 | -- | 1500 |
| A3-SS81-02 | MB5SR3 | ALUMINUM | 2780 | J | NA |
| A3-SS81-02 | MB5SR3 | ANTIMONY | 2.9 | J | 14 |
| A3-SS81-02 | MB5SR3 | ARSENIC | 12.7 | J | 20 |
| A3-SS81-02 | MB5SR3 | CALCIUM | 5640 | J | NA |
| A3-SS81-02 | MB5SR3 | CHROMIUM | 12.9 | J | 240 |
| A3-SS81-02 | MB5SR3 | COPPER | 23.4 | J | 600 |
| A3-SS81-02 | MB5SR3 | IRON | 8020 | J | NA |
| A3-SS81-02 | MB5SR3 | LEAD | 21 | J | 400 |
| A3-SS81-02 | MB5SR3 | MANGANESE | 240 | J | NA |
| A3-SS81-02 | MB5SR3 | NICKEL | 4.5 | J | 250 |
| A3-SS81-02 | MB5SR3 | POTASSIUM | 602 | J | NA |
| A3-SS81-02 | MB5SR3 | SELENIUM | 1.7 | J | 63 |
| A3-SS81-02 | MB5SR3 | SODIUM | 189 | J | NA |
| A3-SS81-02 | MB5SR3 | VANADIUM | 12.8 | J | 370 |
| A3-SS81-02 | MB5SR3 | ZINC | 70.2 | J | 1500 |
| A3-SS81-06 | MB5SR4 | ALUMINUM | 3080 | -- | NA |
| A3-SS81-06 | MB5SR4 | ANTIMONY | 1.5 | J | 14 |
| A3-SS81-06 | MB5SR4 | ARSENIC | 5.3 | -- | 20 |
| A3-SS81-06 | MB5SR4 | BARIUM | 38.2 | -- | 700 |
| A3-SS81-06 | MB5SR4 | CALCIUM | 3420 | -- | NA |
| A3-SS81-06 | MB5SR4 | CHROMIUM | 9.7 | -- | 240 |
| A3-SS81-06 | MB5SR4 | COPPER | 11.5 | -- | 600 |
| A3-SS81-06 | MB5SR4 | IRON | 8580 | -- | NA |
| A3-SS81-06 | MB5SR4 | LEAD | 20.6 | -- | 400 |
| A3-SS81-06 | MB5SR4 | MANGANESE | 141 | J | NA |
| A3-SS81-06 | MB5SR4 | NICKEL | 3.7 | J | 250 |
| A3-SS81-06 | MB5SR4 | POTASSIUM | 530 | J | NA |
| A3-SS81-06 | MB5SR4 | SELENIUM | 0.93 | J | 63 |
| A3-SS81-06 | MB5SR4 | SODIUM | 69.8 | J | NA |
| A3-SS81-06 | MB5SR4 | VANADIUM | 15.5 | -- | 370 |
| A3-SS81-06 | MB5SR4 | ZINC | 31.4 | -- | 1500 |
| A3-SS81-12 | MB5SR5 | ALUMINUM | 4540 | -- | NA |
| A3-SS81-12 | MB5SR5 | ANTIMONY | 1 | J | 14 |
| A3-SS81-12 | MB5SR5 | ARSENIC | 3.5 | -- | 20 |
| A3-SS81-12 | MB5SR5 | BARIUM | 23.1 | -- | 700 |
| A3-SS81-12 | MB5SR5 | CADMIUM | 0.59 | -- | 39 |
| A3-SS81-12 | MB5SR5 | CHROMIUM | 10.5 | -- | 240 |
| A3-SS81-12 | MB5SR5 | COPPER | 15.4 | -- | 600 |
| A3-SS81-12 | MB5SR5 | IRON | 10600 | -- | NA |

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS81-12 | MB5SR5 | LEAD | 30.3 | -- | 400 |
| A3-SS81-12 | MB5SR5 | MAGNESIUM | 921 | -- | NA |
| A3-SS81-12 | MB5SR5 | MANGANESE | 61.8 | J | NA |
| A3-SS81-12 | MB5SR5 | NICKEL | 9.1 | -- | 250 |
| A3-SS81-12 | MB5SR5 | POTASSIUM | 601 | J | NA |
| A3-SS81-12 | MB5SR5 | SELENIUM | 0.57 | J | 63 |
| A3-SS81-12 | MB5SR5 | SODIUM | 44 | J | NA |
| A3-SS81-12 | MB5SR5 | THALLIUM | 0.42 | J | 2 |
| A3-SS81-12 | MB5SR5 | VANADIUM | 17.1 | -- | 370 |
| A3-SS81-12 | MB5SR5 | ZINC | 36.1 | -- | 1500 |
| A3-SS82-02 | MB5SR6 | ALUMINUM | 1090 | J | NA |
| A3-SS82-02 | MB5SR6 | ANTIMONY | 3.4 | J | 14 |
| A3-SS82-02 | MB5SR6 | ARSENIC | 2.7 | J | 20 |
| A3-SS82-02 | MB5SR6 | CALCIUM | 7970 | J | NA |
| A3-SS82-02 | MB5SR6 | CHROMIUM | 5.5 | J | 240 |
| A3-SS82-02 | MB5SR6 | COPPER | 15.4 | J | 600 |
| A3-SS82-02 | MB5SR6 | IRON | 2290 | J | NA |
| A3-SS82-02 | MB5SR6 | LEAD | 10.6 | J | 400 |
| A3-SS82-02 | MB5SR6 | MANGANESE | 192 | J | NA |
| A3-SS82-02 | MB5SR6 | NICKEL | 2.6 | J | 250 |
| A3-SS82-02 | MB5SR6 | POTASSIUM | 502 | J | NA |
| A3-SS82-02 | MB5SR6 | SODIUM | 259 | J | NA |
| A3-SS82-02 | MB5SR6 | VANADIUM | 4.7 | J | 370 |
| A3-SS82-02 | MB5SR6 | ZINC | 43.9 | J | 1500 |
| A3-SS82-06 | MB5SR7 | ALUMINUM | 1570 | J | NA |
| A3-SS82-06 | MB5SR7 | ANTIMONY | 5.5 | J | 14 |
| A3-SS82-06 | MB5SR7 | ARSENIC | 4.2 | J | 20 |
| A3-SS82-06 | MB5SR7 | CALCIUM | 6760 | J | NA |
| A3-SS82-06 | MB5SR7 | CHROMIUM | 7.6 | J | 240 |
| A3-SS82-06 | MB5SR7 | COPPER | 15 | J | 600 |
| A3-SS82-06 | MB5SR7 | IRON | 5070 | J | NA |
| A3-SS82-06 | MB5SR7 | LEAD | 14.7 | J | 400 |
| A3-SS82-06 | MB5SR7 | MANGANESE | 195 | J | NA |
| A3-SS82-06 | MB5SR7 | NICKEL | 3.3 | J | 250 |
| A3-SS82-06 | MB5SR7 | POTASSIUM | 582 | J | NA |
| A3-SS82-06 | MB5SR7 | SODIUM | 261 | J | NA |
| A3-SS82-06 | MB5SR7 | VANADIUM | 5.8 | J | 370 |
| A3-SS82-06 | MB5SR7 | ZINC | 41.3 | J | 1500 |
| A3-SS82-12 | MB5SR8 | ALUMINUM | 3840 | -- | NA |
| A3-SS82-12 | MB5SR8 | ANTIMONY | 1 | J | 14 |
| A3-SS82-12 | MB5SR8 | ARSENIC | 5.3 | -- | 20 |
| A3-SS82-12 | MB5SR8 | CADMIUM | 0.74 | -- | 39 |
| A3-SS82-12 | MB5SR8 | CHROMIUM | 11.5 | -- | 240 |
| A3-SS82-12 | MB5SR8 | COPPER | 10.2 | -- | 600 |
| A3-SS82-12 | MB5SR8 | IRON | 14200 | -- | NA |
| A3-SS82-12 | MB5SR8 | LEAD | 23.4 | -- | 400 |
| A3-SS82-12 | MB5SR8 | MANGANESE | 50.5 | J | NA |
| A3-SS82-12 | MB5SR8 | NICKEL | 4.4 | J | 250 |
| A3-SS82-12 | MB5SR8 | POTASSIUM | 480 | J | NA |
| A3-SS82-12 | MB5SR8 | SELENIUM | 0.85 | J | 63 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS82-12 | MB5SR8 | SODIUM | 54.6 | J | NA |
| A3-SS82-12 | MB5SR8 | VANADIUM | 22.6 | -- | 370 |
| A3-SS82-12 | MB5SR8 | ZINC | 34.7 | -- | 1500 |
| A3-SS83-02 | MB5SR9 | ALUMINUM | 1680 | J | NA |
| A3-SS83-02 | MB5SR9 | ANTIMONY | 4.9 | J | 14 |
| A3-SS83-02 | MB5SR9 | ARSENIC | 2.6 | J | 20 |
| A3-SS83-02 | MB5SR9 | CALCIUM | 8180 | J | NA |
| A3-SS83-02 | MB5SR9 | CHROMIUM | 6.8 | J | 240 |
| A3-SS83-02 | MB5SR9 | COPPER | 26 | J | 600 |
| A3-SS83-02 | MB5SR9 | IRON | 3910 | J | NA |
| A3-SS83-02 | MB5SR9 | LEAD | 26.8 | J | 400 |
| A3-SS83-02 | MB5SR9 | MANGANESE | 276 | J | NA |
| A3-SS83-02 | MB5SR9 | NICKEL | 3.7 | J | 250 |
| A3-SS83-02 | MB5SR9 | POTASSIUM | 404 | J | NA |
| A3-SS83-02 | MB5SR9 | SODIUM | 276 | J | NA |
| A3-SS83-02 | MB5SR9 | VANADIUM | 5.8 | J | 370 |
| A3-SS83-02 | MB5SR9 | ZINC | 65.8 | J | 1500 |
| A3-SS83-06 | MB5SS0 | ALUMINUM | 13400 | -- | NA |
| A3-SS83-06 | MB5SS0 | ANTIMONY | 2.1 | J | 14 |
| A3-SS83-06 | MB5SS0 | ARSENIC | 12 | -- | 20 |
| A3-SS83-06 | MB5SS0 | BARIUM | 54.8 | -- | 700 |
| A3-SS83-06 | MB5SS0 | CADMIUM | 1.7 | -- | 39 |
| A3-SS83-06 | MB5SS0 | CALCIUM | 2690 | -- | NA |
| A3-SS83-06 | MB5SS0 | CHROMIUM | 37.4 | -- | 240 |
| A3-SS83-06 | MB5SS0 | COPPER | 14.9 | -- | 600 |
| A3-SS83-06 | MB5SS0 | IRON | 31400 | -- | NA |
| A3-SS83-06 | MB5SS0 | LEAD | 19 | -- | 400 |
| A3-SS83-06 | MB5SS0 | MANGANESE | 118 | J | NA |
| A3-SS83-06 | MB5SS0 | NICKEL | 7.4 | J | 250 |
| A3-SS83-06 | MB5SS0 | POTASSIUM | 1700 | J | NA |
| A3-SS83-06 | MB5SS0 | SELENIUM | 1.8 | J | 63 |
| A3-SS83-06 | MB5SS0 | SODIUM | 109 | J | NA |
| A3-SS83-06 | MB5SS0 | THALLIUM | 1.8 | J | 2 |
| A3-SS83-06 | MB5SS0 | VANADIUM | 54.8 | -- | 370 |
| A3-SS83-06 | MB5SS0 | ZINC | 43.5 | -- | 1500 |
| A3-SS83-12 | MB5SS1 | ALUMINUM | 10500 | -- | NA |
| A3-SS83-12 | MB5SS1 | ARSENIC | 10.6 | -- | 20 |
| A3-SS83-12 | MB5SS1 | CADMIUM | 1.4 | -- | 39 |
| A3-SS83-12 | MB5SS1 | CHROMIUM | 32.5 | -- | 240 |
| A3-SS83-12 | MB5SS1 | COPPER | 8 | -- | 600 |
| A3-SS83-12 | MB5SS1 | IRON | 29200 | -- | NA |
| A3-SS83-12 | MB5SS1 | LEAD | 11.3 | -- | 400 |
| A3-SS83-12 | MB5SS1 | MAGNESIUM | 823 | -- | NA |
| A3-SS83-12 | MB5SS1 | MANGANESE | 75.6 | J | NA |
| A3-SS83-12 | MB5SS1 | NICKEL | 5.3 | -- | 250 |
| A3-SS83-12 | MB5SS1 | POTASSIUM | 1260 | J | NA |
| A3-SS83-12 | MB5SS1 | SELENIUM | 1.6 | J | 63 |
| A3-SS83-12 | MB5SS1 | SODIUM | 44.7 | J | NA |
| A3-SS83-12 | MB5SS1 | THALLIUM | 1.7 | J | 2 |
| A3-SS83-12 | MB5SS1 | VANADIUM | 46.2 | -- | 370 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS83-12 | MB5SS1 | ZINC | 26.1 | -- | 1500 |
| A3-SS84-02 | MB5SS2 | ALUMINUM | 3440 | J | NA |
| A3-SS84-02 | MB5SS2 | ANTIMONY | 3.7 | J | 14 |
| A3-SS84-02 | MB5SS2 | ARSENIC | 3.8 | J | 20 |
| A3-SS84-02 | MB5SS2 | BARIUM | 78.6 | J | 700 |
| A3-SS84-02 | MB5SS2 | CALCIUM | 8000 | J | NA |
| A3-SS84-02 | MB5SS2 | CHROMIUM | 11.8 | J | 240 |
| A3-SS84-02 | MB5SS2 | COPPER | 15.9 | J | 600 |
| A3-SS84-02 | MB5SS2 | IRON | 8880 | J | NA |
| A3-SS84-02 | MB5SS2 | LEAD | 26.3 | J | 400 |
| A3-SS84-02 | MB5SS2 | MAGNESIUM | 1110 | J | NA |
| A3-SS84-02 | MB5SS2 | MANGANESE | 323 | J | NA |
| A3-SS84-02 | MB5SS2 | NICKEL | 5 | J | 250 |
| A3-SS84-02 | MB5SS2 | POTASSIUM | 653 | J | NA |
| A3-SS84-02 | MB5SS2 | SODIUM | 312 | J | NA |
| A3-SS84-02 | MB5SS2 | VANADIUM | 12.5 | J | 370 |
| A3-SS84-02 | MB5SS2 | ZINC | 55.5 | J | 1500 |
| A3-SS84-06 | MB5SS3 | ALUMINUM | 10300 | -- | NA |
| A3-SS84-06 | MB5SS3 | ARSENIC | 7.8 | -- | 20 |
| A3-SS84-06 | MB5SS3 | BARIUM | 23.9 | J | 700 |
| A3-SS84-06 | MB5SS3 | CADMIUM | 1 | -- | 39 |
| A3-SS84-06 | MB5SS3 | CALCIUM | 758 | -- | NA |
| A3-SS84-06 | MB5SS3 | CHROMIUM | 26.3 | -- | 240 |
| A3-SS84-06 | MB5SS3 | COPPER | 7.4 | -- | 600 |
| A3-SS84-06 | MB5SS3 | IRON | 22600 | -- | NA |
| A3-SS84-06 | MB5SS3 | LEAD | 10.5 | -- | 400 |
| A3-SS84-06 | MB5SS3 | MAGNESIUM | 740 | -- | NA |
| A3-SS84-06 | MB5SS3 | MANGANESE | 60.7 | J | NA |
| A3-SS84-06 | MB5SS3 | NICKEL | 4.7 | J | 250 |
| A3-SS84-06 | MB5SS3 | POTASSIUM | 1100 | J | NA |
| A3-SS84-06 | MB5SS3 | SODIUM | 54.2 | J | NA |
| A3-SS84-06 | MB5SS3 | THALLIUM | 1.5 | J | 2 |
| A3-SS84-06 | MB5SS3 | VANADIUM | 38.1 | -- | 370 |
| A3-SS84-06 | MB5SS3 | ZINC | 24.3 | -- | 1500 |
| A3-SS84-12 | MB5SS4 | ALUMINUM | 8280 | -- | NA |
| A3-SS84-12 | MB5SS4 | ANTIMONY | 0.97 | J | 14 |
| A3-SS84-12 | MB5SS4 | ARSENIC | 7.1 | -- | 20 |
| A3-SS84-12 | MB5SS4 | BARIUM | 18.4 | J | 700 |
| A3-SS84-12 | MB5SS4 | BERYLLIUM | 0.61 | -- | NA |
| A3-SS84-12 | MB5SS4 | CADMIUM | 0.4 | J | 39 |
| A3-SS84-12 | MB5SS4 | CHROMIUM | 23.5 | -- | 240 |
| A3-SS84-12 | MB5SS4 | COPPER | 5.8 | -- | 600 |
| A3-SS84-12 | MB5SS4 | IRON | 22400 | -- | NA |
| A3-SS84-12 | MB5SS4 | LEAD | 8.3 | J | 400 |
| A3-SS84-12 | MB5SS4 | MANGANESE | 51.1 | -- | NA |
| A3-SS84-12 | MB5SS4 | NICKEL | 3.4 | J | 250 |
| A3-SS84-12 | MB5SS4 | POTASSIUM | 834 | J | NA |
| A3-SS84-12 | MB5SS4 | SODIUM | 37.7 | J | NA |
| A3-SS84-12 | MB5SS4 | THALLIUM | 0.63 | J | 2 |
| A3-SS84-12 | MB5SS4 | VANADIUM | 34.8 | -- | 370 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS84-12 | MB5SS4 | ZINC | 16.1 | -- | 1500 |
| A3-SS85-02 | MB5SS5 | ALUMINUM | 1280 | J | NA |
| A3-SS85-02 | MB5SS5 | ANTIMONY | 4.3 | J | 14 |
| A3-SS85-02 | MB5SS5 | ARSENIC | 2.7 | J | 20 |
| A3-SS85-02 | MB5SS5 | BARIUM | 47.9 | J | 700 |
| A3-SS85-02 | MB5SS5 | CADMIUM | 0.58 | J | 39 |
| A3-SS85-02 | MB5SS5 | CALCIUM | 7330 | J | NA |
| A3-SS85-02 | MB5SS5 | COPPER | 11.7 | J | 600 |
| A3-SS85-02 | MB5SS5 | IRON | 5690 | J | NA |
| A3-SS85-02 | MB5SS5 | LEAD | 12.5 | J | 400 |
| A3-SS85-02 | MB5SS5 | MANGANESE | 178 | J | NA |
| A3-SS85-02 | MB5SS5 | POTASSIUM | 449 | J | NA |
| A3-SS85-02 | MB5SS5 | SODIUM | 305 | J | NA |
| A3-SS85-02 | MB5SS5 | VANADIUM | 10.2 | J | 370 |
| A3-SS85-02 | MB5SS5 | ZINC | 68 | J | 1500 |
| A3-SS85-06 | MB5SS6 | ALUMINUM | 9370 | -- | NA |
| A3-SS85-06 | MB5SS6 | ANTIMONY | 1 | J | 14 |
| A3-SS85-06 | MB5SS6 | ARSENIC | 8.7 | -- | 20 |
| A3-SS85-06 | MB5SS6 | BARIUM | 21.9 | J | 700 |
| A3-SS85-06 | MB5SS6 | CADMIUM | 0.47 | J | 39 |
| A3-SS85-06 | MB5SS6 | CALCIUM | 784 | -- | NA |
| A3-SS85-06 | MB5SS6 | CHROMIUM | 28.1 | -- | 240 |
| A3-SS85-06 | MB5SS6 | COPPER | 6.9 | -- | 600 |
| A3-SS85-06 | MB5SS6 | IRON | 26600 | -- | NA |
| A3-SS85-06 | MB5SS6 | LEAD | 9.4 | J | 400 |
| A3-SS85-06 | MB5SS6 | MAGNESIUM | 617 | J | NA |
| A3-SS85-06 | MB5SS6 | MANGANESE | 63.5 | -- | NA |
| A3-SS85-06 | MB5SS6 | NICKEL | 4.3 | J | 250 |
| A3-SS85-06 | MB5SS6 | POTASSIUM | 834 | J | NA |
| A3-SS85-06 | MB5SS6 | SELENIUM | 0.84 | J | 63 |
| A3-SS85-06 | MB5SS6 | SODIUM | 39.1 | J | NA |
| A3-SS85-06 | MB5SS6 | VANADIUM | 41.3 | -- | 370 |
| A3-SS85-06 | MB5SS6 | ZINC | 25.4 | -- | 1500 |
| A3-SS85-12 | MB5SS7 | ALUMINUM | 9280 | -- | NA |
| A3-SS85-12 | MB5SS7 | ANTIMONY | 0.74 | J | 14 |
| A3-SS85-12 | MB5SS7 | ARSENIC | 7.7 | -- | 20 |
| A3-SS85-12 | MB5SS7 | BARIUM | 21.3 | J | 700 |
| A3-SS85-12 | MB5SS7 | BERYLLIUM | 0.66 | -- | NA |
| A3-SS85-12 | MB5SS7 | CADMIUM | 0.4 | J | 39 |
| A3-SS85-12 | MB5SS7 | CHROMIUM | 26.2 | -- | 240 |
| A3-SS85-12 | MB5SS7 | COPPER | 6.8 | -- | 600 |
| A3-SS85-12 | MB5SS7 | IRON | 27200 | -- | NA |
| A3-SS85-12 | MB5SS7 | LEAD | 10.2 | J | 400 |
| A3-SS85-12 | MB5SS7 | MAGNESIUM | 590 | -- | NA |
| A3-SS85-12 | MB5SS7 | MANGANESE | 76.8 | -- | NA |
| A3-SS85-12 | MB5SS7 | NICKEL | 4.2 | J | 250 |
| A3-SS85-12 | MB5SS7 | POTASSIUM | 886 | J | NA |
| A3-SS85-12 | MB5SS7 | SELENIUM | 0.71 | J | 63 |
| A3-SS85-12 | MB5SS7 | SODIUM | 33.3 | J | NA |
| A3-SS85-12 | MB5SS7 | THALLIUM | 0.43 | J | 2 |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS85-12 | MB5SS7 | VANADIUM | 38.9 | -- | 370 |
| A3-SS85-12 | MB5SS7 | ZINC | 30.1 | -- | 1500 |
| A3-SS86-02 | MB5SS8 | ALUMINUM | 3740 | -- | NA |
| A3-SS86-02 | MB5SS8 | ANTIMONY | 0.79 | J | 14 |
| A3-SS86-02 | MB5SS8 | ARSENIC | 4 | -- | 20 |
| A3-SS86-02 | MB5SS8 | BARIUM | 17.7 | J | 700 |
| A3-SS86-02 | MB5SS8 | BERYLLIUM | 0.62 | -- | NA |
| A3-SS86-02 | MB5SS8 | CADMIUM | 0.26 | J | 39 |
| A3-SS86-02 | MB5SS8 | CHROMIUM | 14 | -- | 240 |
| A3-SS86-02 | MB5SS8 | COBALT | 4.3 | J | NA |
| A3-SS86-02 | MB5SS8 | COPPER | 5.5 | -- | 600 |
| A3-SS86-02 | MB5SS8 | IRON | 15900 | -- | NA |
| A3-SS86-02 | MB5SS8 | LEAD | 7.8 | J | 400 |
| A3-SS86-02 | MB5SS8 | MAGNESIUM | 565 | -- | NA |
| A3-SS86-02 | MB5SS8 | MANGANESE | 174 | -- | NA |
| A3-SS86-02 | MB5SS8 | NICKEL | 5.1 | -- | 250 |
| A3-SS86-02 | MB5SS8 | POTASSIUM | 649 | J | NA |
| A3-SS86-02 | MB5SS8 | SODIUM | 32.8 | J | NA |
| A3-SS86-02 | MB5SS8 | THALLIUM | 0.84 | J | 2 |
| A3-SS86-02 | MB5SS8 | VANADIUM | 18.4 | -- | 370 |
| A3-SS86-02 | MB5SS8 | ZINC | 19 | -- | 1500 |
| A3-SS86-06 | MB5SS9 | ALUMINUM | 4880 | -- | NA |
| A3-SS86-06 | MB5SS9 | ARSENIC | 7 | -- | 20 |
| A3-SS86-06 | MB5SS9 | BERYLLIUM | 0.82 | -- | NA |
| A3-SS86-06 | MB5SS9 | CHROMIUM | 21.4 | -- | 240 |
| A3-SS86-06 | MB5SS9 | COBALT | 2.8 | J | NA |
| A3-SS86-06 | MB5SS9 | COPPER | 5.3 | -- | 600 |
| A3-SS86-06 | MB5SS9 | IRON | 27600 | -- | NA |
| A3-SS86-06 | MB5SS9 | LEAD | 8.9 | J | 400 |
| A3-SS86-06 | MB5SS9 | MAGNESIUM | 745 | -- | NA |
| A3-SS86-06 | MB5SS9 | MANGANESE | 185 | -- | NA |
| A3-SS86-06 | MB5SS9 | NICKEL | 3.8 | J | 250 |
| A3-SS86-06 | MB5SS9 | POTASSIUM | 1150 | J | NA |
| A3-SS86-06 | MB5SS9 | SELENIUM | 0.53 | J | 63 |
| A3-SS86-06 | MB5SS9 | SODIUM | 34.7 | J | NA |
| A3-SS86-06 | MB5SS9 | THALLIUM | 1 | J | 2 |
| A3-SS86-06 | MB5SS9 | VANADIUM | 29.1 | -- | 370 |
| A3-SS86-06 | MB5SS9 | ZINC | 28.5 | -- | 1500 |
| A3-SS86-12 | MB5ST0 | ALUMINUM | 3400 | -- | NA |
| A3-SS86-12 | MB5ST0 | ARSENIC | 5 | -- | 20 |
| A3-SS86-12 | MB5ST0 | CHROMIUM | 11.7 | -- | 240 |
| A3-SS86-12 | MB5ST0 | COBALT | 1.1 | J | NA |
| A3-SS86-12 | MB5ST0 | COPPER | 12 | -- | 600 |
| A3-SS86-12 | MB5ST0 | IRON | 14700 | -- | NA |
| A3-SS86-12 | MB5ST0 | LEAD | 22.7 | J | 400 |
| A3-SS86-12 | MB5ST0 | MANGANESE | 103 | -- | NA |
| A3-SS86-12 | MB5ST0 | NICKEL | 4.1 | J | 250 |
| A3-SS86-12 | MB5ST0 | POTASSIUM | 534 | J | NA |
| A3-SS86-12 | MB5ST0 | SELENIUM | 0.6 | J | 63 |
| A3-SS86-12 | MB5ST0 | SODIUM | 50.5 | J | NA |



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# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS86-12 | MB5ST0 | VANADIUM | 21.1 | -- | 370 |
| A3-SS86-12 | MB5ST0 | ZINC | 26 | -- | 1500 |
| A3-SS87-02 | MB5ST1 | ALUMINUM | 7980 | -- | NA |
| A3-SS87-02 | MB5ST1 | ARSENIC | 8.3 | -- | 20 |
| A3-SS87-02 | MB5ST1 | BARIUM | 21.7 | -- | 700 |
| A3-SS87-02 | MB5ST1 | BERYLLIUM | 0.71 | -- | NA |
| A3-SS87-02 | MB5ST1 | CALCIUM | 3310 | -- | NA |
| A3-SS87-02 | MB5ST1 | CHROMIUM | 22.1 | -- | 240 |
| A3-SS87-02 | MB5ST1 | COPPER | 7 | -- | 600 |
| A3-SS87-02 | MB5ST1 | IRON | 21100 | -- | NA |
| A3-SS87-02 | MB5ST1 | LEAD | 10.8 | J | 400 |
| A3-SS87-02 | MB5ST1 | MAGNESIUM | 2190 | -- | NA |
| A3-SS87-02 | MB5ST1 | MANGANESE | 73.6 | -- | NA |
| A3-SS87-02 | MB5ST1 | NICKEL | 4.1 | -- | 250 |
| A3-SS87-02 | MB5ST1 | POTASSIUM | 918 | J | NA |
| A3-SS87-02 | MB5ST1 | SODIUM | 53.8 | J | NA |
| A3-SS87-02 | MB5ST1 | THALLIUM | 1.6 | J | 2 |
| A3-SS87-02 | MB5ST1 | VANADIUM | 35.4 | -- | 370 |
| A3-SS87-02 | MB5ST1 | ZINC | 20.6 | -- | 1500 |
| A3-SS87-06 | MB5ST2 | ALUMINUM | 9070 | -- | NA |
| A3-SS87-06 | MB5ST2 | ARSENIC | 7.8 | -- | 20 |
| A3-SS87-06 | MB5ST2 | BARIUM | 22.1 | -- | 700 |
| A3-SS87-06 | MB5ST2 | BERYLLIUM | 0.63 | -- | NA |
| A3-SS87-06 | MB5ST2 | CALCIUM | 599 | -- | NA |
| A3-SS87-06 | MB5ST2 | CHROMIUM | 21.5 | -- | 240 |
| A3-SS87-06 | MB5ST2 | COPPER | 6.6 | -- | 600 |
| A3-SS87-06 | MB5ST2 | IRON | 21700 | -- | NA |
| A3-SS87-06 | MB5ST2 | LEAD | 11 | J | 400 |
| A3-SS87-06 | MB5ST2 | MAGNESIUM | 689 | -- | NA |
| A3-SS87-06 | MB5ST2 | MANGANESE | 61.6 | -- | NA |
| A3-SS87-06 | MB5ST2 | NICKEL | 4 | J | 250 |
| A3-SS87-06 | MB5ST2 | POTASSIUM | 763 | J | NA |
| A3-SS87-06 | MB5ST2 | SELENIUM | 0.5 | J | 63 |
| A3-SS87-06 | MB5ST2 | SODIUM | 38.4 | J | NA |
| A3-SS87-06 | MB5ST2 | THALLIUM | 1 | J | 2 |
| A3-SS87-06 | MB5ST2 | VANADIUM | 34.9 | -- | 370 |
| A3-SS87-06 | MB5ST2 | ZINC | 18.5 | -- | 1500 |
| A3-SS87-12 | MB5ST3 | ALUMINUM | 9340 | -- | NA |
| A3-SS87-12 | MB5ST3 | ARSENIC | 8.3 | -- | 20 |
| A3-SS87-12 | MB5ST3 | BARIUM | 21.8 | -- | 700 |
| A3-SS87-12 | MB5ST3 | BERYLLIUM | 0.65 | -- | NA |
| A3-SS87-12 | MB5ST3 | CALCIUM | 534 | -- | NA |
| A3-SS87-12 | MB5ST3 | CHROMIUM | 24.4 | -- | 240 |
| A3-SS87-12 | MB5ST3 | COPPER | 6.9 | -- | 600 |
| A3-SS87-12 | MB5ST3 | IRON | 23800 | -- | NA |
| A3-SS87-12 | MB5ST3 | LEAD | 9.8 | J | 400 |
| A3-SS87-12 | MB5ST3 | MAGNESIUM | 678 | -- | NA |
| A3-SS87-12 | MB5ST3 | MANGANESE | 67.5 | -- | NA |
| A3-SS87-12 | MB5ST3 | NICKEL | 4.2 | -- | 250 |
| A3-SS87-12 | MB5ST3 | POTASSIUM | 795 | J | NA |



R2-0004379

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS87-12 | MB5ST3 | SODIUM | 30.7 | J | NA |
| A3-SS87-12 | MB5ST3 | THALLIUM | 0.98 | J | 2 |
| A3-SS87-12 | MB5ST3 | VANADIUM | 37.5 | -- | 370 |
| A3-SS87-12 | MB5ST3 | ZINC | 21.5 | -- | 1500 |
| A3-SS88-06 | MB5ST4 | ALUMINUM | 2620 | -- | NA |
| A3-SS88-06 | MB5ST4 | ARSENIC | 5 | -- | 20 |
| A3-SS88-06 | MB5ST4 | CALCIUM | 640 | -- | NA |
| A3-SS88-06 | MB5ST4 | CHROMIUM | 7.9 | -- | 240 |
| A3-SS88-06 | MB5ST4 | COPPER | 14.8 | -- | 600 |
| A3-SS88-06 | MB5ST4 | IRON | 9170 | -- | NA |
| A3-SS88-06 | MB5ST4 | LEAD | 54.3 | J | 400 |
| A3-SS88-06 | MB5ST4 | MANGANESE | 54.5 | -- | NA |
| A3-SS88-06 | MB5ST4 | NICKEL | 4.1 | J | 250 |
| A3-SS88-06 | MB5ST4 | POTASSIUM | 299 | J | NA |
| A3-SS88-06 | MB5ST4 | SODIUM | 50.4 | J | NA |
| A3-SS88-06 | MB5ST4 | VANADIUM | 16.2 | -- | 370 |
| A3-SS88-06 | MB5ST4 | ZINC | 30.7 | -- | 1500 |
| A3-SS88-12 | MB5ST5 | ALUMINUM | 915 | -- | NA |
| A3-SS88-12 | MB5ST5 | ANTIMONY | 4.9 | J | 14 |
| A3-SS88-12 | MB5ST5 | ARSENIC | 6.4 | -- | 20 |
| A3-SS88-12 | MB5ST5 | BARIUM | 5.8 | J | 700 |
| A3-SS88-12 | MB5ST5 | BERYLLIUM | 0.12 | J | NA |
| A3-SS88-12 | MB5ST5 | CHROMIUM | 4.2 | -- | 240 |
| A3-SS88-12 | MB5ST5 | COPPER | 9.3 | -- | 600 |
| A3-SS88-12 | MB5ST5 | IRON | 5350 | -- | NA |
| A3-SS88-12 | MB5ST5 | LEAD | 132 | -- | 400 |
| A3-SS88-12 | MB5ST5 | MAGNESIUM | 143 | J | NA |
| A3-SS88-12 | MB5ST5 | MANGANESE | 20.1 | -- | NA |
| A3-SS88-12 | MB5ST5 | NICKEL | 1.8 | J | 250 |
| A3-SS88-12 | MB5ST5 | POTASSIUM | 125 | J | NA |
| A3-SS88-12 | MB5ST5 | SODIUM | 27.5 | J | NA |
| A3-SS88-12 | MB5ST5 | VANADIUM | 9.5 | -- | 370 |
| A3-SS88-12 | MB5ST5 | ZINC | 13.8 | J | 1500 |
| A3-SS89-02 | MB5ST6 | ALUMINUM | 2180 | -- | NA |
| A3-SS89-02 | MB5ST6 | ARSENIC | 4.2 | -- | 20 |
| A3-SS89-02 | MB5ST6 | CALCIUM | 600 | -- | NA |
| A3-SS89-02 | MB5ST6 | CHROMIUM | 5.8 | -- | 240 |
| A3-SS89-02 | MB5ST6 | COPPER | 6.7 | -- | 600 |
| A3-SS89-02 | MB5ST6 | IRON | 7800 | -- | NA |
| A3-SS89-02 | MB5ST6 | LEAD | 26.3 | J | 400 |
| A3-SS89-02 | MB5ST6 | MANGANESE | 46.2 | -- | NA |
| A3-SS89-02 | MB5ST6 | NICKEL | 1.7 | J | 250 |
| A3-SS89-02 | MB5ST6 | POTASSIUM | 216 | J | NA |
| A3-SS89-02 | MB5ST6 | SELENIUM | 0.47 | J | 63 |
| A3-SS89-02 | MB5ST6 | SODIUM | 39.4 | J | NA |
| A3-SS89-02 | MB5ST6 | VANADIUM | 15 | -- | 370 |
| A3-SS89-02 | MB5ST6 | ZINC | 29.2 | -- | 1500 |
| A3-SS89-06 | MB5ST7 | ALUMINUM | 2530 | -- | NA |
| A3-SS89-06 | MB5ST7 | ARSENIC | 5.4 | -- | 20 |
| A3-SS89-06 | MB5ST7 | CHROMIUM | 6.6 | -- | 240 |



R2-0004380

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS89-06 | MB5ST7 | COPPER | 9.3 | -- | 600 |
| A3-SS89-06 | MB5ST7 | IRON | 8790 | -- | NA |
| A3-SS89-06 | MB5ST7 | LEAD | 27.2 | J | 400 |
| A3-SS89-06 | MB5ST7 | MANGANESE | 54.1 | -- | NA |
| A3-SS89-06 | MB5ST7 | NICKEL | 2.9 | J | 250 |
| A3-SS89-06 | MB5ST7 | POTASSIUM | 237 | J | NA |
| A3-SS89-06 | MB5ST7 | SODIUM | 49.8 | J | NA |
| A3-SS89-06 | MB5ST7 | VANADIUM | 16.2 | -- | 370 |
| A3-SS89-06 | MB5ST7 | ZINC | 22.7 | -- | 1500 |
| A3-SS89-12 | MB5ST8 | ALUMINUM | 2090 | -- | NA |
| A3-SS89-12 | MB5ST8 | ARSENIC | 4.5 | -- | 20 |
| A3-SS89-12 | MB5ST8 | CHROMIUM | 7 | -- | 240 |
| A3-SS89-12 | MB5ST8 | COPPER | 18 | -- | 600 |
| A3-SS89-12 | MB5ST8 | IRON | 8890 | -- | NA |
| A3-SS89-12 | MB5ST8 | LEAD | 77 | J | 400 |
| A3-SS89-12 | MB5ST8 | MANGANESE | 53.1 | -- | NA |
| A3-SS89-12 | MB5ST8 | NICKEL | 4.2 | J | 250 |
| A3-SS89-12 | MB5ST8 | POTASSIUM | 208 | J | NA |
| A3-SS89-12 | MB5ST8 | SILVER | 0.054 | J | 110 |
| A3-SS89-12 | MB5ST8 | SODIUM | 47.2 | J | NA |
| A3-SS89-12 | MB5ST8 | VANADIUM | 14.8 | -- | 370 |
| A3-SS89-12 | MB5ST8 | ZINC | 45.6 | -- | 1500 |
| A3-SS90-02 | MB5ST9 | ALUMINUM | 2390 | -- | NA |
| A3-SS90-02 | MB5ST9 | ARSENIC | 5 | -- | 20 |
| A3-SS90-02 | MB5ST9 | CALCIUM | 619 | -- | NA |
| A3-SS90-02 | MB5ST9 | CHROMIUM | 6.2 | -- | 240 |
| A3-SS90-02 | MB5ST9 | COPPER | 6.3 | -- | 600 |
| A3-SS90-02 | MB5ST9 | IRON | 8970 | -- | NA |
| A3-SS90-02 | MB5ST9 | LEAD | 25.5 | J | 400 |
| A3-SS90-02 | MB5ST9 | MANGANESE | 47.5 | -- | NA |
| A3-SS90-02 | MB5ST9 | NICKEL | 1.8 | J | 250 |
| A3-SS90-02 | MB5ST9 | POTASSIUM | 254 | J | NA |
| A3-SS90-02 | MB5ST9 | SODIUM | 47.5 | J | NA |
| A3-SS90-02 | MB5ST9 | VANADIUM | 16.1 | -- | 370 |
| A3-SS90-02 | MB5ST9 | ZINC | 37.1 | -- | 1500 |
| A3-SS90-06 | MB5SW0 | ALUMINUM | 2410 | -- | NA |
| A3-SS90-06 | MB5SW0 | ANTIMONY | 0.99 | J | 14 |
| A3-SS90-06 | MB5SW0 | ARSENIC | 4.5 | -- | 20 |
| A3-SS90-06 | MB5SW0 | BARIUM | 12.4 | J | 700 |
| A3-SS90-06 | MB5SW0 | BERYLLIUM | 0.2 | J | NA |
| A3-SS90-06 | MB5SW0 | CHROMIUM | 6.4 | -- | 240 |
| A3-SS90-06 | MB5SW0 | COPPER | 7.5 | -- | 600 |
| A3-SS90-06 | MB5SW0 | IRON | 8650 | -- | NA |
| A3-SS90-06 | MB5SW0 | LEAD | 21.9 | -- | 400 |
| A3-SS90-06 | MB5SW0 | MANGANESE | 37.4 | J | NA |
| A3-SS90-06 | MB5SW0 | NICKEL | 1.9 | J | 250 |
| A3-SS90-06 | MB5SW0 | POTASSIUM | 273 | J | NA |
| A3-SS90-06 | MB5SW0 | SELENIUM | 0.74 | J | 63 |
| A3-SS90-06 | MB5SW0 | SODIUM | 36.9 | J | NA |
| A3-SS90-06 | MB5SW0 | VANADIUM | 16.3 | -- | 370 |



R2-0004381

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A3-SS90-06 | MB5SW0 | ZINC | 22 | -- | 1500 |
| A3-SS90-12 | MB5SW1 | ALUMINUM | 2980 | -- | NA |
| A3-SS90-12 | MB5SW1 | ARSENIC | 6.4 | -- | 20 |
| A3-SS90-12 | MB5SW1 | CALCIUM | 554 | -- | NA |
| A3-SS90-12 | MB5SW1 | CHROMIUM | 10.6 | -- | 240 |
| A3-SS90-12 | MB5SW1 | COPPER | 17.5 | -- | 600 |
| A3-SS90-12 | MB5SW1 | IRON | 15300 | -- | NA |
| A3-SS90-12 | MB5SW1 | LEAD | 60 | J | 400 |
| A3-SS90-12 | MB5SW1 | MANGANESE | 51.6 | -- | NA |
| A3-SS90-12 | MB5SW1 | NICKEL | 4.1 | -- | 250 |
| A3-SS90-12 | MB5SW1 | POTASSIUM | 308 | J | NA |
| A3-SS90-12 | MB5SW1 | SODIUM | 44.8 | J | NA |
| A3-SS90-12 | MB5SW1 | VANADIUM | 20.2 | -- | 370 |
| A3-SS90-12 | MB5SW1 | ZINC | 36.9 | -- | 1500 |
| Z3-SS75-02 | MB5SW2 | ALUMINUM | 405 | J | NA |
| Z3-SS75-02 | MB5SW2 | CALCIUM | 8620 | J | NA |
| Z3-SS75-02 | MB5SW2 | COPPER | 11.7 | J | 600 |
| Z3-SS75-02 | MB5SW2 | IRON | 1430 | J | NA |
| Z3-SS75-02 | MB5SW2 | LEAD | 13.1 | J | 400 |
| Z3-SS75-02 | MB5SW2 | MANGANESE | 322 | J | NA |
| Z3-SS75-02 | MB5SW2 | POTASSIUM | 419 | J | NA |
| Z3-SS75-02 | MB5SW2 | SODIUM | 222 | J | NA |
| Z3-SS75-02 | MB5SW2 | VANADIUM | 1.9 | J | 370 |
| Z3-SS75-02 | MB5SW2 | ZINC | 171 | J | 1500 |
| Z3-SS89-02 | MB5SW3 | ALUMINUM | 2120 | -- | NA |
| Z3-SS89-02 | MB5SW3 | ARSENIC | 4 | -- | 20 |
| Z3-SS89-02 | MB5SW3 | CALCIUM | 526 | -- | NA |
| Z3-SS89-02 | MB5SW3 | CHROMIUM | 7 | -- | 240 |
| Z3-SS89-02 | MB5SW3 | COPPER | 5.7 | -- | 600 |
| Z3-SS89-02 | MB5SW3 | IRON | 7820 | -- | NA |
| Z3-SS89-02 | MB5SW3 | LEAD | 24.4 | J | 400 |
| Z3-SS89-02 | MB5SW3 | MANGANESE | 42.8 | -- | NA |
| Z3-SS89-02 | MB5SW3 | NICKEL | 2 | J | 250 |
| Z3-SS89-02 | MB5SW3 | POTASSIUM | 208 | J | NA |
| Z3-SS89-02 | MB5SW3 | SODIUM | 29.6 | J | NA |
| Z3-SS89-02 | MB5SW3 | VANADIUM | 15.6 | -- | 370 |
| Z3-SS89-02 | MB5SW3 | ZINC | 20.6 | -- | 1500 |
| Z3-SS90-06 | MB5SW4 | ALUMINUM | 2250 | -- | NA |
| Z3-SS90-06 | MB5SW4 | ARSENIC | 4.8 | -- | 20 |
| Z3-SS90-06 | MB5SW4 | CHROMIUM | 14.5 | -- | 240 |
| Z3-SS90-06 | MB5SW4 | COPPER | 6.8 | -- | 600 |
| Z3-SS90-06 | MB5SW4 | IRON | 11000 | -- | NA |
| Z3-SS90-06 | MB5SW4 | LEAD | 22.3 | J | 400 |
| Z3-SS90-06 | MB5SW4 | MANGANESE | 39.1 | -- | NA |
| Z3-SS90-06 | MB5SW4 | NICKEL | 1.7 | J | 250 |
| Z3-SS90-06 | MB5SW4 | POTASSIUM | 194 | J | NA |
| Z3-SS90-06 | MB5SW4 | SODIUM | 41.2 | J | NA |
| Z3-SS90-06 | MB5SW4 | VANADIUM | 18.7 | -- | 370 |
| Z3-SS90-06 | MB5SW4 | ZINC | 29.2 | -- | 1500 |
| A1-SS05-12 | MB5SW6 | ALUMINUM | 3380 | -- | NA |



