MTA Long Island Rail Road

Delineation Phase II
Site Assessment Investigation Report
Valley Stream Substation: Site No. V00404-1

November 2012

Dvirka and Bartilucci Consulting Engineers
A Division of D&B Engineers and Architects, P.C.

METROPOLITAN TRANSPORTATION AUTHORITY

LONG ISLAND RAIL ROAD

DELINEATION PHASE II SITE ASSESSMENT
FOR
VALLEY STREAM SUBSTATION
(V00404-1)

INVESTIGATION REPORT

Prepared for:

METROPOLITAN TRANSPORTATION AUTHORITY

LONG ISLAND RAIL ROAD

Prepared by:

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WOODBURY, NEW YORK 11797

NOVEMBER 2012

LONG ISLAND RAIL ROAD
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1.0 INTRODUCTION

This Investigation Report presents the results of the Delineation Phase II Site Assessment, conducted at the Long Island Rail Road (LIRR) Valley Stream Substation which was completed in accordance with fully executed Voluntary Cleanup Agreement No. V00404-1.

The objectives of the Delineation Phase II Site Assessment included the following:

- Define the nature and extent of impacts to surface and subsurface soil;
- Determine if site-related contaminants have impacted groundwater quality;
- Identify potential impacts to human health and/or the environment associated with site-related contaminants; and
- Obtain sufficient data to determine the need for remedial action and to evaluate remedial alternatives that may be implemented as a final long-term remedy for the site.

Field activities and sampling procedures associated with the Delineation Phase II Site Assessment at the Valley Stream Substation were completed in accordance with the NYSDEC-approved "Investigation Work Plan" dated June 2005.

The following subsections provide relevant project background information, including detailed descriptions of the Valley Stream Substation site, as well as a summary of the findings of prior investigation work.

1.1 Project Background

The LIRR designed, constructed and operated substations from the early 1930's through 1951 that utilized mercury rectifiers. These rectifiers allowed the LIRR to receive 60-cycle, alternating current (AC) from local utilities and convert it to direct current (DC) for use as a source of electric power for its locomotives and electric passenger car fleet. The LIRR identified

20 substations located throughout Queens, Nassau and Suffolk Counties that once utilized mercury containing rectifiers, including the Valley Stream Substation.

It is believed that during the early 1980s, the mercury rectifiers were taken out of service and physically removed from these LIRR substations and replaced with non-mercury containing solid state equipment. However, due to uncertainties surrounding the work practices that may have been employed when managing the operation and maintenance of these mercury rectifiers, the LIRR believed it necessary to conduct environmental assessments at these 20 electric substations to determine the potential effects that may have occurred to the surrounding environment.

Between 1999 and 2000, the LIRR conducted environmental assessments at the 20 electric substations previously utilizing mercury-containing rectifiers. The results of these assessments were documented in a report prepared by Dvirka and Bartilucci Consulting Engineers (D&B), entitled, "Site Assessment of 20 Substations for Mercury Contamination," dated December 2000. Based on the findings of that report, mercury was identified in soil at all 20 substations, including the Valley Stream Substation, at concentrations above the New York State Department of Environmental Conservation's (NYSDEC's) recommended cleanup objectives (TAGM 4046).

As detailed in Section 1.3, the LIRR conducted an Interim Remedial Measure (IRM) in April 2000 consisting of the removal of mercury-contaminated soil and replacement with poly sheeting and crushed stone to the north, east and northeast of the Valley Stream Substation.

In order to further delineate and remediate impacted soil at the 20 substations, the LIRR has agreed to undertake and complete Delineation Phase II Site Assessments under the NYSDEC Voluntary Cleanup Program (VCP).