R2-0004382

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS05-12 | MB5SW6 | ARSENIC | 6.9 | -- | 20 |
| A1-SS05-12 | MB5SW6 | BARIUM | 21.1 | -- | 700 |
| A1-SS05-12 | MB5SW6 | CALCIUM | 523 | -- | NA |
| A1-SS05-12 | MB5SW6 | CHROMIUM | 8.8 | -- | 240 |
| A1-SS05-12 | MB5SW6 | COBALT | 2 | J | NA |
| A1-SS05-12 | MB5SW6 | COPPER | 22.8 | -- | 600 |
| A1-SS05-12 | MB5SW6 | IRON | 9290 | -- | NA |
| A1-SS05-12 | MB5SW6 | LEAD | 174 | -- | 400 |
| A1-SS05-12 | MB5SW6 | MAGNESIUM | 713 | -- | NA |
| A1-SS05-12 | MB5SW6 | MANGANESE | 75 | -- | NA |
| A1-SS05-12 | MB5SW6 | NICKEL | 10.6 | -- | 250 |
| A1-SS05-12 | MB5SW6 | POTASSIUM | 317 | J | NA |
| A1-SS05-12 | MB5SW6 | VANADIUM | 15.7 | -- | 370 |
| A1-SS05-12 | MB5SW6 | ZINC | 36.2 | -- | 1500 |
| A1-SS06-06 | MB5SW7 | ALUMINUM | 3410 | -- | NA |
| A1-SS06-06 | MB5SW7 | ARSENIC | 5.6 | -- | 20 |
| A1-SS06-06 | MB5SW7 | BARIUM | 20.7 | J | 700 |
| A1-SS06-06 | MB5SW7 | CALCIUM | 717 | -- | NA |
| A1-SS06-06 | MB5SW7 | CHROMIUM | 10.4 | -- | 240 |
| A1-SS06-06 | MB5SW7 | COBALT | 1.1 | J | NA |
| A1-SS06-06 | MB5SW7 | COPPER | 18 | -- | 600 |
| A1-SS06-06 | MB5SW7 | IRON | 10700 | -- | NA |
| A1-SS06-06 | MB5SW7 | LEAD | 52 | -- | 400 |
| A1-SS06-06 | MB5SW7 | MANGANESE | 44.3 | -- | NA |
| A1-SS06-06 | MB5SW7 | NICKEL | 3.9 | J | 250 |
| A1-SS06-06 | MB5SW7 | POTASSIUM | 353 | J | NA |
| A1-SS06-06 | MB5SW7 | VANADIUM | 20.7 | -- | 370 |
| A1-SS06-06 | MB5SW7 | ZINC | 27.8 | -- | 1500 |
| A1-SS06-12 | MB5SW8 | ALUMINUM | 1500 | -- | NA |
| A1-SS06-12 | MB5SW8 | ARSENIC | 0.95 | J | 20 |
| A1-SS06-12 | MB5SW8 | BARIUM | 8.2 | J | 700 |
| A1-SS06-12 | MB5SW8 | CHROMIUM | 5.2 | -- | 240 |
| A1-SS06-12 | MB5SW8 | COBALT | 0.28 | J | NA |
| A1-SS06-12 | MB5SW8 | COPPER | 6.5 | -- | 600 |
| A1-SS06-12 | MB5SW8 | IRON | 4090 | -- | NA |
| A1-SS06-12 | MB5SW8 | LEAD | 18 | -- | 400 |
| A1-SS06-12 | MB5SW8 | MANGANESE | 6.2 | -- | NA |
| A1-SS06-12 | MB5SW8 | NICKEL | 0.74 | J | 250 |
| A1-SS06-12 | MB5SW8 | POTASSIUM | 113 | J | NA |
| A1-SS06-12 | MB5SW8 | VANADIUM | 11.8 | -- | 370 |
| A1-SS07-06 | MB5SW9 | ALUMINUM | 3690 | -- | NA |
| A1-SS07-06 | MB5SW9 | ARSENIC | 5.5 | -- | 20 |
| A1-SS07-06 | MB5SW9 | BARIUM | 17.5 | J | 700 |
| A1-SS07-06 | MB5SW9 | CALCIUM | 611 | -- | NA |
| A1-SS07-06 | MB5SW9 | CHROMIUM | 11.4 | -- | 240 |
| A1-SS07-06 | MB5SW9 | COBALT | 1.3 | J | NA |
| A1-SS07-06 | MB5SW9 | COPPER | 17.6 | -- | 600 |
| A1-SS07-06 | MB5SW9 | IRON | 13400 | -- | NA |
| A1-SS07-06 | MB5SW9 | LEAD | 42.2 | -- | 400 |
| A1-SS07-06 | MB5SW9 | MANGANESE | 54.3 | -- | NA |



R2-0004383

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS07-06 | MB5SW9 | NICKEL | 4.3 | -- | 250 |
| A1-SS07-06 | MB5SW9 | POTASSIUM | 398 | J | NA |
| A1-SS07-06 | MB5SW9 | VANADIUM | 22.2 | -- | 370 |
| A1-SS07-06 | MB5SW9 | ZINC | 33.3 | -- | 1500 |
| A1-SS07-12 | MB5SX0 | ALUMINUM | 2430 | -- | NA |
| A1-SS07-12 | MB5SX0 | ARSENIC | 8.4 | -- | 20 |
| A1-SS07-12 | MB5SX0 | BARIUM | 15 | J | 700 |
| A1-SS07-12 | MB5SX0 | CALCIUM | 655 | -- | NA |
| A1-SS07-12 | MB5SX0 | CHROMIUM | 9.4 | -- | 240 |
| A1-SS07-12 | MB5SX0 | COBALT | 1 | J | NA |
| A1-SS07-12 | MB5SX0 | COPPER | 23.2 | -- | 600 |
| A1-SS07-12 | MB5SX0 | IRON | 11300 | -- | NA |
| A1-SS07-12 | MB5SX0 | LEAD | 78.3 | -- | 400 |
| A1-SS07-12 | MB5SX0 | MANGANESE | 47.3 | -- | NA |
| A1-SS07-12 | MB5SX0 | NICKEL | 2.9 | J | 250 |
| A1-SS07-12 | MB5SX0 | POTASSIUM | 244 | J | NA |
| A1-SS07-12 | MB5SX0 | SILVER | 0.19 | J | 110 |
| A1-SS07-12 | MB5SX0 | VANADIUM | 20.2 | -- | 370 |
| A1-SS07-12 | MB5SX0 | ZINC | 32.6 | -- | 1500 |
| A1-SS08-06 | MB5SX1 | ALUMINUM | 4360 | -- | NA |
| A1-SS08-06 | MB5SX1 | ARSENIC | 6.4 | -- | 20 |
| A1-SS08-06 | MB5SX1 | BARIUM | 24 | -- | 700 |
| A1-SS08-06 | MB5SX1 | CALCIUM | 579 | -- | NA |
| A1-SS08-06 | MB5SX1 | CHROMIUM | 15.2 | -- | 240 |
| A1-SS08-06 | MB5SX1 | COBALT | 3.1 | J | NA |
| A1-SS08-06 | MB5SX1 | COPPER | 16.7 | -- | 600 |
| A1-SS08-06 | MB5SX1 | IRON | 16300 | -- | NA |
| A1-SS08-06 | MB5SX1 | LEAD | 50.3 | -- | 400 |
| A1-SS08-06 | MB5SX1 | MAGNESIUM | 922 | -- | NA |
| A1-SS08-06 | MB5SX1 | MANGANESE | 65.3 | -- | NA |
| A1-SS08-06 | MB5SX1 | NICKEL | 5.9 | -- | 250 |
| A1-SS08-06 | MB5SX1 | POTASSIUM | 573 | -- | NA |
| A1-SS08-06 | MB5SX1 | VANADIUM | 25 | -- | 370 |
| A1-SS08-06 | MB5SX1 | ZINC | 22.9 | -- | 1500 |
| A1-SS08-12 | MB5SX2 | ALUMINUM | 2830 | -- | NA |
| A1-SS08-12 | MB5SX2 | ARSENIC | 3.3 | -- | 20 |
| A1-SS08-12 | MB5SX2 | BARIUM | 15 | J | 700 |
| A1-SS08-12 | MB5SX2 | CALCIUM | 613 | -- | NA |
| A1-SS08-12 | MB5SX2 | CHROMIUM | 9.5 | -- | 240 |
| A1-SS08-12 | MB5SX2 | COBALT | 2.1 | J | NA |
| A1-SS08-12 | MB5SX2 | COPPER | 14.8 | -- | 600 |
| A1-SS08-12 | MB5SX2 | IRON | 10300 | -- | NA |
| A1-SS08-12 | MB5SX2 | LEAD | 43.7 | -- | 400 |
| A1-SS08-12 | MB5SX2 | MANGANESE | 86.5 | -- | NA |
| A1-SS08-12 | MB5SX2 | NICKEL | 6.6 | -- | 250 |
| A1-SS08-12 | MB5SX2 | POTASSIUM | 275 | J | NA |
| A1-SS08-12 | MB5SX2 | VANADIUM | 15.6 | -- | 370 |
| A1-SS08-12 | MB5SX2 | ZINC | 27 | -- | 1500 |
| A1-SS09-06 | MB5SX3 | ALUMINUM | 4750 | -- | NA |
| A1-SS09-06 | MB5SX3 | ARSENIC | 9.9 | -- | 20 |



R2-0004384

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS09-06 | MB5SX3 | BARIUM | 30.4 | -- | 700 |
| A1-SS09-06 | MB5SX3 | CALCIUM | 1580 | -- | NA |
| A1-SS09-06 | MB5SX3 | CHROMIUM | 15.9 | -- | 240 |
| A1-SS09-06 | MB5SX3 | COBALT | 3.8 | J | NA |
| A1-SS09-06 | MB5SX3 | COPPER | 29.3 | -- | 600 |
| A1-SS09-06 | MB5SX3 | IRON | 17600 | -- | NA |
| A1-SS09-06 | MB5SX3 | LEAD | 164 | -- | 400 |
| A1-SS09-06 | MB5SX3 | MAGNESIUM | 1450 | -- | NA |
| A1-SS09-06 | MB5SX3 | MANGANESE | 120 | -- | NA |
| A1-SS09-06 | MB5SX3 | NICKEL | 7.7 | -- | 250 |
| A1-SS09-06 | MB5SX3 | POTASSIUM | 576 | -- | NA |
| A1-SS09-06 | MB5SX3 | VANADIUM | 27.8 | -- | 370 |
| A1-SS09-06 | MB5SX3 | ZINC | 38.4 | -- | 1500 |
| A1-SS09-12 | MB5SX4 | ALUMINUM | 3850 | -- | NA |
| A1-SS09-12 | MB5SX4 | ANTIMONY | 13.6 | J | 14 |
| A1-SS09-12 | MB5SX4 | ARSENIC | 22.9 | -- | 20 |
| A1-SS09-12 | MB5SX4 | BARIUM | 26.4 | -- | 700 |
| A1-SS09-12 | MB5SX4 | CADMIUM | 0.041 | J | 39 |
| A1-SS09-12 | MB5SX4 | CALCIUM | 2190 | -- | NA |
| A1-SS09-12 | MB5SX4 | CHROMIUM | 12.9 | -- | 240 |
| A1-SS09-12 | MB5SX4 | COBALT | 3.5 | J | NA |
| A1-SS09-12 | MB5SX4 | COPPER | 65.7 | -- | 600 |
| A1-SS09-12 | MB5SX4 | IRON | 12500 | -- | NA |
| A1-SS09-12 | MB5SX4 | LEAD | 1090 | -- | 400 |
| A1-SS09-12 | MB5SX4 | MAGNESIUM | 2100 | -- | NA |
| A1-SS09-12 | MB5SX4 | MANGANESE | 109 | -- | NA |
| A1-SS09-12 | MB5SX4 | NICKEL | 9.3 | -- | 250 |
| A1-SS09-12 | MB5SX4 | POTASSIUM | 239 | J | NA |
| A1-SS09-12 | MB5SX4 | SILVER | 0.14 | J | 110 |
| A1-SS09-12 | MB5SX4 | VANADIUM | 20.6 | -- | 370 |
| A1-SS09-12 | MB5SX4 | ZINC | 29.8 | -- | 1500 |
| A1-SS10-06 | MB5SX5 | ALUMINUM | 3790 | -- | NA |
| A1-SS10-06 | MB5SX5 | ARSENIC | 5.6 | -- | 20 |
| A1-SS10-06 | MB5SX5 | BARIUM | 20.6 | J | 700 |
| A1-SS10-06 | MB5SX5 | CALCIUM | 926 | -- | NA |
| A1-SS10-06 | MB5SX5 | CHROMIUM | 12.1 | -- | 240 |
| A1-SS10-06 | MB5SX5 | COBALT | 1.6 | J | NA |
| A1-SS10-06 | MB5SX5 | COPPER | 23.3 | -- | 600 |
| A1-SS10-06 | MB5SX5 | IRON | 11800 | -- | NA |
| A1-SS10-06 | MB5SX5 | LEAD | 52.3 | -- | 400 |
| A1-SS10-06 | MB5SX5 | MAGNESIUM | 567 | -- | NA |
| A1-SS10-06 | MB5SX5 | MANGANESE | 60.4 | -- | NA |
| A1-SS10-06 | MB5SX5 | NICKEL | 4.7 | -- | 250 |
| A1-SS10-06 | MB5SX5 | POTASSIUM | 407 | J | NA |
| A1-SS10-06 | MB5SX5 | VANADIUM | 20 | -- | 370 |
| A1-SS10-06 | MB5SX5 | ZINC | 39.9 | -- | 1500 |
| A1-SS10-12 | MB5SX6 | ALUMINUM | 1660 | -- | NA |
| A1-SS10-12 | MB5SX6 | ARSENIC | 4.1 | -- | 20 |
| A1-SS10-12 | MB5SX6 | BARIUM | 11.3 | J | 700 |
| A1-SS10-12 | MB5SX6 | CHROMIUM | 11.6 | -- | 240 |



R2-0004385

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS10-12 | MB5SX6 | COBALT | 0.82 | J | NA |
| A1-SS10-12 | MB5SX6 | COPPER | 6.4 | -- | 600 |
| A1-SS10-12 | MB5SX6 | IRON | 19300 | -- | NA |
| A1-SS10-12 | MB5SX6 | LEAD | 23.6 | -- | 400 |
| A1-SS10-12 | MB5SX6 | MAGNESIUM | 127 | J | NA |
| A1-SS10-12 | MB5SX6 | MANGANESE | 25.9 | -- | NA |
| A1-SS10-12 | MB5SX6 | NICKEL | 1.4 | J | 250 |
| A1-SS10-12 | MB5SX6 | POTASSIUM | 180 | J | NA |
| A1-SS10-12 | MB5SX6 | VANADIUM | 26.6 | -- | 370 |
| A1-SS10-12 | MB5SX6 | ZINC | 13.6 | -- | 1500 |
| A1-SS11-06 | MB5SX7 | ALUMINUM | 5270 | -- | NA |
| A1-SS11-06 | MB5SX7 | ARSENIC | 6.2 | -- | 20 |
| A1-SS11-06 | MB5SX7 | BARIUM | 24.2 | -- | 700 |
| A1-SS11-06 | MB5SX7 | CALCIUM | 976 | -- | NA |
| A1-SS11-06 | MB5SX7 | CHROMIUM | 12.7 | -- | 240 |
| A1-SS11-06 | MB5SX7 | COBALT | 1.6 | J | NA |
| A1-SS11-06 | MB5SX7 | COPPER | 13.3 | -- | 600 |
| A1-SS11-06 | MB5SX7 | IRON | 13500 | -- | NA |
| A1-SS11-06 | MB5SX7 | LEAD | 33.3 | -- | 400 |
| A1-SS11-06 | MB5SX7 | MAGNESIUM | 592 | -- | NA |
| A1-SS11-06 | MB5SX7 | MANGANESE | 79.3 | -- | NA |
| A1-SS11-06 | MB5SX7 | NICKEL | 3.9 | J | 250 |
| A1-SS11-06 | MB5SX7 | POTASSIUM | 401 | J | NA |
| A1-SS11-06 | MB5SX7 | VANADIUM | 23.1 | -- | 370 |
| A1-SS11-06 | MB5SX7 | ZINC | 28.2 | -- | 1500 |
| A1-SS11-12 | MB5SX8 | ALUMINUM | 2740 | -- | NA |
| A1-SS11-12 | MB5SX8 | ARSENIC | 5.2 | -- | 20 |
| A1-SS11-12 | MB5SX8 | BARIUM | 24.4 | -- | 700 |
| A1-SS11-12 | MB5SX8 | CALCIUM | 583 | -- | NA |
| A1-SS11-12 | MB5SX8 | CHROMIUM | 9.4 | -- | 240 |
| A1-SS11-12 | MB5SX8 | COBALT | 0.96 | J | NA |
| A1-SS11-12 | MB5SX8 | COPPER | 15 | -- | 600 |
| A1-SS11-12 | MB5SX8 | IRON | 12100 | -- | NA |
| A1-SS11-12 | MB5SX8 | LEAD | 46.5 | -- | 400 |
| A1-SS11-12 | MB5SX8 | MAGNESIUM | 365 | J | NA |
| A1-SS11-12 | MB5SX8 | MANGANESE | 32.3 | -- | NA |
| A1-SS11-12 | MB5SX8 | NICKEL | 2.5 | J | 250 |
| A1-SS11-12 | MB5SX8 | POTASSIUM | 282 | J | NA |
| A1-SS11-12 | MB5SX8 | VANADIUM | 18.8 | -- | 370 |
| A1-SS11-12 | MB5SX8 | ZINC | 26.9 | -- | 1500 |
| A1-SS12-06 | MB5SX9 | ALUMINUM | 2790 | -- | NA |
| A1-SS12-06 | MB5SX9 | ARSENIC | 4.6 | -- | 20 |
| A1-SS12-06 | MB5SX9 | BARIUM | 15.6 | J | 700 |
| A1-SS12-06 | MB5SX9 | CALCIUM | 578 | -- | NA |
| A1-SS12-06 | MB5SX9 | CHROMIUM | 12.1 | -- | 240 |
| A1-SS12-06 | MB5SX9 | COBALT | 0.83 | J | NA |
| A1-SS12-06 | MB5SX9 | COPPER | 7.7 | -- | 600 |
| A1-SS12-06 | MB5SX9 | IRON | 12700 | -- | NA |
| A1-SS12-06 | MB5SX9 | LEAD | 19.8 | -- | 400 |
| A1-SS12-06 | MB5SX9 | MAGNESIUM | 310 | J | NA |



R2-0004386

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS12-06 | MB5SX9 | MANGANESE | 32 | -- | NA |
| A1-SS12-06 | MB5SX9 | NICKEL | 2 | J | 250 |
| A1-SS12-06 | MB5SX9 | POTASSIUM | 228 | J | NA |
| A1-SS12-06 | MB5SX9 | VANADIUM | 20.2 | -- | 370 |
| A1-SS12-06 | MB5SX9 | ZINC | 13.7 | -- | 1500 |
| A1-SS12-12 | MB5SY0 | ALUMINUM | 2020 | -- | NA |
| A1-SS12-12 | MB5SY0 | ARSENIC | 5.9 | -- | 20 |
| A1-SS12-12 | MB5SY0 | BARIUM | 17.8 | J | 700 |
| A1-SS12-12 | MB5SY0 | CHROMIUM | 14.5 | -- | 240 |
| A1-SS12-12 | MB5SY0 | COBALT | 0.58 | J | NA |
| A1-SS12-12 | MB5SY0 | COPPER | 6.5 | -- | 600 |
| A1-SS12-12 | MB5SY0 | IRON | 16800 | -- | NA |
| A1-SS12-12 | MB5SY0 | LEAD | 14 | -- | 400 |
| A1-SS12-12 | MB5SY0 | MANGANESE | 20 | -- | NA |
| A1-SS12-12 | MB5SY0 | NICKEL | 1.1 | J | 250 |
| A1-SS12-12 | MB5SY0 | POTASSIUM | 245 | J | NA |
| A1-SS12-12 | MB5SY0 | VANADIUM | 30.7 | -- | 370 |
| A1-SS12-12 | MB5SY0 | ZINC | 7.5 | -- | 1500 |
| A1-SS13-06 | MB5SY1 | ALUMINUM | 4700 | -- | NA |
| A1-SS13-06 | MB5SY1 | ARSENIC | 6 | -- | 20 |
| A1-SS13-06 | MB5SY1 | BARIUM | 27.9 | -- | 700 |
| A1-SS13-06 | MB5SY1 | CALCIUM | 1220 | -- | NA |
| A1-SS13-06 | MB5SY1 | CHROMIUM | 13.8 | -- | 240 |
| A1-SS13-06 | MB5SY1 | COBALT | 2.6 | J | NA |
| A1-SS13-06 | MB5SY1 | COPPER | 16.2 | -- | 600 |
| A1-SS13-06 | MB5SY1 | IRON | 16200 | -- | NA |
| A1-SS13-06 | MB5SY1 | LEAD | 39.9 | -- | 400 |
| A1-SS13-06 | MB5SY1 | MAGNESIUM | 960 | -- | NA |
| A1-SS13-06 | MB5SY1 | MANGANESE | 114 | -- | NA |
| A1-SS13-06 | MB5SY1 | NICKEL | 5.3 | -- | 250 |
| A1-SS13-06 | MB5SY1 | POTASSIUM | 616 | -- | NA |
| A1-SS13-06 | MB5SY1 | VANADIUM | 25.1 | -- | 370 |
| A1-SS13-06 | MB5SY1 | ZINC | 35.5 | -- | 1500 |
| A1-SS13-12 | MB5SY2 | ALUMINUM | 2980 | -- | NA |
| A1-SS13-12 | MB5SY2 | ARSENIC | 11.9 | -- | 20 |
| A1-SS13-12 | MB5SY2 | BARIUM | 18.1 | J | 700 |
| A1-SS13-12 | MB5SY2 | CALCIUM | 776 | -- | NA |
| A1-SS13-12 | MB5SY2 | CHROMIUM | 9 | -- | 240 |
| A1-SS13-12 | MB5SY2 | COBALT | 1.7 | J | NA |
| A1-SS13-12 | MB5SY2 | COPPER | 21.5 | -- | 600 |
| A1-SS13-12 | MB5SY2 | IRON | 11300 | -- | NA |
| A1-SS13-12 | MB5SY2 | LEAD | 178 | -- | 400 |
| A1-SS13-12 | MB5SY2 | MAGNESIUM | 665 | -- | NA |
| A1-SS13-12 | MB5SY2 | MANGANESE | 65.3 | -- | NA |
| A1-SS13-12 | MB5SY2 | NICKEL | 3.7 | J | 250 |
| A1-SS13-12 | MB5SY2 | POTASSIUM | 333 | J | NA |
| A1-SS13-12 | MB5SY2 | SILVER | 0.54 | J | 110 |
| A1-SS13-12 | MB5SY2 | VANADIUM | 17.1 | -- | 370 |
| A1-SS13-12 | MB5SY2 | ZINC | 18.4 | -- | 1500 |
| A1-SS05-06 | MB5SZ2 | ALUMINUM | 3940 | -- | NA |



R2-0004387

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS05-06 | MB5SZ2 | ARSENIC | 8.2 | -- | 20 |
| A1-SS05-06 | MB5SZ2 | BARIUM | 20.1 | J | 700 |
| A1-SS05-06 | MB5SZ2 | CALCIUM | 572 | -- | NA |
| A1-SS05-06 | MB5SZ2 | CHROMIUM | 10.8 | -- | 240 |
| A1-SS05-06 | MB5SZ2 | COBALT | 1.7 | J | NA |
| A1-SS05-06 | MB5SZ2 | COPPER | 12.7 | -- | 600 |
| A1-SS05-06 | MB5SZ2 | IRON | 18200 | -- | NA |
| A1-SS05-06 | MB5SZ2 | LEAD | 47 | -- | 400 |
| A1-SS05-06 | MB5SZ2 | MAGNESIUM | 642 | -- | NA |
| A1-SS05-06 | MB5SZ2 | MANGANESE | 91.4 | -- | NA |
| A1-SS05-06 | MB5SZ2 | NICKEL | 7.5 | -- | 250 |
| A1-SS05-06 | MB5SZ2 | POTASSIUM | 365 | J | NA |
| A1-SS05-06 | MB5SZ2 | VANADIUM | 27 | -- | 370 |
| A1-SS05-06 | MB5SZ2 | ZINC | 31.9 | -- | 1500 |
| Z1-SS13-06 | MB5SZ5 | ALUMINUM | 5260 | -- | NA |
| Z1-SS13-06 | MB5SZ5 | ARSENIC | 5.2 | -- | 20 |
| Z1-SS13-06 | MB5SZ5 | BARIUM | 31.1 | -- | 700 |
| Z1-SS13-06 | MB5SZ5 | CALCIUM | 1110 | -- | NA |
| Z1-SS13-06 | MB5SZ5 | CHROMIUM | 13.7 | -- | 240 |
| Z1-SS13-06 | MB5SZ5 | COBALT | 3.1 | J | NA |
| Z1-SS13-06 | MB5SZ5 | COPPER | 16.7 | -- | 600 |
| Z1-SS13-06 | MB5SZ5 | IRON | 14500 | -- | NA |
| Z1-SS13-06 | MB5SZ5 | LEAD | 39.6 | -- | 400 |
| Z1-SS13-06 | MB5SZ5 | MAGNESIUM | 988 | -- | NA |
| Z1-SS13-06 | MB5SZ5 | MANGANESE | 116 | -- | NA |
| Z1-SS13-06 | MB5SZ5 | NICKEL | 6.2 | -- | 250 |
| Z1-SS13-06 | MB5SZ5 | POTASSIUM | 642 | -- | NA |
| Z1-SS13-06 | MB5SZ5 | VANADIUM | 24.5 | -- | 370 |
| Z1-SS13-06 | MB5SZ5 | ZINC | 36.8 | -- | 1500 |
| Z1-SS18-06 | MB5SZ6 | ALUMINUM | 1700 | -- | NA |
| Z1-SS18-06 | MB5SZ6 | ARSENIC | 7.5 | J | 20 |
| Z1-SS18-06 | MB5SZ6 | CALCIUM | 2030 | J | NA |
| Z1-SS18-06 | MB5SZ6 | CHROMIUM | 9.9 | -- | 240 |
| Z1-SS18-06 | MB5SZ6 | COPPER | 28.2 | -- | 600 |
| Z1-SS18-06 | MB5SZ6 | IRON | 5920 | -- | NA |
| Z1-SS18-06 | MB5SZ6 | LEAD | 75.1 | J | 400 |
| Z1-SS18-06 | MB5SZ6 | MAGNESIUM | 487 | J | NA |
| Z1-SS18-06 | MB5SZ6 | MANGANESE | 17.8 | J | NA |
| Z1-SS18-06 | MB5SZ6 | NICKEL | 3 | J | 250 |
| Z1-SS18-06 | MB5SZ6 | POTASSIUM | 24.3 | J | NA |
| Z1-SS18-06 | MB5SZ6 | VANADIUM | 22.8 | -- | 370 |
| Z1-SS18-06 | MB5SZ6 | ZINC | 14.7 | J | 1500 |
| A1-SS14-12 | MB5SZ7 | ALUMINUM | 4270 | -- | NA |
| A1-SS14-12 | MB5SZ7 | ANTIMONY | 11.9 | J | 14 |
| A1-SS14-12 | MB5SZ7 | ARSENIC | 17.2 | J | 20 |
| A1-SS14-12 | MB5SZ7 | BARIUM | 52.9 | -- | 700 |
| A1-SS14-12 | MB5SZ7 | BERYLLIUM | 0.18 | J | NA |
| A1-SS14-12 | MB5SZ7 | CADMIUM | 2.1 | -- | 39 |
| A1-SS14-12 | MB5SZ7 | CALCIUM | 2750 | J | NA |
| A1-SS14-12 | MB5SZ7 | CHROMIUM | 8.5 | -- | 240 |



R2-0004388

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS14-12 | MB5SZ7 | COBALT | 1.1 | J | NA |
| A1-SS14-12 | MB5SZ7 | COPPER | 58.4 | -- | 600 |
| A1-SS14-12 | MB5SZ7 | IRON | 8370 | -- | NA |
| A1-SS14-12 | MB5SZ7 | LEAD | 1930 | J | 400 |
| A1-SS14-12 | MB5SZ7 | MAGNESIUM | 1030 | J | NA |
| A1-SS14-12 | MB5SZ7 | MANGANESE | 192 | -- | NA |
| A1-SS14-12 | MB5SZ7 | NICKEL | 9.2 | -- | 250 |
| A1-SS14-12 | MB5SZ7 | POTASSIUM | 460 | J | NA |
| A1-SS14-12 | MB5SZ7 | SELENIUM | 1.1 | J | 63 |
| A1-SS14-12 | MB5SZ7 | SILVER | 0.34 | J | 110 |
| A1-SS14-12 | MB5SZ7 | VANADIUM | 18.6 | -- | 370 |
| A1-SS14-12 | MB5SZ7 | ZINC | 74.7 | J | 1500 |
| A1-SS15-06 | MB5SZ8 | ALUMINUM | 556 | -- | NA |
| A1-SS15-06 | MB5SZ8 | ANTIMONY | 9.9 | J | 14 |
| A1-SS15-06 | MB5SZ8 | ARSENIC | 12.6 | J | 20 |
| A1-SS15-06 | MB5SZ8 | CHROMIUM | 4.5 | -- | 240 |
| A1-SS15-06 | MB5SZ8 | COPPER | 20.2 | -- | 600 |
| A1-SS15-06 | MB5SZ8 | IRON | 5280 | -- | NA |
| A1-SS15-06 | MB5SZ8 | LEAD | 167 | J | 400 |
| A1-SS15-06 | MB5SZ8 | MAGNESIUM | 76.3 | J | NA |
| A1-SS15-06 | MB5SZ8 | MANGANESE | 7.6 | -- | NA |
| A1-SS15-06 | MB5SZ8 | NICKEL | 1 | J | 250 |
| A1-SS15-06 | MB5SZ8 | SELENIUM | 1.1 | J | 63 |
| A1-SS15-06 | MB5SZ8 | SILVER | 1.4 | -- | 110 |
| A1-SS15-06 | MB5SZ8 | VANADIUM | 6.7 | -- | 370 |
| A1-SS15-06 | MB5SZ8 | ZINC | 8.7 | J | 1500 |
| A1-SS15-12 | MB5SZ9 | ALUMINUM | 437 | -- | NA |
| A1-SS15-12 | MB5SZ9 | ANTIMONY | 21.5 | J | 14 |
| A1-SS15-12 | MB5SZ9 | ARSENIC | 13.9 | J | 20 |
| A1-SS15-12 | MB5SZ9 | CHROMIUM | 4.8 | -- | 240 |
| A1-SS15-12 | MB5SZ9 | COPPER | 20.9 | -- | 600 |
| A1-SS15-12 | MB5SZ9 | IRON | 5980 | -- | NA |
| A1-SS15-12 | MB5SZ9 | LEAD | 179 | J | 400 |
| A1-SS15-12 | MB5SZ9 | MAGNESIUM | 38.9 | J | NA |
| A1-SS15-12 | MB5SZ9 | MANGANESE | 7.3 | -- | NA |
| A1-SS15-12 | MB5SZ9 | NICKEL | 0.7 | J | 250 |
| A1-SS15-12 | MB5SZ9 | SELENIUM | 0.91 | J | 63 |
| A1-SS15-12 | MB5SZ9 | SILVER | 1.3 | -- | 110 |
| A1-SS15-12 | MB5SZ9 | VANADIUM | 6.2 | -- | 370 |
| A1-SS15-12 | MB5SZ9 | ZINC | 11.4 | J | 1500 |
| A1-SS16-06 | MB5T00 | ALUMINUM | 1330 | -- | NA |
| A1-SS16-06 | MB5T00 | ARSENIC | 39.1 | J | 20 |
| A1-SS16-06 | MB5T00 | CHROMIUM | 6.9 | -- | 240 |
| A1-SS16-06 | MB5T00 | COPPER | 179 | -- | 600 |
| A1-SS16-06 | MB5T00 | IRON | 9470 | -- | NA |
| A1-SS16-06 | MB5T00 | LEAD | 94.5 | J | 400 |
| A1-SS16-06 | MB5T00 | MAGNESIUM | 65.2 | J | NA |
| A1-SS16-06 | MB5T00 | MANGANESE | 8.1 | -- | NA |
| A1-SS16-06 | MB5T00 | NICKEL | 3.8 | J | 250 |
| A1-SS16-06 | MB5T00 | POTASSIUM | 82.3 | J | NA |

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS16-06 | MB5T00 | SELENIUM | 0.95 | J | 63 |
| A1-SS16-06 | MB5T00 | SILVER | 0.86 | J | 110 |
| A1-SS16-06 | MB5T00 | VANADIUM | 12.6 | -- | 370 |
| A1-SS16-06 | MB5T00 | ZINC | 8.5 | J | 1500 |
| A1-SS16-12 | MB5T01 | ALUMINUM | 1530 | -- | NA |
| A1-SS16-12 | MB5T01 | ARSENIC | 11.7 | J | 20 |
| A1-SS16-12 | MB5T01 | BERYLLIUM | 0.15 | J | NA |
| A1-SS16-12 | MB5T01 | CHROMIUM | 5.2 | -- | 240 |
| A1-SS16-12 | MB5T01 | COPPER | 78.6 | -- | 600 |
| A1-SS16-12 | MB5T01 | IRON | 11300 | -- | NA |
| A1-SS16-12 | MB5T01 | LEAD | 25.7 | J | 400 |
| A1-SS16-12 | MB5T01 | MAGNESIUM | 72.1 | J | NA |
| A1-SS16-12 | MB5T01 | MANGANESE | 14.9 | -- | NA |
| A1-SS16-12 | MB5T01 | NICKEL | 1.8 | J | 250 |
| A1-SS16-12 | MB5T01 | POTASSIUM | 74 | J | NA |
| A1-SS16-12 | MB5T01 | SELENIUM | 0.96 | J | 63 |
| A1-SS16-12 | MB5T01 | SILVER | 0.39 | J | 110 |
| A1-SS16-12 | MB5T01 | VANADIUM | 13.2 | -- | 370 |
| A1-SS16-12 | MB5T01 | ZINC | 6.8 | J | 1500 |
| A1-SS17-06 | MB5T02 | ALUMINUM | 1760 | -- | NA |
| A1-SS17-06 | MB5T02 | ARSENIC | 3 | J | 20 |
| A1-SS17-06 | MB5T02 | CHROMIUM | 7.1 | -- | 240 |
| A1-SS17-06 | MB5T02 | COPPER | 4.3 | -- | 600 |
| A1-SS17-06 | MB5T02 | IRON | 11100 | -- | NA |
| A1-SS17-06 | MB5T02 | LEAD | 10.7 | J | 400 |
| A1-SS17-06 | MB5T02 | MAGNESIUM | 76.3 | J | NA |
| A1-SS17-06 | MB5T02 | MANGANESE | 15.2 | -- | NA |
| A1-SS17-06 | MB5T02 | NICKEL | 1 | J | 250 |
| A1-SS17-06 | MB5T02 | POTASSIUM | 39.7 | J | NA |
| A1-SS17-06 | MB5T02 | SELENIUM | 0.89 | J | 63 |
| A1-SS17-06 | MB5T02 | VANADIUM | 14.8 | -- | 370 |
| A1-SS17-12 | MB5T03 | ALUMINUM | 2180 | -- | NA |
| A1-SS17-12 | MB5T03 | ARSENIC | 5.2 | J | 20 |
| A1-SS17-12 | MB5T03 | BARIUM | 32.1 | -- | 700 |
| A1-SS17-12 | MB5T03 | CHROMIUM | 14.5 | -- | 240 |
| A1-SS17-12 | MB5T03 | COPPER | 7.3 | -- | 600 |
| A1-SS17-12 | MB5T03 | IRON | 16500 | -- | NA |
| A1-SS17-12 | MB5T03 | LEAD | 11.4 | J | 400 |
| A1-SS17-12 | MB5T03 | MAGNESIUM | 97.5 | J | NA |
| A1-SS17-12 | MB5T03 | MANGANESE | 43.5 | -- | NA |
| A1-SS17-12 | MB5T03 | NICKEL | 1.1 | J | 250 |
| A1-SS17-12 | MB5T03 | POTASSIUM | 96.2 | J | NA |
| A1-SS17-12 | MB5T03 | SELENIUM | 1.5 | J | 63 |
| A1-SS17-12 | MB5T03 | SILVER | 0.14 | J | 110 |
| A1-SS17-12 | MB5T03 | VANADIUM | 21 | -- | 370 |
| A1-SS17-12 | MB5T03 | ZINC | 8.8 | J | 1500 |
| A1-SS18-06 | MB5T04 | ALUMINUM | 2360 | -- | NA |
| A1-SS18-06 | MB5T04 | ARSENIC | 5.4 | J | 20 |
| A1-SS18-06 | MB5T04 | BARIUM | 30 | -- | 700 |
| A1-SS18-06 | MB5T04 | CALCIUM | 2940 | J | NA |



R2-0004390

# TABLE #2

## RARITAN BAY BEACH SAMPLING SITE

## CLP LAB INORGANICS SOIL SAMPLE SUMMARY

| Sample Location | CLP Sample ID | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria (mg/kg) |
|---|---|---|---|---|---|
| A1-SS18-06 | MB5T04 | CHROMIUM | 11.4 | -- | 240 |
| A1-SS18-06 | MB5T04 | COPPER | 31.6 | -- | 600 |
| A1-SS18-06 | MB5T04 | IRON | 5840 | -- | NA |
| A1-SS18-06 | MB5T04 | LEAD | 81.7 | J | 400 |
| A1-SS18-06 | MB5T04 | MAGNESIUM | 1110 | J | NA |
| A1-SS18-06 | MB5T04 | MANGANESE | 59.9 | J | NA |
| A1-SS18-06 | MB5T04 | NICKEL | 2.9 | J | 250 |
| A1-SS18-06 | MB5T04 | POTASSIUM | 87.3 | J | NA |
| A1-SS18-06 | MB5T04 | VANADIUM | 24.6 | -- | 370 |
| A1-SS18-06 | MB5T04 | ZINC | 16.1 | J | 1500 |
| A1-SS18-12 | MB5T05 | ALUMINUM | 1710 | -- | NA |
| A1-SS18-12 | MB5T05 | ARSENIC | 4.1 | J | 20 |
| A1-SS18-12 | MB5T05 | CALCIUM | 840 | J | NA |
| A1-SS18-12 | MB5T05 | CHROMIUM | 12.3 | -- | 240 |
| A1-SS18-12 | MB5T05 | COPPER | 22.2 | -- | 600 |
| A1-SS18-12 | MB5T05 | IRON | 6970 | -- | NA |
| A1-SS18-12 | MB5T05 | LEAD | 99.5 | J | 400 |
| A1-SS18-12 | MB5T05 | MAGNESIUM | 314 | J | NA |
| A1-SS18-12 | MB5T05 | MANGANESE | 14.3 | -- | NA |
| A1-SS18-12 | MB5T05 | NICKEL | 3.7 | J | 250 |
| A1-SS18-12 | MB5T05 | POTASSIUM | 35 | J | NA |
| A1-SS18-12 | MB5T05 | SELENIUM | 0.56 | J | 63 |
| A1-SS18-12 | MB5T05 | VANADIUM | 26.4 | -- | 370 |
| A1-SS18-12 | MB5T05 | ZINC | 19 | J | 1500 |
| A1-SS14-06 | MB5T06 | ALUMINUM | 4240 | -- | NA |
| A1-SS14-06 | MB5T06 | ARSENIC | 5.4 | J | 20 |
| A1-SS14-06 | MB5T06 | BARIUM | 28 | -- | 700 |
| A1-SS14-06 | MB5T06 | BERYLLIUM | 0.23 | J | NA |
| A1-SS14-06 | MB5T06 | CADMIUM | 0.11 | J | 39 |
| A1-SS14-06 | MB5T06 | CALCIUM | 1290 | J | NA |
| A1-SS14-06 | MB5T06 | CHROMIUM | 14.4 | -- | 240 |
| A1-SS14-06 | MB5T06 | COBALT | 0.65 | J | NA |
| A1-SS14-06 | MB5T06 | COPPER | 17.7 | -- | 600 |
| A1-SS14-06 | MB5T06 | IRON | 13900 | -- | NA |
| A1-SS14-06 | MB5T06 | LEAD | 69.5 | J | 400 |
| A1-SS14-06 | MB5T06 | MAGNESIUM | 995 | J | NA |
| A1-SS14-06 | MB5T06 | MANGANESE | 143 | -- | NA |
| A1-SS14-06 | MB5T06 | NICKEL | 5.7 | -- | 250 |
| A1-SS14-06 | MB5T06 | POTASSIUM | 672 | J | NA |
| A1-SS14-06 | MB5T06 | SELENIUM | 0.97 | J | 63 |
| A1-SS14-06 | MB5T06 | VANADIUM | 21.9 | -- | 370 |
| A1-SS14-06 | MB5T06 | ZINC | 36.6 | J | 1500 |
| RB-01 | MB5T07 | CALCIUM | 8260 | -- | NA |
| RB-01 | MB5T07 | MAGNESIUM | 2640 | J | NA |
| RB-01 | MB5T07 | POTASSIUM | 59.5 | J | NA |
| RB-01 | MB5T07 | SODIUM | 6870 | -- | NA |
| RB-01 | MB5T07 | ZINC | 13 | J | 1500 |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A6-SS213-06 | ARSENIC | 2.7 | -- | 20 | |
| A6-SS213-06 | CHROMIUM | 5.8 | -- | 240 | |
| A6-SS213-06 | LEAD | 2.3 | -- | 400 | |
| A6-SS142-06 | ARSENIC | 3.9 | -- | 20 | |
| A6-SS142-06 | CHROMIUM | 27 | -- | 240 | |
| A6-SS142-06 | COPPER | 1.5 | -- | 600 | |
| A6-SS142-06 | LEAD | 2.9 | -- | 400 | |
| A6-SD100-06 | ARSENIC | 2.6 | -- | 20 | |
| A6-SD100-06 | CHROMIUM | 3.9 | -- | 240 | |
| A6-SD100-06 | LEAD | 1.8 | -- | 400 | |
| A6-SD98-06 | ARSENIC | 2.4 | -- | 20 | |
| A6-SD98-06 | CHROMIUM | 4.6 | -- | 240 | |
| A6-SD98-06 | LEAD | 2.2 | -- | 400 | |
| A6-SS101-06 | ARSENIC | 2.3 | -- | 20 | |
| A6-SS101-06 | CHROMIUM | 4.5 | -- | 240 | |
| A6-SS101-06 | LEAD | 2.8 | -- | 400 | |
| A6-SD41-06 | ARSENIC | 6.8 | -- | 20 | |
| A6-SD41-06 | CHROMIUM | 12 | -- | 240 | |
| A6-SD41-06 | COPPER | 1.4 | -- | 600 | |
| A6-SD41-06 | LEAD | 7.6 | -- | 400 | |
| Z6-SD41-06 | ARSENIC | 6.8 | -- | 20 | |
| Z6-SD41-06 | CHROMIUM | 23 | -- | 240 | |
| Z6-SD41-06 | COPPER | 4.1 | -- | 600 | |
| Z6-SD41-06 | LEAD | 12 | -- | 400 | |
| A6-SS41-06 | ARSENIC | 3.6 | -- | 20 | |
| A6-SS41-06 | CHROMIUM | 7 | -- | 240 | |
| A6-SS41-06 | COPPER | 2.9 | -- | 600 | |
| A6-SS41-06 | LEAD | 35 | -- | 400 | |
| A6-SS37-02 | ARSENIC | 7.4 | -- | 20 | |
| A6-SS37-02 | CHROMIUM | 15 | -- | 240 | |
| A6-SS37-02 | COPPER | 5.5 | -- | 600 | |
| A6-SS37-02 | LEAD | 40 | -- | 400 | |
| A6-SS210-02 | ARSENIC | 2.5 | -- | 20 | |
| A6-SS210-02 | CHROMIUM | 5.5 | -- | 240 | |
| A6-SS210-02 | LEAD | 2.5 | -- | 400 | |
| A6-SS211-02 | ARSENIC | 2.7 | -- | 20 | |
| A6-SS211-02 | CHROMIUM | 6 | -- | 240 | |
| A6-SS211-02 | COPPER | 0.99 | -- | 600 | |
| A6-SS211-02 | LEAD | 2.7 | -- | 400 | |
| A6-SS44-02 | ARSENIC | 4.1 | -- | 20 | |
| A6-SS44-02 | CHROMIUM | 10 | -- | 240 | |
| A6-SS44-02 | COPPER | 2.1 | -- | 600 | |
| A6-SS44-02 | LEAD | 20 | -- | 400 | |
| A6-SS46-02 | ARSENIC | 2.1 | -- | 20 | |
| A6-SS46-02 | CHROMIUM | 3.5 | -- | 240 | |
| A6-SS46-02 | LEAD | 2.8 | -- | 400 | |
| A6-SS88-02 | ARSENIC | 2.6 | -- | 20 | |
| A6-SS88-02 | CHROMIUM | 4.2 | -- | 240 | |
| A6-SS88-02 | COPPER | 1.6 | -- | 600 | |
| A6-SS88-02 | LEAD | 6.4 | -- | 400 | |
| A6-SDB47-02 | ARSENIC | 3.1 | -- | 20 | |
| A6-SDB47-02 | CHROMIUM | 6.5 | -- | 240 | |
| A6-SDB47-02 | COPPER | 3.6 | -- | 600 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A6-SDB47-02 | LEAD | 27 | -- | 400 | |
| A6-SDB26-02 | ARSENIC | 3.6 | -- | 20 | |
| A6-SDB26-02 | CHROMIUM | 5.2 | -- | 240 | |
| A6-SDB26-02 | COPPER | 8.7 | -- | 600 | |
| A6-SDB26-02 | LEAD | 40 | -- | 400 | |
| A6-SDB35-02 | ARSENIC | 2.8 | -- | 20 | |
| A6-SDB35-02 | CHROMIUM | 8 | -- | 240 | |
| A6-SDB35-02 | COPPER | 4.2 | -- | 600 | |
| A6-SDB35-02 | LEAD | 44 | -- | 400 | |
| A6-SDB35-02 | ANTIMONY | 2.6 | -- | 14 | |
| A6-SDB27-06 | ARSENIC | 4.5 | -- | 20 | |
| A6-SDB27-06 | CHROMIUM | 9.8 | -- | 240 | |
| A6-SDB27-06 | COPPER | 4.5 | -- | 600 | |
| A6-SDB27-06 | LEAD | 37 | -- | 400 | |
| A6-SD112-02 | ARSENIC | 4.7 | -- | 20 | |
| A6-SD112-02 | CHROMIUM | 9.3 | -- | 240 | |
| A6-SD112-02 | COPPER | 2.2 | -- | 600 | |
| A6-SD112-02 | LEAD | 13 | -- | 400 | |
| A6-SD38-02 | ARSENIC | 2.8 | -- | 20 | |
| A6-SD38-02 | CHROMIUM | 6.7 | -- | 240 | |
| A6-SD38-02 | COPPER | 1.3 | -- | 600 | |
| A6-SD38-02 | LEAD | 12 | -- | 400 | |
| A6-SD48-02 | ARSENIC | 2 | -- | 20 | |
| A6-SD48-02 | CHROMIUM | 3.1 | -- | 240 | |
| A6-SD48-02 | COPPER | 1.7 | -- | 600 | |
| A6-SD48-02 | LEAD | 13 | -- | 400 | |
| A6-SDB43-02 | ARSENIC | 3.3 | -- | 20 | |
| A6-SDB43-02 | CHROMIUM | 6.2 | -- | 240 | |
| A6-SDB43-02 | COPPER | 2.9 | -- | 600 | |
| A6-SDB43-02 | LEAD | 17 | -- | 400 | |
| A6-SD106-02 | ARSENIC | 4.5 | -- | 20 | |
| A6-SD106-02 | CHROMIUM | 4.7 | -- | 240 | |
| A6-SD106-02 | COPPER | 2.7 | -- | 600 | |
| A6-SD106-02 | LEAD | 16 | -- | 400 | |
| A6-SD95-02 | ARSENIC | 2.4 | -- | 20 | |
| A6-SD95-02 | CHROMIUM | 5.2 | -- | 240 | |
| A6-SD95-02 | LEAD | 3 | -- | 400 | |
| A6-SS212-02 | ARSENIC | 2.7 | -- | 20 | |
| A6-SS212-02 | CHROMIUM | 4.7 | -- | 240 | |
| A6-SS212-02 | COPPER | 1.8 | -- | 600 | |
| A6-SS212-02 | LEAD | 2 | -- | 400 | |
| Z6-SS212-02 | ARSENIC | 2.2 | -- | 20 | |
| Z6-SS212-02 | CHROMIUM | 5 | -- | 240 | |
| Z6-SS212-02 | COPPER | 1.5 | -- | 600 | |
| Z6-SS212-02 | LEAD | 1.8 | -- | 400 | |
| A6-SS37-06 | ARSENIC | 20 | -- | 20 | |
| A6-SS37-06 | CHROMIUM | 34 | -- | 240 | |
| A6-SS37-06 | COPPER | 7.1 | -- | 600 | |
| A6-SS37-06 | LEAD | 42 | -- | 400 | |
| A6-SS37-06 | ANTIMONY | 4.3 | -- | 14 | |
| A6-SS37-12 | ARSENIC | 9.2 | -- | 20 | |
| A6-SS37-12 | CHROMIUM | 23 | -- | 240 | |
| A6-SS37-12 | COPPER | 12 | -- | 600 | |

# TABLE #3

## RARITAN BAY BEACH SAMPLING SITE

## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A6-SS37-12 | LEAD | 34 | -- | 400 | |
| A6-SS37-12 | ANTIMONY | 2.6 | -- | 14 | |
| A6-SS37-24 | ARSENIC | 5 | -- | 20 | |
| A6-SS37-24 | CHROMIUM | 12 | -- | 240 | |
| A6-SS37-24 | COPPER | 6.2 | -- | 600 | |
| A6-SS37-24 | LEAD | 40 | -- | 400 | |
| A6-SS210-06 | ARSENIC | 1.9 | -- | 20 | |
| A6-SS210-06 | CHROMIUM | 4.8 | -- | 240 | |
| A6-SS210-06 | LEAD | 2.1 | -- | 400 | |
| A6-SS210-12 | ARSENIC | 2.6 | -- | 20 | |
| A6-SS210-12 | CHROMIUM | 5.7 | -- | 240 | |
| A6-SS210-12 | LEAD | 2.1 | -- | 400 | |
| A6-SS210-24 | ARSENIC | 2.4 | -- | 20 | |
| A6-SS210-24 | CHROMIUM | 5.7 | -- | 240 | |
| A6-SS210-24 | LEAD | 2.2 | -- | 400 | |
| A6-SS211-06 | ARSENIC | 3.5 | -- | 20 | |
| A6-SS211-06 | CHROMIUM | 13 | -- | 240 | |
| A6-SS211-06 | LEAD | 2.5 | -- | 400 | |
| A6-SS211-12 | ARSENIC | 3.1 | -- | 20 | |
| A6-SS211-12 | CHROMIUM | 6.9 | -- | 240 | |
| A6-SS211-12 | LEAD | 2.4 | -- | 400 | |
| A6-SS211-24 | ARSENIC | 2.8 | -- | 20 | |
| A6-SS211-24 | CHROMIUM | 6 | -- | 240 | |
| A6-SS211-24 | LEAD | 2.4 | -- | 400 | |
| A6-SS44-06 | ARSENIC | 16 | -- | 20 | |
| A6-SS44-06 | CHROMIUM | 7.9 | -- | 240 | |
| A6-SS44-06 | COPPER | 2.3 | -- | 600 | |
| A6-SS44-06 | LEAD | 26 | -- | 400 | |
| A6-SS44-06 | ANTIMONY | 2 | -- | 14 | |
| A6-SS44-12 | ARSENIC | 3.4 | -- | 20 | |
| A6-SS44-12 | CHROMIUM | 5.8 | -- | 240 | |
| A6-SS44-12 | COPPER | 17 | -- | 600 | |
| A6-SS44-12 | LEAD | 71 | -- | 400 | |
| A6-SS44-12 | ANTIMONY | 3.2 | -- | 14 | |
| A6-SS44-24 | ARSENIC | 2.9 | -- | 20 | |
| A6-SS44-24 | CHROMIUM | 4.1 | -- | 240 | |
| A6-SS44-24 | COPPER | 6.3 | -- | 600 | |
| A6-SS44-24 | LEAD | 65 | -- | 400 | |
| A6-SS46-06 | ARSENIC | 2 | -- | 20 | |
| A6-SS46-06 | CHROMIUM | 5.8 | -- | 240 | |
| A6-SS46-06 | COPPER | 7 | -- | 600 | |
| A6-SS46-06 | LEAD | 3.5 | -- | 400 | |
| A6-SS46-12 | ARSENIC | 1.5 | -- | 20 | |
| A6-SS46-12 | CHROMIUM | 4 | -- | 240 | |
| A6-SS46-12 | LEAD | 3.3 | -- | 400 | |
| A6-SS46-24 | ARSENIC | 1.7 | -- | 20 | |
| A6-SS46-24 | CHROMIUM | 4 | -- | 240 | |
| A6-SS46-24 | LEAD | 3.2 | -- | 400 | |
| A6-SS88-06 | ARSENIC | 2.1 | -- | 20 | |
| A6-SS88-06 | CHROMIUM | 5.9 | -- | 240 | |
| A6-SS88-06 | COPPER | 1.7 | -- | 600 | |
| A6-SS88-06 | LEAD | 11 | -- | 400 | |
| A6-SS88-12 | ARSENIC | 7.3 | -- | 20 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A6-SS88-12 | CHROMIUM | 15 | -- | 240 | |
| A6-SS88-12 | COPPER | 3.6 | -- | 600 | |
| A6-SS88-12 | LEAD | 11 | -- | 400 | |
| A6-SS88-24 | ARSENIC | 2.5 | -- | 20 | |
| A6-SS88-24 | CHROMIUM | 100 | -- | 240 | |
| A6-SS88-24 | COPPER | 3.4 | -- | 600 | |
| A6-SS88-24 | LEAD | 4.8 | -- | 400 | |
| A6-SDB47-06 | ARSENIC | 1.5 | -- | 20 | |
| A6-SDB47-06 | CHROMIUM | 230 | -- | 240 | |
| A6-SDB47-06 | COPPER | 7.9 | -- | 600 | |
| A6-SDB47-06 | LEAD | 12 | -- | 400 | |
| A6-SDB47-06 | ANTIMONY | 3.3 | -- | 14 | |
| A6-SDB47-12 | ARSENIC | 2.7 | -- | 20 | |
| A6-SDB47-12 | CHROMIUM | 6.8 | -- | 240 | |
| A6-SDB47-12 | COPPER | 3.5 | -- | 600 | |
| A6-SDB47-12 | LEAD | 31 | -- | 400 | |
| A6-SDB47-24 | ARSENIC | 2.7 | -- | 20 | |
| A6-SDB47-24 | CHROMIUM | 4.7 | -- | 240 | |
| A6-SDB47-24 | LEAD | 5.6 | -- | 400 | |
| A6-SDB26-06 | ARSENIC | 3.3 | -- | 20 | |
| A6-SDB26-06 | CHROMIUM | 5.7 | -- | 240 | |
| A6-SDB26-06 | COPPER | 4.9 | -- | 600 | |
| A6-SDB26-06 | LEAD | 46 | -- | 400 | |
| A6-SDB26-12 | ARSENIC | 3.9 | -- | 20 | |
| A6-SDB26-12 | CHROMIUM | 8 | -- | 240 | |
| A6-SDB26-12 | COPPER | 8.9 | -- | 600 | |
| A6-SDB26-12 | LEAD | 57 | -- | 400 | |
| A6-SDB26-12 | ANTIMONY | 2.4 | -- | 14 | |
| A6-SDB26-24 | ARSENIC | 2.2 | -- | 20 | |
| A6-SDB26-24 | CHROMIUM | 5.1 | -- | 240 | |
| A6-SDB26-24 | COPPER | 2.6 | -- | 600 | |
| A6-SDB26-24 | LEAD | 6.3 | -- | 400 | |
| A6-SDB35-06 | ARSENIC | 4 | -- | 20 | |
| A6-SDB35-06 | CHROMIUM | 9 | -- | 240 | |
| A6-SDB35-06 | COPPER | 1.7 | -- | 600 | |
| A6-SDB35-06 | LEAD | 28 | -- | 400 | |
| A6-SDB35-12 | ARSENIC | 3.5 | -- | 20 | |
| A6-SDB35-12 | CHROMIUM | 7.8 | -- | 240 | |
| A6-SDB35-12 | COPPER | 6.6 | -- | 600 | |
| A6-SDB35-12 | LEAD | 77 | -- | 400 | |
| A6-SDB35-12 | ANTIMONY | 2.7 | -- | 14 | |
| A6-SDB35-24 | ARSENIC | 1.7 | -- | 20 | |
| A6-SDB35-24 | CHROMIUM | 4.6 | -- | 240 | |
| A6-SDB35-24 | LEAD | 14 | -- | 400 | |
| A6-SD112-06 | ARSENIC | 8.6 | -- | 20 | |
| A6-SD112-06 | CHROMIUM | 16 | -- | 240 | |
| A6-SD112-06 | COPPER | 2.4 | -- | 600 | |
| A6-SD112-06 | LEAD | 17 | -- | 400 | |
| A6-SD112-12 | ARSENIC | 2.7 | -- | 20 | |
| A6-SD112-12 | CHROMIUM | 4.8 | -- | 240 | |
| A6-SD112-12 | COPPER | 4.9 | -- | 600 | |
| A6-SD112-12 | LEAD | 9.8 | -- | 400 | |
| A6-SD112-24 | ARSENIC | 2.5 | -- | 20 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A6-SD112-24 | CHROMIUM | 8.7 | -- | 240 | |
| A6-SD112-24 | LEAD | 5.6 | -- | 400 | |
| A6-SD38-06 | ARSENIC | 7.4 | -- | 20 | |
| A6-SD38-06 | CHROMIUM | 44 | -- | 240 | |
| A6-SD38-06 | COPPER | 4.8 | -- | 600 | |
| A6-SD38-06 | LEAD | 12 | -- | 400 | |
| A6-SD38-12 | ARSENIC | 2 | -- | 20 | |
| A6-SD38-12 | CHROMIUM | 5.1 | -- | 240 | |
| A6-SD38-12 | LEAD | 7.1 | -- | 400 | |
| A6-SD38-24 | ARSENIC | 5.7 | -- | 20 | |
| A6-SD38-24 | CHROMIUM | 17 | -- | 240 | |
| A6-SD38-24 | COPPER | 1.8 | -- | 600 | |
| A6-SD38-24 | LEAD | 17 | -- | 400 | |
| A6-SD48-06 | ARSENIC | 3.4 | -- | 20 | |
| A6-SD48-06 | CHROMIUM | 5.6 | -- | 240 | |
| A6-SD48-06 | COPPER | 2.9 | -- | 600 | |
| A6-SD48-06 | LEAD | 24 | -- | 400 | |
| A6-SD48-12 | ARSENIC | 4.7 | -- | 20 | |
| A6-SD48-12 | CHROMIUM | 11 | -- | 240 | |
| A6-SD48-12 | COPPER | 5.9 | -- | 600 | |
| A6-SD48-12 | LEAD | 38 | -- | 400 | |
| A6-SD48-24 | ARSENIC | 2.7 | -- | 20 | |
| A6-SD48-24 | CHROMIUM | 7.9 | -- | 240 | |
| A6-SD48-24 | LEAD | 7 | -- | 400 | |
| A6-SDB43-06 | ARSENIC | 3 | -- | 20 | |
| A6-SDB43-06 | CHROMIUM | 8.9 | -- | 240 | |
| A6-SDB43-06 | COPPER | 2.3 | -- | 600 | |
| A6-SDB43-06 | LEAD | 17 | -- | 400 | |
| A6-SDB43-12 | ARSENIC | 6.6 | -- | 20 | |
| A6-SDB43-12 | CHROMIUM | 14 | -- | 240 | |
| A6-SDB43-12 | COPPER | 7.3 | -- | 600 | |
| A6-SDB43-12 | LEAD | 21 | -- | 400 | |
| A6-SDB43-24 | ARSENIC | 12 | -- | 20 | |
| A6-SDB43-24 | CHROMIUM | 19 | -- | 240 | |
| A6-SDB43-24 | COPPER | 28 | -- | 600 | |
| A6-SDB43-24 | LEAD | 30 | -- | 400 | |
| A6-SD106-06 | ARSENIC | 2.8 | -- | 20 | |
| A6-SD106-06 | CHROMIUM | 6 | -- | 240 | |
| A6-SD106-06 | COPPER | 5.7 | -- | 600 | |
| A6-SD106-06 | LEAD | 38 | -- | 400 | |
| A6-SD106-12 | ARSENIC | 2.6 | -- | 20 | |
| A6-SD106-12 | CHROMIUM | 7.1 | -- | 240 | |
| A6-SD106-12 | LEAD | 4.9 | -- | 400 | |
| A6-SD106-24 | ARSENIC | 6.5 | -- | 20 | |
| A6-SD106-24 | CHROMIUM | 13 | -- | 240 | |
| A6-SD106-24 | COPPER | 11 | -- | 600 | |
| A6-SD106-24 | LEAD | 17 | -- | 400 | |
| A6-SD95-06 | ARSENIC | 5.9 | -- | 20 | |
| A6-SD95-06 | CHROMIUM | 26 | -- | 240 | |
| A6-SD95-06 | LEAD | 6.3 | -- | 400 | |
| A6-SD95-12 | ARSENIC | 4.1 | -- | 20 | |
| A6-SD95-12 | CHROMIUM | 9.5 | -- | 240 | |
| A6-SD95-12 | COPPER | 2.3 | -- | 600 | |



R2-0004396

# TABLE #3

## RARITAN BAY BEACH SAMPLING SITE

## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A6-SD95-12 | LEAD | 5.3 | -- | 400 | |
| A6-SD95-24 | ARSENIC | 1.8 | -- | 20 | |
| A6-SD95-24 | CHROMIUM | 17 | -- | 240 | |
| A6-SD95-24 | LEAD | 5.6 | -- | 400 | |
| A6-SS212-06 | ARSENIC | 7 | -- | 20 | |
| A6-SS212-06 | CHROMIUM | 7.1 | -- | 240 | |
| A6-SS212-06 | COPPER | 1.3 | -- | 600 | |
| A6-SS212-06 | LEAD | 2.7 | -- | 400 | |
| A6-SS212-12 | ARSENIC | 2.6 | -- | 20 | |
| A6-SS212-12 | CHROMIUM | 9.2 | -- | 240 | |
| A6-SS212-12 | COPPER | 1.1 | -- | 600 | |
| A6-SS212-12 | LEAD | 2.7 | -- | 400 | |
| A6-SS212-24 | ARSENIC | 2.3 | -- | 20 | |
| A6-SS212-24 | CHROMIUM | 7.8 | -- | 240 | |
| A6-SS212-24 | LEAD | 2.2 | -- | 400 | |
| Z6-SS212-24 | ARSENIC | 2.4 | -- | 20 | |
| Z6-SS212-24 | CHROMIUM | 6.1 | -- | 240 | |
| Z6-SS212-24 | LEAD | 2 | -- | 400 | |
| A5-SS107-02 | ARSENIC | 2.3 | -- | 20 | |
| A5-SS107-02 | CHROMIUM | 3.9 | -- | 240 | |
| A5-SS107-02 | COPPER | 2 | -- | 600 | |
| A5-SS107-02 | LEAD | 20 | -- | 400 | |
| A5-SS107-06 | ARSENIC | 3.2 | -- | 20 | |
| A5-SS107-06 | CHROMIUM | 9 | -- | 240 | |
| A5-SS107-06 | COPPER | 16 | -- | 600 | |
| A5-SS107-06 | LEAD | 24 | -- | 400 | |
| A5-SS107-12 | ARSENIC | 5.4 | -- | 20 | |
| A5-SS107-12 | CHROMIUM | 15 | -- | 240 | |
| A5-SS107-12 | COPPER | 3.9 | -- | 600 | |
| A5-SS107-12 | LEAD | 25 | -- | 400 | |
| A5-SS107-24 | ARSENIC | 5.2 | -- | 20 | |
| A5-SS107-24 | CHROMIUM | 9.6 | -- | 240 | |
| A5-SS107-24 | COPPER | 4.5 | -- | 600 | |
| A5-SS107-24 | LEAD | 35 | -- | 400 | |
| A5-SS109-02 | ARSENIC | 3.1 | -- | 20 | |
| A5-SS109-02 | CHROMIUM | 6.7 | -- | 240 | |
| A5-SS109-02 | COPPER | 7.2 | -- | 600 | |
| A5-SS109-02 | LEAD | 25 | -- | 400 | |
| A5-SS109-06 | ARSENIC | 11 | -- | 20 | |
| A5-SS109-06 | CHROMIUM | 20 | -- | 240 | |
| A5-SS109-06 | COPPER | 6.3 | -- | 600 | |
| A5-SS109-06 | LEAD | 25 | -- | 400 | |
| A5-SS109-12 | ARSENIC | 6.3 | -- | 20 | |
| A5-SS109-12 | CHROMIUM | 36 | -- | 240 | |
| A5-SS109-12 | COPPER | 18 | -- | 600 | |
| A5-SS109-12 | LEAD | 36 | -- | 400 | |
| A5-SS109-12 | ANTIMONY | 2 | -- | 14 | |
| A5-SS109-24 | ARSENIC | 11 | -- | 20 | |
| A5-SS109-24 | CHROMIUM | 38 | -- | 240 | |
| A5-SS109-24 | COPPER | 10 | -- | 600 | |
| A5-SS109-24 | LEAD | 26 | -- | 400 | |
| A5-SS111-02 | ARSENIC | 3 | -- | 20 | |
| A5-SS111-02 | CHROMIUM | 5.8 | -- | 240 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SS111-02 | COPPER | 2.4 | -- | 600 | |
| A5-SS111-02 | LEAD | 19 | -- | 400 | |
| A5-SS111-06 | ARSENIC | 12 | -- | 20 | |
| A5-SS111-06 | CHROMIUM | 23 | -- | 240 | |
| A5-SS111-06 | COPPER | 23 | -- | 600 | |
| A5-SS111-06 | LEAD | 52 | -- | 400 | |
| A5-SS111-06 | ANTIMONY | 6.7 | -- | 14 | |
| A5-SS111-12 | ARSENIC | 9.6 | -- | 20 | |
| A5-SS111-12 | CHROMIUM | 17 | -- | 240 | |
| A5-SS111-12 | COPPER | 10 | -- | 600 | |
| A5-SS111-12 | LEAD | 30 | -- | 400 | |
| A5-SS111-24 | ARSENIC | 11 | -- | 20 | |
| A5-SS111-24 | CHROMIUM | 27 | -- | 240 | |
| A5-SS111-24 | COPPER | 26 | -- | 600 | |
| A5-SS111-24 | LEAD | 41 | -- | 400 | |
| A5-SS112-02 | ARSENIC | 7.3 | -- | 20 | |
| A5-SS112-02 | CHROMIUM | 13 | -- | 240 | |
| A5-SS112-02 | COPPER | 5.7 | -- | 600 | |
| A5-SS112-02 | LEAD | 30 | -- | 400 | |
| A5-SS112-06 | ARSENIC | 9.9 | -- | 20 | |
| A5-SS112-06 | CHROMIUM | 8.6 | -- | 240 | |
| A5-SS112-06 | COPPER | 5.5 | -- | 600 | |
| A5-SS112-06 | LEAD | 36 | -- | 400 | |
| A5-SS112-06 | ANTIMONY | 2.1 | -- | 14 | |
| A5-SS112-12 | ARSENIC | 9.5 | -- | 20 | |
| A5-SS112-12 | CHROMIUM | 47 | -- | 240 | |
| A5-SS112-12 | COPPER | 8 | -- | 600 | |
| A5-SS112-12 | LEAD | 32 | -- | 400 | |
| A5-SS112-24 | ARSENIC | 12 | -- | 20 | |
| A5-SS112-24 | CHROMIUM | 44 | -- | 240 | |
| A5-SS112-24 | COPPER | 7.1 | -- | 600 | |
| A5-SS112-24 | LEAD | 42 | -- | 400 | |
| A5-SS140-06 | ARSENIC | 3.5 | -- | 20 | |
| A5-SS140-06 | CHROMIUM | 6.1 | -- | 240 | |
| A5-SS140-06 | COPPER | 2 | -- | 600 | |
| A5-SS140-06 | LEAD | 4 | -- | 400 | |
| A5-SS139-06 | ARSENIC | 8.4 | -- | 20 | |
| A5-SS139-06 | CHROMIUM | 8.9 | -- | 240 | |
| A5-SS139-06 | COPPER | 2.4 | -- | 600 | |
| A5-SS139-06 | LEAD | 2.7 | -- | 400 | |
| A5-SDB22-06 | ARSENIC | 2.7 | -- | 20 | |
| A5-SDB22-06 | CHROMIUM | 4.5 | -- | 240 | |
| A5-SDB22-06 | COPPER | 8.9 | -- | 600 | |
| A5-SDB22-06 | LEAD | 32 | -- | 400 | |
| A5-SS113-06 | ARSENIC | 6.4 | -- | 20 | |
| A5-SS113-06 | CHROMIUM | 11 | -- | 240 | |
| A5-SS113-06 | COPPER | 12 | -- | 600 | |
| A5-SS113-06 | LEAD | 30 | -- | 400 | |
| Z5-SS113-06 | ARSENIC | 5.3 | -- | 20 | |
| Z5-SS113-06 | CHROMIUM | 9.1 | -- | 240 | |
| Z5-SS113-06 | COPPER | 4.9 | -- | 600 | |
| Z5-SS113-06 | LEAD | 29 | -- | 400 | |
| A5-SD127-06 | ARSENIC | 14 | -- | 20 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SD127-06 | CHROMIUM | 29 | -- | 240 | |
| A5-SD127-06 | COPPER | 7.7 | -- | 600 | |
| A5-SD127-06 | LEAD | 46 | -- | 400 | |
| A5-SD127-06 | ANTIMONY | 1.6 | -- | 14 | |
| A5-SD129-06 | ARSENIC | 7.4 | -- | 20 | |
| A5-SD129-06 | CHROMIUM | 17 | -- | 240 | |
| A5-SD129-06 | COPPER | 5.8 | -- | 600 | |
| A5-SD129-06 | LEAD | 49 | -- | 400 | |
| A5-SS132-06 | ARSENIC | 3.7 | -- | 20 | |
| A5-SS132-06 | CHROMIUM | 8.9 | -- | 240 | |
| A5-SS132-06 | COPPER | 4.8 | -- | 600 | |
| A5-SS132-06 | LEAD | 30 | -- | 400 | |
| A5-SS211-06 | ARSENIC | 5.2 | -- | 20 | |
| A5-SS211-06 | CHROMIUM | 9.4 | -- | 240 | |
| A5-SS211-06 | COPPER | 5 | -- | 600 | |
| A5-SS211-06 | LEAD | 28 | -- | 400 | |
| A5-SD123-06 | ARSENIC | 5.6 | -- | 20 | |
| A5-SD123-06 | CHROMIUM | 11 | -- | 240 | |
| A5-SD123-06 | COPPER | 4.5 | -- | 600 | |
| A5-SD123-06 | LEAD | 26 | -- | 400 | |
| A5-SS115-06 | ARSENIC | 8.3 | -- | 20 | |
| A5-SS115-06 | CHROMIUM | 10 | -- | 240 | |
| A5-SS115-06 | COPPER | 6.9 | -- | 600 | |
| A5-SS115-06 | LEAD | 62 | -- | 400 | |
| A5-SS115-06 | ANTIMONY | 3.9 | -- | 14 | |
| A5-SS123-06 | ARSENIC | 8.3 | -- | 20 | |
| A5-SS123-06 | CHROMIUM | 17 | -- | 240 | |
| A5-SS123-06 | COPPER | 8.5 | -- | 600 | |
| A5-SS123-06 | LEAD | 40 | -- | 400 | |
| A5-SS123-06 | ANTIMONY | 1.7 | -- | 14 | |
| A5-SS117-06 | ARSENIC | 4.6 | -- | 20 | |
| A5-SS117-06 | CHROMIUM | 9.5 | -- | 240 | |
| A5-SS117-06 | COPPER | 3.8 | -- | 600 | |
| A5-SS117-06 | LEAD | 24 | -- | 400 | |
| A5-SS119-06 | ARSENIC | 6.9 | -- | 20 | |
| A5-SS119-06 | CHROMIUM | 11 | -- | 240 | |
| A5-SS119-06 | COPPER | 20 | -- | 600 | |
| A5-SS119-06 | LEAD | 93 | -- | 400 | |
| A5-SS119-06 | ANTIMONY | 3.4 | -- | 14 | |
| A5-SD147-06 | ARSENIC | 18 | -- | 20 | |
| A5-SD147-06 | CHROMIUM | 15 | -- | 240 | |
| A5-SD147-06 | COPPER | 10 | -- | 600 | |
| A5-SD147-06 | LEAD | 200 | -- | 400 | |
| A5-SD147-06 | ANTIMONY | 14 | -- | 14 | |
| A5-SS213-06 | ARSENIC | 29 | -- | 20 | |
| A5-SS213-06 | CHROMIUM | 18 | -- | 240 | |
| A5-SS213-06 | COPPER | 35 | -- | 600 | |
| A5-SS213-06 | LEAD | 800 | -- | 400 | |
| A5-SS213-06 | ANTIMONY | 210 | -- | 14 | |
| A5-SS33-06 | ARSENIC | 28 | -- | 20 | |
| A5-SS33-06 | CHROMIUM | 11 | -- | 240 | |
| A5-SS33-06 | COPPER | 16 | -- | 600 | |
| A5-SS33-06 | LEAD | 320 | -- | 400 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SS33-06 | ANTIMONY | 35 | -- | 14 | |
| A5-SS159-06 | ARSENIC | 28 | -- | 20 | |
| A5-SS159-06 | CHROMIUM | 9.6 | -- | 240 | |
| A5-SS159-06 | COPPER | 17 | -- | 600 | |
| A5-SS159-06 | LEAD | 240 | -- | 400 | |
| A5-SS159-06 | ANTIMONY | 55 | -- | 14 | |
| A5-SS160-06 | ARSENIC | 19 | -- | 20 | |
| A5-SS160-06 | CHROMIUM | 9.4 | -- | 240 | |
| A5-SS160-06 | COPPER | 21 | -- | 600 | |
| A5-SS160-06 | LEAD | 400 | -- | 400 | |
| A5-SS160-06 | ANTIMONY | 21 | -- | 14 | |
| A5-SS29-06 | ARSENIC | 20 | -- | 20 | |
| A5-SS29-06 | CHROMIUM | 6.8 | -- | 240 | |
| A5-SS29-06 | COPPER | 18 | -- | 600 | |
| A5-SS29-06 | LEAD | 240 | -- | 400 | |
| A5-SS29-06 | ANTIMONY | 24 | -- | 14 | |
| A5-SS125-02 | ARSENIC | 5.8 | -- | 20 | |
| A5-SS125-02 | CHROMIUM | 12 | -- | 240 | |
| A5-SS125-02 | COPPER | 4.5 | -- | 600 | |
| A5-SS125-02 | LEAD | 32 | -- | 400 | |
| A5-SS125-06 | ARSENIC | 6.2 | -- | 20 | |
| A5-SS125-06 | CHROMIUM | 13 | -- | 240 | |
| A5-SS125-06 | COPPER | 28 | -- | 600 | |
| A5-SS125-06 | LEAD | 32 | -- | 400 | |
| A5-SS125-12 | ARSENIC | 5.4 | -- | 20 | |
| A5-SS125-12 | CHROMIUM | 12 | -- | 240 | |
| A5-SS125-12 | COPPER | 7.6 | -- | 600 | |
| A5-SS125-12 | LEAD | 46 | -- | 400 | |
| A5-SS125-12 | ANTIMONY | 1.6 | -- | 14 | |
| A5-SS125-24 | ARSENIC | 3.4 | -- | 20 | |
| A5-SS125-24 | CHROMIUM | 9.8 | -- | 240 | |
| A5-SS125-24 | COPPER | 4.6 | -- | 600 | |
| A5-SS125-24 | LEAD | 27 | -- | 400 | |
| A5-SDB20-02 | ARSENIC | 2 | -- | 20 | |
| A5-SDB20-02 | CHROMIUM | 4.8 | -- | 240 | |
| A5-SDB20-02 | COPPER | 4.4 | -- | 600 | |
| A5-SDB20-02 | LEAD | 32 | -- | 400 | |
| A5-SDB20-06 | ARSENIC | 2.1 | -- | 20 | |
| A5-SDB20-06 | CHROMIUM | 9.7 | -- | 240 | |
| A5-SDB20-06 | COPPER | 5 | -- | 600 | |
| A5-SDB20-06 | LEAD | 28 | -- | 400 | |
| A5-SDB20-12 | ARSENIC | 0.9 | -- | 20 | |
| A5-SDB20-12 | CHROMIUM | 3.5 | -- | 240 | |
| A5-SDB20-12 | COPPER | 1.9 | -- | 600 | |
| A5-SDB20-12 | LEAD | 6.3 | -- | 400 | |
| A5-SDB20-24 | ARSENIC | 4.9 | -- | 20 | |
| A5-SDB20-24 | CHROMIUM | 12 | -- | 240 | |
| A5-SDB20-24 | COPPER | 7.9 | -- | 600 | |
| A5-SDB20-24 | LEAD | 7.5 | -- | 400 | |
| Z5-SDB20-24 | ARSENIC | 6.2 | -- | 20 | |
| Z5-SDB20-24 | CHROMIUM | 12 | -- | 240 | |
| Z5-SDB20-24 | COPPER | 10 | -- | 600 | |
| Z5-SDB20-24 | LEAD | 8.9 | -- | 400 | |

# TABLE #3

## RARITAN BAY BEACH SAMPLING SITE

## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SD139-02 | ARSENIC | 3.9 | -- | 20 | |
| A5-SD139-02 | CHROMIUM | 6.6 | -- | 240 | |
| A5-SD139-02 | COPPER | 8.8 | -- | 600 | |
| A5-SD139-02 | LEAD | 66 | -- | 400 | |
| A5-SD139-02 | ANTIMONY | 2.5 | -- | 14 | |
| A5-SD139-06 | ARSENIC | 3.3 | -- | 20 | |
| A5-SD139-06 | CHROMIUM | 6.2 | -- | 240 | |
| A5-SD139-06 | COPPER | 6 | -- | 600 | |
| A5-SD139-06 | LEAD | 50 | -- | 400 | |
| A5-SD139-06 | ANTIMONY | 1.9 | -- | 14 | |
| A5-SD139-12 | ARSENIC | 5.5 | -- | 20 | |
| A5-SD139-12 | CHROMIUM | 13 | -- | 240 | |
| A5-SD139-12 | COPPER | 12 | -- | 600 | |
| A5-SD139-12 | LEAD | 32 | -- | 400 | |
| A5-SD139-24 | ARSENIC | 2.8 | -- | 20 | |
| A5-SD139-24 | CHROMIUM | 6.7 | -- | 240 | |
| A5-SD139-24 | COPPER | 7.4 | -- | 600 | |
| A5-SD139-24 | LEAD | 21 | -- | 400 | |
| A5-SD124-02 | ARSENIC | 3.3 | -- | 20 | |
| A5-SD124-02 | CHROMIUM | 7.8 | -- | 240 | |
| A5-SD124-02 | COPPER | 3.9 | -- | 600 | |
| A5-SD124-02 | LEAD | 23 | -- | 400 | |
| A5-SD124-06 | ARSENIC | 9.5 | -- | 20 | |
| A5-SD124-06 | CHROMIUM | 18 | -- | 240 | |
| A5-SD124-06 | COPPER | 7.6 | -- | 600 | |
| A5-SD124-06 | LEAD | 31 | -- | 400 | |
| A5-SD124-12 | ARSENIC | 16 | -- | 20 | |
| A5-SD124-12 | CHROMIUM | 32 | -- | 240 | |
| A5-SD124-12 | COPPER | 20 | -- | 600 | |
| A5-SD124-12 | LEAD | 77 | -- | 400 | |
| A5-SD124-12 | ANTIMONY | 1.8 | -- | 14 | |
| A5-SD124-24 | ARSENIC | 3.9 | -- | 20 | |
| A5-SD124-24 | CHROMIUM | 13 | -- | 240 | |
| A5-SD124-24 | COPPER | 3.8 | -- | 600 | |
| A5-SD124-24 | LEAD | 10 | -- | 400 | |
| A5-SDB10-02 | ARSENIC | 4.2 | -- | 20 | |
| A5-SDB10-02 | CHROMIUM | 7 | -- | 240 | |
| A5-SDB10-02 | COPPER | 9.9 | -- | 600 | |
| A5-SDB10-02 | LEAD | 80 | -- | 400 | |
| A5-SDB10-02 | ANTIMONY | 3 | -- | 14 | |
| A5-SDB10-06 | ARSENIC | 4.6 | -- | 20 | |
| A5-SDB10-06 | CHROMIUM | 9.5 | -- | 240 | |
| A5-SDB10-06 | COPPER | 9.8 | -- | 600 | |
| A5-SDB10-06 | LEAD | 69 | -- | 400 | |
| A5-SDB10-06 | ANTIMONY | 2.8 | -- | 14 | |
| A5-SDB10-12 | ARSENIC | 6.1 | -- | 20 | |
| A5-SDB10-12 | CHROMIUM | 11 | -- | 240 | |
| A5-SDB10-12 | COPPER | 18 | -- | 600 | |
| A5-SDB10-12 | LEAD | 57 | -- | 400 | |
| A5-SDB10-12 | ANTIMONY | 1.8 | -- | 14 | |
| A5-SDB10-24 | ARSENIC | 4.1 | -- | 20 | |
| A5-SDB10-24 | CHROMIUM | 10 | -- | 240 | |