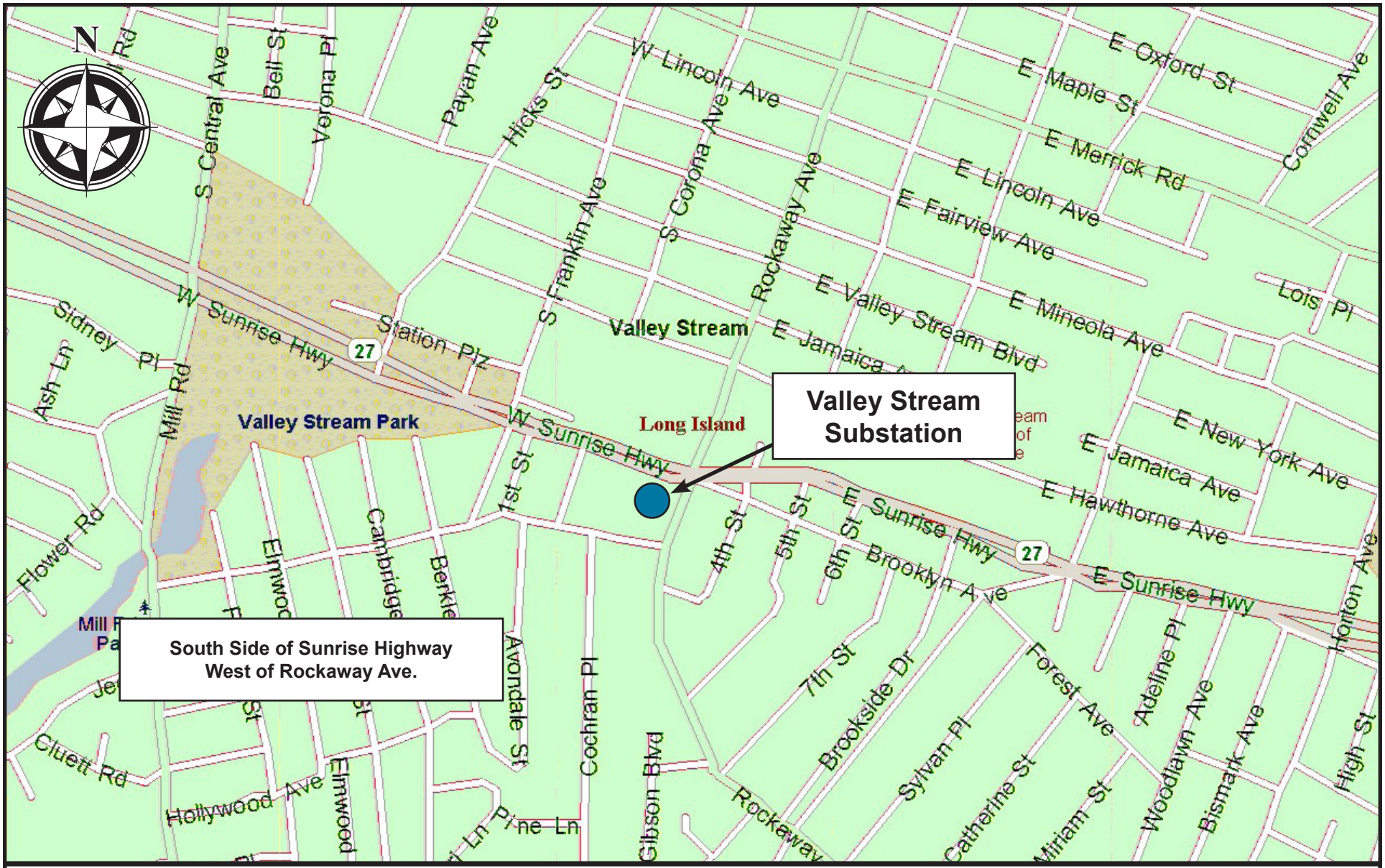
In support of this VCP, the LIRR elected to conduct Delineation Phase II Site Assessment activities at the Valley Stream Substation. This report discusses the data generated as

part of the Initial Site Assessment and Delineation Phase II Site Assessment activities conducted at the Valley Stream Substation.

1.2 Site Description

The Valley Stream Substation site is located in Valley Stream, Nassau County, New York, as depicted on Figure 1-1. The substation consists of an approximately 25-foot by 25-foot one-story brick building, as depicted on Figure 1-2. An approximately 275-foot by 30-foot transformer yard is located adjacent to the substation to the south and is enclosed by a chain-link fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Far Rockaway branch. The areas surrounding the south and west of the substation property are currently utilized as commercial parking areas, and the area to the immediate east of the substation property is currently utilized as a commercial parking area for a fast food restaurant. Note that the northern side of the Valley Stream Substation abuts a pedestrian sidewalk and Sunrise Highway.

The Valley Stream Substation is not equipped with a basement, or any sanitary or office facilities. The interior of the substation consists of one active solid-state rectifier located over a separate pit that once serviced a mercury-containing rectifier. The substation is equipped with a second pit, which was covered by a metal utility plate, referred to as a "water trough" on LIRR construction drawings. During the Initial Site Assessment a steel plate-covered water meter pit with a concrete solid bottom was identified in the northeast corner of the substation; a steel plate-covered conduit pit with a solid bottom was identified off the southwest corner of the substation building; an earthen bottom negative feed manhole was identified along the west side of the substation building; and a solid bottom positive feed manhole was identified along the west side of the substation building. In addition, the Initial Site Assessment also identified a discharge pipe which extended through the south side of the substation building that appeared to discharge onto a concrete pad located in the transformer yard. This discharge pipe did not appear to be connected to a drainage feature within the substation at the time of the inspection.



DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
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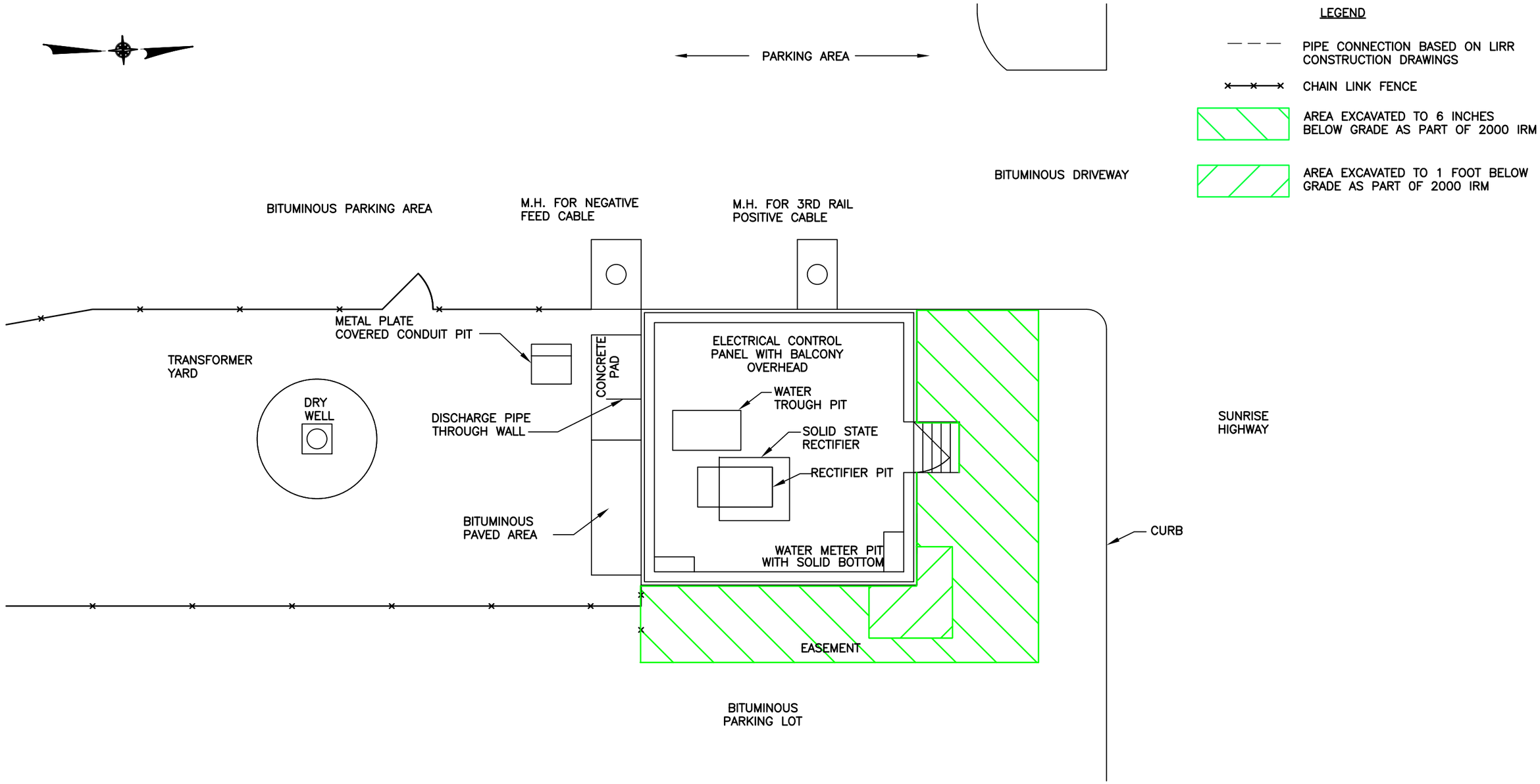
LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

SITE LOCATION MAP
VALLEY STREAM SUBSTATION (V00404-1)

Not to Scale

FIGURE 1-1



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

SITE PLAN
VALLEY STREAM SUBSTATION (V00404-1)

FIGURE 1-2

Floor drains were not present in the substation building during the site inspection. As a result, discharge testing at the Valley Stream Substation was not conducted. However, a dry well was observed located in the transformer yard approximately 27 feet south of the substation building. According to available LIRR construction drawings, this dry well was once connected to the rectifier and water trough pits located within the substation building.