# TABLE #3

## RARITAN BAY BEACH SAMPLING SITE

## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SDB10-24 | COPPER | 8.7 | -- | 600 | |
| A5-SDB10-24 | LEAD | 9.9 | -- | 400 | |
| Z5-SDB10-24 | ARSENIC | 4.7 | -- | 20 | |
| Z5-SDB10-24 | CHROMIUM | 12 | -- | 240 | |
| Z5-SDB10-24 | COPPER | 9 | -- | 600 | |
| Z5-SDB10-24 | LEAD | 12 | -- | 400 | |
| A5-SD141-02 | ARSENIC | 7 | -- | 20 | |
| A5-SD141-02 | CHROMIUM | 10 | -- | 240 | |
| A5-SD141-02 | COPPER | 9.8 | -- | 600 | |
| A5-SD141-02 | LEAD | 48 | -- | 400 | |
| A5-SD141-02 | ANTIMONY | 2.4 | -- | 14 | |
| A5-SD141-06 | ARSENIC | 3 | -- | 20 | |
| A5-SD141-06 | CHROMIUM | 6.5 | -- | 240 | |
| A5-SD141-06 | COPPER | 6.8 | -- | 600 | |
| A5-SD141-06 | LEAD | 48 | -- | 400 | |
| A5-SD141-06 | ANTIMONY | 1.9 | -- | 14 | |
| A5-SD141-12 | ARSENIC | 2.5 | -- | 20 | |
| A5-SD141-12 | CHROMIUM | 8.8 | -- | 240 | |
| A5-SD141-12 | COPPER | 6.5 | -- | 600 | |
| A5-SD141-12 | LEAD | 35 | -- | 400 | |
| A5-SD141-24 | ARSENIC | 1.6 | -- | 20 | |
| A5-SD141-24 | CHROMIUM | 7.6 | -- | 240 | |
| A5-SD141-24 | COPPER | 2.1 | -- | 600 | |
| A5-SD141-24 | LEAD | 4.9 | -- | 400 | |
| A5-SS118-02 | ARSENIC | 3.5 | -- | 20 | |
| A5-SS118-02 | CHROMIUM | 6.5 | -- | 240 | |
| A5-SS118-02 | COPPER | 6.7 | -- | 600 | |
| A5-SS118-02 | LEAD | 29 | -- | 400 | |
| A5-SS118-06 | ARSENIC | 2.8 | -- | 20 | |
| A5-SS118-06 | CHROMIUM | 5 | -- | 240 | |
| A5-SS118-06 | COPPER | 5.5 | -- | 600 | |
| A5-SS118-06 | LEAD | 26 | -- | 400 | |
| A5-SS118-12 | ARSENIC | 2.9 | -- | 20 | |
| A5-SS118-12 | CHROMIUM | 6 | -- | 240 | |
| A5-SS118-12 | COPPER | 3.6 | -- | 600 | |
| A5-SS118-12 | LEAD | 28 | -- | 400 | |
| A5-SS118-12 | ANTIMONY | 1.5 | -- | 14 | |
| A5-SS118-24 | ARSENIC | 2.8 | -- | 20 | |
| A5-SS118-24 | CHROMIUM | 5.8 | -- | 240 | |
| A5-SS118-24 | COPPER | 4.6 | -- | 600 | |
| A5-SS118-24 | LEAD | 27 | -- | 400 | |
| A6-SDB55-06 | ARSENIC | 2.4 | -- | 20 | |
| A6-SDB55-06 | CHROMIUM | 4.9 | -- | 240 | |
| A6-SDB55-06 | COPPER | 3.6 | -- | 600 | |
| A6-SDB55-06 | LEAD | 15 | -- | 400 | |
| A5-SDA165-06 | ARSENIC | 5.2 | -- | 20 | |
| A5-SDA165-06 | CHROMIUM | 11 | -- | 240 | |
| A5-SDA165-06 | COPPER | 34 | -- | 600 | |
| A5-SDA165-06 | LEAD | 200 | -- | 400 | |
| A5-SDA165-06 | ANTIMONY | 6.8 | -- | 14 | |
| A5-SDA133-06 | ARSENIC | 7.5 | -- | 20 | |
| A5-SDA133-06 | CHROMIUM | 11 | -- | 240 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SDA133-06 | COPPER | 27 | -- | 600 | |
| A5-SDA133-06 | LEAD | 180 | -- | 400 | |
| A5-SDA133-06 | ANTIMONY | 7.2 | -- | 14 | |
| A5-SD152-06 | ARSENIC | 5.7 | -- | 20 | |
| A5-SD152-06 | CHROMIUM | 3.5 | -- | 240 | |
| A5-SD152-06 | COPPER | 5.9 | -- | 600 | |
| A5-SD152-06 | LEAD | 120 | -- | 400 | |
| A5-SD152-06 | ANTIMONY | 7.9 | -- | 14 | |
| A5-SD121-06 | ARSENIC | 2.4 | -- | 20 | |
| A5-SD121-06 | CHROMIUM | 3.9 | -- | 240 | |
| A5-SD121-06 | COPPER | 2.8 | -- | 600 | |
| A5-SD121-06 | LEAD | 22 | -- | 400 | |
| A5-SD142-06 | ARSENIC | 7.6 | -- | 20 | |
| A5-SD142-06 | CHROMIUM | 12 | -- | 240 | |
| A5-SD142-06 | COPPER | 12 | -- | 600 | |
| A5-SD142-06 | LEAD | 49 | -- | 400 | |
| A5-SD142-06 | ANTIMONY | 2.8 | -- | 14 | |
| A5-SD136-06 | ARSENIC | 3 | -- | 20 | |
| A5-SD136-06 | CHROMIUM | 5.3 | -- | 240 | |
| A5-SD136-06 | COPPER | 7.1 | -- | 600 | |
| A5-SD136-06 | LEAD | 42 | -- | 400 | |
| A5-SDA130-02 | ARSENIC | 12 | -- | 20 | |
| A5-SDA130-02 | CHROMIUM | 13 | -- | 240 | |
| A5-SDA130-02 | COPPER | 31 | -- | 600 | |
| A5-SDA130-02 | LEAD | 330 | -- | 400 | |
| A5-SDA130-02 | ANTIMONY | 15 | -- | 14 | |
| A5-SDA130-06 | ARSENIC | 13 | -- | 20 | |
| A5-SDA130-06 | CHROMIUM | 27 | -- | 240 | |
| A5-SDA130-06 | COPPER | 93 | -- | 600 | |
| A5-SDA130-06 | LEAD | 300 | -- | 400 | |
| A5-SDA130-06 | ANTIMONY | 10 | -- | 14 | |
| A5-SDA130-12 | ARSENIC | 8.2 | -- | 20 | |
| A5-SDA130-12 | CHROMIUM | 11 | -- | 240 | |
| A5-SDA130-12 | COPPER | 23 | -- | 600 | |
| A5-SDA130-12 | LEAD | 250 | -- | 400 | |
| A5-SDA130-12 | ANTIMONY | 9.5 | -- | 14 | |
| A5-SDA130-24 | ARSENIC | 3.5 | -- | 20 | |
| A5-SDA130-24 | CHROMIUM | 6.5 | -- | 240 | |
| A5-SDA130-24 | COPPER | 9.8 | -- | 600 | |
| A5-SDA130-24 | LEAD | 140 | -- | 400 | |
| A5-SDA130-24 | ANTIMONY | 5.9 | -- | 14 | |
| A5-SS162-02 | ARSENIC | 54 | -- | 20 | |
| A5-SS162-02 | CHROMIUM | 13 | -- | 240 | |
| A5-SS162-02 | COPPER | 34 | -- | 600 | |
| A5-SS162-02 | LEAD | 780 | -- | 400 | |
| A5-SS162-02 | ANTIMONY | 52 | -- | 14 | |
| A5-SS162-06 | ARSENIC | 26 | -- | 20 | |
| A5-SS162-06 | CHROMIUM | 12 | -- | 240 | |
| A5-SS162-06 | COPPER | 55 | -- | 600 | |
| A5-SS162-06 | LEAD | 1,000 | -- | 400 | |
| A5-SS162-06 | ANTIMONY | 49 | -- | 14 | |
| A5-SD157-02 | ARSENIC | 6.3 | -- | 20 | |



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# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SD157-02 | CHROMIUM | 4 | -- | 240 | |
| A5-SD157-02 | COPPER | 6.3 | -- | 600 | |
| A5-SD157-02 | LEAD | 130 | -- | 400 | |
| A5-SD157-02 | ANTIMONY | 10 | -- | 14 | |
| A5-SD157-06 | ARSENIC | 4.2 | -- | 20 | |
| A5-SD157-06 | CHROMIUM | 4.4 | -- | 240 | |
| A5-SD157-06 | COPPER | 5.4 | -- | 600 | |
| A5-SD157-06 | LEAD | 100 | -- | 400 | |
| A5-SD157-06 | ANTIMONY | 4.4 | -- | 14 | |
| A5-SD157-12 | ARSENIC | 8.9 | -- | 20 | |
| A5-SD157-12 | CHROMIUM | 9.5 | -- | 240 | |
| A5-SD157-12 | COPPER | 17 | -- | 600 | |
| A5-SD157-12 | LEAD | 270 | -- | 400 | |
| A5-SD157-12 | ANTIMONY | 13 | -- | 14 | |
| A5-SD157-24 | ARSENIC | 9.5 | -- | 20 | |
| A5-SD157-24 | CHROMIUM | 13 | -- | 240 | |
| A5-SD157-24 | COPPER | 10 | -- | 600 | |
| A5-SD157-24 | LEAD | 26 | -- | 400 | |
| A5-SD157-24 | ANTIMONY | 4.2 | -- | 14 | |
| A5-SDB3-02 | ARSENIC | 6.7 | -- | 20 | |
| A5-SDB3-02 | CHROMIUM | 4.5 | -- | 240 | |
| A5-SDB3-02 | COPPER | 5.7 | -- | 600 | |
| A5-SDB3-02 | LEAD | 91 | -- | 400 | |
| A5-SDB3-02 | ANTIMONY | 5 | -- | 14 | |
| A5-SDB3-06 | ARSENIC | 9.3 | -- | 20 | |
| A5-SDB3-06 | CHROMIUM | 5 | -- | 240 | |
| A5-SDB3-06 | COPPER | 9.7 | -- | 600 | |
| A5-SDB3-06 | LEAD | 160 | -- | 400 | |
| A5-SDB3-06 | ANTIMONY | 8.3 | -- | 14 | |
| A5-SDB3-12 | ARSENIC | 40 | -- | 20 | |
| A5-SDB3-12 | CHROMIUM | 9.5 | -- | 240 | |
| A5-SDB3-12 | COPPER | 12 | -- | 600 | |
| A5-SDB3-12 | LEAD | 270 | -- | 400 | |
| A5-SDB3-12 | ANTIMONY | 25 | -- | 14 | |
| A5-SDB3-24 | ARSENIC | 16 | -- | 20 | |
| A5-SDB3-24 | CHROMIUM | 18 | -- | 240 | |
| A5-SDB3-24 | COPPER | 33 | -- | 600 | |
| A5-SDB3-24 | LEAD | 200 | -- | 400 | |
| A5-SDB3-24 | ANTIMONY | 8.6 | -- | 14 | |
| A5-SD99-02 | ARSENIC | 2.1 | -- | 20 | |
| A5-SD99-02 | CHROMIUM | 5.2 | -- | 240 | |
| A5-SD99-02 | LEAD | 2.2 | -- | 400 | |
| A5-SD99-06 | ARSENIC | 2.1 | -- | 20 | |
| A5-SD99-06 | CHROMIUM | 5.9 | -- | 240 | |
| A5-SD99-06 | LEAD | 2.2 | -- | 400 | |
| A5-SD99-12 | ARSENIC | 2.2 | -- | 20 | |
| A5-SD99-12 | CHROMIUM | 5.1 | -- | 240 | |
| A5-SD99-12 | LEAD | 2.2 | -- | 400 | |
| A5-SD99-24 | ARSENIC | 3.7 | -- | 20 | |
| A5-SD99-24 | CHROMIUM | 17 | -- | 240 | |
| A5-SD99-24 | COPPER | 5.7 | -- | 600 | |
| A5-SD99-24 | LEAD | 11 | -- | 400 | |

# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SS153-02 | ARSENIC | 7 | -- | 20 | |
| A5-SS153-02 | CHROMIUM | 3.1 | -- | 240 | |
| A5-SS153-02 | COPPER | 6.3 | -- | 600 | |
| A5-SS153-02 | LEAD | 94 | -- | 400 | |
| A5-SS153-02 | ANTIMONY | 5.5 | -- | 14 | |
| A5-SS153-06 | ARSENIC | 14 | -- | 20 | |
| A5-SS153-06 | CHROMIUM | 5.6 | -- | 240 | |
| A5-SS153-06 | COPPER | 9.8 | -- | 600 | |
| A5-SS153-06 | LEAD | 190 | -- | 400 | |
| A5-SS153-06 | ANTIMONY | 10 | -- | 14 | |
| A5-SS153-12 | ARSENIC | 15 | -- | 20 | |
| A5-SS153-12 | CHROMIUM | 13 | -- | 240 | |
| A5-SS153-12 | COPPER | 11 | -- | 600 | |
| A5-SS153-12 | LEAD | 170 | -- | 400 | |
| A5-SS153-12 | ANTIMONY | 9.3 | -- | 14 | |
| A5-SS153-24 | ARSENIC | 7.1 | -- | 20 | |
| A5-SS153-24 | CHROMIUM | 4.8 | -- | 240 | |
| A5-SS153-24 | COPPER | 6.1 | -- | 600 | |
| A5-SS153-24 | LEAD | 34 | -- | 400 | |
| A5-SS153-24 | ANTIMONY | 3.3 | -- | 14 | |
| A5-SS155-02 | ARSENIC | 8.4 | -- | 20 | |
| A5-SS155-02 | CHROMIUM | 5.7 | -- | 240 | |
| A5-SS155-02 | COPPER | 7.5 | -- | 600 | |
| A5-SS155-02 | LEAD | 120 | -- | 400 | |
| A5-SS155-02 | ANTIMONY | 7.6 | -- | 14 | |
| A5-SS155-06 | ARSENIC | 7.5 | -- | 20 | |
| A5-SS155-06 | CHROMIUM | 4.6 | -- | 240 | |
| A5-SS155-06 | COPPER | 6.2 | -- | 600 | |
| A5-SS155-06 | LEAD | 120 | -- | 400 | |
| A5-SS155-06 | ANTIMONY | 7 | -- | 14 | |
| A5-SS155-12 | ARSENIC | 8.5 | -- | 20 | |
| A5-SS155-12 | CHROMIUM | 5.7 | -- | 240 | |
| A5-SS155-12 | COPPER | 8.6 | -- | 600 | |
| A5-SS155-12 | LEAD | 160 | -- | 400 | |
| A5-SS155-12 | ANTIMONY | 9.2 | -- | 14 | |
| A5-SS155-24 | ARSENIC | 8 | -- | 20 | |
| A5-SS155-24 | CHROMIUM | 4.5 | -- | 240 | |
| A5-SS155-24 | COPPER | 8.2 | -- | 600 | |
| A5-SS155-24 | LEAD | 210 | -- | 400 | |
| A5-SS155-24 | ANTIMONY | 14 | -- | 14 | |
| A5-SDB6-02 | ARSENIC | 3.1 | -- | 20 | |
| A5-SDB6-02 | CHROMIUM | 8.3 | -- | 240 | |
| A5-SDB6-02 | COPPER | 8 | -- | 600 | |
| A5-SDB6-02 | LEAD | 32 | -- | 400 | |
| A5-SDB6-06 | ARSENIC | 4.3 | -- | 20 | |
| A5-SDB6-06 | CHROMIUM | 8.7 | -- | 240 | |
| A5-SDB6-06 | COPPER | 6.8 | -- | 600 | |
| A5-SDB6-06 | LEAD | 44 | -- | 400 | |
| A5-SDB6-12 | ARSENIC | 3.3 | -- | 20 | |
| A5-SDB6-12 | CHROMIUM | 7.6 | -- | 240 | |
| A5-SDB6-12 | COPPER | 7.1 | -- | 600 | |
| A5-SDB6-12 | LEAD | 57 | -- | 400 | |



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# TABLE #3
## RARITAN BAY BEACH SAMPLING SITE
## DESA LAB INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| Sample Location | Chemical | Results (mg/kg) | Qualifier | NJDEP Soil Cleanup Criteria | |
|---|---|---|---|---|---|
| A5-SDB6-24 | ARSENIC | 10 | -- | 20 | |
| A5-SDB6-24 | CHROMIUM | 25 | -- | 240 | |
| A5-SDB6-24 | COPPER | 12 | -- | 600 | |
| A5-SDB6-24 | LEAD | 120 | -- | 400 | |
| A5-SDB6-24 | ANTIMONY | 2 | -- | 14 | |
| A5-SS35-02 | ARSENIC | 13 | -- | 20 | |
| A5-SS35-02 | CHROMIUM | 11 | -- | 240 | |
| A5-SS35-02 | COPPER | 21 | -- | 600 | |
| A5-SS35-02 | LEAD | 180 | -- | 400 | |
| A5-SS35-02 | ANTIMONY | 24 | -- | 14 | |
| A5-SS35-06 | ARSENIC | 23 | -- | 20 | |
| A5-SS35-06 | CHROMIUM | 14 | -- | 240 | |
| A5-SS35-06 | COPPER | 15 | -- | 600 | |
| A5-SS35-06 | LEAD | 230 | -- | 400 | |
| A5-SS35-06 | ANTIMONY | 19 | -- | 14 | |
| A5-SS35-12 | ARSENIC | 10 | -- | 20 | |
| A5-SS35-12 | CHROMIUM | 8.8 | -- | 240 | |
| A5-SS35-12 | COPPER | 12 | -- | 600 | |
| A5-SS35-12 | LEAD | 200 | -- | 400 | |
| A5-SS35-12 | ANTIMONY | 9.1 | -- | 14 | |
| A5-SS35-24 | ARSENIC | 7.1 | -- | 20 | |
| A5-SS35-24 | CHROMIUM | 5.5 | -- | 240 | |
| A5-SS35-24 | COPPER | 10 | -- | 600 | |
| A5-SS35-24 | LEAD | 180 | -- | 400 | |
| A5-SS35-24 | ANTIMONY | 6 | -- | 14 | |
| Z5-SD121-06 | ARSENIC | 2.8 | -- | 20 | |
| Z5-SD121-06 | CHROMIUM | 6.6 | -- | 240 | |
| Z5-SD121-06 | COPPER | 5.3 | -- | 600 | |
| Z5-SD121-06 | LEAD | 23 | -- | 400 | |
| A5-SDB9-06 | ARSENIC | 6.5 | -- | 20 | |
| A5-SDB9-06 | CHROMIUM | 8.8 | -- | 240 | |
| A5-SDB9-06 | COPPER | 14 | -- | 600 | |
| A5-SDB9-06 | LEAD | 130 | -- | 400 | |
| A5-SDB9-06 | ANTIMONY | 5.1 | -- | 14 | |
| Z5-SS35-24 | ARSENIC | 4.1 | -- | 20 | |
| Z5-SS35-24 | CHROMIUM | 5.4 | -- | 240 | |
| Z5-SS35-24 | COPPER | 7.3 | -- | 600 | |
| Z5-SS35-24 | LEAD | 82 | -- | 400 | |
| Z5-SS35-24 | ANTIMONY | 5.8 | -- | 14 | |



R2-0004406

# TABLE #4

## RARITAN BAY BEACH SAMPLING SITE

## DESA LAB INORGANICS SURFACE WATER SAMPLE SUMMARY

| Sample Location | Chemical | Results(ug/L) | Qualifier | NJDEP Surface Water Quality Criteria |
|---|---|---|---|---|
| A6-SW12 | COPPER | 11 | -- | NA |
| A6-SW13 | LEAD | 8.2 | -- | NA |
| A6-SW14 | CHROMIUM | 6.2 | -- | NA |
| A6-SW14 | COPPER | 25 | -- | NA |
| A6-SW14 | LEAD | 26 | -- | NA |
| A6-SW30 | COPPER | 12 | -- | NA |
| A6-SW30 | LEAD | 18 | -- | NA |
| A6-SW33 | COPPER | 11 | -- | NA |
| A6-SW34 | COPPER | 11 | -- | NA |
| A6-SW34 | LEAD | 11 | -- | NA |
| A6-SW36 | COPPER | 12 | -- | NA |
| A6-SW37 | COPPER | 10 | -- | NA |
| A6-SW38 | ARSENIC | 17 | -- | 0.061 |
| A6-SW38 | CHROMIUM | 6.2 | -- | NA |
| A6-SW38 | COPPER | 16 | K | NA |
| A6-SW38 | LEAD | 45 | -- | NA |
| A5-SW32 | COPPER | 10 | -- | 600 |
| A5-SW34 | COPPER | 33 | -- | 600 |
| A5-SW34 | LEAD | 81 | -- | 400 |
| A5-SW39 | LEAD | 8 | -- | 400 |

# TABLE #5

## RARITAN BAY BEACH SAMPLING SITE

## XRF INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| AREA 5 SEDIMENT | Pb | As | Cu | Cr | Sb | Units | Analysis Time |
|---|---|---|---|---|---|---|---|
| A5-SD121-06 | 19.04 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:32 |
| Z5-SD121-06 | 15.76 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:36 |
| A5-SD121-06 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:29 |
| Z5-SD121-06 >250 | 23.26 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 9:18 |
| A5-SD123-06 | 21.17 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 13:50 |
| A5-SD123-06 >250 | 18.94 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:39 |
| A5-SD124-06 | 12.79 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 10:20 |
| A5-SD124-06 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 10:15 |
| A5-SD124-12 | 30.37 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 10:12 |
| A5-SD124-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 10:27 |
| A5-SD124-24 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 10:22 |
| A5-SD127-06 | 25.77 | < LOD | 12.64 | < LOD | < LOD | ppm | 5/19/2010 14:28 |
| A5-SD129-06 | 16.12 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:09 |
| A5-SD130-06 | 22.2 | 4.99 | 12.45 | < LOD | < LOD | ppm | 5/19/2010 15:51 |
| A5-SD134-06 | 32.17 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 9:22 |
| A5-SD136-06 | 34.47 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 9:34 |
| A5-SD139-06 | 52.07 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 13:54 |
| A5-SD139-12 | 29.42 | < LOD | 17.2 | < LOD | < LOD | ppm | 5/20/2010 13:57 |
| A5-SD139-24 | 18.8 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:00 |
| A5-SD141-06 | 37.05 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:05 |
| A5-SD141-06 >250 | 10.91 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:03 |
| A5-SD141-12 | 33.75 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:09 |
| A5-SD141-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:11 |
| A5-SD142-06 | 14.17 | 9.5 | 21.26 | < LOD | < LOD | ppm | 5/20/2010 9:42 |
| A5-SD143-06 | 42.82 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:30 |
| A5-SD143-06 >250 | 70.86 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:27 |
| A5-SD147-06 | 76.79 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:23 |
| A5-SD148-06 | 59.59 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:20 |
| A5-SD151-06 | 57.16 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 9:10 |
| Z5-SD151-06 | 113.28 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:52 |
| A5-SD152-06 | 91.7 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:54 |
| A5-SD155-06 | 145.84 | < LOD | < LOD | 59.16 | < LOD | ppm | 5/20/2010 15:02 |
| A5-SD155-06 >250 | 95.07 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:00 |
| A5-SD157-06 | 103.22 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 9:48 |
| A5-SD157-06 >250 | 106.74 | < LOD | < LOD | < LOD | 30.17 | ppm | 5/20/2010 9:45 |
| A5-SD157-12 | 152.45 | 19.38 | 27.55 | < LOD | < LOD | ppm | 5/20/2010 9:55 |
| A5-SD157-12 >250 | 139.69 | 27.1 | 25.27 | 27.26 | < LOD | ppm | 5/20/2010 9:51 |
| A5-SD157-24 | 20.09 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 10:09 |
| A5-SD157-24 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 9:57 |
| A5-SDA130-06 | 355.15 | < LOD | 44.97 | 41.87 | < LOD | ppm | 5/20/2010 10:40 |
| A5-SDA130-12 | 228.5 | < LOD | 28.26 | < LOD | < LOD | ppm | 5/20/2010 10:52 |
| A5-SDA130-12 >250 | 199.96 | < LOD | 17.68 | < LOD | < LOD | ppm | 5/19/2010 16:44 |
| A5-SDA130-24 | 176.25 | < LOD | 18.54 | < LOD | < LOD | ppm | 5/19/2010 16:48 |
| A5-SDA133-06 | 193.92 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 10:57 |
| A5-SDA165-06 | 144.17 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:08 |
| A5-SDB10-06 | 52.55 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:18 |
| A5-SDB10-12 | 48.81 | < LOD | 17.94 | < LOD | < LOD | ppm | 5/19/2010 16:39 |
| A5-SDB10-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:32 |
| Z5-SDB10-24 | < LOD | 14.61 | < LOD | < LOD | < LOD | ppm | 5/18/2010 14:09 |



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# TABLE #5

## RARITAN BAY BEACH SAMPLING SITE

## XRF INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A5-SDB15-06 | 30.2 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:35 |
| A5-SDB20-06 | 21.93 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:25 |
| A5-SDB20-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:26 |
| A5-SDB20-24 | < LOD | 8.8 | 26.36 | < LOD | < LOD | ppm | 5/20/2010 14:37 |
| Z5-SDB20-24 | 11.7 | 12.52 | < LOD | < LOD | < LOD | ppm | 5/20/2010 14:42 |
| A5-SDB22-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:33 |
| A5-SDB3-06 | 63.46 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:04 |
| A5-SDB3-12 | 94.58 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:26 |
| A5-SDB3-12 >250 | 103.62 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:23 |
| A5-SDB3-24 | 239.11 | < LOD | 45.26 | < LOD | < LOD | ppm | 5/20/2010 11:09 |
| A5-SDB6-06 | 24.7 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:23 |
| A5-SDB6-12 | 42.41 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:28 |
| A5-SDB6-24 | 19.71 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:32 |
| A5-SDB6-24 >250 | 34.09 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:20 |
| A5-SDB9-06 | 80.73 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:14 |
| A5-SDB9-06 >250 | 71.56 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 11:12 |
| A5-SS107-06 | 10.01 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:26 |
| A5-SS107-12 | 9.11 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:06 |
| A5-SS107-24 | 17.35 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:02 |
| A5-SS109-06 | 10.29 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:54 |
| A5-SS109-12 | 44.19 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:35 |
| A5-SS109-24 | 18.21 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:48 |
| A5-SS110-06 | 9.79 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:32 |
| A5-SS111-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:46 |
| A5-SS111-12 | 28.86 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:40 |
| A5-SS111-24 | 28.34 | < LOD | 19.95 | < LOD | < LOD | ppm | 5/19/2010 16:52 |
| A5-SS112-06 | 15.83 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:43 |
| A5-SS112-12 | 23.96 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:37 |
| A5-SS112-24 | 52.88 | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:18 |
| A5-SS113-06 | 50.81 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:16 |
| Z5-SS113-06 | 19.57 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 15:13 |
| A5-SS115-06 | 19.79 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:59 |
| A5-SS117-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:02 |
| A5-SS118-06 | 9.89 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:56 |
| A5-SS118-12 | 13.93 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:01 |
| A5-SS118-24 | 22.62 | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 11:53 |
| A5-SS119-06 | 57.48 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:05 |
| A5-SS123-06 | 62.6 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:07 |
| A5-SS125-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:10 |
| A5-SS125-12 | 17.83 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:13 |
| A5-SS125-24 | 24.21 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:15 |
| A5-SS129-06 | 11.4 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:07 |
| A5-SS131-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 16:09 |
| A5-SS132-06 | 32.67 | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:27 |
| A5-SS135-06 | 118.02 | 17.78 | 29.18 | < LOD | < LOD | ppm | 5/19/2010 15:22 |
| A5-SS139-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 14:53 |
| A5-SS140-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:29 |
| A5-SS144-06 | 45.57 | < LOD | < LOD | 129.76 | < LOD | ppm | 5/20/2010 16:17 |
| A5-SS153-06 | 101.3 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 14:44 |
| A5-SS153-12 | 159.65 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 14:41 |

# TABLE #5

## RARITAN BAY BEACH SAMPLING SITE

## XRF INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A5-SS153-24 | 15.56 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:22 |
| A5-SS153-24 >250 | 8.03 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:20 |
| A5-SS155-06 | 50.02 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:28 |
| A5-SS155-06 >250 | 69.39 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:32 |
| A5-SS155-12 | 165.64 | 24.29 | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:30 |
| A5-SS155-24 | 276.97 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 14:51 |
| A5-SS157-06 | 332.68 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:35 |
| A5-SS159-06 | 119.08 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:05 |
| A5-SS160-06 | 248.29 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:37 |
| A5-SS162-06 | 376.8 | < LOD | 30.14 | < LOD | < LOD | ppm | 5/20/2010 16:40 |
| A5-SS213-06 | 371.44 | < LOD | 27.01 | < LOD | 42.68 | ppm | 5/20/2010 16:42 |
| A5-SS29-06 | 86.22 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:11 |
| A5-SS30-06 | 228.76 | < LOD | < LOD | < LOD | 179 | ppm | 5/20/2010 15:34 |
| Z5-SS30-06 | 158.23 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:13 |
| A5-SS33-06 | 153.75 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:17 |
| A5-SS35-06 | 98.63 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:39 |
| A5-SS35-06 >250 | 136.71 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:49 |
| A5-SS35-12 | 208.77 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:43 |
| A5-SS35-24 | 74.16 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:46 |
| A5-SS35-24 >250 | 53.05 | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 15:51 |
| **AREA 6 SEDIMENT** | **Pb** | **As** | **Cu** | **Cr** | **Sb** | **Units** | **Analysis Time** |
| A6-SD100-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:46 |
| A6-SD106-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 10:19 |
| A6-SD106-12 | < LOD | 2.06 | < LOD | < LOD | < LOD | ppm | 5/19/2010 10:46 |
| A6-SD106-24 | 9.02 | 7.59 | 11.37 | < LOD | < LOD | ppm | 5/19/2010 10:53 |
| A6-SD109-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/13/2010 11:27 |
| A6-SD112-06 | 7.62 | 7.73 | < LOD | < LOD | < LOD | ppm | 5/19/2010 10:09 |
| A6-SD112-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 10:13 |
| A6-SD112-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 10:16 |
| A6-SD116-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:38 |
| A6-SD119-06 | 56.42 | < LOD | 32.72 | < LOD | < LOD | ppm | 5/17/2010 9:55 |
| A6-SD38-06 | < LOD | < LOD | 13.9 | < LOD | < LOD | ppm | 5/19/2010 11:13 |
| A6-SD38-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 14:12 |
| A6-SD41-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/13/2010 11:56 |
| A6-SD48-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 11:00 |
| A6-SD48-12 | 12.06 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 11:03 |
| A6-SD48-24 | < LOD | 6.3 | < LOD | < LOD | < LOD | ppm | 5/19/2010 11:09 |
| A6-SD85-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/13/2010 11:54 |
| A6-SD95-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 16:45 |
| A6-SD95-06 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 16:42 |
| A6-SD95-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 16:53 |
| A6-SD95-12 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 16:48 |
| A6-SD95-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 16:55 |
| A6-SD98-06 | < LOD | 7.38 | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:48 |
| A6-SD99-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:45 |
| A6-SD99-06 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:47 |
| A6-SD99-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:49 |
| A6-SD99-12 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:56 |
| A6-SD99-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 16:58 |
| A6-SD99-24 >250 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/20/2010 17:00 |

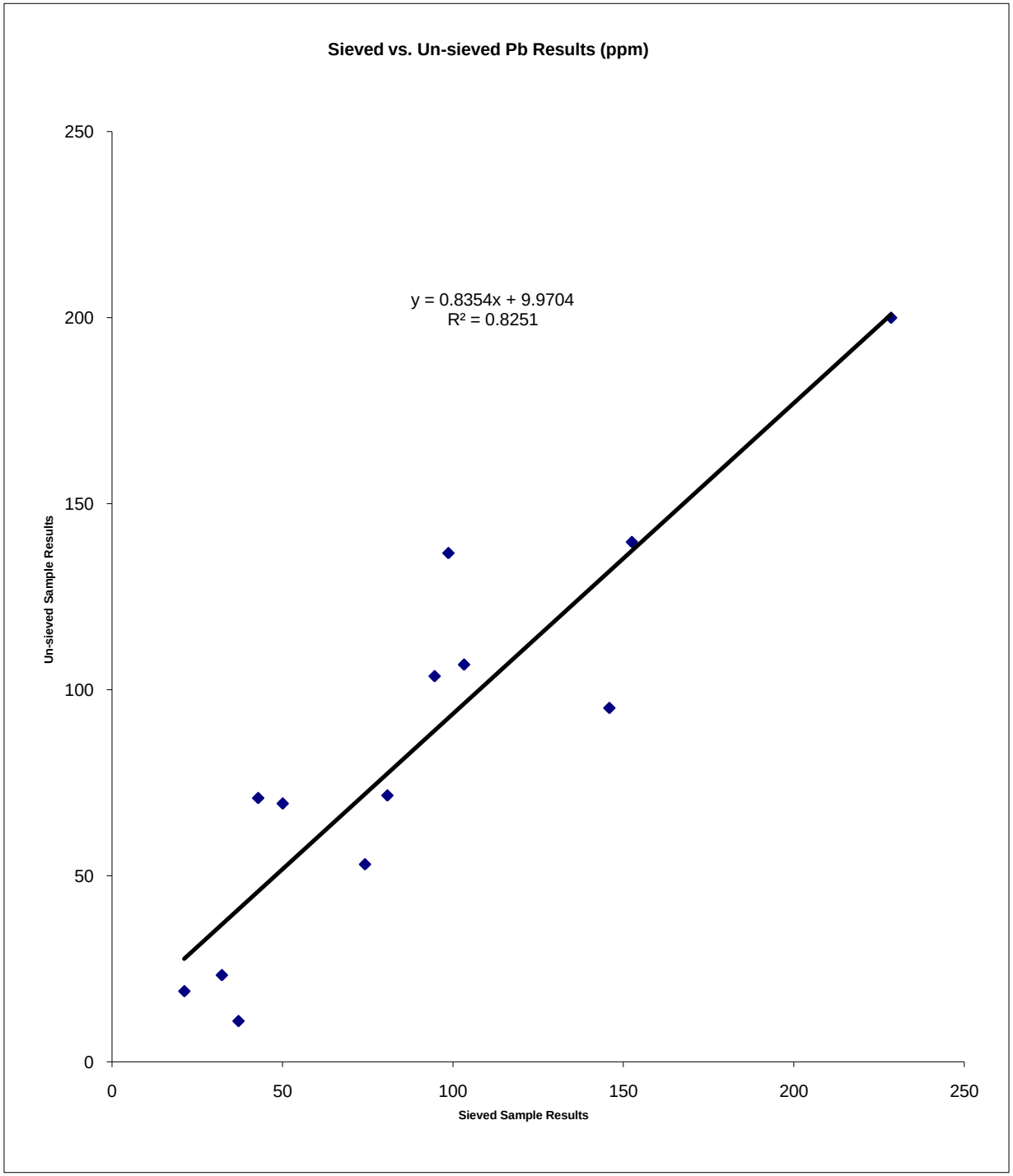
# TABLE #5

## RARITAN BAY BEACH SAMPLING SITE

## XRF INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A6-SDB26-06 | 31.33 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 9:50 |
| A6-SDB26-12 | 54.05 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 9:55 |
| A6-SDB26-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 10:00 |
| A6-SDB27-06 | 37.46 | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:52 |
| A6-SDB35-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 16:58 |
| A6-SDB35-12 | 61.63 | < LOD | 41.64 | < LOD | < LOD | ppm | 5/18/2010 17:00 |
| A6-SDB35-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 9:12 |
| A6-SDB35-24 >250 | 11.92 | < LOD | 11.66 | < LOD | < LOD | ppm | 5/18/2010 17:17 |
| A6-SDB36-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 10:06 |
| A6-SDB43-06 | 7.76 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 9:45 |
| A6-SDB43-12 | 9.93 | 6.54 | 20.7 | < LOD | < LOD | ppm | 5/19/2010 9:35 |
| A6-SDB43-24 | 23.95 | 15.17 | 35.64 | < LOD | < LOD | ppm | 5/19/2010 9:41 |
| A6-SDB47-06 | 16.9 | 9.58 | 24.47 | 52.95 | < LOD | ppm | 5/19/2010 9:18 |
| A6-SDB47-12 | 31.02 | 18.2 | 45.68 | 35.41 | < LOD | ppm | 5/19/2010 9:29 |
| A6-SDB47-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 10:11 |
| A6-SDB55-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 9:21 |
| **AREA 6 SOIL** | **Pb** | **As** | **Cu** | **Cr** | **Sb** | **Units** | **Analysis Time** |
| A6-SS101-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 10:09 |
| A6-SS142-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 10:02 |
| A6-SS208-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/13/2010 11:46 |
| A6-SS210-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 14:25 |
| A6-SS210-12 | < LOD | 3.98 | 6.86 | < LOD | < LOD | ppm | 5/17/2010 15:17 |
| A6-SS210-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 14:32 |
| A6-SS211-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 14:15 |
| A6-SS211-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 14:17 |
| A6-SS211-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/18/2010 14:23 |
| A6-SS212-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 14:07 |
| A6-SS212-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 14:09 |
| A6-SS213-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:43 |
| A6-SS37-06 | 67.95 | 10.41 | 18.96 | 61.37 | 30.94 | ppm | 5/19/2010 11:26 |
| A6-SS37-12 | 37.04 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 11:29 |
| A6-SS37-24 | 59.93 | 10.44 | 16.89 | < LOD | < LOD | ppm | 5/19/2010 11:35 |
| A6-SS41-06 | 22.08 | < LOD | < LOD | < LOD | < LOD | ppm | 5/13/2010 11:48 |
| A6-SS44-06 | 27.78 | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 10:04 |
| A6-SS44-12 | 31.54 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 11:46 |
| A6-SS44-24 | 30.1 | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 11:51 |
| A6-SS46-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 12:02 |
| A6-SS46-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:41 |
| A6-SS46-24 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 12:05 |
| A6-SS51-06 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/17/2010 9:50 |
| A6-SS88-06 | < LOD | < LOD | 18.49 | < LOD | < LOD | ppm | 5/19/2010 13:55 |
| A6-SS88-12 | < LOD | < LOD | < LOD | < LOD | < LOD | ppm | 5/19/2010 13:57 |
| **RCRA Check Standard** | **Pb** | **As** | **Cu** | **Cr** | **Sb** | **Units** | **Analysis Time** |
| RCRA-01 | 480.89 | 475.57 | 49.7 | 397.91 | < LOD | ppm | 5/13/2010 11:40 |
| RCRA-02 | 458.01 | 488.99 | 38.63 | 397.75 | < LOD | ppm | 5/17/2010 8:59 |
| RCRA-03 | 470.67 | 521.89 | 38.67 | 399.36 | < LOD | ppm | 5/17/2010 9:58 |
| RCRA-04 | 463.29 | 502.89 | 57.41 | 402.2 | < LOD | ppm | 5/18/2010 11:37 |
| RCRA-05 | 492.84 | 455.53 | 42.38 | 419.71 | < LOD | ppm | 5/18/2010 14:27 |
| RCRA-06 | 486.4 | 475.88 | 46.14 | 377.98 | < LOD | ppm | 5/18/2010 17:23 |
| RCRA-07 | 502.73 | 468.78 | 40.86 | 401.38 | < LOD | ppm | 5/19/2010 10:05 |

| TABLE #5 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **RARITAN BAY BEACH SAMPLING SITE** | | | | | | | |
| **XRF INORGANICS SOIL/SEDIMENT SAMPLE SUMMARY** | | | | | | | |
| RCRA-08 | 491.71 | 497.01 | 46.39 | 394.62 | < LOD | ppm | 5/19/2010 11:21 |
| RCRA-09 | 485.81 | 489.78 | 50.13 | 419.48 | < LOD | ppm | 5/19/2010 14:04 |
| RCRA-10 | 485.31 | 491 | 50.28 | 390.07 | < LOD | ppm | 5/19/2010 14:58 |
| RCRA-11 | 503.96 | 487.23 | 50.73 | 412.48 | < LOD | ppm | 5/19/2010 15:57 |
| RCRA-12 | 498.65 | 477.83 | 33.59 | 419.3 | < LOD | ppm | 5/19/2010 16:57 |
| RCRA-13 | 482.96 | 489.43 | 52.54 | 433.99 | < LOD | ppm | 5/20/2010 10:05 |
| RCRA-14 | 496.59 | 520.09 | 25.08 | 381.84 | < LOD | ppm | 5/20/2010 11:07 |
| RCRA-15 | 505.27 | 480.44 | 36.36 | 412.82 | < LOD | ppm | 5/20/2010 11:43 |
| RCRA-16 | 489.52 | 443.45 | 46.26 | 429.68 | < LOD | ppm | 5/20/2010 14:31 |
| RCRA-17 | 482.23 | 450.71 | 33.09 | 394.62 | < LOD | ppm | 5/20/2010 15:20 |
| RCRA-18 | 501.68 | 470.43 | < LOD | 354.51 | 40.02 | ppm | 5/20/2010 15:56 |
| RCRA-19 | 477.5 | 483.15 | 46.98 | 397.76 | < LOD | ppm | 5/20/2010 16:25 |
| RCRA-20 | 459.46 | 509.01 | 48.03 | 369.62 | < LOD | ppm | 5/20/2010 16:52 |


Sieved vs. Un-sieved Pb Results (ppm)
y = 0.8354x + 9.9704
R² = 0.8251
Un-sieved Sample Results
Sieved Sample Results
0
50
100
150
200
250

# Appendix B

Appendix B
Soil, Sediment, and Surface Water Sample Results Tables
Final Beach Sampling
Technical Memorandum

See Attached CD

CDM

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample ID | A1-SS05-06 | | A1-SS05-12 | | A1-SS06-06 | | A1-SS06-12 | | A1-SS07-06 | | A1-SS07-12 | | A1-SS08-06 | | A1-SS08-12 | | A1-SS09-06 | | A1-SS09-12 | | A1-SS10-06 | |
| | | | | CLP Number | MB5SZ2 | | MB5SW6 | | MB5SW7 | | MB5SW8 | | MB5SW9 | | MB5SX0 | | MB5SX1 | | MB5SX2 | | MB5SX3 | | MB5SX4 | | MB5SX5 | |
| | | | | Location ID | A1-S05 | | A1-S05 | | A1-S06 | | A1-S06 | | A1-S07 | | A1-S07 | | A1-S08 | | A1-S08 | | A1-S09 | | A1-S09 | | A1-S10 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | |
| | | | | Start Depth | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 3940 | | 3380 | | 3410 | | 1500 | | 3690 | | 2430 | | 4360 | | 2830 | | 4750 | | 3850 | | 3790 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 6.4 | UJ | 6.1 | UJ | 6.4 | UJ | 6.5 | UJ | 6.4 | UJ | 6.4 | UJ | 6.3 | UJ | 6.5 | UJ | 640 | UJ | 13.6 | J | 6.3 | UJ |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 8.2 | | 6.9 | | 5.6 | | 0.95 | J | 5.5 | | 8.4 | | 6.4 | | 3.3 | | 9.9 | | 22.9 | | 5.6 | |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 20.1 | J | 21.1 | | 20.7 | J | 8.2 | J | 17.5 | J | 15 | J | 24 | | 15 | J | 30.4 | | 26.4 | | 20.6 | J |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 0.53 | U | 0.51 | U | 0.53 | U | 0.54 | U | 0.53 | U | 0.54 | U | 0.53 | U | 0.54 | U | 0.53 | U | 0.51 | U | 0.53 | U |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 0.53 | U | 0.51 | U | 0.53 | U | 0.54 | U | 0.53 | U | 0.54 | U | 0.53 | U | 0.54 | U | 0.53 | U | 0.041 | J | 0.53 | U |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 572 | | 523 | | 717 | | 538 | U | 611 | | 655 | | 579 | | 613 | | 1580 | | 2190 | | 926 | |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 10.8 | | 8.8 | | 10.4 | | 5.2 | | 11.4 | | 9.4 | | 15.2 | | 9.5 | | 15.9 | | 12.9 | | 12.1 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 1.7 | J | 2 | J | 1.1 | J | 0.28 | J | 1.3 | J | 1 | J | 3.1 | J | 2.1 | J | 3.8 | J | 3.5 | J | 1.6 | J |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 12.7 | | 22.8 | | 18 | | 6.5 | | 17.6 | | 23.2 | | 16.7 | | 14.8 | | 29.3 | | 65.7 | | 23.3 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 18200 | | 9290 | | 10700 | | 4090 | | 13400 | | 11300 | | 16300 | | 10300 | | 17600 | | 12500 | | 11800 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 47 | | 174 | | 52 | | 18 | | 42.2 | | 78.3 | | 50.3 | | 43.7 | | 164 | | 1090 | | 52.3 | |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 642 | | 713 | | 533 | U | 538 | U | 531 | U | 537 | U | 922 | | 538 | U | 1450 | | 2100 | | 567 | |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 91.4 | | 75 | | 44.3 | | 6.2 | | 54.3 | | 47.3 | | 65.3 | | 86.5 | | 120 | | 109 | | 60.4 | |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 7.5 | | 10.6 | | 3.9 | J | 0.74 | J | 4.3 | | 2.9 | J | 5.9 | | 6.6 | | 7.7 | | 9.3 | | 4.7 | |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 365 | J | 317 | J | 353 | J | 113 | J | 398 | J | 244 | J | 573 | | 275 | J | 576 | | 239 | J | 407 | J |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 3.7 | U | 3.6 | U | 3.7 | U | 3.8 | U | 3.7 | U | 3.8 | U | 3.7 | U | 3.8 | U | 3.7 | U | 3.5 | U | 3.7 | U |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 1.1 | U | 1 | U | 1.1 | U | 1.1 | U | 1.1 | U | 0.19 | J | 1.1 | U | 1.1 | U | 1.1 | U | 0.14 | J | 1.1 | U |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 533 | U | 509 | U | 533 | U | 538 | U | 531 | U | 537 | U | 526 | U | 538 | U | 533 | U | 506 | U | 526 | U |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 2.7 | U | 2.5 | U | 2.7 | U | 2.7 | U | 2.7 | U | 2.7 | U | 2.6 | U | 2.7 | U | 2.7 | U | 2.5 | U | 2.6 | U |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 27 | | 15.7 | | 20.7 | | 11.8 | | 22.2 | | 20.2 | | 25 | | 15.6 | | 27.8 | | 20.6 | | 20 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 31.9 | | 36.2 | | 27.8 | | 6.5 | U | 33.3 | | 32.6 | | 22.9 | | 27 | | 38.4 | | 29.8 | | 39.9 | |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS05-06 | | A1-SS05-12 | | A1-SS06-06 | | A1-SS06-12 | | A1-SS07-06 | | A1-SS07-12 | | A1-SS08-06 | | A1-SS08-12 | | A1-SS09-06 | | A1-SS09-12 | | A1-SS10-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SZ2 | | MB5SW6 | | MB5SW7 | | MB5SW8 | | MB5SW9 | | MB5SX0 | | MB5SX1 | | MB5SX2 | | MB5SX3 | | MB5SX4 | | MB5SX5 | |
| | | | | Location ID | A1-S05 | | A1-S05 | | A1-S06 | | A1-S06 | | A1-S07 | | A1-S07 | | A1-S08 | | A1-S08 | | A1-S09 | | A1-S09 | | A1-S10 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | |
| | | | | Start Depth | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 110 | R | 110 | R | 170 | R | 120 | R | 120 | R | 110 | R | 130 | R | 110 | R | 120 | R | 120 | R | 110 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 11 | U | 11 | U | 17 | U | 12 | U | 12 | U | 11 | U | 13 | U | 11 | U | 12 | U | 12 | U | 11 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 11 | U | 11 | U | 17 | U | 12 | U | 12 | U | 11 | U | 13 | U | 11 | U | 12 | U | 12 | U | 11 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 11 | U | 11 | U | 17 | U | 12 | U | 12 | U | 11 | U | 13 | U | 11 | U | 12 | U | 12 | U | 11 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 11 | U | 11 | U | 17 | U | 12 | U | 12 | U | 11 | U | 13 | U | 11 | U | 12 | U | 12 | U | 11 | U |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | 12000000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 95-47-6 | o-Xylene | E624 | µg/kg | 12000000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 0.41 | J | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 0.38 | J | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 5.3 | U | 5.4 | U | 8.6 | U | 6.1 | U | 6.2 | U | 5.4 | U | 6.5 | U | 5.4 | U | 6.1 | U | 6.2 | U | 5.6 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS05-06 | | A1-SS05-12 | | A1-SS06-06 | | A1-SS06-12 | | A1-SS07-06 | | A1-SS07-12 | | A1-SS08-06 | | A1-SS08-12 | | A1-SS09-06 | | A1-SS09-12 | | A1-SS10-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SZ2 | | MB5SW6 | | MB5SW7 | | MB5SW8 | | MB5SW9 | | MB5SX0 | | MB5SX1 | | MB5SX2 | | MB5SX3 | | MB5SX4 | | MB5SX5 | |
| | | | | Location ID | A1-S05 | | A1-S05 | | A1-S06 | | A1-S06 | | A1-S07 | | A1-S07 | | A1-S08 | | A1-S08 | | A1-S09 | | A1-S09 | | A1-S10 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | |
| | | | | Start Depth | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 180 | U | 13 | J | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 6.4 | J | 910 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 340 | U | 340 | U | 420 | U | 380 | U | 350 | U | 1800 | U | 360 | U | 350 | U | 1700 | U | 340 | U | 1800 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 5.7 | J | 21 | J | 8.5 | J | 200 | U | 23 | J | 930 | UJ | 6.3 | J | 29 | J | 57 | J | 21 | J | 910 | UJ |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 340 | U | 340 | U | 420 | U | 380 | U | 350 | U | 1800 | U | 360 | U | 350 | U | 1700 | U | 340 | U | 1800 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 340 | U | 340 | U | 420 | U | 380 | U | 350 | U | 1800 | U | 360 | U | 350 | U | 1700 | U | 340 | U | 1800 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 340 | U | 340 | U | 420 | U | 380 | U | 350 | U | 1800 | U | 360 | U | 350 | U | 1700 | U | 340 | U | 1800 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 340 | U | 340 | U | 420 | U | 380 | U | 350 | U | 1800 | U | 360 | U | 350 | U | 1700 | U | 340 | U | 1800 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 340 | U | 340 | U | 420 | U | 380 | U | 350 | U | 1800 | U | 360 | U | 350 | U | 1700 | U | 340 | U | 1800 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 180 | U | 6.6 | J | 220 | U | 200 | U | 12 | J | 930 | U | 180 | U | 18 | J | 890 | U | 6.5 | J | 910 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 13 | J | 14 | J | 10 | J | 200 | U | 17 | J | 930 | U | 13 | J | 25 | J | 33 | J | 14 | J | 35 | J |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 74 | J | 82 | J | 64 | J | 200 | U | 96 | J | 48 | J | 81 | J | 56 | J | 160 | J | 53 | J | 180 | J |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 95 | J | 80 | J | 96 | J | 200 | U | 110 | J | 56 | J | 92 | J | 59 | J | 180 | J | 51 | J | 180 | J |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 140 | J | 150 | J | 120 | J | 200 | U | 150 | J | 73 | J | 120 | J | 73 | J | 240 | J | 79 | J | 240 | J |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS05-06 | | A1-SS05-12 | | A1-SS06-06 | | A1-SS06-12 | | A1-SS07-06 | | A1-SS07-12 | | A1-SS08-06 | | A1-SS08-12 | | A1-SS09-06 | | A1-SS09-12 | | A1-SS10-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SZ2 | | MB5SW6 | | MB5SW7 | | MB5SW8 | | MB5SW9 | | MB5SX0 | | MB5SX1 | | MB5SX2 | | MB5SX3 | | MB5SX4 | | MB5SX5 | |
| | | | | Location ID | A1-S05 | | A1-S05 | | A1-S06 | | A1-S06 | | A1-S07 | | A1-S07 | | A1-S08 | | A1-S08 | | A1-S09 | | A1-S09 | | A1-S10 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | |
| | | | | Start Depth | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 72 | J | 51 | J | 72 | J | 200 | U | 88 | J | 41 | J | 74 | J | 40 | J | 130 | J | 49 | J | 120 | J |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 42 | J | 47 | J | 39 | J | 200 | U | 57 | J | 930 | U | 46 | J | 33 | J | 75 | J | 20 | J | 92 | J |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 730 | U | 170 | U | 220 | U | 450 | U | 180 | U | 930 | U | 180 | U | 200 | U | 890 | U | 170 | U | 910 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 5.7 | J | 9.3 | J | 7.4 | J | 200 | U | 10 | J | 930 | U | 6.1 | J | 11 | J | 890 | U | 7.3 | J | 910 | U |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 100 | J | 96 | J | 95 | J | 200 | U | 93 | J | 56 | J | 77 | J | 61 | J | 180 | J | 67 | J | 210 | J |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 22 | J | 17 | J | 21 | J | 200 | U | 24 | J | 930 | U | 19 | J | 9.4 | J | 31 | J | 15 | J | 30 | J |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 180 | U | 8.6 | J | 220 | U | 200 | U | 8.5 | J | 930 | U | 180 | U | 12 | J | 890 | U | 10 | J | 910 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 160 | J | 160 | J | 150 | J | 200 | U | 160 | J | 88 | J | 140 | J | 120 | J | 290 | J | 93 | J | 410 | J |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 180 | U | 9.3 | J | 220 | U | 200 | U | 11 | J | 930 | U | 180 | U | 17 | J | 890 | U | 5.4 | J | 910 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 77 | J | 60 | J | 77 | J | 200 | U | 91 | J | 930 | U | 82 | J | 41 | J | 140 | J | 47 | J | 130 | J |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 9 | J | 19 | J | 11 | J | 200 | U | 19 | J | 930 | U | 11 | J | 16 | J | 54 | J | 31 | J | 910 | U |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 340 | U | 340 | U | 420 | U | 380 | U | 350 | U | 1800 | U | 360 | U | 350 | U | 1700 | U | 340 | U | 1800 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 83 | J | 90 | J | 64 | J | 200 | U | 98 | J | 37 | J | 66 | J | 99 | J | 150 | J | 64 | J | 220 | J |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 180 | U | 170 | U | 220 | U | 200 | U | 180 | U | 930 | U | 180 | U | 180 | U | 890 | U | 170 | U | 910 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 160 | J | 180 | | 160 | J | 200 | U | 210 | | 84 | J | 150 | J | 120 | J | 280 | J | 82 | J | 360 | J |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 3.4 | U | 3.4 | U | 4.3 | U | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 7.3 | J | 1.8 | J | 4.3 | UJ | 3.8 | U | 3.4 | U | 3.5 | U | 4.3 | | 3.5 | UJ | 3.4 | U | 11 | | 3.5 | U |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 11 | | 3 | J | 4.2 | U | 3.8 | U | 4.4 | J | 5.7 | J | 11 | J | 2.3 | U | 13 | J | 3.3 | U | 8 | NJ |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 1.8 | U | 1.8 | U | 2.2 | U | 2 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.8 | U |

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Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | Sample ID | A1-SS05-06 | | A1-SS05-12 | | A1-SS06-06 | | A1-SS06-12 | | A1-SS07-06 | | A1-SS07-12 | | A1-SS08-06 | | A1-SS08-12 | | A1-SS09-06 | | A1-SS09-12 | | A1-SS10-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CLP Number | MB5SZ2 | | MB5SW6 | | MB5SW7 | | MB5SW8 | | MB5SW9 | | MB5SX0 | | MB5SX1 | | MB5SX2 | | MB5SX3 | | MB5SX4 | | MB5SX5 | |
| | | | | | Location ID | A1-S05 | | A1-S05 | | A1-S06 | | A1-S06 | | A1-S07 | | A1-S07 | | A1-S08 | | A1-S08 | | A1-S09 | | A1-S09 | | A1-S10 | |
| | | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | |
| | | | | | Start Depth | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | | End Depth | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 1.8 | U | 1.8 | U | 2.2 | U | 2 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 52 | NJ | 22 | R | 7.7 | NJ | 2 | U | 9 | NJ | 2.4 | R | 4.9 | NJ | 13 | R | 1.4 | J | 1.7 | U | 1.8 | U |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 1.8 | U | 1.8 | U | 2.2 | U | 2 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 180 | U | 180 | U | 220 | U | 200 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 170 | U | 180 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 1.8 | U | 1.8 | U | 2.2 | U | 2 | U | 2 | J | 1.8 | U | 1.8 | U | 1.2 | J | 1.7 | U | 1.7 | U | 1.8 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 3.4 | U | 3.4 | U | 4.3 | U | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 1.8 | U | 1.8 | U | 2.2 | U | 2 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 3.4 | U | 3.4 | U | 4.3 | U | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 3.4 | U | 3.4 | U | 4.3 | U | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 3.4 | U | 3.4 | U | 4.3 | U | 3.8 | U | 3.4 | U | 0.21 | J | 3.6 | U | 3.5 | U | 3.4 | U | 4.4 | R | 3.5 | U |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 3.4 | U | 3.4 | U | 4.3 | U | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 3.4 | U | 3.4 | U | 4.3 | U | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 1.8 | U | 1.8 | U | 2.2 | U | 2 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 52 | | 22 | | 8.7 | | 2 | U | 8.6 | | 3.3 | J | 6 | J | 15 | | 1.7 | U | 1.7 | U | 1.8 | U |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 3.6 | | 1.8 | U | 2.2 | U | 2 | U | 1.7 | U | 1.8 | J | 1.8 | UJ | 1.8 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 8.5 | NJ | 3.4 | NJ | 3.3 | | 2 | U | 2.1 | NJ | 1.8 | U | 1.8 | U | 2.6 | NJ | 1.7 | U | 1.7 | U | 1.8 | U |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 3.3 | J | 18 | U | 22 | U | 20 | U | 17 | U | 18 | U | 18 | U | 18 | U | 17 | U | 17 | U | 18 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 100 | J | 170 | NJ | 36 | U | 210 | | 360 | | 190 | |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 35 | U | 35 | U | 43 | U | 38 | U | 35 | U | 36 | U | 36 | U | 36 | U | 35 | U | 34 | U | 35 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
µg/kg - micrograms per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample ID | A1-SS10-12 | | A1-SS11-06 | | A1-SS11-12 | | A1-SS12-06 | | A1-SS12-12 | | A1-SS13-06 | | Z1-SS13-06 | | A1-SS13-12 | | A1-SS14-06 | | A1-SS14-12 | | A1-SS15-06 | |
| | | | | CLP Number | MB5SX6 | | MB5SX7 | | MB5SX8 | | MB5SX9 | | MB5SY0 | | MB5SY1 | | MB5SZ5 | | MB5SY2 | | MB5T06 | | MB5SZ7 | | MB5SZ8 | |
| | | | | Location ID | A1-S10 | | A1-S11 | | A1-S11 | | A1-S12 | | A1-S12 | | A1-S13 | | A1-S13 | | A1-S13 | | A1-S14 | | A1-S14 | | A1-S15 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 1660 | | 5270 | | 2740 | | 2790 | | 2020 | | 4700 | | 5260 | | 2980 | | 4240 | | 4270 | | 556 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 6.1 | UJ | 6.4 | UJ | 6.4 | UJ | 6.3 | UJ | 6.7 | UJ | 6.2 | UJ | 6.4 | UJ | 6.2 | UJ | 6.8 | UJ | 11.9 | J | 9.9 | J |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 4.1 | | 6.2 | | 5.2 | | 4.6 | | 5.9 | | 6 | | 5.2 | | 11.9 | | 5.4 | J | 17.2 | J | 12.6 | J |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 11.3 | J | 24.2 | | 24.4 | | 15.6 | J | 17.8 | J | 27.9 | | 31.1 | | 18.1 | J | 28 | | 52.9 | | 23.3 | U |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 0.51 | U | 0.53 | U | 0.54 | U | 0.52 | U | 0.56 | U | 0.52 | U | 0.53 | U | 0.52 | U | 0.23 | J | 0.18 | J | 0.58 | U |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 0.51 | U | 0.53 | U | 0.54 | U | 0.52 | U | 0.56 | U | 0.52 | U | 0.53 | U | 0.52 | U | 0.11 | J | 2.1 | | 0.58 | U |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 510 | U | 976 | | 583 | | 578 | | 559 | U | 1220 | | 1110 | | 776 | | 1290 | J | 2750 | J | 582 | UJ |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 11.6 | | 12.7 | | 9.4 | | 12.1 | | 14.5 | | 13.8 | | 13.7 | | 9 | | 14.4 | | 8.5 | | 4.5 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 0.82 | J | 1.6 | J | 0.96 | J | 0.83 | J | 0.58 | J | 2.6 | J | 3.1 | J | 1.7 | J | 0.65 | J | 1.1 | J | 5.8 | U |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 6.4 | | 13.3 | | 15 | | 7.7 | | 6.5 | | 16.2 | | 16.7 | | 21.5 | | 17.7 | | 58.4 | | 20.2 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 19300 | | 13500 | | 12100 | | 12700 | | 16800 | | 16200 | | 14500 | | 11300 | | 13900 | | 8370 | | 5280 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 23.6 | | 33.3 | | 46.5 | | 19.8 | | 14 | | 39.9 | | 39.6 | | 178 | | 69.5 | J | 1930 | J | 167 | J |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 127 | J | 592 | | 365 | J | 310 | J | 559 | U | 960 | | 988 | | 665 | | 995 | J | 1030 | J | 76.3 | J |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 25.9 | | 79.3 | | 32.3 | | 32 | | 20 | | 114 | | 116 | | 65.3 | | 143 | | 192 | | 7.6 | |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 1.4 | J | 3.9 | J | 2.5 | J | 2 | J | 1.1 | J | 5.3 | | 6.2 | | 3.7 | J | 5.7 | | 9.2 | | 1 | J |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 180 | J | 401 | J | 282 | J | 228 | J | 245 | J | 616 | | 642 | | 333 | J | 672 | J | 460 | J | 582 | U |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 3.6 | U | 3.7 | U | 3.8 | U | 3.7 | U | 3.9 | U | 3.6 | U | 3.7 | U | 3.6 | U | 0.97 | J | 1.1 | J | 1.1 | J |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 1 | U | 1.1 | U | 1.1 | U | 1 | U | 1.1 | U | 1 | U | 1.1 | U | 0.54 | J | 1.1 | U | 0.34 | J | 1.4 | |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 510 | U | 531 | U | 536 | U | 521 | U | 559 | U | 519 | U | 531 | U | 518 | U | 569 | U | 563 | U | 582 | U |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 2.5 | U | 2.7 | U | 2.7 | U | 2.6 | U | 2.8 | U | 2.6 | U | 2.7 | U | 2.6 | U | 2.8 | U | 2.8 | U | 2.9 | U |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 26.6 | | 23.1 | | 18.8 | | 20.2 | | 30.7 | | 25.1 | | 24.5 | | 17.1 | | 21.9 | | 18.6 | | 6.7 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 13.6 | | 28.2 | | 26.9 | | 13.7 | | 7.5 | | 35.5 | | 36.8 | | 18.4 | | 36.6 | J | 74.7 | J | 8.7 | J |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS10-12 | | A1-SS11-06 | | A1-SS11-12 | | A1-SS12-06 | | A1-SS12-12 | | A1-SS13-06 | | Z1-SS13-06 | | A1-SS13-12 | | A1-SS14-06 | | A1-SS14-12 | | A1-SS15-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SX6 | | MB5SX7 | | MB5SX8 | | MB5SX9 | | MB5SY0 | | MB5SY1 | | MB5SZ5 | | MB5SY2 | | MB5T06 | | MB5SZ7 | | MB5SZ8 | |
| | | | | Location ID | A1-S10 | | A1-S11 | | A1-S11 | | A1-S12 | | A1-S12 | | A1-S13 | | A1-S13 | | A1-S13 | | A1-S14 | | A1-S14 | | A1-S15 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 110 | R | 120 | R | 120 | R | 120 | R | 110 | R | 120 | R | 140 | R | 110 | R | 100 | R | 130 | R | 110 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 11 | U | 12 | U | 12 | U | 12 | U | 11 | U | 12 | U | 14 | U | 11 | U | 10 | U | 13 | U | 11 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 11 | U | 12 | U | 12 | U | 12 | U | 11 | U | 12 | U | 14 | U | 11 | U | 10 | U | 13 | U | 11 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 11 | U | 12 | U | 12 | U | 12 | U | 11 | U | 12 | U | 14 | U | 11 | U | 10 | U | 13 | U | 11 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 11 | U | 12 | U | 12 | U | 12 | U | 11 | U | 13 | | 14 | U | 11 | U | 14 | | 13 | U | 11 | U |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | 12000000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 95-47-6 | o-Xylene | E624 | µg/kg | 12000000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 0.77 | J | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | UJ | 5.4 | U | 5.1 | U | 6.7 | UJ | 5.5 | U |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 5.6 | U | 6.1 | U | 6.2 | U | 6 | U | 5.5 | U | 6 | U | 6.9 | U | 5.4 | U | 5.1 | U | 6.7 | U | 5.5 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS10-12 | | A1-SS11-06 | | A1-SS11-12 | | A1-SS12-06 | | A1-SS12-12 | | A1-SS13-06 | | Z1-SS13-06 | | A1-SS13-12 | | A1-SS14-06 | | A1-SS14-12 | | A1-SS15-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SX6 | | MB5SX7 | | MB5SX8 | | MB5SX9 | | MB5SY0 | | MB5SY1 | | MB5SZ5 | | MB5SY2 | | MB5T06 | | MB5SZ7 | | MB5SZ8 | |
| | | | | Location ID | A1-S10 | | A1-S11 | | A1-S11 | | A1-S12 | | A1-S12 | | A1-S13 | | A1-S13 | | A1-S13 | | A1-S14 | | A1-S14 | | A1-S15 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 15 | J | 15 | J | 180 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 1900 | U | 1800 | U | 360 | U | 350 | U | 360 | U | 1700 | U | 1700 | U | 340 | U | 340 | U | 390 | U | 350 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 990 | UJ | 900 | UJ | 7.4 | J | 5.7 | J | 190 | U | 890 | UJ | 900 | UJ | 8.7 | J | 59 | J | 74 | J | 180 | U |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 1900 | U | 1800 | U | 360 | U | 350 | U | 360 | U | 1700 | U | 1700 | U | 340 | U | 340 | U | 390 | U | 350 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 1900 | U | 1800 | U | 360 | U | 350 | U | 360 | U | 1700 | U | 1700 | U | 340 | U | 340 | U | 390 | U | 350 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 1900 | U | 1800 | U | 360 | U | 350 | U | 360 | U | 1700 | U | 1700 | U | 340 | U | 340 | U | 390 | U | 350 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 1900 | U | 1800 | U | 360 | U | 350 | U | 360 | U | 1700 | U | 1700 | U | 340 | U | 340 | U | 390 | U | 350 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 1900 | U | 1800 | U | 360 | U | 350 | U | 360 | U | 1700 | U | 1700 | U | 340 | U | 340 | U | 390 | U | 350 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 13 | J | 68 | J | 200 | U | 180 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 990 | U | 28 | J | 6.5 | J | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 9.4 | J | 200 | U | 9.7 | J |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 990 | U | 28 | J | 9.9 | J | 6 | J | 190 | U | 890 | U | 900 | U | 36 | J | 150 | J | 12 | J | 11 | J |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 31 | J | 270 | J | 80 | J | 56 | J | 13 | J | 110 | J | 160 | J | 99 | J | 600 | | 71 | J | 99 | J |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 990 | U | 230 | J | 76 | J | 77 | J | 15 | J | 140 | J | 200 | J | 100 | J | 530 | | 88 | J | 89 | J |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 35 | J | 270 | J | 100 | J | 110 | J | 21 | J | 210 | J | 250 | J | 150 | J | 580 | | 120 | J | 100 | J |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS10-12 | | A1-SS11-06 | | A1-SS11-12 | | A1-SS12-06 | | A1-SS12-12 | | A1-SS13-06 | | Z1-SS13-06 | | A1-SS13-12 | | A1-SS14-06 | | A1-SS14-12 | | A1-SS15-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SX6 | | MB5SX7 | | MB5SX8 | | MB5SX9 | | MB5SY0 | | MB5SY1 | | MB5SZ5 | | MB5SY2 | | MB5T06 | | MB5SZ7 | | MB5SZ8 | |
| | | | | Location ID | A1-S10 | | A1-S11 | | A1-S11 | | A1-S12 | | A1-S12 | | A1-S13 | | A1-S13 | | A1-S13 | | A1-S14 | | A1-S14 | | A1-S15 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 990 | U | 150 | J | 58 | J | 61 | J | 190 | U | 110 | J | 150 | J | 78 | J | 290 | | 78 | J | 67 | J |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 990 | U | 120 | J | 39 | J | 34 | J | 10 | J | 53 | J | 89 | J | 59 | J | 450 | | 84 | J | 90 | J |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 11 | J | 180 | U |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 11 | J | 180 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 990 | U | 900 | U | 1700 | | 630 | U | 890 | U | 890 | U | 2000 | U | 180 | U | 230 | U | 200 | U | 180 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 990 | U | 900 | U | 6.3 | J | 5.7 | J | 190 | U | 890 | U | 900 | U | 19 | J | 53 | J | 11 | J | 6.8 | J |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 33 | J | 270 | J | 94 | J | 63 | J | 14 | J | 140 | J | 170 | J | 120 | J | 550 | | 120 | J | 110 | J |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 990 | U | 37 | J | 18 | J | 16 | J | 190 | U | 890 | U | 900 | U | 23 | J | 110 | J | 20 | J | 19 | J |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 6.1 | J | 96 | J | 10 | J | 180 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 43 | J | 530 | J | 130 | J | 130 | J | 25 | J | 200 | J | 260 | J | 220 | | 1100 | | 130 | J | 200 | |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 12 | J | 130 | J | 9.6 | J | 180 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 990 | U | 150 | J | 62 | J | 60 | J | 190 | U | 100 | J | 150 | J | 77 | J | 290 | | 59 | J | 56 | J |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 990 | U | 900 | U | 10 | J | 10 | J | 5.9 | J | 890 | U | 900 | U | 15 | J | 58 | J | 95 | J | 5.6 | J |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 25 | J | 110 | J | 180 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 1900 | U | 1800 | U | 360 | U | 350 | U | 360 | U | 1700 | U | 1700 | U | 340 | U | 340 | U | 390 | U | 350 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 990 | U | 170 | J | 60 | J | 51 | J | 9.7 | J | 88 | J | 97 | J | 150 | J | 960 | | 100 | J | 88 | J |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 990 | U | 900 | U | 180 | U | 180 | U | 190 | U | 890 | U | 900 | U | 180 | U | 180 | U | 200 | U | 180 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 45 | J | 440 | J | 140 | J | 110 | J | 27 | J | 200 | J | 290 | J | 200 | | 990 | | 130 | J | 190 | |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 3.9 | U | 4 | | 3.6 | U | 3.5 | U | 3.6 | U | 4.2 | R | 6.3 | R | 3.5 | U | 3.4 | U | 4 | U | 3.5 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 3.9 | U | 4.6 | NJ | 1.8 | J | 1.4 | J | 3.6 | U | 3.5 | U | 4.6 | NJ | 3.9 | | 3.4 | U | 7.9 | | 130 | |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 3.9 | U | 9.4 | | 3.4 | J | 3.5 | | 0.61 | J | 12 | J | 13 | | 5.7 | NJ | 4.4 | R | 4 | U | 3.5 | U |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 2 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 2.1 | U | 1.8 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS10-12 | | A1-SS11-06 | | A1-SS11-12 | | A1-SS12-06 | | A1-SS12-12 | | A1-SS13-06 | | Z1-SS13-06 | | A1-SS13-12 | | A1-SS14-06 | | A1-SS14-12 | | A1-SS15-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SX6 | | MB5SX7 | | MB5SX8 | | MB5SX9 | | MB5SY0 | | MB5SY1 | | MB5SZ5 | | MB5SY2 | | MB5T06 | | MB5SZ7 | | MB5SZ8 | |
| | | | | Location ID | A1-S10 | | A1-S11 | | A1-S11 | | A1-S12 | | A1-S12 | | A1-S13 | | A1-S13 | | A1-S13 | | A1-S14 | | A1-S14 | | A1-S15 | |
| | | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 6 | | 0 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 6 | | 6 | | 12 | | 6 | | 12 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 2 | U | 1.8 | U | 0.29 | J | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 2.1 | U | 1.8 | U |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 0.37 | J | 1.8 | U | 1.8 | U | 1.8 | U | 1.9 | U | 3.6 | R | 8.1 | NJ | 2.3 | R | 1.8 | U | 2.1 | U | 1.8 | U |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 2 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 2.1 | U | 1.8 | U |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 200 | U | 180 | U | 180 | U | 180 | U | 190 | U | 180 | U | 180 | U | 180 | U | 180 | U | 210 | U | 180 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 2 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 0.13 | J | 2.1 | U | 1.8 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 3.9 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 4 | U | 3.5 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 2 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 2.1 | U | 1.8 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 3.9 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 4 | U | 16 | R |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 3.9 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 4 | U | 3.5 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 3.9 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.5 | U | 0.65 | J | 4 | U | 18 | JN |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 3.9 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 4 | U | 11 | JN |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 3.9 | U | 1.2 | J | 3.6 | U | 3.5 | U | 3.6 | U | 3.5 | U | 3.4 | U | 3.5 | U | 1.4 | J | 4 | U | 3.5 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 2 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 2.1 | U | 1.8 | U |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 2 | U | 3.9 | | 2.9 | | 1.8 | U | 1.9 | U | 4.6 | | 8.4 | | 2.8 | NJ | 1.8 | U | 2.1 | U | 1.8 | U |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 2 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | UJ | 2.1 | U | 1.8 | U |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 2 | U | 1.8 | U | 1.8 | UJ | 1.9 | | 1.9 | U | 1.8 | U | 3 | | 1.8 | U | 1.8 | U | 2.1 | U | 17 | R |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 20 | U | 18 | U | 18 | U | 18 | U | 19 | U | 18 | U | 18 | U | 18 | U | 18 | U | 6.5 | J | 18 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 34 | J | 35 | U | 36 | U | 35 | U | 37 | U | 150 | | 35 | U | 100 | | 110 | J | 270 | | 3100 | |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 39 | U | 35 | U | 36 | U | 35 | U | 37 | U | 35 | U | 35 | U | 35 | U | 35 | U | 40 | U | 35 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
µg/kg - micrograms per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample ID | A1-SS15-12 | | A1-SS16-06 | | A1-SS16-12 | | A1-SS17-06 | | A1-SS17-12 | | Z1-SS17-12 | | A1-SS18-06 | | Z1-SS18-06 | | A1-SS18-12 | |
| | | | | CLP Number | MB5SZ9 | | MB5T00 | | MB5T01 | | MB5T02 | | MB5T03 | | B5SZ3 | | MB5T04 | | MB5SZ6 | | MB5T05 | |
| | | | | Location ID | A1-S15 | | A1-S16 | | A1-S16 | | A1-S17 | | A1-S17 | | A1-S17 | | A1-S18 | | A1-S18 | | A1-S18 | |
| | | | | Sample Date | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/14/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 12 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 437 | | 1330 | | 1530 | | 1760 | | 2180 | | | | 2360 | | 1700 | | 1710 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 21.5 | J | 6.7 | UJ | 6.7 | UJ | 6.9 | UJ | 7.5 | UJ | | | 7 | UJ | 7 | UJ | 6.7 | UJ |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 13.9 | J | 39.1 | J | 11.7 | J | 3 | J | 5.2 | J | | | 5.4 | J | 7.5 | J | 4.1 | J |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 20.2 | U | 22.3 | U | 22.3 | U | 23.1 | U | 32.1 | | | | 30 | | 23.2 | U | 22.4 | U |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 0.51 | U | 0.56 | U | 0.15 | J | 0.58 | U | 0.63 | U | | | 0.58 | U | 0.58 | U | 0.56 | U |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 0.51 | U | 0.56 | U | 0.56 | U | 0.58 | U | 0.63 | U | | | 0.58 | U | 0.58 | U | 0.56 | U |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 506 | UJ | 556 | U | 556 | UJ | 577 | UJ | 627 | UJ | | | 2940 | J | 2030 | J | 840 | J |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 4.8 | | 6.9 | | 5.2 | | 7.1 | | 14.5 | | | | 11.4 | | 9.9 | | 12.3 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 5.1 | U | 5.6 | U | 5.6 | U | 5.8 | U | 6.3 | U | | | 5.8 | U | 5.8 | U | 5.6 | U |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 20.9 | | 179 | | 78.6 | | 4.3 | | 7.3 | | | | 31.6 | | 28.2 | | 22.2 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 5980 | | 9470 | | 11300 | | 11100 | | 16500 | | | | 5840 | | 5920 | | 6970 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 179 | J | 94.5 | J | 25.7 | J | 10.7 | J | 11.4 | J | | | 81.7 | J | 75.1 | J | 99.5 | J |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 38.9 | J | 65.2 | J | 72.1 | J | 76.3 | J | 97.5 | J | | | 1110 | J | 487 | J | 314 | J |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 7.3 | | 8.1 | | 14.9 | | 15.2 | | 43.5 | | | | 59.9 | J | 17.8 | J | 14.3 | |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 0.7 | J | 3.8 | J | 1.8 | J | 1 | J | 1.1 | J | | | 2.9 | J | 3 | J | 3.7 | J |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 506 | U | 82.3 | J | 74 | J | 39.7 | J | 96.2 | J | | | 87.3 | J | 24.3 | J | 35 | J |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 0.91 | J | 0.95 | J | 0.96 | J | 0.89 | J | 1.5 | J | | | 4.1 | U | 4.1 | U | 0.56 | J |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 1.3 | | 0.86 | J | 0.39 | J | 1.2 | U | 0.14 | J | | | 1.2 | U | 1.2 | U | 1.1 | U |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 506 | U | 556 | U | 556 | U | 577 | U | 627 | U | | | 579 | U | 580 | U | 560 | U |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 2.5 | U | 2.8 | U | 2.8 | U | 2.9 | U | 3.1 | U | | | 2.9 | U | 2.9 | U | 2.8 | U |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 6.2 | | 12.6 | | 13.2 | | 14.8 | | 21 | | | | 24.6 | | 22.8 | | 26.4 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 11.4 | J | 8.5 | J | 6.8 | J | 6.9 | UJ | 8.8 | J | | | 16.1 | J | 14.7 | J | 19 | J |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS15-12 | | A1-SS16-06 | | A1-SS16-12 | | A1-SS17-06 | | A1-SS17-12 | | Z1-SS17-12 | | A1-SS18-06 | | Z1-SS18-06 | | A1-SS18-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SZ9 | | MB5T00 | | MB5T01 | | MB5T02 | | MB5T03 | | B5SZ3 | | MB5T04 | | MB5SZ6 | | MB5T05 | |
| | | | | Location ID | A1-S15 | | A1-S16 | | A1-S16 | | A1-S17 | | A1-S17 | | A1-S17 | | A1-S18 | | A1-S18 | | A1-S18 | |
| | | | | Sample Date | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/14/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 12 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 140 | R | 140 | R | 110 | R | 140 | R | 120 | R | | | 110 | R | 140 | R | 100 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 14 | U | 14 | U | 11 | U | 14 | U | 12 | U | | | 11 | U | 14 | U | 10 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 14 | U | 14 | U | 11 | U | 14 | U | 12 | U | | | 11 | U | 14 | U | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 14 | U | 14 | U | 11 | U | 14 | U | 12 | U | | | 11 | U | 14 | U | 10 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 14 | U | 14 | U | 11 | U | 14 | U | 12 | U | | | 11 | U | 14 | U | 10 | U |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | 12000000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 95-47-6 | o-Xylene | E624 | µg/kg | 12000000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | UJ | 6 | UJ | | | 5.6 | U | 6.8 | UJ | 5 | U |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 7.2 | U | 6.9 | U | 5.6 | U | 7.2 | U | 6 | U | | | 5.6 | U | 6.8 | U | 5 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A1-SS15-12 | | A1-SS16-06 | | A1-SS16-12 | | A1-SS17-06 | | A1-SS17-12 | | Z1-SS17-12 | | A1-SS18-06 | | Z1-SS18-06 | | A1-SS18-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SZ9 | | MB5T00 | | MB5T01 | | MB5T02 | | MB5T03 | | B5SZ3 | | MB5T04 | | MB5SZ6 | | MB5T05 | |
| | | | | Location ID | A1-S15 | | A1-S16 | | A1-S16 | | A1-S17 | | A1-S17 | | A1-S17 | | A1-S18 | | A1-S18 | | A1-S18 | |
| | | | | Sample Date | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/14/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 12 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 14 | J | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 440 | U | 400 | U | 380 | U | 380 | U | 360 | U | 370 | U | 370 | U | | | 370 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 52 | J | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 440 | U | 400 | U | 380 | U | 380 | U | 360 | U | 370 | U | 370 | U | | | 370 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 440 | U | 400 | U | 380 | U | 380 | U | 360 | U | 370 | U | 370 | U | | | 370 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 440 | U | 400 | U | 380 | U | 380 | U | 360 | U | 370 | U | 370 | U | | | 370 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 440 | U | 400 | U | 380 | U | 380 | U | 360 | U | 370 | U | 370 | U | | | 370 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 440 | U | 400 | U | 380 | U | 380 | U | 360 | U | 370 | U | 370 | U | | | 370 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 130 | J | 210 | U | 9.7 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 60 | J | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 370 | | 210 | U | 31 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 1500 | | 21 | J | 110 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 16 | J |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 1000 | | 30 | J | 86 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 11 | J |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 1100 | | 30 | J | 76 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 11 | J |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample ID | A1-SS15-12 | | A1-SS16-06 | | A1-SS16-12 | | A1-SS17-06 | | A1-SS17-12 | | Z1-SS17-12 | | A1-SS18-06 | | Z1-SS18-06 | | A1-SS18-12 | |
| | | | | CLP Number | MB5SZ9 | | MB5T00 | | MB5T01 | | MB5T02 | | MB5T03 | | B5SZ3 | | MB5T04 | | MB5SZ6 | | MB5T05 | |
| | | | | Location ID | A1-S15 | | A1-S16 | | A1-S16 | | A1-S17 | | A1-S17 | | A1-S17 | | A1-S18 | | A1-S18 | | A1-S18 | |
| | | | | Sample Date | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/14/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 12 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 600 | | 32 | J | 46 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 980 | | 24 | J | 65 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 11 | J |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 110 | J | 210 | U | 8.1 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 1600 | | 24 | J | 110 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 16 | J |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 200 | J | 210 | U | 17 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 120 | J | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 3900 | | 27 | J | 220 | | 200 | U | 180 | U | 190 | U | 190 | U | | | 38 | J |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 170 | J | 210 | U | 10 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 530 | | 25 | J | 41 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 35 | J | 6.8 | J | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 440 | U | 400 | U | 380 | U | 380 | U | 360 | U | 370 | U | 370 | U | | | 370 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 3500 | | 16 | J | 170 | J | 200 | U | 180 | U | 190 | U | 190 | U | | | 8.4 | J |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 230 | U | 210 | U | 200 | U | 200 | U | 180 | U | 190 | U | 190 | U | | | 190 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 3500 | | 31 | J | 210 | | 200 | U | 180 | U | 190 | U | 190 | U | | | 31 | J |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 4.5 | U | 4 | U | 3.8 | U | 3.8 | U | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 4.8 | JN | 35 | | 0.51 | J | 3.8 | U | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 4.5 | U | 4 | U | 3.8 | U | 3.8 | U | 0.19 | J | 0.23 | J | 3.7 | U | | | 0.2 | J |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 2.3 | U | 2.1 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |

Table B-1
Area 1 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sample ID | A1-SS15-12 | | A1-SS16-06 | | A1-SS16-12 | | A1-SS17-06 | | A1-SS17-12 | | Z1-SS17-12 | | A1-SS18-06 | | Z1-SS18-06 | | A1-SS18-12 | |
| | | | | CLP Number | MB5SZ9 | | MB5T00 | | MB5T01 | | MB5T02 | | MB5T03 | | B5SZ3 | | MB5T04 | | MB5SZ6 | | MB5T05 | |
| | | | | Location ID | A1-S15 | | A1-S16 | | A1-S16 | | A1-S17 | | A1-S17 | | A1-S17 | | A1-S18 | | A1-S18 | | A1-S18 | |
| | | | | Sample Date | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | | 5/14/2010 | | 5/18/2010 | | 5/18/2010 | | 5/18/2010 | |
| | | | | Start Depth | 6 | | 0 | | 6 | | 0 | | 6 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 6 | | 12 | | 6 | | 12 | | 12 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 2.3 | U | 2.1 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 2.3 | U | 2.1 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 2.3 | U | 0.72 | J | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 230 | U | 210 | U | 200 | U | 200 | U | 190 | U | 190 | U | 190 | U | | | 190 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 2.3 | U | 2.1 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 4.5 | U | 4 | U | 3.8 | U | 3.8 | U | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 2.3 | U | 2.1 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 4.5 | U | 6.5 | R | 3.8 | U | 4.9 | J | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 4.5 | U | 4 | U | 3.8 | U | 3.8 | U | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 1.4 | J | 8 | JN | 0.22 | J | 3.8 | U | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 4.5 | U | 4 | U | 3.8 | U | 3.8 | U | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 4.5 | U | 4 | U | 3.8 | U | 3.8 | U | 3.6 | U | 3.6 | U | 3.7 | U | | | 3.7 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 2.3 | U | 2.1 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 0.059 | J |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 2.3 | U | 2.1 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 0.25 | J |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 2.3 | U | 2.1 | U | 2 | UJ | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 2.3 | U | 7.3 | R | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 1.9 | U | | | 1.9 | U |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 23 | U | 21 | U | 0.65 | J | 20 | U | 19 | U | 19 | U | 19 | U | | | 19 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 200 | JN | 1300 | J | 22 | J | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 45 | U | 40 | U | 38 | U | 38 | U | 37 | U | 37 | U | 37 | U | | | 37 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
µg/kg - micrograms per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS70-02 | | A3-SS70-06 | | A3-SS70-12 | | A3-SS71-02 | | A3-SS71-06 | | A3-SS71-12 | | A3-SS73-02 | | A3-SS73-06 | | A3-SS73-12 | | A3-SS74-02 | | A3-SS74-06 | | A3-SS74-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SN5 | | MB5SN7 | | MB5SN8 | | MB5SN9 | | MB5SP0 | | MB5SP1 | | MB5SP2 | | MB5SP3 | | MB5SP4 | | MB5SP5 | | MB5SP6 | | MB5SP7 | |
| | | | | Location ID | S70 | | S70 | | S70 | | S71 | | S71 | | S71 | | S73 | | S73 | | S73 | | S74 | | S74 | | S74 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 2230 | | 2190 | | 1070 | | 1130 | | 5770 | | 8190 | | 1700 | J | 7320 | | 8820 | | 1130 | J | 11000 | | 8850 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 1.5 | J | 1.4 | J | 1.6 | J | 2.8 | J | 6.8 | UJ | 6.9 | UJ | 3.1 | J | 1.5 | J | 7.1 | UJ | 2.8 | J | 7.5 | UJ | 6.9 | UJ |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 4.6 | | 4.3 | | 2.3 | | 3.2 | | 6.2 | | 7.8 | | 4.3 | J | 7.2 | | 8.5 | | 2 | J | 7.9 | | 7.4 | |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 13.6 | J | 11.9 | J | 6.9 | J | 75 | | 14.8 | J | 19.1 | J | 89.8 | J | 40.5 | | 17.4 | J | 52.9 | J | 25.1 | | 17.7 | J |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 0.15 | UJ | 0.2 | UJ | 0.12 | UJ | 1.4 | U | 0.39 | UJ | 0.54 | UJ | 1.8 | R | 0.56 | UJ | 0.55 | UJ | 2.2 | R | 0.53 | UJ | 0.47 | UJ |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 0.076 | UJ | 0.083 | UJ | 0.079 | UJ | 1.2 | UJ | 0.57 | U | 0.57 | U | 0.88 | UJ | 0.16 | UJ | 0.59 | U | 1 | UJ | 0.62 | U | 0.57 | U |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 758 | | 542 | | 325 | UJ | 10300 | | 512 | UJ | 569 | UJ | 9380 | J | 2790 | | 448 | UJ | 7120 | J | 533 | UJ | 398 | UJ |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 6 | | 6.6 | | 4 | | 6.1 | | 17.9 | | 25.6 | | 7.3 | J | 19 | | 26.8 | | 8.3 | J | 27.4 | | 23.4 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 0.46 | UJ | 0.38 | UJ | 5.2 | U | 1.3 | UJ | 5.7 | U | 5.7 | U | 1.7 | UJ | 9.7 | U | 5.9 | U | 1.8 | UJ | 6.2 | U | 5.7 | U |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 6.5 | | 10 | | 5.6 | | 18 | | 6.6 | | 7.4 | | 38.8 | J | 13.1 | | 7 | | 11.3 | J | 7.9 | | 6.6 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 7850 | | 8020 | | 4550 | | 7660 | | 17300 | | 25100 | | 5180 | J | 18500 | | 25000 | | 5210 | J | 23900 | | 23200 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 41.8 | | 47.9 | | 120 | | 33.3 | | 10.2 | | 11 | | 52.6 | J | 25.7 | | 17.9 | | 19.9 | J | 9.9 | | 9.1 | |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 416 | UJ | 309 | UJ | 136 | UJ | 907 | UJ | 401 | UJ | 559 | UJ | 816 | UJ | 701 | UJ | 526 | UJ | 746 | UJ | 723 | | 579 | |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 55.5 | | 49.7 | | 25.8 | | 335 | | 41.9 | | 55.9 | | 294 | J | 110 | | 51.1 | | 268 | J | 50.5 | | 50.9 | |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 2.5 | J | 3.8 | J | 1.9 | J | 3.4 | J | 2.8 | J | 3.8 | J | 3.8 | J | 4.4 | J | 4.3 | J | 2.9 | J | 5 | | 3.9 | J |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 291 | J | 274 | J | 146 | J | 522 | J | 601 | J | 943 | J | 467 | J | 1030 | J | 1080 | J | 434 | J | 1120 | J | 909 | J |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 3.6 | U | 3.7 | U | 3.6 | U | 1.3 | J | 4 | U | 4 | U | 12.8 | R | 1 | J | 0.62 | J | 15.1 | R | 4.4 | U | 0.45 | J |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 1 | U | 1 | U | 1 | U | 2.7 | U | 1.1 | U | 1.1 | U | 3.7 | R | 1.9 | U | 1.2 | U | 4.3 | R | 1.2 | U | 1.1 | U |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 37.5 | J | 37.3 | J | 36.8 | J | 202 | J | 44.9 | J | 30.5 | J | 235 | J | 90.7 | J | 19.8 | J | 301 | J | 36.8 | J | 37.7 | J |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 2.6 | U | 2.6 | U | 2.6 | U | 6.8 | U | 2.8 | U | 2.9 | U | 9.2 | R | 4.8 | U | 2.9 | U | 10.8 | R | 3.1 | U | 2.9 | U |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 14.1 | | 14.6 | | 8.1 | | 7 | UJ | 27.2 | | 35.9 | | 7.7 | UJ | 30.7 | | 41.9 | | 6.3 | UJ | 43 | | 35.8 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 22.5 | J | 20.9 | J | 13.9 | J | 71.4 | J | 14.3 | J | 18.6 | J | 114 | J | 39.3 | J | 21.1 | J | 67.9 | J | 45.4 | J | 19 | J |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 5.4 | R | 5 | R | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | R | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 5.4 | R | 5 | R | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | R | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 5.4 | R | 5 | R | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | R | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.4 | R | 5 | R | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | R | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.4 | R | 5 | R | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | R | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS70-02 | | A3-SS70-06 | | A3-SS70-12 | | A3-SS71-02 | | A3-SS71-06 | | A3-SS71-12 | | A3-SS73-02 | | A3-SS73-06 | | A3-SS73-12 | | A3-SS74-02 | | A3-SS74-06 | | A3-SS74-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SN5 | | MB5SN7 | | MB5SN8 | | MB5SN9 | | MB5SP0 | | MB5SP1 | | MB5SP2 | | MB5SP3 | | MB5SP4 | | MB5SP5 | | MB5SP6 | | MB5SP7 | |
| | | | | Location ID | S70 | | S70 | | S70 | | S71 | | S71 | | S71 | | S73 | | S73 | | S73 | | S74 | | S74 | | S74 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 5.4 | R | 5 | R | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | R | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 110 | R | 100 | R | 120 | R | 510 | R | 190 | R | 95 | R | 580 | R | 110 | R | 93 | R | 930 | R | 110 | R | 92 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 11 | U | 10 | U | 12 | U | 51 | R | 19 | R | 9.5 | U | 58 | R | 11 | U | 9.3 | U | 93 | R | 11 | U | 9.2 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 11 | U | 10 | U | 12 | U | 51 | R | 19 | R | 9.5 | U | 58 | R | 11 | U | 9.3 | U | 93 | R | 11 | U | 9.2 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 11 | U | 10 | U | 12 | U | 51 | R | 19 | R | 9.5 | U | 58 | R | 11 | U | 9.3 | U | 93 | R | 11 | U | 9.2 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 11 | U | 10 | U | 12 | U | 190 | J | 19 | R | 9.5 | U | 58 | R | 11 | U | 35 | | 93 | R | 11 | U | 34 | |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 5.4 | R | 5 | R | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | R | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 95-47-6 | o-Xylene | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 5.4 | U | 5 | U | 5.8 | U | 25 | R | 9.5 | R | 4.8 | U | 29 | R | 5.7 | U | 4.7 | U | 46 | R | 5.5 | U | 4.6 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 5.4 | U | 5 | U | 5.8 | U | 25 | U | 9.5 | U | 4.8 | U | 29 | UJ | 5.7 | U | 4.7 | U | 46 | UJ | 5.5 | U | 4.6 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS70-02 | | A3-SS70-06 | | A3-SS70-12 | | A3-SS71-02 | | A3-SS71-06 | | A3-SS71-12 | | A3-SS73-02 | | A3-SS73-06 | | A3-SS73-12 | | A3-SS74-02 | | A3-SS74-06 | | A3-SS74-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SN5 | | MB5SN7 | | MB5SN8 | | MB5SN9 | | MB5SP0 | | MB5SP1 | | MB5SP2 | | MB5SP3 | | MB5SP4 | | MB5SP5 | | MB5SP6 | | MB5SP7 | |
| | | | | Location ID | S70 | | S70 | | S70 | | S71 | | S71 | | S71 | | S73 | | S73 | | S73 | | S74 | | S74 | | S74 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 170 | UJ | 170 | UJ | 180 | UJ | 440 | UJ | 190 | UJ | 200 | UJ | 650 | UJ | 250 | UJ | 200 | UJ | 850 | UJ | 200 | UJ | 190 | UJ |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 340 | U | 340 | U | 340 | U | 860 | U | 370 | U | 380 | U | 1300 | UJ | 480 | U | 380 | U | 1600 | UJ | 380 | U | 370 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 340 | U | 340 | U | 340 | U | 860 | U | 370 | U | 380 | U | 1300 | UJ | 480 | U | 380 | U | 1600 | UJ | 380 | U | 370 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 340 | U | 340 | U | 340 | U | 860 | U | 370 | U | 380 | U | 1300 | UJ | 480 | U | 380 | U | 1600 | UJ | 380 | U | 370 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 340 | U | 340 | U | 340 | U | 860 | U | 370 | U | 380 | U | 1300 | UJ | 480 | U | 380 | U | 1600 | UJ | 380 | U | 370 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 170 | UJ | 170 | UJ | 180 | UJ | 440 | UJ | 190 | UJ | 200 | UJ | 650 | UJ | 250 | UJ | 200 | UJ | 850 | UJ | 200 | UJ | 190 | UJ |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 340 | U | 340 | U | 340 | U | 860 | U | 370 | U | 380 | U | 1300 | UJ | 480 | U | 380 | U | 1600 | UJ | 380 | U | 370 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 340 | U | 340 | U | 340 | U | 860 | U | 370 | U | 380 | U | 1300 | UJ | 480 | U | 380 | U | 1600 | UJ | 380 | U | 370 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 36 | J | 49 | J | 180 | UJ | 440 | U | 190 | UJ | 40 | J | 650 | UJ | 250 | U | 75 | J | 850 | UJ | 200 | U | 190 | U |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 170 | U | 35 | J | 180 | U | 440 | U | 190 | U | 40 | J | 650 | UJ | 250 | U | 68 | J | 850 | UJ | 200 | U | 190 | U |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 50 | J | 78 | J | 180 | U | 440 | U | 63 | J | 66 | J | 140 | J | 250 | U | 110 | J | 850 | UJ | 61 | J | 190 | U |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 37 | J | 170 | U | 180 | U | 440 | U | 190 | U | 49 | J | 650 | UJ | 250 | U | 74 | J | 850 | UJ | 200 | U | 190 | U |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS70-02 | | A3-SS70-06 | | A3-SS70-12 | | A3-SS71-02 | | A3-SS71-06 | | A3-SS71-12 | | A3-SS73-02 | | A3-SS73-06 | | A3-SS73-12 | | A3-SS74-02 | | A3-SS74-06 | | A3-SS74-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SN5 | | MB5SN7 | | MB5SN8 | | MB5SN9 | | MB5SP0 | | MB5SP1 | | MB5SP2 | | MB5SP3 | | MB5SP4 | | MB5SP5 | | MB5SP6 | | MB5SP7 | |
| | | | | Location ID | S70 | | S70 | | S70 | | S71 | | S71 | | S71 | | S73 | | S73 | | S73 | | S74 | | S74 | | S74 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 170 | U | 170 | U | 180 | U | 2300 | | 190 | U | 90 | J | 260 | J | 470 | | 200 | U | 320 | J | 200 | U | 190 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 39 | J | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 47 | J | 55 | J | 180 | UJ | 440 | U | 44 | J | 54 | J | 650 | UJ | 250 | U | 75 | J | 850 | UJ | 39 | J | 190 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 170 | U | 170 | U | 180 | U | 500 | | 190 | U | 200 | U | 650 | UJ | 57 | J | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 87 | J | 91 | J | 37 | J | 440 | U | 71 | J | 100 | J | 280 | J | 250 | U | 170 | J | 850 | UJ | 65 | J | 190 | U |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 43 | J | 850 | UJ | 200 | U | 190 | U |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 340 | U | 340 | U | 340 | U | 860 | U | 370 | U | 380 | U | 1300 | UJ | 480 | U | 380 | U | 1600 | UJ | 380 | U | 370 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 36 | J | 39 | J | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 47 | J | 850 | UJ | 200 | U | 190 | U |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 170 | U | 170 | U | 180 | U | 440 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 74 | J | 79 | J | 180 | UJ | 440 | U | 52 | J | 75 | J | 210 | J | 250 | U | 110 | J | 850 | UJ | 56 | J | 190 | U |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 3.4 | U | 3.4 | U | 4.8 | J | 8.7 | U | 3.7 | U | 3.8 | U | 13 | UJ | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 3.4 | R | 3.4 | R | 3.7 | R | 8.7 | R | 3.7 | R | 3.8 | R | 13 | R | 4.8 | R | 3.8 | R | 16 | R | 3.9 | R | 3.7 | R |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 3.4 | U | 3.7 | | 7.9 | | 8.7 | U | 3.7 | U | 3.8 | U | 13 | UJ | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 1.7 | U | 1.8 | U | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 1.7 | U | 1.8 | U | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 1.7 | U | 3.1 | NJ | 1.1 | J | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 1.7 | U | 1.8 | U | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 2.3 | R |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS70-02 | | A3-SS70-06 | | A3-SS70-12 | | A3-SS71-02 | | A3-SS71-06 | | A3-SS71-12 | | A3-SS73-02 | | A3-SS73-06 | | A3-SS73-12 | | A3-SS74-02 | | A3-SS74-06 | | A3-SS74-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SN5 | | MB5SN7 | | MB5SN8 | | MB5SN9 | | MB5SP0 | | MB5SP1 | | MB5SP2 | | MB5SP3 | | MB5SP4 | | MB5SP5 | | MB5SP6 | | MB5SP7 | |
| | | | | Location ID | S70 | | S70 | | S70 | | S71 | | S71 | | S71 | | S73 | | S73 | | S73 | | S74 | | S74 | | S74 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 170 | U | 180 | U | 180 | U | 450 | U | 190 | U | 200 | U | 650 | UJ | 250 | U | 200 | U | 850 | UJ | 200 | U | 190 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 1.7 | U | 1.8 | U | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 3.4 | U | 3.4 | U | 3.5 | U | 8.7 | U | 3.7 | U | 3.8 | U | 13 | UJ | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 1.7 | U | 1.8 | U | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 3.4 | U | 3.4 | U | 3.5 | U | 8.7 | U | 3.7 | U | 3.8 | U | 13 | UJ | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 3.4 | U | 3.4 | U | 3.5 | U | 8.7 | U | 3.7 | U | 3.8 | U | 8.6 | J | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 3.4 | U | 3.4 | U | 3.5 | U | 8.7 | U | 3.7 | U | 3.8 | U | 13 | UJ | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 3.4 | U | 3.4 | U | 3.5 | U | 8.7 | U | 3.7 | U | 3.8 | U | 13 | UJ | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 3.4 | U | 3.4 | U | 3.5 | U | 8.7 | U | 3.7 | U | 3.8 | U | 13 | UJ | 4.8 | U | 3.8 | U | 16 | UJ | 3.9 | U | 3.7 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 1.7 | U | 1.8 | U | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 1.7 | U | 2.1 | J | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 1.7 | U | 1.8 | U | 1.8 | U | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 1.7 | U | 1.8 | U | 3.1 | J | 4.5 | U | 1.9 | U | 2 | U | 6.5 | UJ | 2.5 | U | 2 | U | 8.5 | UJ | 2 | U | 1.9 | U |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 17 | U | 18 | U | 18 | U | 45 | U | 19 | U | 20 | U | 65 | UJ | 25 | U | 20 | U | 85 | UJ | 20 | U | 19 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 34 | U | 34 | U | 160 | | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 34 | U | 34 | U | 35 | U | 87 | U | 37 | U | 38 | U | 130 | UJ | 48 | U | 39 | U | 170 | UJ | 38 | U | 37 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
Qualifers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS75-02 | | Z3-SS75-02 | | A3-SS75-06 | | A3-SS75-12 | | A3-SS76-02 | | A3-SS76-06 | | A3-SS76-12 | | A3-SS77-02 | | A3-SS77-06 | | A3-SS77-12 | | A3-SS79-02 | | A3-SS79-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SP8 | | MB5SW2 | | MB5SP9 | | MB5SQ0 | | MB5SQ1 | | MB5SQ2 | | MB5SQ3 | | MB5SQ4 | | MB5SQ5 | | MB5SQ6 | | MB5SQ7 | | MB5SQ8 | |
| | | | | Location ID | S75 | | S75 | | S75 | | S75 | | S76 | | S76 | | S76 | | S77 | | S77 | | S77 | | S79 | | S79 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 302 | J | 405 | J | 7290 | | 30400 | J | 881 | J | 7800 | | 4010 | | 1210 | J | 27600 | J | 7780 | | 781 | J | 8020 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 21.4 | R | 4.8 | UJ | 9 | UJ | 21.7 | R | 2.9 | J | 6.8 | UJ | 6.9 | UJ | 5 | J | 23.8 | R | 7.2 | UJ | 4.6 | J | 15.4 | UJ |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 3.6 | R | 4.7 | R | 8.3 | | 26.2 | J | 1.9 | J | 7 | | 5.9 | | 10.4 | J | 26.5 | J | 7.2 | | 2.2 | J | 5.8 | |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 52.3 | J | 61.2 | UJ | 25.1 | J | 74 | J | 86.8 | J | 19.3 | UJ | 15.5 | UJ | 52.6 | J | 73.2 | UJ | 20.2 | UJ | 67 | UJ | 37.9 | UJ |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 1.8 | R | 0.81 | UJ | 0.63 | UJ | 1.7 | UJ | 0.48 | UJ | 0.44 | UJ | 0.34 | UJ | 0.83 | UJ | 1.3 | UJ | 0.46 | UJ | 2.5 | R | 0.43 | UJ |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 0.78 | UJ | 0.62 | UJ | 0.13 | UJ | 1.8 | R | 2.4 | J | 0.52 | J | 0.32 | J | 0.62 | J | 3.3 | J | 0.99 | | 1.2 | UJ | 1.1 | UJ |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 7200 | J | 8620 | J | 1190 | | 1810 | UJ | 10200 | J | 494 | UJ | 426 | UJ | 7850 | J | 2660 | J | 558 | UJ | 9410 | J | 2830 | |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 2.3 | UJ | 2.8 | UJ | 26.3 | | 73.6 | J | 4.4 | J | 23.5 | | 10.5 | | 10.3 | J | 81.3 | J | 21.1 | | 6.2 | J | 22 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 1.7 | UJ | 23.5 | R | 0.65 | UJ | 2.5 | UJ | 18.1 | R | 5.7 | U | 5.7 | U | 22.4 | R | 19.8 | R | 6 | U | 25.4 | R | 12.8 | U |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 7.9 | J | 11.7 | J | 9.7 | | 25.5 | J | 17.6 | J | 7.8 | | 8.9 | | 17.2 | J | 24.6 | J | 8.1 | | 18 | J | 9.8 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 912 | J | 1430 | J | 22700 | | 73800 | J | 4950 | J | 21800 | | 14700 | | 3460 | J | 62800 | J | 19100 | | 2180 | J | 15600 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 8.6 | J | 13.1 | J | 16.3 | | 39.5 | J | 38.3 | J | 10.6 | | 20.9 | | 35.5 | J | 37.8 | J | 14.7 | | 26 | J | 13.4 | |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 586 | UJ | 708 | UJ | 601 | UJ | 2330 | J | 886 | UJ | 538 | UJ | 448 | UJ | 827 | UJ | 2080 | J | 584 | UJ | 774 | UJ | 803 | UJ |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 393 | J | 322 | J | 78.7 | | 180 | J | 383 | J | 53.5 | | 47.2 | | 257 | J | 166 | J | 42.5 | J | 231 | J | 92 | J |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 14.3 | R | 18.8 | R | 4.9 | J | 15.1 | J | 3.3 | J | 3.7 | J | 2.9 | J | 3 | J | 13.8 | J | 4.1 | J | 20.3 | R | 4.6 | J |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 350 | J | 419 | J | 1060 | J | 3110 | J | 467 | J | 887 | J | 461 | J | 415 | J | 3410 | J | 962 | J | 406 | J | 1100 | J |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 12.5 | R | 16.4 | R | 0.68 | J | 1.5 | J | 12.6 | R | 1.3 | UJ | 1.1 | UJ | 15.7 | R | 4.1 | J | 1.1 | J | 2 | J | 1.6 | J |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 3.6 | R | 4.7 | R | 1.5 | U | 3.6 | R | 3.6 | R | 1.1 | U | 1.1 | U | 4.5 | R | 4 | R | 1.2 | U | 5.1 | R | 2.6 | U |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 177 | J | 222 | J | 70.6 | J | 112 | J | 396 | J | 46.6 | J | 48 | J | 202 | J | 101 | J | 40.8 | J | 318 | J | 111 | J |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 8.9 | R | 11.7 | R | 3.8 | U | 9 | R | 9 | R | 2.9 | U | 2.9 | U | 11.2 | R | 2 | J | 1.6 | J | 12.7 | R | 6.4 | U |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 1.3 | UJ | 1.9 | J | 43 | | 121 | J | 4.9 | UJ | 36.3 | | 29.2 | | 5.4 | J | 112 | J | 33.4 | | 3.2 | J | 26.9 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 61.7 | J | 171 | J | 32.2 | J | 76.3 | J | 75.9 | J | 19.3 | J | 24.2 | J | 58.8 | J | 67 | J | 22.5 | | 88 | J | 39.9 | |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | UJ | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | R | 5 | R | 21 | UJ | 24 | R | 5.3 | R | 21 | R | 9.1 | R |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | R | 5 | R | 21 | UJ | 24 | R | 5.3 | R | 21 | R | 9.1 | R |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | R | 5 | R | 21 | UJ | 24 | R | 5.3 | R | 21 | R | 9.1 | R |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | R | 5 | R | 21 | UJ | 24 | R | 5.3 | R | 21 | R | 9.1 | R |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | R | 5 | R | 21 | UJ | 24 | R | 5.3 | R | 21 | R | 9.1 | R |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS75-02 | | Z3-SS75-02 | | A3-SS75-06 | | A3-SS75-12 | | A3-SS76-02 | | A3-SS76-06 | | A3-SS76-12 | | A3-SS77-02 | | A3-SS77-06 | | A3-SS77-12 | | A3-SS79-02 | | A3-SS79-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SP8 | | MB5SW2 | | MB5SP9 | | MB5SQ0 | | MB5SQ1 | | MB5SQ2 | | MB5SQ3 | | MB5SQ4 | | MB5SQ5 | | MB5SQ6 | | MB5SQ7 | | MB5SQ8 | |
| | | | | Location ID | S75 | | S75 | | S75 | | S75 | | S76 | | S76 | | S76 | | S77 | | S77 | | S77 | | S79 | | S79 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | R | 5 | R | 21 | UJ | 24 | R | 5.3 | R | 21 | R | 9.1 | R |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 620 | R | 320 | R | 170 | R | 110 | R | 670 | R | 100 | R | 100 | R | 420 | | 470 | R | 110 | R | 430 | R | 180 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 62 | R | 32 | UJ | 17 | U | 11 | U | 67 | R | 10 | U | 10 | U | 42 | UJ | 47 | R | 11 | U | 43 | UJ | 18 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 62 | R | 32 | UJ | 17 | U | 11 | U | 67 | R | 10 | U | 10 | U | 42 | UJ | 47 | R | 11 | U | 43 | R | 18 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 62 | R | 32 | UJ | 17 | U | 11 | U | 67 | R | 10 | U | 10 | U | 42 | UJ | 47 | R | 11 | U | 43 | R | 18 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 62 | R | 32 | UJ | 17 | U | 110 | | 67 | R | 10 | U | 99 | | 42 | UJ | 47 | R | 63 | | 43 | UJ | 18 | U |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | R | 5 | R | 21 | UJ | 24 | R | 5.3 | R | 21 | R | 9.1 | R |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | UJ | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 95-47-6 | o-Xylene | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | UJ | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 31 | R | 16 | UJ | 8.3 | U | 5.6 | U | 33 | R | 5 | U | 5 | U | 21 | UJ | 24 | R | 5.3 | U | 21 | R | 9.1 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 31 | UJ | 16 | UJ | 8.3 | U | 5.6 | U | 33 | UJ | 5 | U | 5 | U | 21 | UJ | 24 | UJ | 5.3 | U | 21 | UJ | 9.1 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS75-02 | | Z3-SS75-02 | | A3-SS75-06 | | A3-SS75-12 | | A3-SS76-02 | | A3-SS76-06 | | A3-SS76-12 | | A3-SS77-02 | | A3-SS77-06 | | A3-SS77-12 | | A3-SS79-02 | | A3-SS79-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SP8 | | MB5SW2 | | MB5SP9 | | MB5SQ0 | | MB5SQ1 | | MB5SQ2 | | MB5SQ3 | | MB5SQ4 | | MB5SQ5 | | MB5SQ6 | | MB5SQ7 | | MB5SQ8 | |
| | | | | Location ID | S75 | | S75 | | S75 | | S75 | | S76 | | S76 | | S76 | | S77 | | S77 | | S77 | | S79 | | S79 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 650 | UJ | 630 | UJ | 290 | UJ | 210 | UJ | 680 | UJ | 200 | UJ | 190 | UJ | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 1300 | UJ | 1200 | UJ | 570 | U | 400 | U | 1300 | UJ | 380 | U | 380 | U | 1400 | UJ | 1400 | UJ | 390 | U | 1400 | UJ | 540 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 1300 | UJ | 1200 | UJ | 570 | U | 400 | U | 1300 | UJ | 380 | U | 380 | U | 1400 | UJ | 1400 | UJ | 390 | U | 1400 | UJ | 540 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 1300 | UJ | 1200 | UJ | 570 | U | 400 | U | 1300 | UJ | 380 | U | 380 | U | 1400 | UJ | 1400 | UJ | 390 | U | 1400 | UJ | 540 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 1300 | UJ | 1200 | UJ | 570 | U | 400 | U | 1300 | UJ | 380 | U | 380 | U | 1400 | UJ | 1400 | UJ | 390 | U | 1400 | UJ | 540 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 650 | UJ | 630 | UJ | 290 | UJ | 210 | UJ | 680 | UJ | 200 | UJ | 190 | UJ | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 1300 | UJ | 1200 | UJ | 570 | U | 400 | U | 1300 | UJ | 380 | U | 380 | U | 1400 | UJ | 1400 | UJ | 390 | U | 1400 | UJ | 540 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 1300 | UJ | 1200 | UJ | 570 | U | 400 | U | 1300 | UJ | 380 | U | 380 | U | 1400 | UJ | 1400 | UJ | 390 | U | 1400 | UJ | 540 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 61 | J | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 120 | J | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 650 | UJ | 630 | UJ | 290 | U | 120 | J | 680 | UJ | 290 | | 45 | J | 700 | UJ | 730 | UJ | 200 | UJ | 730 | UJ | 280 | U |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 650 | UJ | 630 | UJ | 290 | U | 110 | J | 680 | UJ | 240 | | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 650 | UJ | 630 | UJ | 100 | J | 220 | | 680 | UJ | 340 | | 75 | J | 700 | UJ | 730 | UJ | 62 | J | 730 | UJ | 280 | U |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 650 | UJ | 630 | UJ | 290 | U | 84 | J | 680 | UJ | 140 | J | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 650 | UJ | 630 | UJ | 290 | U | 95 | J | 680 | UJ | 200 | J | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS75-02 | | Z3-SS75-02 | | A3-SS75-06 | | A3-SS75-12 | | A3-SS76-02 | | A3-SS76-06 | | A3-SS76-12 | | A3-SS77-02 | | A3-SS77-06 | | A3-SS77-12 | | A3-SS79-02 | | A3-SS79-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SP8 | | MB5SW2 | | MB5SP9 | | MB5SQ0 | | MB5SQ1 | | MB5SQ2 | | MB5SQ3 | | MB5SQ4 | | MB5SQ5 | | MB5SQ6 | | MB5SQ7 | | MB5SQ8 | |
| | | | | Location ID | S75 | | S75 | | S75 | | S75 | | S76 | | S76 | | S76 | | S77 | | S77 | | S77 | | S79 | | S79 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 520 | J | 630 | UJ | 290 | U | 210 | U | 1400 | J | 200 | U | 240 | | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 650 | UJ | 630 | UJ | 77 | J | 130 | J | 680 | UJ | 280 | | 43 | J | 700 | UJ | 730 | UJ | 46 | J | 730 | UJ | 280 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 790 | J | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 650 | UJ | 630 | UJ | 130 | J | 250 | | 680 | UJ | 730 | | 85 | J | 220 | J | 160 | J | 84 | J | 730 | UJ | 280 | U |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 67 | J | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 650 | UJ | 630 | UJ | 290 | U | 74 | J | 680 | UJ | 120 | J | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 1300 | UJ | 1200 | UJ | 570 | U | 400 | U | 1300 | UJ | 380 | U | 380 | U | 1400 | UJ | 1400 | UJ | 390 | U | 1400 | UJ | 540 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 650 | UJ | 630 | UJ | 290 | U | 60 | J | 680 | UJ | 460 | | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 650 | UJ | 630 | UJ | 290 | U | 210 | U | 680 | UJ | 200 | U | 190 | U | 700 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 650 | UJ | 630 | UJ | 130 | J | 170 | J | 680 | UJ | 580 | | 77 | J | 150 | J | 730 | UJ | 59 | J | 730 | UJ | 280 | U |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 13 | UJ | 12 | UJ | 5.8 | U | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 13 | R | 12 | UJ | 5.8 | R | 4 | R | 13 | R | 2 | NJ | 3.8 | R | 14 | R | 14 | R | 3.9 | R | 14 | R | 5.5 | R |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 13 | UJ | 12 | UJ | 5.8 | U | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 2 | U | 2 | U | 7.1 | UJ | 7.3 | UJ | 2 | U | 7.3 | UJ | 2.8 | U |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 6.5 | UJ | 4 | J | 3 | U | 2.1 | U | 6.8 | UJ | 2 | U | 2 | U | 7.1 | UJ | 7.3 | UJ | 2 | U | 13 | J | 2.2 | J |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 1.4 | J | 1.6 | J | 7.1 | UJ | 7.3 | UJ | 2 | U | 7.3 | UJ | 2.8 | U |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 2.3 | R | 2 | U | 7.1 | UJ | 7.3 | UJ | 4.9 | R | 7.3 | UJ | 2.8 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS75-02 | | Z3-SS75-02 | | A3-SS75-06 | | A3-SS75-12 | | A3-SS76-02 | | A3-SS76-06 | | A3-SS76-12 | | A3-SS77-02 | | A3-SS77-06 | | A3-SS77-12 | | A3-SS79-02 | | A3-SS79-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SP8 | | MB5SW2 | | MB5SP9 | | MB5SQ0 | | MB5SQ1 | | MB5SQ2 | | MB5SQ3 | | MB5SQ4 | | MB5SQ5 | | MB5SQ6 | | MB5SQ7 | | MB5SQ8 | |
| | | | | Location ID | S75 | | S75 | | S75 | | S75 | | S76 | | S76 | | S76 | | S77 | | S77 | | S77 | | S79 | | S79 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 650 | UJ | 620 | UJ | 300 | U | 210 | U | 680 | UJ | 200 | U | 200 | U | 710 | UJ | 730 | UJ | 200 | U | 730 | UJ | 280 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 2 | U | 2 | U | 7.1 | UJ | 7.3 | UJ | 2 | U | 7.3 | UJ | 2.8 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 13 | UJ | 12 | UJ | 5.8 | U | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 2 | U | 2 | U | 7.1 | UJ | 7.3 | UJ | 2 | U | 7.3 | UJ | 2.8 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 13 | UJ | 12 | UJ | 5.8 | U | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 13 | UJ | 43 | J | 5.6 | J | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 13 | UJ | 12 | UJ | 5.8 | U | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 13 | UJ | 12 | UJ | 5.8 | U | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 13 | UJ | 12 | UJ | 5.8 | U | 4 | U | 13 | UJ | 3.8 | U | 3.8 | U | 14 | UJ | 14 | UJ | 3.9 | U | 14 | UJ | 5.5 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 2 | U | 2 | U | 7.1 | UJ | 7.3 | UJ | 2 | U | 7.3 | UJ | 2.8 | U |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 2 | U | 2 | U | 7.1 | UJ | 7.3 | UJ | 2 | U | 21 | J | 2.8 | J |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 1.5 | J | 2 | U | 7.1 | UJ | 7.3 | UJ | 2.5 | NJ | 7.3 | UJ | 2.8 | U |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 6.5 | UJ | 6.2 | UJ | 3 | U | 2.1 | U | 6.8 | UJ | 2 | U | 2 | U | 7.1 | UJ | 7.3 | UJ | 2 | U | 7.3 | UJ | 2.8 | U |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 65 | UJ | 62 | UJ | 30 | U | 21 | U | 68 | UJ | 20 | U | 20 | U | 71 | UJ | 73 | UJ | 20 | U | 73 | UJ | 28 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 130 | UJ | 120 | UJ | 57 | U | 40 | U | 130 | UJ | 38 | U | 38 | U | 140 | UJ | 140 | UJ | 39 | U | 140 | UJ | 55 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
Qualifers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS79-12 | | A3-SS80-02 | | A3-SS80-06 | | A3-SS80-12 | | A3-SS81-02 | | A3-SS81-06 | | A3-SS81-12 | | A3-SS82-02 | | A3-SS82-06 | | A3-SS82-12 | | A3-SS83-02 | | A3-SS83-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SQ9 | | MB5SR0 | | MB5SR1 | | MB5SR2 | | MB5SR3 | | MB5SR4 | | MB5SR5 | | MB5SR6 | | MB5SR7 | | MB5SR8 | | MB5SR9 | | MB5SS0 | |
| | | | | Location ID | S79 | | S80 | | S80 | | S80 | | S81 | | S81 | | S81 | | S82 | | S82 | | S82 | | S83 | | S83 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 11500 | | 6220 | | 3680 | | 3800 | | 2780 | J | 3080 | | 4540 | | 1090 | J | 1570 | J | 3840 | | 1680 | J | 13400 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 6.9 | UJ | 6.1 | UJ | 6.1 | UJ | 1.1 | J | 2.9 | J | 1.5 | J | 1 | J | 3.4 | J | 5.5 | J | 1 | J | 4.9 | J | 2.1 | J |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 8.3 | | 7.7 | | 6 | | 4.7 | | 12.7 | J | 5.3 | | 3.5 | | 2.7 | J | 4.2 | J | 5.3 | | 2.6 | J | 12 | |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 21.8 | UJ | 25.9 | | 12.5 | UJ | 20.1 | UJ | 56.1 | UJ | 38.2 | | 23.1 | | 38.7 | UJ | 52.5 | UJ | 18.4 | UJ | 67.6 | UJ | 54.8 | |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 0.5 | UJ | 0.88 | | 0.49 | UJ | 0.27 | UJ | 0.68 | UJ | 0.3 | UJ | 0.31 | UJ | 2 | R | 0.82 | UJ | 0.35 | UJ | 2.3 | R | 0.92 | UJ |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 1.2 | | 1.7 | | 1 | | 0.59 | | 0.81 | UJ | 0.57 | UJ | 0.59 | | 0.62 | UJ | 0.73 | UJ | 0.74 | | 0.98 | UJ | 1.7 | |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 425 | UJ | 681 | | 467 | UJ | 687 | | 5640 | J | 3420 | | 516 | UJ | 7970 | J | 6760 | J | 465 | UJ | 8180 | J | 2690 | |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 27.6 | | 36.2 | | 16.9 | | 10.3 | | 12.9 | J | 9.7 | | 10.5 | | 5.5 | J | 7.6 | J | 11.5 | | 6.8 | J | 37.4 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 5.7 | U | 2.5 | UJ | 1.5 | UJ | 0.88 | UJ | 21.4 | R | 0.95 | UJ | 1.5 | UJ | 19.7 | R | 26.2 | R | 6.1 | U | 22.7 | R | 1.4 | UJ |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 7.5 | | 7.8 | | 5.3 | | 15.5 | | 23.4 | J | 11.5 | | 15.4 | | 15.4 | J | 15 | J | 10.2 | | 26 | J | 14.9 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 23100 | | 33600 | | 21500 | | 11000 | | 8020 | J | 8580 | | 10600 | | 2290 | J | 5070 | J | 14200 | | 3910 | J | 31400 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 9.6 | | 16.3 | | 12 | | 33.2 | | 21 | J | 20.6 | | 30.3 | | 10.6 | J | 14.7 | J | 23.4 | | 26.8 | J | 19 | |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 634 | | 853 | | 459 | UJ | 498 | UJ | 884 | UJ | 676 | UJ | 921 | | 768 | UJ | 880 | UJ | 438 | UJ | 1010 | UJ | 1190 | UJ |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 42.5 | J | 227 | J | 101 | J | 65.6 | J | 240 | J | 141 | J | 61.8 | J | 192 | J | 195 | J | 50.5 | J | 276 | J | 118 | J |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 4.5 | J | 6.1 | | 5.1 | | 3.7 | J | 4.5 | J | 3.7 | J | 9.1 | | 2.6 | J | 3.3 | J | 4.4 | J | 3.7 | J | 7.4 | J |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 1090 | J | 1430 | J | 981 | J | 524 | J | 602 | J | 530 | J | 601 | J | 502 | J | 582 | J | 480 | J | 404 | J | 1700 | J |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 1 | J | 1.4 | J | 0.95 | J | 0.85 | J | 1.7 | J | 0.93 | J | 0.57 | J | 13.8 | R | 18.3 | R | 0.85 | J | 15.9 | R | 1.8 | J |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 1.1 | U | 1 | U | 1 | U | 0.093 | J | 4.3 | R | 1.7 | U | 1.1 | U | 3.9 | R | 5.2 | R | 1.2 | U | 4.5 | R | 2.6 | U |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 29.5 | J | 40.9 | J | 30.8 | J | 36.5 | J | 189 | J | 69.8 | J | 44 | J | 259 | J | 261 | J | 54.6 | J | 276 | J | 109 | J |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 2.3 | J | 2.8 | | 1.3 | J | 2.6 | U | 10.7 | R | 4.2 | U | 0.42 | J | 9.8 | R | 13.1 | R | 3 | U | 11.3 | R | 1.8 | J |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 35.7 | | 35.8 | | 26.5 | | 18.3 | | 12.8 | J | 15.5 | | 17.1 | | 4.7 | J | 5.8 | J | 22.6 | | 5.8 | J | 54.8 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 17.1 | | 45.9 | | 32.2 | | 42.8 | | 70.2 | J | 31.4 | | 36.1 | | 43.9 | J | 41.3 | J | 34.7 | | 65.8 | J | 43.5 | |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | R | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 5.4 | U | 5.2 | R | 5.6 | R | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 5.4 | U | 5.2 | R | 5.6 | R | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.4 | U | 5.2 | R | 5.6 | R | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.4 | U | 5.2 | R | 5.6 | R | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS79-12 | | A3-SS80-02 | | A3-SS80-06 | | A3-SS80-12 | | A3-SS81-02 | | A3-SS81-06 | | A3-SS81-12 | | A3-SS82-02 | | A3-SS82-06 | | A3-SS82-12 | | A3-SS83-02 | | A3-SS83-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SQ9 | | MB5SR0 | | MB5SR1 | | MB5SR2 | | MB5SR3 | | MB5SR4 | | MB5SR5 | | MB5SR6 | | MB5SR7 | | MB5SR8 | | MB5SR9 | | MB5SS0 | |
| | | | | Location ID | S79 | | S80 | | S80 | | S80 | | S81 | | S81 | | S81 | | S82 | | S82 | | S82 | | S83 | | S83 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 5.4 | U | 5.2 | R | 5.6 | R | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 110 | R | 100 | R | 110 | R | 98 | R | 360 | R | 150 | R | 100 | R | 390 | R | 500 | R | 130 | R | 480 | R | 140 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 11 | U | 10 | U | 11 | U | 9.8 | U | 36 | R | 15 | U | 10 | U | 39 | UJ | 50 | UJ | 13 | U | 48 | UJ | 14 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 11 | U | 10 | R | 11 | U | 9.8 | R | 36 | R | 15 | U | 10 | U | 39 | UJ | 50 | UJ | 13 | U | 48 | UJ | 14 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 11 | U | 10 | R | 11 | U | 9.8 | R | 36 | R | 15 | U | 10 | U | 39 | UJ | 50 | UJ | 13 | U | 48 | UJ | 14 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 40 | | 10 | U | 11 | U | 9.8 | U | 36 | R | 15 | U | 10 | U | 39 | UJ | 50 | UJ | 13 | U | 48 | UJ | 14 | U |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 5.4 | U | 5.2 | R | 5.6 | R | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 95-47-6 | o-Xylene | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 5.4 | U | 5.2 | R | 5.6 | U | 4.9 | R | 18 | R | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | UJ |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 5.4 | U | 5.2 | U | 5.6 | U | 4.9 | U | 18 | UJ | 7.7 | U | 5.1 | U | 19 | UJ | 25 | UJ | 6.6 | U | 24 | UJ | 6.9 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS79-12 | | A3-SS80-02 | | A3-SS80-06 | | A3-SS80-12 | | A3-SS81-02 | | A3-SS81-06 | | A3-SS81-12 | | A3-SS82-02 | | A3-SS82-06 | | A3-SS82-12 | | A3-SS83-02 | | A3-SS83-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SQ9 | | MB5SR0 | | MB5SR1 | | MB5SR2 | | MB5SR3 | | MB5SR4 | | MB5SR5 | | MB5SR6 | | MB5SR7 | | MB5SR8 | | MB5SR9 | | MB5SS0 | |
| | | | | Location ID | S79 | | S80 | | S80 | | S80 | | S81 | | S81 | | S81 | | S82 | | S82 | | S82 | | S83 | | S83 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 380 | U | 340 | U | 350 | U | 360 | U | 1300 | UJ | 570 | U | 380 | U | 1400 | UJ | 1700 | UJ | 410 | U | 1500 | UJ | 460 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 380 | U | 340 | U | 350 | U | 360 | U | 1300 | UJ | 570 | U | 380 | U | 1400 | UJ | 1700 | UJ | 410 | U | 1500 | UJ | 460 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 380 | U | 340 | U | 350 | U | 360 | U | 1300 | UJ | 570 | U | 380 | U | 1400 | UJ | 1700 | UJ | 410 | U | 1500 | UJ | 460 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 380 | U | 340 | U | 350 | U | 360 | U | 1300 | UJ | 570 | U | 380 | U | 1400 | UJ | 1700 | UJ | 410 | U | 1500 | UJ | 460 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 380 | U | 340 | U | 350 | U | 360 | U | 1300 | UJ | 570 | U | 380 | U | 1400 | UJ | 1700 | UJ | 410 | U | 1500 | UJ | 460 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 380 | U | 340 | U | 350 | U | 360 | U | 1300 | UJ | 570 | U | 380 | U | 1400 | UJ | 1700 | UJ | 410 | U | 1500 | UJ | 460 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 200 | UJ | 170 | U | 180 | UJ | 45 | J | 680 | UJ | 92 | J | 42 | J | 740 | UJ | 890 | UJ | 47 | J | 760 | UJ | 240 | U |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 200 | U | 170 | U | 180 | U | 48 | J | 680 | UJ | 66 | J | 46 | J | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 200 | U | 170 | U | 49 | J | 83 | J | 680 | UJ | 100 | J | 68 | J | 740 | UJ | 890 | UJ | 70 | J | 760 | UJ | 240 | U |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 200 | U | 170 | U | 180 | U | 55 | J | 680 | UJ | 80 | J | 59 | J | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS79-12 | | A3-SS80-02 | | A3-SS80-06 | | A3-SS80-12 | | A3-SS81-02 | | A3-SS81-06 | | A3-SS81-12 | | A3-SS82-02 | | A3-SS82-06 | | A3-SS82-12 | | A3-SS83-02 | | A3-SS83-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SQ9 | | MB5SR0 | | MB5SR1 | | MB5SR2 | | MB5SR3 | | MB5SR4 | | MB5SR5 | | MB5SR6 | | MB5SR7 | | MB5SR8 | | MB5SR9 | | MB5SS0 | |
| | | | | Location ID | S79 | | S80 | | S80 | | S80 | | S81 | | S81 | | S81 | | S82 | | S82 | | S82 | | S83 | | S83 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 200 | UJ | 170 | U | 180 | UJ | 63 | J | 680 | UJ | 76 | J | 59 | J | 740 | UJ | 890 | UJ | 55 | J | 760 | UJ | 240 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 41 | J | 170 | U | 61 | J | 120 | J | 680 | UJ | 170 | J | 88 | J | 740 | UJ | 890 | UJ | 90 | J | 760 | UJ | 240 | U |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 200 | U | 170 | U | 180 | U | 36 | J | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 380 | U | 340 | U | 350 | U | 360 | U | 1300 | UJ | 570 | U | 380 | U | 1400 | UJ | 1700 | UJ | 410 | U | 1500 | UJ | 460 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 88 | J | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 200 | U | 170 | U | 180 | U | 180 | U | 680 | UJ | 290 | U | 190 | U | 740 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 200 | UJ | 170 | U | 45 | J | 81 | J | 680 | UJ | 120 | J | 86 | J | 740 | UJ | 890 | UJ | 81 | J | 760 | UJ | 240 | U |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.7 | J | 15 | UJ | 4.7 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 3.8 | R | 3.4 | R | 3.5 | R | 3.6 | R | 13 | R | 5.7 | R | 3.8 | R | 14 | R | 17 | R | 4.1 | R | 15 | R | 4.7 | R |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.1 | U | 15 | UJ | 4.7 | U |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 2 | U | 1.8 | U | 1.3 | J | 9.9 | NJ | 6.8 | UJ | 2.9 | U | 11 | NJ | 7.3 | UJ | 8.9 | UJ | 7.8 | NJ | 7.6 | UJ | 2.4 | U |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |

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Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS79-12 | | A3-SS80-02 | | A3-SS80-06 | | A3-SS80-12 | | A3-SS81-02 | | A3-SS81-06 | | A3-SS81-12 | | A3-SS82-02 | | A3-SS82-06 | | A3-SS82-12 | | A3-SS83-02 | | A3-SS83-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SQ9 | | MB5SR0 | | MB5SR1 | | MB5SR2 | | MB5SR3 | | MB5SR4 | | MB5SR5 | | MB5SR6 | | MB5SR7 | | MB5SR8 | | MB5SR9 | | MB5SS0 | |
| | | | | Location ID | S79 | | S80 | | S80 | | S80 | | S81 | | S81 | | S81 | | S82 | | S82 | | S82 | | S83 | | S83 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 200 | U | 180 | U | 180 | U | 190 | U | 680 | UJ | 290 | U | 190 | U | 730 | UJ | 890 | UJ | 210 | U | 760 | UJ | 240 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.1 | U | 15 | UJ | 4.7 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.1 | U | 15 | UJ | 4.7 | U |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.1 | U | 15 | UJ | 4.7 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.1 | U | 15 | UJ | 4.7 | U |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.1 | U | 15 | UJ | 4.7 | U |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 3.8 | U | 3.4 | U | 3.5 | U | 3.6 | U | 13 | UJ | 5.7 | U | 3.8 | U | 14 | UJ | 17 | UJ | 4.1 | U | 15 | UJ | 4.7 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 2 | U | 1.8 | U | 1.8 | U | 8.7 | | 6.8 | UJ | 2.9 | U | 9.5 | R | 7.3 | UJ | 8.9 | UJ | 6.4 | NJ | 7.6 | UJ | 2.4 | U |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 2 | U | 1.8 | U | 1.8 | U | 1.9 | U | 6.8 | UJ | 2.9 | U | 1.9 | U | 7.3 | UJ | 8.9 | UJ | 2.1 | U | 7.6 | UJ | 2.4 | U |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 20 | U | 18 | U | 18 | U | 19 | U | 68 | UJ | 29 | U | 19 | U | 73 | UJ | 89 | UJ | 21 | U | 76 | UJ | 24 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 38 | U | 34 | U | 35 | U | 36 | U | 130 | UJ | 57 | U | 38 | U | 140 | UJ | 170 | UJ | 41 | U | 150 | UJ | 47 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
Qualifers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS83-12 | | A3-SS84-02 | | A3-SS84-06 | | A3-SS84-12 | | A3-SS85-02 | | A3-SS85-06 | | A3-SS85-12 | | A3-SS86-02 | | A3-SS86-06 | | A3-SS86-12 | | A3-SS87-02 | | A3-SS87-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SS1 | | MB5SS2 | | MB5SS3 | | MB5SS4 | | MB5SS5 | | MB5SS6 | | MB5SS7 | | MB5SS8 | | MB5SS9 | | MB5ST0 | | MB5ST1 | | MB5ST2 | |
| | | | | Location ID | S83 | | S84 | | S84 | | S84 | | S85 | | S85 | | S85 | | S86 | | S86 | | S86 | | S87 | | S87 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 10500 | | 3440 | J | 10300 | | 8280 | | 1280 | J | 9370 | | 9280 | | 3740 | | 4880 | | 3400 | | 7980 | | 9070 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 6.9 | UJ | 3.7 | J | 7.3 | UJ | 0.97 | J | 4.3 | J | 1 | J | 0.74 | J | 0.79 | J | 0.93 | UJ | 1 | UJ | 0.74 | UJ | 6.2 | UJ |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 10.6 | | 3.8 | J | 7.8 | | 7.1 | | 2.7 | J | 8.7 | | 7.7 | | 4 | | 7 | | 5 | | 8.3 | | 7.8 | |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 22.5 | UJ | 78.6 | J | 23.9 | J | 18.4 | J | 47.9 | J | 21.9 | J | 21.3 | J | 17.7 | J | 15.4 | UJ | 15.7 | UJ | 21.7 | | 22.1 | |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 0.57 | UJ | 0.8 | UJ | 0.55 | UJ | 0.61 | | 1.1 | UJ | 0.55 | UJ | 0.66 | | 0.62 | | 0.82 | | 0.52 | UJ | 0.71 | | 0.63 | |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 1.4 | | 1.5 | UJ | 1 | | 0.4 | J | 0.58 | J | 0.47 | J | 0.4 | J | 0.26 | J | 0.37 | UJ | 0.23 | UJ | 0.38 | UJ | 0.27 | UJ |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 493 | UJ | 8000 | J | 758 | | 473 | UJ | 7330 | J | 784 | | 496 | UJ | 486 | UJ | 482 | UJ | 529 | UJ | 3310 | | 599 | |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 32.5 | | 11.8 | J | 26.3 | | 23.5 | | 4.5 | UJ | 28.1 | | 26.2 | | 14 | | 21.4 | | 11.7 | | 22.1 | | 21.5 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 5.8 | U | 2.1 | UJ | 0.58 | UJ | 5.6 | U | 23.3 | R | 6.3 | U | 5.6 | U | 4.3 | J | 2.8 | J | 1.1 | J | 5.1 | U | 5.2 | U |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 8 | | 15.9 | J | 7.4 | | 5.8 | | 11.7 | J | 6.9 | | 6.8 | | 5.5 | | 5.3 | | 12 | | 7 | | 6.6 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 29200 | | 8880 | J | 22600 | | 22400 | | 5690 | J | 26600 | | 27200 | | 15900 | | 27600 | | 14700 | | 21100 | | 21700 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 11.3 | | 26.3 | J | 10.5 | | 8.3 | J | 12.5 | J | 9.4 | J | 10.2 | J | 7.8 | J | 8.9 | J | 22.7 | J | 10.8 | J | 11 | J |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 823 | | 1110 | J | 740 | | 543 | UJ | 696 | UJ | 617 | J | 590 | | 565 | | 745 | | 442 | UJ | 2190 | | 689 | |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 75.6 | J | 323 | J | 60.7 | J | 51.1 | | 178 | J | 63.5 | | 76.8 | | 174 | | 185 | | 103 | | 73.6 | | 61.6 | |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 5.3 | | 5 | J | 4.7 | J | 3.4 | J | 18.7 | R | 4.3 | J | 4.2 | J | 5.1 | | 3.8 | J | 4.1 | J | 4.1 | | 4 | J |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 1260 | J | 653 | J | 1100 | J | 834 | J | 449 | J | 834 | J | 886 | J | 649 | J | 1150 | J | 534 | J | 918 | J | 763 | J |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 1.6 | J | 12.9 | R | 1.2 | UJ | 4 | U | 16.3 | R | 0.84 | J | 0.71 | J | 3.6 | U | 0.53 | J | 0.6 | J | 3.6 | U | 0.5 | J |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 1.2 | U | 3.7 | R | 1.2 | U | 1.1 | U | 4.7 | R | 1.3 | U | 1.1 | U | 1 | U | 1 | U | 1.1 | U | 1 | U | 1 | U |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 44.7 | J | 312 | J | 54.2 | J | 37.7 | J | 305 | J | 39.1 | J | 33.3 | J | 32.8 | J | 34.7 | J | 50.5 | J | 53.8 | J | 38.4 | J |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 1.7 | J | 9.2 | R | 1.5 | J | 0.63 | J | 11.7 | R | 3.1 | U | 0.43 | J | 0.84 | J | 1 | J | 2.7 | U | 1.6 | J | 1 | J |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 46.2 | | 12.5 | J | 38.1 | | 34.8 | | 10.2 | J | 41.3 | | 38.9 | | 18.4 | | 29.1 | | 21.1 | | 35.4 | | 34.9 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 26.1 | | 55.5 | J | 24.3 | | 16.1 | | 68 | J | 25.4 | | 30.1 | | 19 | | 28.5 | | 26 | | 20.6 | | 18.5 | |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS83-12 | | A3-SS84-02 | | A3-SS84-06 | | A3-SS84-12 | | A3-SS85-02 | | A3-SS85-06 | | A3-SS85-12 | | A3-SS86-02 | | A3-SS86-06 | | A3-SS86-12 | | A3-SS87-02 | | A3-SS87-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SS1 | | MB5SS2 | | MB5SS3 | | MB5SS4 | | MB5SS5 | | MB5SS6 | | MB5SS7 | | MB5SS8 | | MB5SS9 | | MB5ST0 | | MB5ST1 | | MB5ST2 | |
| | | | | Location ID | S83 | | S84 | | S84 | | S84 | | S85 | | S85 | | S85 | | S86 | | S86 | | S86 | | S87 | | S87 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 120 | R | 330 | R | 130 | R | 110 | R | 440 | R | 110 | R | 110 | R | 110 | R | 100 | R | 110 | R | 95 | R | 95 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 12 | U | 33 | UJ | 13 | U | 11 | U | 44 | UJ | 11 | U | 11 | U | 11 | U | 10 | U | 11 | U | 9.5 | U | 9.5 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 12 | U | 33 | UJ | 13 | U | 11 | U | 44 | UJ | 11 | U | 11 | U | 11 | U | 10 | U | 11 | U | 9.5 | U | 9.5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 12 | U | 33 | UJ | 13 | U | 11 | U | 44 | UJ | 11 | U | 11 | U | 11 | U | 10 | U | 11 | U | 9.5 | U | 9.5 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 21 | | 33 | UJ | 13 | U | 11 | U | 44 | UJ | 11 | U | 11 | U | 11 | U | 10 | U | 11 | U | 9.5 | U | 9.5 | U |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 95-47-6 | o-Xylene | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 5.9 | U | 17 | UJ | 6.5 | U | 5.4 | U | 22 | UJ | 5.5 | U | 5.5 | U | 5.5 | U | 5 | U | 5.3 | U | 4.7 | U | 4.7 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS83-12 | | A3-SS84-02 | | A3-SS84-06 | | A3-SS84-12 | | A3-SS85-02 | | A3-SS85-06 | | A3-SS85-12 | | A3-SS86-02 | | A3-SS86-06 | | A3-SS86-12 | | A3-SS87-02 | | A3-SS87-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SS1 | | MB5SS2 | | MB5SS3 | | MB5SS4 | | MB5SS5 | | MB5SS6 | | MB5SS7 | | MB5SS8 | | MB5SS9 | | MB5ST0 | | MB5ST1 | | MB5ST2 | |
| | | | | Location ID | S83 | | S84 | | S84 | | S84 | | S85 | | S85 | | S85 | | S86 | | S86 | | S86 | | S87 | | S87 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 200 | UJ | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | UJ | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 380 | U | 1200 | UJ | 450 | U | 370 | U | 1600 | UJ | 440 | U | 370 | U | 340 | U | 340 | U | 350 | U | 350 | U | 350 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 200 | UJ | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 380 | U | 1200 | UJ | 450 | U | 370 | U | 1600 | UJ | 440 | U | 370 | U | 340 | U | 340 | U | 350 | U | 350 | U | 350 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 380 | U | 1200 | UJ | 450 | U | 370 | U | 1600 | UJ | 440 | U | 370 | U | 340 | U | 340 | U | 350 | U | 350 | U | 350 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 380 | U | 1200 | UJ | 450 | U | 370 | U | 1600 | UJ | 440 | U | 370 | U | 340 | U | 340 | U | 350 | U | 350 | U | 350 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 200 | UJ | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | UJ | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 380 | U | 1200 | UJ | 450 | U | 370 | U | 1600 | UJ | 440 | U | 370 | U | 340 | U | 340 | U | 350 | U | 350 | U | 350 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 380 | U | 1200 | UJ | 450 | U | 370 | U | 1600 | UJ | 440 | U | 370 | U | 340 | U | 340 | U | 350 | U | 350 | U | 350 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 86 | J | 600 | UJ | 190 | J | 110 | J | 800 | UJ | 190 | J | 65 | J | 37 | J | 170 | U | 180 | U | 50 | J | 180 | U |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 87 | J | 600 | UJ | 180 | J | 110 | J | 800 | UJ | 150 | J | 76 | J | 46 | J | 170 | U | 44 | J | 57 | J | 47 | J |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 140 | J | 600 | UJ | 210 | J | 150 | J | 800 | UJ | 270 | | 100 | J | 60 | J | 35 | J | 51 | J | 73 | J | 61 | J |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 77 | J | 600 | UJ | 150 | J | 98 | J | 800 | UJ | 110 | J | 61 | J | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 97 | J | 600 | UJ | 160 | J | 100 | J | 800 | UJ | 130 | J | 45 | J | 25 | J | 170 | U | 22 | J | 31 | J | 28 | J |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS83-12 | | A3-SS84-02 | | A3-SS84-06 | | A3-SS84-12 | | A3-SS85-02 | | A3-SS85-06 | | A3-SS85-12 | | A3-SS86-02 | | A3-SS86-06 | | A3-SS86-12 | | A3-SS87-02 | | A3-SS87-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SS1 | | MB5SS2 | | MB5SS3 | | MB5SS4 | | MB5SS5 | | MB5SS6 | | MB5SS7 | | MB5SS8 | | MB5SS9 | | MB5ST0 | | MB5ST1 | | MB5ST2 | |
| | | | | Location ID | S83 | | S84 | | S84 | | S84 | | S85 | | S85 | | S85 | | S86 | | S86 | | S86 | | S87 | | S87 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 94 | J | 600 | UJ | 200 | J | 120 | J | 800 | UJ | 170 | J | 86 | J | 46 | J | 170 | U | 49 | J | 66 | J | 51 | J |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 180 | J | 600 | UJ | 360 | | 200 | | 800 | UJ | 360 | | 150 | J | 62 | J | 40 | J | 75 | J | 120 | J | 78 | J |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 200 | U | 600 | UJ | 230 | UJ | 190 | UJ | 800 | UJ | 230 | U | 190 | UJ | 180 | UJ | 170 | UJ | 180 | UJ | 180 | UJ | 180 | UJ |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 62 | J | 600 | UJ | 130 | J | 88 | J | 800 | UJ | 110 | J | 61 | J | 35 | J | 170 | U | 180 | U | 39 | J | 180 | U |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 380 | U | 1200 | UJ | 450 | U | 370 | U | 1600 | UJ | 440 | U | 370 | U | 340 | U | 340 | U | 350 | U | 350 | U | 350 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 46 | J | 600 | UJ | 130 | J | 45 | J | 800 | UJ | 110 | J | 49 | J | 180 | U | 170 | U | 180 | U | 35 | J | 180 | U |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 200 | U | 600 | UJ | 230 | U | 190 | U | 800 | UJ | 230 | U | 190 | U | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 160 | J | 600 | UJ | 300 | | 170 | J | 800 | UJ | 260 | | 120 | J | 58 | J | 39 | J | 67 | J | 94 | J | 63 | J |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 3.8 | U | 12 | UJ | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 3.5 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 3.8 | R | 12 | R | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | R | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 1.9 | J |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 3.8 | U | 12 | UJ | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 2 | J |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 2 | U | 7.4 | J | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 3.3 | NJ | 1.8 | U | 1.8 | U |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 2.8 | R | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS83-12 | | A3-SS84-02 | | A3-SS84-06 | | A3-SS84-12 | | A3-SS85-02 | | A3-SS85-06 | | A3-SS85-12 | | A3-SS86-02 | | A3-SS86-06 | | A3-SS86-12 | | A3-SS87-02 | | A3-SS87-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5SS1 | | MB5SS2 | | MB5SS3 | | MB5SS4 | | MB5SS5 | | MB5SS6 | | MB5SS7 | | MB5SS8 | | MB5SS9 | | MB5ST0 | | MB5ST1 | | MB5ST2 | |
| | | | | Location ID | S83 | | S84 | | S84 | | S84 | | S85 | | S85 | | S85 | | S86 | | S86 | | S86 | | S87 | | S87 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | | 12 | | 2 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 200 | U | 600 | UJ | 230 | U | 190 | U | 810 | UJ | 230 | U | 190 | U | 180 | U | 180 | U | 180 | U | 180 | U | 180 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 3.8 | U | 12 | UJ | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 3.5 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 3.8 | U | 12 | UJ | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 3.5 | U |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 3.8 | U | 12 | UJ | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 3.5 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 3.8 | U | 12 | UJ | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 3.5 | U |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 3.8 | U | 12 | UJ | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 3.5 | U |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 3.8 | U | 6.8 | J | 4.4 | U | 3.7 | U | 16 | UJ | 4.4 | U | 3.7 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.5 | U | 3.5 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | UJ | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 2.7 | | 1.8 | U | 1.8 | U |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 2 | U | 6 | UJ | 2.3 | U | 1.9 | U | 8.1 | UJ | 2.3 | U | 1.9 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.8 | U |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 20 | U | 85 | NJ | 23 | U | 19 | U | 81 | UJ | 23 | U | 19 | U | 18 | U | 18 | U | 18 | U | 18 | U | 18 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 38 | U | 120 | UJ | 44 | U | 37 | U | 160 | UJ | 44 | U | 36 | U | 34 | U | 34 | U | 35 | U | 35 | U | 35 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
Qualifers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS87-12 | | A3-SS88-02 | | A3-SS88-06 | | A3-SS88-12 | | A3-SS89-02 | | Z3-SS89-02 | | A3-SS89-06 | | A3-SS89-12 | | A3-SS90-02 | | A3-SS90-06 | | Z3-SS90-06 | | A3-SS90-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5ST3 | | MB5SN6 | | MB5ST4 | | MB5ST5 | | MB5ST6 | | MB5SW3 | | MB5ST7 | | MB5ST8 | | MB5ST9 | | MB5SW0 | | MB5SW4 | | MB5SW1 | |
| | | | | Location ID | S87 | | A3-S88 | | A3-S88 | | A3-S88 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S90 | | A3-S90 | | A3-S90 | | A3-S90 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Inorganic Analytes (mg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7429-90-5 | Aluminum | E200.7 | mg/kg | 78000 | 9340 | | 2130 | | 2620 | | 915 | | 2180 | | 2120 | | 2530 | | 2090 | | 2390 | | 2410 | | 2250 | | 2980 | |
| 7440-36-0 | Antimony | E200.7 | mg/kg | 31 | 0.73 | UJ | 1 | J | 1.8 | UJ | 4.9 | J | 1.3 | UJ | 1.2 | UJ | 1.1 | UJ | 2.1 | UJ | 1.2 | UJ | 0.99 | J | 1 | UJ | 1.3 | UJ |
| 7440-38-2 | Arsenic | E200.7 | mg/kg | 19 | 8.3 | | 4.2 | | 5 | | 6.4 | | 4.2 | | 4 | | 5.4 | | 4.5 | | 5 | | 4.5 | | 4.8 | | 6.4 | |
| 7440-39-3 | Barium | E200.7 | mg/kg | 16000 | 21.8 | | 13.3 | J | 14.8 | UJ | 5.8 | J | 11.7 | UJ | 11 | UJ | 14.3 | UJ | 13.2 | UJ | 12.6 | UJ | 12.4 | J | 11 | UJ | 15.7 | UJ |
| 7440-41-7 | Beryllium | E200.7 | mg/kg | 16 | 0.65 | | 0.51 | U | 0.41 | UJ | 0.12 | J | 0.34 | UJ | 0.38 | UJ | 0.38 | UJ | 0.31 | UJ | 0.38 | UJ | 0.2 | J | 0.42 | UJ | 0.46 | UJ |
| 7440-43-9 | Cadmium | E200.7 | mg/kg | 78 | 0.37 | UJ | 0.096 | UJ | 0.21 | UJ | 0.52 | U | 0.13 | UJ | 0.13 | UJ | 0.17 | UJ | 0.17 | UJ | 0.14 | UJ | 0.49 | UJ | 0.19 | UJ | 0.26 | UJ |
| 7440-70-2 | Calcium | E200.7 | mg/kg | --- | 534 | | 818 | | 640 | | 223 | UJ | 600 | | 526 | | 467 | UJ | 528 | UJ | 619 | | 381 | UJ | 353 | UJ | 554 | |
| 7440-47-3 | Chromium | E200.7 | mg/kg | 240 | 24.4 | | 6.3 | | 7.9 | | 4.2 | | 5.8 | | 7 | | 6.6 | | 7 | | 6.2 | | 6.4 | | 14.5 | | 10.6 | |
| 7440-48-4 | Cobalt | E200.7 | mg/kg | 1600 | 5.3 | U | 5.1 | U | 5.2 | U | 5.2 | U | 5.1 | U | 5.1 | U | 5 | U | 5.3 | U | 5.1 | U | 5.2 | U | 5 | U | 5.2 | U |
| 7440-50-8 | Copper | E200.7 | mg/kg | 3100 | 6.9 | | 7.5 | | 14.8 | | 9.3 | | 6.7 | | 5.7 | | 9.3 | | 18 | | 6.3 | | 7.5 | | 6.8 | | 17.5 | |
| 7439-89-6 | Iron | E200.7 | mg/kg | --- | 23800 | | 7350 | | 9170 | | 5350 | | 7800 | | 7820 | | 8790 | | 8890 | | 8970 | | 8650 | | 11000 | | 15300 | |
| 7439-92-1 | Lead | E200.7 | mg/kg | 400 | 9.8 | J | 34.2 | | 54.3 | J | 132 | | 26.3 | J | 24.4 | J | 27.2 | J | 77 | J | 25.5 | J | 21.9 | | 22.3 | J | 60 | J |
| 7439-95-4 | Magnesium | E200.7 | mg/kg | --- | 678 | | 322 | UJ | 409 | UJ | 143 | J | 314 | UJ | 283 | UJ | 322 | UJ | 303 | UJ | 335 | UJ | 261 | UJ | 206 | UJ | 351 | UJ |
| 7439-96-5 | Manganese | E200.7 | mg/kg | 11000 | 67.5 | | 64 | | 54.5 | | 20.1 | | 46.2 | | 42.8 | | 54.1 | | 53.1 | | 47.5 | | 37.4 | J | 39.1 | | 51.6 | |
| 7440-02-0 | Nickel | E200.7 | mg/kg | 1600 | 4.2 | | 2.3 | J | 4.1 | J | 1.8 | J | 1.7 | J | 2 | J | 2.9 | J | 4.2 | J | 1.8 | J | 1.9 | J | 1.7 | J | 4.1 | |
| 7440-09-7 | Potassium | E200.7 | mg/kg | --- | 795 | J | 267 | J | 299 | J | 125 | J | 216 | J | 208 | J | 237 | J | 208 | J | 254 | J | 273 | J | 194 | J | 308 | J |
| 7782-49-2 | Selenium | E200.7 | mg/kg | 390 | 3.7 | U | 3.6 | U | 3.7 | U | 3.6 | U | 0.47 | J | 3.6 | U | 3.5 | U | 3.7 | U | 3.5 | U | 0.74 | J | 3.5 | U | 3.6 | U |
| 7440-22-4 | Silver | E200.7 | mg/kg | 390 | 1.1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 0.054 | J | 1 | U | 1 | U | 1 | U | 1 | U |
| 7440-23-5 | Sodium | E200.7 | mg/kg | --- | 30.7 | J | 43.1 | J | 50.4 | J | 27.5 | J | 39.4 | J | 29.6 | J | 49.8 | J | 47.2 | J | 47.5 | J | 36.9 | J | 41.2 | J | 44.8 | J |
| 7440-28-0 | Thallium | E200.7 | mg/kg | 5 | 0.98 | J | 2.6 | U | 2.6 | U | 2.6 | U | 2.6 | U | 2.6 | U | 2.5 | U | 2.7 | U | 2.5 | U | 2.6 | U | 2.5 | U | 2.6 | U |
| 7440-62-2 | Vanadium | E200.7 | mg/kg | 78 | 37.5 | | 14.1 | | 16.2 | | 9.5 | | 15 | | 15.6 | | 16.2 | | 14.8 | | 16.1 | | 16.3 | | 18.7 | | 20.2 | |
| 7440-66-6 | Zinc | E200.7 | mg/kg | 23000 | 21.5 | | 20.8 | J | 30.7 | | 13.8 | J | 29.2 | | 20.6 | | 22.7 | | 45.6 | | 37.1 | | 22 | | 29.2 | | 36.9 | |
| **Volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane | E624 | µg/kg | 290000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | E624 | µg/kg | 1000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 76-13-1 | 1,1,2-Trichloro-1,2,2-trifluoroethane | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 79-00-5 | 1,1,2-Trichloroethane | E624 | µg/kg | 2000 | 4.9 | U | 6 | U | 5.7 | U | 5 | UJ | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-34-3 | 1,1-Dichloroethane | E624 | µg/kg | 8000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-35-4 | 1,1-Dichloroethene | E624 | µg/kg | 11000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | E624 | µg/kg | 73000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | E624 | µg/kg | 80 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 106-93-4 | 1,2-Dibromoethane | E624 | µg/kg | 8 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 95-50-1 | 1,2-Dichlorobenzene | E624 | µg/kg | 5300000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 107-06-2 | 1,2-Dichloroethane | E624 | µg/kg | 900 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 78-87-5 | 1,2-Dichloropropane | E624 | µg/kg | 2000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 541-73-1 | 1,3-Dichlorobenzene | E624 | µg/kg | 5300000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS87-12 | | A3-SS88-02 | | A3-SS88-06 | | A3-SS88-12 | | A3-SS89-02 | | Z3-SS89-02 | | A3-SS89-06 | | A3-SS89-12 | | A3-SS90-02 | | A3-SS90-06 | | Z3-SS90-06 | | A3-SS90-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5ST3 | | MB5SN6 | | MB5ST4 | | MB5ST5 | | MB5ST6 | | MB5SW3 | | MB5ST7 | | MB5ST8 | | MB5ST9 | | MB5SW0 | | MB5SW4 | | MB5SW1 | |
| | | | | Location ID | S87 | | A3-S88 | | A3-S88 | | A3-S88 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S90 | | A3-S90 | | A3-S90 | | A3-S90 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 106-46-7 | 1,4-Dichlorobenzene | E624 | µg/kg | 5000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 123-91-1 | 1,4-Dioxane | E624 | µg/kg | --- | 99 | R | 120 | R | 110 | R | 100 | R | 100 | R | 97 | R | 99 | R | 100 | R | 98 | R | 110 | R | 110 | R | 100 | R |
| 78-93-3 | 2-Butanone | E624 | µg/kg | 3100000 | 9.9 | U | 12 | U | 11 | U | 10 | U | 10 | U | 9.7 | U | 9.9 | U | 10 | U | 9.8 | U | 11 | U | 11 | U | 10 | U |
| 591-78-6 | 2-Hexanone | E624 | µg/kg | --- | 9.9 | U | 12 | U | 11 | U | 10 | R | 10 | U | 9.7 | U | 9.9 | U | 10 | U | 9.8 | U | 11 | U | 11 | U | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | E624 | µg/kg | --- | 9.9 | U | 12 | U | 11 | U | 10 | R | 10 | U | 9.7 | U | 9.9 | U | 10 | U | 9.8 | U | 11 | U | 11 | U | 10 | U |
| 67-64-1 | Acetone | E624 | µg/kg | 70000000 | 9.9 | U | 12 | U | 11 | U | 10 | U | 10 | U | 9.7 | U | 9.9 | U | 10 | U | 9.8 | U | 11 | U | 11 | U | 10 | U |
| 71-43-2 | Benzene | E624 | µg/kg | 2000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 74-97-5 | Bromochloromethane | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-27-4 | Bromodichloromethane | E624 | µg/kg | 1000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-25-2 | Bromoform | E624 | µg/kg | 81000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 74-83-9 | Bromomethane | E624 | µg/kg | 25000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-15-0 | Carbon Disulfide | E624 | µg/kg | 7800000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 56-23-5 | Carbon tetrachloride | E624 | µg/kg | 600 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 108-90-7 | Chlorobenzene | E624 | µg/kg | 510000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-00-3 | Chloroethane | E624 | µg/kg | 220000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 67-66-3 | Chloroform | E624 | µg/kg | 600 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 74-87-3 | Chloromethane | E624 | µg/kg | 4000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 156-59-2 | cis-1,2-Dichloroethene | E624 | µg/kg | 230000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | UJ | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 110-82-7 | Cyclohexane | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 124-48-1 | Dibromochloromethane | E624 | µg/kg | 3000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-71-8 | Dichlorodifluoromethane | E624 | µg/kg | 490000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 100-41-4 | Ethylbenzene | E624 | µg/kg | 7800000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 98-82-8 | Isopropylbenzene | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 179601-23-1 | m,p-Xylene | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 79-20-9 | Methyl Acetate | E624 | µg/kg | 78000000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 1634-04-4 | Methyl tert-Butyl Ether | E624 | µg/kg | 110000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 108-87-2 | Methylcyclohexane | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-09-2 | Methylene chloride | E624 | µg/kg | 34000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 95-47-6 | o-Xylene | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 100-42-5 | Styrene | E624 | µg/kg | 90000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 127-18-4 | Tetrachloroethene | E624 | µg/kg | 2000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 108-88-3 | Toluene | E624 | µg/kg | 6300000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 156-60-5 | trans-1,2-Dichloroethene | E624 | µg/kg | 300000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | E624 | µg/kg | --- | 4.9 | U | 6 | U | 5.7 | U | 5 | UJ | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 79-01-6 | Trichloroethene | E624 | µg/kg | 7000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 7.9 | | 5.3 | U | 5.2 | U |
| 75-69-4 | Trichlorofluoromethane | E624 | µg/kg | 23000000 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |
| 75-01-4 | Vinyl Chloride | E624 | µg/kg | 700 | 4.9 | U | 6 | U | 5.7 | U | 5 | U | 5 | U | 4.9 | U | 5 | U | 5 | U | 4.9 | U | 5.4 | U | 5.3 | U | 5.2 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS87-12 | | A3-SS88-02 | | A3-SS88-06 | | A3-SS88-12 | | A3-SS89-02 | | Z3-SS89-02 | | A3-SS89-06 | | A3-SS89-12 | | A3-SS90-02 | | A3-SS90-06 | | Z3-SS90-06 | | A3-SS90-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5ST3 | | MB5SN6 | | MB5ST4 | | MB5ST5 | | MB5ST6 | | MB5SW3 | | MB5ST7 | | MB5ST8 | | MB5ST9 | | MB5SW0 | | MB5SW4 | | MB5SW1 | |
| | | | | Location ID | S87 | | A3-S88 | | A3-S88 | | A3-S88 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S90 | | A3-S90 | | A3-S90 | | A3-S90 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Semi-volatile Organic Compounds (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92-52-4 | 1,1'-Biphenyl | E625 | µg/kg | 3100000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | E625 | µg/kg | 6100000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | E625 | µg/kg | 19000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 120-83-2 | 2,4-Dichlorophenol | E625 | µg/kg | 180000 | 180 | U | 170 | U | 180 | U | 180 | UJ | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 105-67-9 | 2,4-Dimethylphenol | E625 | µg/kg | 1200000 | 180 | U | 170 | UJ | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | UJ | 180 | U |
| 51-28-5 | 2,4-Dinitrophenol | E625 | µg/kg | 120000 | 350 | U | 340 | U | 350 | U | 340 | U | 340 | U | 340 | U | 350 | U | 350 | U | 330 | U | 340 | U | 340 | U | 350 | U |
| 121-14-2 | 2,4-Dinitrotoluene | E625 | µg/kg | 700 | 180 | U | 170 | U | 180 | U | 180 | UJ | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 606-20-2 | 2,6-Dinitrotoluene | E625 | µg/kg | 700 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 91-58-7 | 2-Chloronaphthalene | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 95-57-8 | 2-Chlorophenol | E625 | µg/kg | 310000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 91-57-6 | 2-Methylnaphthalene | E625 | µg/kg | 230000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 62 | J | 170 | U | 170 | U | 170 | U | 180 | U |
| 95-48-7 | 2-Methylphenol | E625 | µg/kg | 310000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 88-74-4 | 2-Nitroaniline | E625 | µg/kg | 39000 | 350 | U | 340 | U | 350 | U | 340 | U | 340 | U | 340 | U | 350 | U | 350 | U | 330 | U | 340 | U | 340 | U | 350 | U |
| 88-75-5 | 2-Nitrophenol | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 91-94-1 | 3,3`-Dichlorobenzidine | E625 | µg/kg | 1000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 99-09-2 | 3-Nitroaniline | E625 | µg/kg | --- | 350 | U | 340 | U | 350 | U | 340 | U | 340 | U | 340 | U | 350 | U | 350 | U | 330 | U | 340 | U | 340 | U | 350 | U |
| 534-52-1 | 4,6-Dinitro-2-Methylphenol | E625 | µg/kg | 6000 | 350 | U | 340 | U | 350 | U | 340 | U | 340 | U | 340 | U | 350 | U | 350 | U | 330 | U | 340 | U | 340 | U | 350 | U |
| 101-55-3 | 4-Bromophenyl Phenyl Ether | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 106-47-8 | 4-Chloroaniline | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 7005-72-3 | 4-Chlorophenyl Phenylether | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 106-44-5 | 4-Methylphenol | E625 | µg/kg | 31000 | 180 | U | 170 | UJ | 180 | U | 180 | UJ | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 100-01-6 | 4-Nitroaniline | E625 | µg/kg | --- | 350 | U | 340 | U | 350 | U | 340 | U | 340 | U | 340 | U | 350 | U | 350 | U | 330 | U | 340 | U | 340 | U | 350 | U |
| 100-02-7 | 4-Nitrophenol | E625 | µg/kg | --- | 350 | U | 340 | U | 350 | U | 340 | U | 340 | U | 340 | U | 350 | U | 350 | U | 330 | U | 340 | U | 340 | U | 350 | U |
| 83-32-9 | Acenaphthene | E625 | µg/kg | 3400000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 39 | J | 170 | U | 170 | U | 170 | U | 180 | U |
| 208-96-8 | Acenaphthylene | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 98-86-2 | Acetophenone | E625 | µg/kg | 2000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 120-12-7 | Anthracene | E625 | µg/kg | 17000000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 52 | J | 170 | U | 170 | U | 170 | U | 180 | U |
| 1912-24-9 | Atrazine | E625 | µg/kg | 210000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 100-52-7 | Benzaldehyde | E625 | µg/kg | 6100000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 56-55-3 | Benzo(a)anthracene | E625 | µg/kg | 600 | 53 | J | 43 | J | 50 | J | 180 | U | 37 | J | 61 | J | 47 | J | 79 | J | 50 | J | 51 | J | 77 | J | 87 | J |
| 50-32-8 | Benzo(a)pyrene | E625 | µg/kg | 200 | 66 | J | 42 | J | 59 | J | 180 | U | 49 | J | 62 | J | 56 | J | 77 | J | 61 | J | 61 | J | 93 | J | 83 | J |
| 205-99-2 | Benzo(b)fluoranthene | E625 | µg/kg | 600 | 77 | J | 87 | J | 72 | J | 36 | J | 62 | J | 74 | J | 72 | J | 91 | J | 77 | J | 76 | J | 120 | J | 100 | J |
| 191-24-2 | Benzo(g,h,i)perylene | E625 | µg/kg | 380000000 | 53 | J | 170 | U | 180 | U | 180 | U | 180 | U | 52 | J | 180 | U | 180 | U | 170 | U | 170 | U | 85 | J | 68 | J |
| 207-08-9 | Benzo(k)fluoranthene | E625 | µg/kg | 6000 | 30 | J | 170 | U | 29 | J | 180 | U | 31 | J | 59 | J | 34 | J | 48 | J | 43 | J | 41 | J | 64 | J | 74 | J |
| 111-91-1 | Bis(2-Chloroethoxy) methane | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS87-12 | | A3-SS88-02 | | A3-SS88-06 | | A3-SS88-12 | | A3-SS89-02 | | Z3-SS89-02 | | A3-SS89-06 | | A3-SS89-12 | | A3-SS90-02 | | A3-SS90-06 | | Z3-SS90-06 | | A3-SS90-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5ST3 | | MB5SN6 | | MB5ST4 | | MB5ST5 | | MB5ST6 | | MB5SW3 | | MB5ST7 | | MB5ST8 | | MB5ST9 | | MB5SW0 | | MB5SW4 | | MB5SW1 | |
| | | | | Location ID | S87 | | A3-S88 | | A3-S88 | | A3-S88 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S90 | | A3-S90 | | A3-S90 | | A3-S90 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 111-44-4 | Bis(2-Chloroethyl) ether | E625 | µg/kg | 400 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 117-81-7 | Bis(2-Ethylhexyl) phthalate | E625 | µg/kg | 35000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 108-60-1 | Bis-Chloroisopropyl ether | E625 | µg/kg | 23000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 85-68-7 | Butylbenzylphthalate | E625 | µg/kg | 1200000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 105-60-2 | Caprolactam | E625 | µg/kg | 31000000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 86-74-8 | Carbazole | E625 | µg/kg | 24000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 58-90-2 | Chlorophenols | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 218-01-9 | Chrysene | E625 | µg/kg | 62000 | 71 | J | 69 | J | 70 | J | 180 | U | 60 | J | 74 | J | 69 | J | 110 | J | 84 | J | 81 | J | 120 | J | 97 | J |
| 53-70-3 | Dibenzo(a,h)anthracene | E625 | µg/kg | 200 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 132-64-9 | Dibenzofuran | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 84-66-2 | Diethylphthalate | E625 | µg/kg | 49000000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 131-11-3 | Dimethylphthalate | E625 | µg/kg | --- | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 84-74-2 | Di-N-Butylphthalate | E625 | µg/kg | 6100000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 117-84-0 | Di-N-Octyl Phthalate | E625 | µg/kg | 2400000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 206-44-0 | Fluoranthene | E625 | µg/kg | 2300000 | 110 | J | 110 | J | 100 | J | 44 | J | 89 | J | 110 | J | 100 | J | 210 | | 110 | J | 120 | J | 180 | | 150 | J |
| 86-73-7 | Fluorene | E625 | µg/kg | 2300000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 37 | J | 170 | U | 170 | U | 170 | U | 180 | U |
| 118-74-1 | Hexachlorobenzene | E625 | µg/kg | 300 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 87-68-3 | Hexachlorobutadiene | E625 | µg/kg | 6000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 77-47-4 | Hexachlorocyclopentadiene | E625 | µg/kg | 45000 | 180 | UJ | 170 | U | 180 | UJ | 180 | U | 180 | UJ | 170 | UJ | 180 | UJ | 180 | UJ | 170 | UJ | 170 | UJ | 170 | U | 180 | UJ |
| 67-72-1 | Hexachloroethane | E625 | µg/kg | 35000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 193-39-5 | Indeno(1,2,3-Cd)Pyrene | E625 | µg/kg | 600 | 49 | J | 170 | U | 44 | J | 180 | U | 180 | U | 43 | J | 180 | U | 48 | J | 43 | J | 40 | J | 69 | J | 58 | J |
| 78-59-1 | Isophorone | E625 | µg/kg | 510000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 91-20-3 | Naphthalene | E625 | µg/kg | 6000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 98-95-3 | Nitrobenzene | E625 | µg/kg | 31000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 621-64-7 | N-Nitroso-Di-N-Propylamine | E625 | µg/kg | 200 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 86-30-6 | N-Nitrosodiphenylamine | E625 | µg/kg | 99000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 87-86-5 | Pentachlorophenol | E625 | µg/kg | 3000 | 350 | U | 340 | U | 350 | U | 340 | U | 340 | U | 340 | U | 350 | U | 350 | U | 330 | U | 340 | U | 340 | U | 350 | U |
| 85-01-8 | Phenanthrene | E625 | µg/kg | --- | 180 | U | 38 | J | 180 | U | 180 | U | 180 | U | 170 | U | 36 | J | 180 | J | 37 | J | 56 | J | 65 | J | 46 | J |
| 108-95-2 | Phenol | E625 | µg/kg | 18000000 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 129-00-0 | Pyrene | E625 | µg/kg | 1700000 | 98 | J | 88 | J | 95 | J | 46 | J | 78 | J | 100 | J | 87 | J | 150 | J | 98 | J | 100 | J | 160 | J | 130 | J |
| **Pesticides/Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72-54-8 | 4,4'-DDD | CPEST | µg/kg | 3000 | 3.5 | U | 3.4 | U | 3.5 | U | 3.5 | R | 3.4 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 72-55-9 | 4,4'-DDE | CPEST | µg/kg | 2000 | 3.5 | U | 3.4 | R | 3.5 | U | 3.4 | R | 3.4 | U | 3.4 | U | 1.8 | J | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 50-29-3 | 4,4'-DDT | CPEST | µg/kg | 2000 | 2.3 | J | 3.4 | U | 3.2 | J | 3.4 | U | 3.4 | U | 3.4 | U | 2.4 | J | 3.5 | U | 3.3 | U | 2.2 | J | 2.7 | J | 3.3 | J |
| 309-00-2 | Aldrin | CPEST | µg/kg | 40 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 319-84-6 | alpha-BHC | CPEST | µg/kg | 100 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 5103-71-9 | alpha-Chlordane | CPEST | µg/kg | 200 | 1.8 | U | 1.7 | U | 4.9 | J | 1.8 | U | 1.8 | U | 1.7 | U | 7.2 | R | 12 | NJ | 0.93 | J | 1.7 | U | 2 | R | 28 | NJ |
| 319-85-7 | beta-BHC | CPEST | µg/kg | 400 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.8 | U |

Table B-2
Area 3 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A3-SS87-12 | | A3-SS88-02 | | A3-SS88-06 | | A3-SS88-12 | | A3-SS89-02 | | Z3-SS89-02 | | A3-SS89-06 | | A3-SS89-12 | | A3-SS90-02 | | A3-SS90-06 | | Z3-SS90-06 | | A3-SS90-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | MB5ST3 | | MB5SN6 | | MB5ST4 | | MB5ST5 | | MB5ST6 | | MB5SW3 | | MB5ST7 | | MB5ST8 | | MB5ST9 | | MB5SW0 | | MB5SW4 | | MB5SW1 | |
| | | | | Location ID | S87 | | A3-S88 | | A3-S88 | | A3-S88 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S89 | | A3-S90 | | A3-S90 | | A3-S90 | | A3-S90 | |
| | | | | Sample Date | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | | 5/10/2010 | |
| | | | | Start Depth | 6 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | | 0 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 12 | | 2 | | 6 | | 12 | | 2 | | 2 | | 6 | | 12 | | 2 | | 6 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 8001-35-2 | Chlorinated Camphene | CPEST | µg/kg | 600 | 180 | U | 170 | U | 180 | U | 180 | U | 180 | U | 170 | U | 180 | U | 180 | U | 170 | U | 170 | U | 170 | U | 180 | U |
| 319-86-8 | delta-BHC | CPEST | µg/kg | 400 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 60-57-1 | Dieldrin | CPEST | µg/kg | 40 | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 959-98-8 | Endosulfan I | CPEST | µg/kg | 470000 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 33213-65-9 | Endosulfan II | CPEST | µg/kg | 470000 | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 1031-07-8 | Endosulfan Sulfate | CPEST | µg/kg | 470000 | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 72-20-8 | Endrin | CPEST | µg/kg | 23000 | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 7421-93-4 | Endrin Aldehyde | CPEST | µg/kg | 23000 | 3.5 | U | 3.4 | U | 3.5 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 53494-70-5 | Endrin Ketone | CPEST | µg/kg | 23000 | 3.5 | U | 3.4 | U | 3.5 | U | 4 | | 3.4 | U | 3.4 | U | 3.4 | U | 3.5 | U | 3.3 | U | 3.4 | U | 3.3 | U | 3.5 | U |
| 58-89-9 | gamma-BHC (Lindane) | CPEST | µg/kg | 400 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.8 | U |
| 5103-74-2 | gamma-Chlordane | CPEST | µg/kg | 200 | 1.8 | U | 1.7 | U | 1.7 | J | 1.8 | U | 1.8 | U | 1.7 | U | 5.8 | | 9.6 | | 1.7 | U | 0.96 | J | 1.5 | J | 25 | |
| 76-44-8 | Heptachlor | CPEST | µg/kg | 100 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 1.5 | J |
| 1024-57-3 | Heptachlor Epoxide | CPEST | µg/kg | 70 | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.8 | U | 1.8 | U | 1.7 | U | 1.7 | U | 1.7 | U | 2.4 | R |
| 72-43-5 | Methoxychlor | CPEST | µg/kg | 390000 | 18 | U | 17 | U | 18 | U | 18 | U | 18 | U | 17 | U | 18 | U | 18 | U | 17 | U | 17 | U | 17 | U | 18 | U |
| 12674-11-2 | Aroclor 1016 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 11104-28-2 | Aroclor 1221 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 11141-16-5 | Aroclor 1232 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 53469-21-9 | Aroclor 1242 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 12672-29-6 | Aroclor 1248 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 11097-69-1 | Aroclor 1254 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 11096-82-5 | Aroclor 1260 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 37324-23-5 | Aroclor 1262 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |
| 11100-14-4 | Aroclor 1268 | E608 | µg/kg | 200 | 35 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 34 | U | 35 | U | 33 | U | 33 | U | 34 | U | 35 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
Qualifers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.
R - Sample result was rejected.
N - There is presumptive evidence that the compound is present; the compound is reported as a tentative identification.

Table B-3
Area 5 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SS29-06 | | A5-SS33-06 | | A5-SS35-02 | | A5-SS35-06 | | A5-SS35-12 | | A5-SS35-24 | | Z5-SS35-24 | | A5-SS107-02 | | A5-SS107-06 | | A5-SS107-12 | | A5-SS107-24 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | S29 | | S33 | | S35 | | S35 | | S35 | | S35 | | S35 | | S107 | | S107 | | S107 | | S107 | |
| | | | | Sample Date | 5/12/2010 | | 5/12/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | |
| | | | | Start Depth | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | | 12 | | 0 | | 0 | | 6 | | 12 | |
| | | | | End Depth | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | | 24 | | 2 | | 6 | | 12 | | 24 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 24 | | 35 | | 24 | | 19 | | 9.1 | | 6 | | 5.8 | | 2.2 | U | 2 | U | 2 | U | 2.1 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 20 | | 28 | | 13 | | 23 | | 10 | | 7.1 | | 4.1 | | 2.3 | | 3.2 | | 5.4 | | 5.2 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 6.8 | | 11 | | 11 | | 14 | | 8.8 | | 5.5 | | 5.4 | | 3.9 | | 9 | | 15 | | 9.6 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 18 | | 16 | | 21 | | 15 | | 12 | | 10 | | 7.3 | | 2 | | 16 | | 3.9 | | 4.5 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 240 | | 320 | | 180 | | 230 | | 200 | | 180 | | 82 | | 20 | | 24 | | 25 | | 35 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram

Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-3
Area 5 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SS109-02 | | A5-SS109-06 | | A5-SS109-12 | | A5-SS109-24 | | A5-SS111-02 | | A5-SS111-06 | | A5-SS111-12 | | A5-SS111-24 | | A5-SS112-02 | | A5-SS112-06 | | A5-SS112-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | S109 | | S109 | | S109 | | S109 | | S111 | | S111 | | S111 | | S111 | | S112 | | S112 | | S112 | |
| | | | | Sample Date | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.8 | U | 1.6 | U | 2 | | 1.6 | U | 1.5 | U | 6.7 | | 1.4 | U | 1.4 | U | 1.5 | U | 2.1 | | 1.5 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 3.1 | | 11 | | 6.3 | | 11 | | 3 | | 12 | | 9.6 | | 11 | | 7.3 | | 9.9 | | 9.5 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 6.7 | | 20 | | 36 | | 38 | | 5.8 | | 23 | | 17 | | 27 | | 13 | | 8.6 | | 47 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 7.2 | | 6.3 | | 18 | | 10 | | 2.4 | | 23 | | 10 | | 26 | | 5.7 | | 5.5 | | 8 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 25 | | 25 | | 36 | | 26 | | 19 | | 52 | | 30 | | 41 | | 30 | | 36 | | 32 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram

Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-3
Area 5 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SS112-24 | | A5-SS113-06 | | Z5-SS113-06 | | A5-SS115-06 | | A5-SS117-06 | | A5-SS118-02 | | A5-SS118-06 | | A5-SS118-12 | | A5-SS118-24 | | A5-SS119-06 | | A5-SS123-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | S112 | | S113 | | S113 | | S115 | | S117 | | S118 | | S118 | | S118 | | S118 | | S119 | | S123 | |
| | | | | Sample Date | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | |
| | | | | Start Depth | 12 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | |
| | | | | End Depth | 24 | | 6 | | 6 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | | 6 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.5 | U | 1.4 | U | 1.4 | U | 3.9 | | 1.3 | U | 1.5 | U | 1.8 | U | 1.5 | | 1.4 | U | 3.4 | | 1.7 | |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 12 | | 6.4 | | 5.3 | | 8.3 | | 4.6 | | 3.5 | | 2.8 | | 2.9 | | 2.8 | | 6.9 | | 8.3 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 44 | | 11 | | 9.1 | | 10 | | 9.5 | | 6.5 | | 5 | | 6 | | 5.8 | | 11 | | 17 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 7.1 | | 12 | | 4.9 | | 6.9 | | 3.8 | | 6.7 | | 5.5 | | 3.6 | | 4.6 | | 20 | | 8.5 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 42 | | 30 | | 29 | | 62 | | 24 | | 29 | | 26 | | 28 | | 27 | | 93 | | 40 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram

Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-3
Area 5 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SS125-02 | | A5-SS125-06 | | A5-SS125-12 | | A5-SS125-24 | | A5-SS132-06 | | A5-SS139-06 | | A5-SS140-06 | | A5-SS153-02 | | A5-SS153-06 | | A5-SS153-12 | | A5-SS153-24 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | S125 | | S125 | | S125 | | S125 | | S132 | | S139 | | S140 | | S153 | | S153 | | S153 | | S153 | |
| | | | | Sample Date | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 24 | | 6 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.2 | U | 1.3 | U | 1.6 | | 1.4 | U | 1.6 | U | 1.7 | U | 1.8 | U | 5.5 | | 10 | | 9.3 | | 3.3 | |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 5.8 | | 6.2 | | 5.4 | | 3.4 | | 3.7 | | 8.4 | | 3.5 | | 7 | | 14 | | 15 | | 7.1 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 12 | | 13 | | 12 | | 9.8 | | 8.9 | | 8.9 | | 6.1 | | 3.1 | | 5.6 | | 13 | | 4.8 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 4.5 | | 28 | | 7.6 | | 4.6 | | 4.8 | | 2.4 | | 2 | | 6.3 | | 9.8 | | 11 | | 6.1 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 32 | | 32 | | 46 | | 27 | | 30 | | 2.7 | | 4 | | 94 | | 190 | | 170 | | 34 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram

Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-3
Area 5 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SS155-02 | | A5-SS155-06 | | A5-SS155-12 | | A5-SS155-24 | | A5-SS159-06 | | A5-SS160-06 | | A5-SS162-02 | | A5-SS162-06 | | A5-SS211-06 | | A5-SS213-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | S155 | | S155 | | S155 | | S155 | | S159 | | S160 | | S162 | | S162 | | S211 | | S213 | |
| | | | | Sample Date | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/12/2010 | | 5/12/2010 | | 5/13/2010 | | 5/13/2010 | | 5/12/2010 | | 5/12/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 24 | | 6 | | 6 | | 2 | | 6 | | 6 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 7.6 | | 7 | | 9.2 | | 14 | | 55 | | 21 | | 52 | | 49 | | 1.4 | U | 210 | |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 8.4 | | 7.5 | | 8.5 | | 8 | | 28 | | 19 | | 54 | | 26 | | 5.2 | | 29 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 5.7 | | 4.6 | | 5.7 | | 4.5 | | 9.6 | | 9.4 | | 13 | | 12 | | 9.4 | | 18 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 7.5 | | 6.2 | | 8.6 | | 8.2 | | 17 | | 21 | | 34 | | 55 | | 5 | | 35 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 120 | | 120 | | 160 | | 210 | | 240 | | 400 | | 780 | | 1000 | | 28 | | 800 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram

Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-4
Area 5 Sediment Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SD121-06 | | Z5-SD121-06 | | A5-SD123-06 | | A5-SD124-02 | | A5-SD124-06 | | A5-SD124-12 | | A5-SD124-24 | | A5-SD127-06 | | A5-SD129-06 | | A5-SD136-06 | | A5-SD139-02 | | A5-SD139-06 | | A5-SD139-12 | | A5-SD139-24 | | A5-SD141-02 | | A5-SD141-06 | | A5-SD141-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | SED121 | | SED121 | | SED123 | | SED124 | | SED124 | | SED124 | | SED124 | | SED127 | | SED129 | | SED136 | | SED139 | | SED139 | | SED139 | | SED139 | | SED141 | | SED141 | | SED141 | |
| | | | | Sample Date | 5/13/2010 | | 5/13/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/13/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | |
| | | | | Start Depth | 0 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 6 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | | 6 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | |
| | | | | Sample Type | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.6 | U | 1.6 | U | 1.3 | U | 1.5 | U | 1.5 | U | 1.8 | | 1.6 | U | 1.6 | | 1.5 | U | 2 | U | 2.5 | | 1.9 | | 1.8 | U | 1.7 | U | 2.4 | | 1.9 | | 1.8 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 2.4 | | 2.8 | | 5.6 | | 3.3 | | 9.5 | | 16 | | 3.9 | | 14 | | 7.4 | | 3 | | 3.9 | | 3.3 | | 5.5 | | 2.8 | | 7 | | 3 | | 2.5 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 3.9 | | 6.6 | | 11 | | 7.8 | | 18 | | 32 | | 13 | | 29 | | 17 | | 5.3 | | 6.6 | | 6.2 | | 13 | | 6.7 | | 10 | | 6.5 | | 8.8 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 2.8 | | 5.3 | | 4.5 | | 3.9 | | 7.6 | | 20 | | 3.8 | | 7.7 | | 5.8 | | 7.1 | | 8.8 | | 6 | | 12 | | 7.4 | | 9.8 | | 6.8 | | 6.5 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 22 | | 23 | | 26 | | 23 | | 31 | | 77 | | 10 | | 46 | | 49 | | 42 | | 66 | | 50 | | 32 | | 21 | | 48 | | 48 | | 35 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.

Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:

Table B-4
Area 5 Sediment Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SD141-24 | | A5-SD142-06 | | A5-SD147-06 | | A5-SD152-06 | | A5-SD157-02 | | A5-SD157-06 | | A5-SD157-12 | | A5-SD157-24 | | A5-SDA130-02 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | SED141 | | SED142 | | SED147 | | SED152 | | SED157 | | SED157 | | SED157 | | SED157 | | A130 | |
| | | | | Sample Date | 5/12/2010 | | 5/13/2010 | | 5/12/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | |
| | | | | Start Depth | 12 | | 0 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | |
| | | | | End Depth | 24 | | 6 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | | 2 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.8 | U | 2.8 | | 14 | | 7.9 | | 10 | | 4.4 | | 13 | | 4.2 | | 15 | |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 1.6 | | 7.6 | | 18 | | 5.7 | | 6.3 | | 4.2 | | 8.9 | | 9.5 | | 12 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 7.6 | | 12 | | 15 | | 3.5 | | 4 | | 4.4 | | 9.5 | | 13 | | 13 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 2.1 | | 12 | | 10 | | 5.9 | | 6.3 | | 5.4 | | 17 | | 10 | | 31 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 4.9 | | 49 | | 200 | | 120 | | 130 | | 100 | | 270 | | 26 | | 330 | |

| | | | | Sample ID | A5-SDA130-06 | | A5-SDA130-12 | | A5-SDA130-24 | | A5-SDA133-06 | | A5-SDA165-06 | | A5-SDB10-02 | | A5-SDB10-06 | | A5-SDB10-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | A130 | | A130 | | A130 | | A133 | | A165 | | B10 | | B10 | | B10 | |
| | | | | Sample Date | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | |
| | | | | Start Depth | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 6 | | 12 | | 24 | | 6 | | 6 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 10 | | 9.5 | | 5.9 | | 7.2 | | 6.8 | | 3 | | 2.8 | | 1.8 | |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 13 | | 8.2 | | 3.5 | | 7.5 | | 5.2 | | 4.2 | | 4.6 | | 6.1 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 27 | | 11 | | 6.5 | | 11 | | 11 | | 7 | | 9.5 | | 11 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 93 | | 23 | | 9.8 | | 27 | | 34 | | 9.9 | | 9.8 | | 18 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 300 | | 250 | | 140 | | 180 | | 200 | | 80 | | 69 | | 57 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:

Table B-4
Area 5 Sediment Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A5-SDB10-24 | | Z5-SDB10-24 | | A5-SDB20-02 | | A5-SDB20-06 | | A5-SDB20-12 | | A5-SDB20-24 | | Z5-SDB20-24 | | A5-SDB22-06 | | A5-SDB3-02 | | A5-SDB3-06 | | A5-SDB3-12 | | A5-SDB3-24 | | A5-SDB6-02 | | A5-SDB6-06 | | A5-SDB6-12 | | A5-SDB6-24 | | A5-SDB9-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Location ID | B10 | | B10 | | B20 | | B20 | | B20 | | B20 | | B20 | | B22 | | B3 | | B3 | | B3 | | B3 | | B6 | | B6 | | B6 | | B6 | | B9 | |
| | | | | Sample Date | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/12/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/14/2010 | |
| | | | | Start Depth | 12 | | 12 | | 0 | | 0 | | 6 | | 12 | | 12 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | | 12 | | 0 | |
| | | | | End Depth | 24 | | 24 | | 2 | | 6 | | 12 | | 24 | | 24 | | 6 | | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | | 24 | | 6 | |
| | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | Matrix | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | |
| | | | | Sample Type | N | | FD | | N | | N | | N | | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.8 | U | 1.7 | U | 1.7 | U | 1.6 | U | 1.4 | U | 1.6 | U | 1.7 | U | 1.8 | U | 5 | | 8.3 | | 25 | | 8.6 | | 1.3 | U | 1.5 | U | 1.5 | U | 2 | | 5.1 | |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 4.1 | | 4.7 | | 2 | | 2.1 | | 0.9 | | 4.9 | | 6.2 | | 2.7 | | 6.7 | | 9.3 | | 40 | | 16 | | 3.1 | | 4.3 | | 3.3 | | 10 | | 6.5 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 10 | | 12 | | 4.8 | | 9.7 | | 3.5 | | 12 | | 12 | | 4.5 | | 4.5 | | 5 | | 9.5 | | 18 | | 8.3 | | 8.7 | | 7.6 | | 25 | | 8.8 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 8.7 | | 9 | | 4.4 | | 5 | | 1.9 | | 7.9 | | 10 | | 8.9 | | 5.7 | | 9.7 | | 12 | | 33 | | 8 | | 6.8 | | 7.1 | | 12 | | 14 | |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 9.9 | | 12 | | 32 | | 28 | | 6.3 | | 7.5 | | 8.9 | | 32 | | 91 | | 160 | | 270 | | 200 | | 32 | | 44 | | 57 | | 120 | | 130 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:

Table B-5
Area 5 Surface Water Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | Sample ID | A5-SW30 | | A5-SW31 | | A5-SW32 | | A5-SW33 | | A5-SW34 | | A5-SW35 | | A5-SW36 | | A5-SW37 | | Z5-SW37 | | A5-SW38 | | A5-SW39 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location ID | SW30 | | SW31 | | SW32 | | SW33 | | SW34 | | SW35 | | SW36 | | A5-SW-37 | | A5-SW-37 | | A5-SW-38 | | A5-SW-39 | |
| | | | Sample Date | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | | 5/17/2010 | |
| | | | Matrix | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | |
| | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | FD | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7439-92-1 | Lead | C-MET | µg/l | 8 | U | 8 | U | 8 | U | 8 | U | 81 | | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | |
| 7440-36-0 | Antimony | C-MET | µg/l | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U |
| 7440-38-2 | Arsenic | C-MET | µg/l | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U |
| 7440-47-3 | Chromium | C-MET | µg/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 7440-50-8 | Copper | C-MET | µg/l | 10 | UJ | 10 | U | 10 | | 10 | U | 33 | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Qual - Qualifier
µg/l - micrograms per liter
Qualifiers:
U - Not detected, value to left is the reporting limit.
J - Estimated concentration.

Table B-6
Area 6 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A6-SS37-02 | | A6-SS37-06 | | A6-SS37-12 | | A6-SS37-24 | | A6-SS41-06 | | A6-SS44-02 | | A6-SS44-06 | | A6-SS44-12 | | A6-SS44-24 | | A6-SS46-02 | | A6-SS46-06 | | A6-SS46-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Location ID | S37 | | S37 | | S37 | | S37 | | S41 | | S44 | | S44 | | S44 | | S44 | | S46 | | S46 | | S46 | |
| | | | | Sample Date | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 24 | | 6 | | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | |
| | | | | Depth Unit | | | in | | in | | in | | in | | | | in | | in | | in | | | | | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 2.1 | U | 4.3 | | 2.6 | | 2.1 | U | 1.9 | U | 1.9 | U | 2 | | 3.2 | | 2 | U | 2.3 | U | 2.1 | U | 2.3 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 7.4 | | 20 | | 9.2 | | 5 | | 3.6 | | 4.1 | | 16 | | 3.4 | | 2.9 | | 2.1 | | 2 | | 1.5 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 15 | | 34 | | 23 | | 12 | | 7 | | 10 | | 7.9 | | 5.8 | | 4.1 | | 3.5 | | 5.8 | | 4 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 5.5 | | 7.1 | | 12 | | 6.2 | | 2.9 | | 2.1 | | 2.3 | | 17 | | 6.3 | | 1.1 | U | 7 | | 1.2 | U |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 40 | | 42 | | 34 | | 40 | | 35 | | 20 | | 26 | | 71 | | 65 | | 2.8 | | 3.5 | | 3.3 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-6
Area 6 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A6-SS46-24 | | A6-SS88-02 | | A6-SS88-06 | | A6-SS88-12 | | A6-SS88-24 | | A6-SS101-06 | | A6-SS142-06 | | A6-SS210-02 | | A6-SS210-06 | | A6-SS210-12 | | A6-SS210-24 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Location ID | S46 | | S88 | | S88 | | S88 | | S88 | | S101 | | S142 | | A6-S210 | | A6-S210 | | A6-S210 | | A6-S210 | |
| | | | | Sample Date | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | |
| | | | | Start Depth | 12 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | |
| | | | | End Depth | 24 | | 2 | | 6 | | 12 | | 24 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | |
| | | | | Depth Unit | in | | | | in | | in | | in | | in | | in | | | | in | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 2.3 | U | 2 | U | 1.3 | U | 2 | U | 1.9 | U | 2.3 | U | 2 | U | 2 | U | 1.9 | U | 1.9 | U | 2 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 1.7 | | 2.6 | | 2.1 | | 7.3 | | 2.5 | | 2.3 | | 3.9 | | 2.5 | | 1.9 | | 2.6 | | 2.4 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 4 | | 4.2 | | 5.9 | | 15 | | 100 | | 4.5 | | 27 | | 5.5 | | 4.8 | | 5.7 | | 5.7 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 1.2 | U | 1.6 | | 1.7 | | 3.6 | | 3.4 | | 1.1 | U | 1.5 | | 1 | U | 0.93 | U | 0.94 | U | 1 | U |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 3.2 | | 6.4 | | 11 | | 11 | | 4.8 | | 2.8 | | 2.9 | | 2.5 | | 2.1 | | 2.1 | | 2.2 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-6
Area 6 Soil Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | Sample ID | A6-SS211-02 | | A6-SS211-06 | | A6-SS211-12 | | A6-SS211-24 | | A6-SS212-02 | | Z6-SS212-02 | | A6-SS212-06 | | A6-SS212-12 | | A6-SS212-24 | | Z6-SS212-24 | | A6-SS213-06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLP Number | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Location ID | A6-S211 | | A6-S211 | | A6-S211 | | A6-S211 | | A6-S212 | | A6-S212 | | A6-S212 | | A6-S212 | | A6-S212 | | A6-S212 | | A6-S213 | |
| | | | | Sample Date | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | |
| | | | | Start Depth | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 6 | | 12 | | 12 | | 0 | |
| | | | | End Depth | 2 | | 6 | | 12 | | 24 | | 2 | | 2 | | 6 | | 12 | | 24 | | 24 | | 6 | |
| | | | | Depth Unit | | | in | | in | | in | | | | in | | in | | in | | | | in | | in | |
| | | | | Matrix | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | FD | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.9 | U | 1.9 | U | 1.8 | U | 1.8 | U | 2 | U | 1.9 | U | 1.9 | U | 2 | U | 1.9 | U | 2 | U | 1.9 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 2.7 | | 3.5 | | 3.1 | | 2.8 | | 2.7 | | 2.2 | | 7 | | 2.6 | | 2.3 | | 2.4 | | 2.7 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 6 | | 13 | | 6.9 | | 6 | | 4.7 | | 5 | | 7.1 | | 9.2 | | 7.8 | | 6.1 | | 5.8 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 0.99 | | 0.94 | U | 0.9 | U | 0.91 | U | 1.8 | | 1.5 | | 1.3 | | 1.1 | | 0.95 | U | 0.99 | U | 0.93 | U |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 2.7 | | 2.5 | | 2.4 | | 2.4 | | 2 | | 1.8 | | 2.7 | | 2.7 | | 2.2 | | 2 | | 2.3 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.

Table B-7
Area 6 Sediment Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | Sample ID | A6-SD38-02 | | A6-SD38-06 | | A6-SD38-12 | | A6-SD38-24 | | A6-SD41-06 | | Z6-SD41-06 | | A6-SD48-02 | | A6-SD48-06 | | A6-SD48-12 | | A6-SD48-24 | | A6-SD95-02 | | A6-SD95-06 | | A6-SD95-12 | | A6-SD95-24 | | A6-SD98-06 | | A6-SD99-02 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CLP Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | Location ID | SED38 | | SED38 | | SED38 | | SED38 | | SED41 | | SED41 | | SED48 | | SED48 | | SED48 | | SED48 | | SED95 | | SED95 | | SED95 | | SED95 | | SED98 | | SED99 | |
| | | | | | Sample Date | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/13/2010 | |
| | | | | | Start Depth | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | |
| | | | | | End Depth | 2 | | 6 | | 12 | | 24 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | | 24 | | 6 | | 2 | |
| | | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | | Matrix | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | |
| | | | | | Sample Type | N | | N | | N | | N | | N | | FD | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 12 | | 12 | | 7.1 | | 17 | | 7.6 | | 2.1 | U | 13 | | 24 | | 38 | | 7 | | 3 | | 6.3 | | 5.3 | | 5.6 | | 2.2 | | 2.2 | |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 2.2 | U | 2 | U | 2.2 | U | 2.2 | U | 2.2 | U | 6.8 | | 2.4 | U | 2 | U | 2.3 | U | 2.5 | U | 2.4 | U | 2.1 | U | 2.3 | U | 2.4 | U | 2.4 | U | 1.6 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 2.8 | | 7.4 | | 2 | | 5.7 | | 6.8 | | 23 | | 2 | | 3.4 | | 4.7 | | 2.7 | | 2.4 | | 5.9 | | 4.1 | | 1.8 | | 2.4 | | 2.1 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 6.7 | | 44 | | 5.1 | | 17 | | 12 | | 4.1 | | 3.1 | K | 5.6 | | 11 | | 7.9 | | 5.2 | | 26 | | 9.5 | | 17 | | 4.6 | | 5.2 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 1.3 | | 4.8 | | 1.1 | U | 1.8 | | 1.4 | | 12 | | 1.7 | | 2.9 | | 5.9 | | 1.3 | U | 1.2 | U | 1 | U | 2.3 | | 1.2 | U | 1.2 | U | 1.6 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.
K - The identification of the reported compound is acceptable the reported concentration may be biased high.

Table B-7
Area 6 Sediment Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | | | Sample ID | A6-SD99-06 | | A6-SD99-12 | | A6-SD99-24 | | A6-SDB26-02 | | A6-SDB26-06 | | A6-SDB26-12 | | A6-SDB26-24 | | A6-SDB27-06 | | A6-SDB35-02 | | A6-SDB35-06 | | A6-SDB35-12 | | A6-SDB35-24 | | A6-SDB43-02 | | A6-SDB43-06 | | A6-SDB43-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CLP Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | Location ID | SED99 | | SED99 | | SED99 | | B26 | | B26 | | B26 | | B26 | | B27 | | B35 | | B35 | | B35 | | B35 | | B43 | | B43 | | B43 | |
| | | | | | Sample Date | 5/13/2010 | | 5/13/2010 | | 5/13/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | |
| | | | | | Start Depth | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | |
| | | | | | End Depth | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | | 24 | | 6 | | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | |
| | | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | | Matrix | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | |
| | | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 2.2 | | 2.2 | | 11 | | 40 | | 46 | | 57 | | 6.3 | | 37 | | 44 | | 28 | | 77 | | 14 | | 17 | | 17 | | 21 | |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 1.7 | U | 1.5 | U | 1.6 | U | 2.6 | U | 2.3 | U | 2.4 | | 2.2 | U | 2.5 | U | 2.6 | | 2.4 | U | 2.7 | | 2.3 | U | 2.6 | U | 2.2 | U | 2.6 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 2.1 | | 2.2 | | 3.7 | | 3.6 | | 3.3 | | 3.9 | | 2.2 | | 4.5 | | 2.8 | | 4 | | 3.5 | | 1.7 | | 3.3 | | 3 | | 6.6 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 5.9 | | 5.1 | | 17 | | 5.2 | | 5.7 | | 8 | | 5.1 | | 9.8 | | 8 | | 9 | | 7.8 | | 4.6 | | 6.2 | | 8.9 | | 14 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 1.7 | U | 1.5 | U | 5.7 | | 8.7 | | 4.9 | | 8.9 | | 2.6 | | 4.5 | | 4.2 | | 1.7 | | 6.6 | | 1.2 | U | 2.9 | | 2.3 | | 7.3 | |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.
K - The identification of the reported compound is acceptable the reported concentration may be biased high.

Table B-7
Area 6 Sediment Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

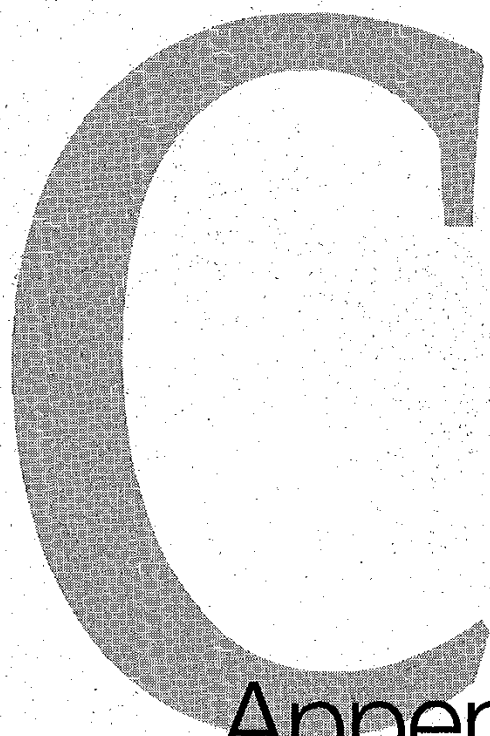
| | | | | | Sample ID | A6-SDB43-24 | | A6-SDB47-02 | | A6-SDB47-06 | | A6-SDB47-12 | | A6-SDB47-24 | | A6-SDB55-06 | | A6-SD100-06 | | A6-SD106-02 | | A6-SD106-06 | | A6-SD106-12 | | A6-SD106-24 | | A6-SD112-02 | | A6-SD112-06 | | A6-SD112-12 | | A6-SD112-24 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CLP Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | Location ID | B43 | | B47 | | B47 | | B47 | | B47 | | B55 | | SED100 | | SED106 | | SED106 | | SED106 | | SED106 | | SED112 | | SED112 | | SED112 | | SED112 | |
| | | | | | Sample Date | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/13/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | |
| | | | | | Start Depth | 12 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 0 | | 0 | | 6 | | 12 | | 0 | | 0 | | 6 | | 12 | |
| | | | | | End Depth | 24 | | 2 | | 6 | | 12 | | 24 | | 6 | | 6 | | 2 | | 6 | | 12 | | 24 | | 2 | | 6 | | 12 | | 24 | |
| | | | | | Depth Unit | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | | in | |
| | | | | | Matrix | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | | Sediment | |
| | | | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Screening Criteria | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7439-92-1 | Lead | C-MET | mg/kg | 400 | 30 | | 27 | | 12 | | 31 | | 5.6 | | 15 | | 1.8 | | 16 | | 38 | | 4.9 | | 17 | | 13 | | 17 | | 9.8 | | 5.6 | |
| 7440-36-0 | Antimony | C-MET | mg/kg | 31 | 2.3 | U | 2 | U | 3.3 | | 1.9 | U | 1.8 | U | 1.6 | U | 2.3 | U | 2.4 | U | 2.5 | U | 2.4 | U | 2.5 | U | 2.5 | U | 2.6 | U | 2.2 | U | 2.2 | U |
| 7440-38-2 | Arsenic | C-MET | mg/kg | 19 | 12 | | 3.1 | | 1.5 | | 2.7 | | 2.7 | | 2.4 | | 2.6 | | 4.5 | | 2.8 | | 2.6 | | 6.5 | | 4.7 | | 8.6 | | 2.7 | | 2.5 | |
| 7440-47-3 | Chromium | C-MET | mg/kg | 240 | 19 | | 6.5 | | 230 | | 6.8 | | 4.7 | | 4.9 | | 3.9 | | 4.7 | | 6 | | 7.1 | | 13 | | 9.3 | | 16 | | 4.8 | | 8.7 | |
| 7440-50-8 | Copper | C-MET | mg/kg | 3100 | 28 | | 3.6 | | 7.9 | | 3.5 | | 0.91 | U | 3.6 | | 1.2 | U | 2.7 | | 5.7 | | 1.2 | U | 11 | | 2.2 | | 2.4 | | 4.9 | | 1.1 | U |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Sample results exceeding screening criteria are shaded blue.
Qual - Qualifier
mg/kg - milligrams per kilogram
Qualifiers:
U - Not detected, value to left is the reporting limit.
K - The identification of the reported compound is acceptable the reported concentration may be biased high.

Table B-8
Area 6 Surface Water Sample Results
Raritan Bay Slag Superfund Site
Old Bridge and Sayreville, New Jersey

| | | | Sample ID | A6-SW12 | | A6-SW13 | | A6-SW14 | | A6-SW30 | | A6-SW31 | | A6-SW32 | | A6-SW33 | | A6-SW34 | | A6-SW35 | | A6-SW36 | | A6-SW37 | | A6-SW38 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location ID | SW12 | | SW13 | | SW14 | | A6-SW30 | | A6-SW31 | | A6-SW32 | | A6-SW33 | | A6-SW34 | | A6-SW35 | | A6-SW36 | | A6-SW37 | | A6-SW38 | |
| | | | Sample Date | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | | 5/11/2010 | |
| | | | Matrix | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | | WS | |
| | | | Sample Type | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | | N | |
| CAS # | Chemical Name | Analytical Method | Result Unit | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| 7439-92-1 | Lead | C-MET | µg/l | 8 | U | 8.2 | | 26 | | 18 | | 8 | U | 8 | U | 8 | U | 11 | | 8 | U | 8 | U | 8 | U | 45 | |
| 7440-36-0 | Antimony | C-MET | µg/l | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U | 20 | U |
| 7440-38-2 | Arsenic | C-MET | µg/l | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 8 | U | 17 | |
| 7440-47-3 | Chromium | C-MET | µg/l | 5 | U | 5 | U | 6.2 | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 6.2 | |
| 7440-50-8 | Copper | C-MET | µg/l | 11 | | 10 | U | 25 | | 12 | | 10 | U | 10 | U | 11 | | 11 | | 10 | U | 12 | | 10 | | 16 | K |

Sample Type:
N - Normal
FD - Field Duplicate
Notes:
Qual - Qualifier
µg/l - micrograms per liter
Qualifiers:
U - Not detected, value to left is the reporting limit.
K - The identification of the reported compound is acceptable the reported concentration may be biased high.



# Appendix C

Appendix C
EPA Fact Sheet
Final Beach Sampling
Technical Memorandum

See Attached CD

CDM

# Raritan Bay Slag Superfund Site
# Old Bridge/Sayreville, New Jersey
# Beach Sampling May 2010

May 27, 2010

In May 2010, EPA collected soil, sediment and surface water samples from two beach areas and nearby playground located in Laurence Harbor. Based on the preliminary results, it appears that the concentrations of slag related metals are low, and consistent with previous sampling results. Therefore, the public health determination conducted by Agency for Toxic Substance and Disease Registry (ATSDR) in February 2009 is still valid and the beaches and playground area may still be used by the public, unless conditions change.

The purpose of the sampling was to assess changes in concentrations of contaminants after a storm event and to support the ongoing assessment of recreational use of the non-impacted beaches, the playground and the fence line along the seawall. The first non-impacted beach (Beach 1) is located east of the closed beach between the first jetty and the third jetty. The second non-impacted beach (Beach 2) is located between the third jetty and Cheesequake Creek Inlet eastern jetty. The contaminants of potential concern are lead, arsenic, copper, chromium, and antimony. Locations for soil and sediment samples were selected randomly by computer from the set of previously sampled locations. Several new sampling locations were proposed for soils and surface water to support both this effort and the upcoming remedial investigation.

Sixty (60) soil samples from nineteen (19) locations, which include quality control (QC) samples, were collected from the playground. In addition to the five (5) contaminants of concern listed above, the playground samples were also analyzed for other metals, volatile organic compounds, semi-volatile organic compounds, pesticides, and polychlorinated biphenyls. Thirty-one (31) soil samples from fourteen (14) locations, which include QC samples, were collected from the fence line.

All samples from the two non-impacted beaches were field screened and a subset (75 percent) of these samples was sent to a fixed laboratory for analysis. Sixty-four (64) soil samples from thirty-one (31) locations, fifty-eight (58) sediment samples from twenty-eight locations (28), and eleven (11) surface water samples from ten (10) locations, which include QC samples, were collected from the non-impacted Beach 1. Thirty-seven (37) soil samples from fourteen locations (14), fifty-three (53) sediment samples from twenty locations (20), and thirteen (13) surface water samples from twelve (12) locations, which include QC samples, were collected from the non-impacted Beach 2. These samples were analyzed for the contaminants of potential concern only.

## Sample Results

Playground

A summary of preliminary soil sample results are below.



R2-0004474

**Raritan Bay Slag Superfund Site**
**Old Bridge/Sayreville, New Jersey**
**Beach Sampling May 2010**
May 27, 2010

| Soil Sample Summary Results - Playground | | |
|---|---|---|
| Contaminant | Range of Detections (mg/kg) | Average (mg/kg) |
| Antimony | 0.74 to 5.5 | 2.5 |
| Arsenic | 1.9 to 26.5 | 7 |
| Chromium | 4 to 81.3 | 17.5 |
| Copper | 5.3 to 38.8 | 11.5 |
| Lead | 7.8 to 132 | 26 |

Based on the preliminary results of sampling recently conducted by EPA in the playground area, it appears that the concentrations of slag related metals are low, and consistent with previous sampling results. The preliminary sampling results for other organic contamination (not slag related) are within an acceptable risk range, and are unlikely to adversely affect human health. Therefore, the public health determination conducted by ATSDR in February 2009 is still valid and the playground area may still be used by the public, unless conditions change.

Non-impacted Beach 1 (between the first jetty and the third jetty)

A summary of preliminary soil and sediment sample results are below. Preliminary analytical results of surface water samples were consistently lower than previous surface water results recently collected by EPA.

| Soil Sample Summary Results – Non-impacted Beach 1 | | |
|---|---|---|
| Contaminant | Range of Detections (mg/kg) | Average (mg/kg) |
| Antimony | 1.5 to 210 | 22 |
| Arsenic | 2.3 to 54 | 10 |
| Chromium | 3.1 to 47 | 12 |
| Copper | 2 to 55 | 11 |
| Lead | 2.7 to 1,000 | 127 |
| **Sediment Sample Summary Results - Non-impacted Beach 1** | | |
| Contaminant | Range of Detections (mg/kg) | Average (mg/kg) |
| Antimony | 1.6 to 25 | 7 |
| Arsenic | 0.9 - 40 | 7 |
| Chromium | 3.5 to 32 | 10 |
| Copper | 1.9 to 93 | 12 |
| Lead | 2.2 to 330 | 80 |

Based on the preliminary results of sampling recently conducted by EPA in Beach 1, a few samples from this area contained concentrations of antimony, arsenic and lead that are above the New Jersey Department of Environmental Protection (NJDEP) standards for residential use. The levels of lead in soil are consistent with previous sampling results evaluated by ATSDR. The average concentrations of arsenic and antimony are slightly above the screening levels utilized



R2-0004475

by ATSDR and EPA. These screening levels are very conservative and will be addressed in more detail, in the full report to be issued by EPA in late June 2010. Based on the limited number of elevated concentrations and the conservative nature of the selected screening levels, the public health determination conducted by ATSDR in February 2009 is still valid and this portion of the beach area may still be used by the public, unless conditions change.

Non-impacted Beach 2 (between the third jetty and Cheesequake Creek Inlet eastern jetty)

A summary of preliminary soil and sediment sample results are below. Preliminary analytical results of surface water samples were consistently lower than previous surface water results recently collected by EPA.

| **Soil Sample Summary Results - Non-impacted Beach 2** | | |
|---|---|---|
| Contaminant | Range of Detections (mg/kg) | Average (mg/kg) |
| Antimony | 2 to 4.3 | 3 |
| Arsenic | 1.5 – 20 | 4 |
| Chromium | 3.5 to 100 | 11.5 |
| Copper | 0.99 to 17 | 4 |
| Lead | 1.8 to 71 | 13.5 |
| **Sediment Sample Summary Results - Non-impacted Beach 2** | | |
| Contaminant | Range of Detections (mg/kg) | Average (mg/kg) |
| Antimony | 2.4 to 3.3 | 3 |
| Arsenic | 1.5 to 12 | 4 |
| Chromium | 3.1 to 230 | 15 |
| Copper | 1.3 to 28 | 5 |
| Lead | 1.8 to 77 | 20 |

Based on the preliminary results of sampling recently conducted by EPA in Beach 2, it appears that the concentrations of metals are low, and consistent with previous sampling results. Therefore, the public health determination conducted by ATSDR in February 2009 is still valid and this portion of the beach area may still be used by the public, unless conditions change.

Fence Line

No analytical results are available at this time.

**Laurence Harbor Waterfront Park Beach Cleanup**

EPA began the debris cleanup of the impacted beach on Monday, May 24, 2010 and completed the debris cleanup on Thursday, May 27, 2010.



R2-0004476

For additional information, please see the EPA website for this project - http://www.epa.gov/region02/superfund/npl/raritanbayslag/

Or contact

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R2-0004477