Based on the results of the completed Delineation Phase II Site Assessment, the depth to groundwater at the site is approximately 10 feet below grade.

1.3 Summary of Prior Investigations

The LIRR completed an Initial Site Assessment of the Valley Stream Substation in July 1999, as documented in the report entitled, "Site Assessment of 20 Substations for Mercury Contamination," dated December 2000. Investigation methods utilized during this Initial Site Assessment included a site inspection, mercury vapor measurements and drainage determinations. In addition, samples of various environmental media were collected at the site for laboratory analysis. These media included surface soil, subsurface soil and concrete cores. Analytical data generated from the Initial Site Assessment is provided in Appendix A.

Additional details regarding the Initial Site Assessment of the Valley Stream Substation are presented in the previously referenced report "Site Assessment of 20 Substations for Mercury Contamination." Note that the findings of the 1999 Initial Site Assessment were utilized as the basis for developing the investigation scope of work for the Delineation Phase II Site Assessment investigation. Below is a summary of the findings of the Initial Site Assessment of the Valley Stream Substation.

Drainage Determination

Floor drains were not present in the substation building during the Initial Site Assessment. As a result, discharge testing at the Valley Stream Substation was not conducted. However, a dry well was observed located in the transformer yard, approximately 27 feet south

of the substation building. According to available LIRR construction drawings, this dry well was once connected to the rectifier and water trough pits located within the substation building. Soil samples were collected from this structure, and are discussed below.

Sampling and Analysis

The following subsections describe the findings associated with surface soil, subsurface soil and concrete core samples collected from the Valley Stream Substation during the completed Initial Site Assessment. All samples were analyzed for mercury. Samples collected during this phase of the investigation were compared to the TAGM 4046 Recommended Soil Cleanup Objectives (RSCOs); however, as of December 2006, the NYSDEC has mandated new cleanup objectives, and as such, all Initial Site Assessment data have been reevaluated and compared to the NYCRR Subpart 375 Industrial Soil Cleanup Objectives (SCOs) for Industrial and Commercial sites. As such, soil samples collected from within the fenced-in, transformer yard have been compared to the Industrial SCOs, and soil samples collected from outside the fenced-in transformer yard have been compared to the Commercial SCOs. In addition, as per the United States Environmental Protection Agency (USEPA), all soil samples collected from or associated with Underground Injection Control (UIC) structures will be compared to the TAGM 4046 SCOs. Sample locations are provided on Figures 2-1 and 2-2. Results for the mercury analysis are provided in Appendix A.

Surface Soil

Two surface soil samples were collected during the Initial Site Assessment for mercury analysis. Both soil samples were collected from outside the limits of the fenced-in transformer yard, and as such, have been compared to the Commercial SCOs. Both collected surface soil samples exhibited detectable concentrations of mercury in exceedance of the Commercial SCO for mercury of 2.8 mg/kg, ranging in concentration from 22.6 mg/kg to a maximum concentration of 249,000 mg/kg. The maximum concentration of mercury was detected in VSSS-01, collected adjacent to the north side of the substation building.

Subsurface Soil

Six subsurface soil samples were collected for mercury analysis. All six soil samples were collected from outside the limits of the fenced-in transformer yard, and as such, have been compared to the Commercial SCOs. All six collected subsurface soil samples exhibited detectable concentrations of mercury in exceedance of the Commercial SCO for mercury of 2.8 mg/kg, ranging in concentration from 87.9 mg/kg to a maximum concentration of 5,910 mg/kg. The maximum concentration of mercury was detected in VSSB-05 (0 to 2 feet), collected approximately 5 feet off the northeast corner of the substation building.

Underground Injection Control (UIC) and Below Grade Structures

Three below grade structures were investigated as part of the Initial Site Assessment. The structures investigated included a dry well located approximately 27 feet south of the substation building, the rectifier pit located within the substation building and the water trough pit located within the substation building. The results of the investigations are as follows:

Dry Well

One soil boring (VSSB-01) was advanced in the dry well located approximately 27 feet south of the substation building and two subsurface soil samples were collected from 6 to 8 and 10 to 12 feet below ground surface for mercury analysis. As this is a UIC structure, these soil samples have been compared to the TAGM SCO for mercury of 0.1 mg/kg. Both subsurface soil samples exhibited mercury concentrations in exceedance of the TAGM SCO, of 0.10 mg/kg ranging in concentration from 1.6 mg/kg to 1.8 mg/kg. The greatest mercury concentration was detected in subsurface soil sample VSSB-01 (6 to 8 feet).

Rectifier Pit

One soil boring (VSSB-03) was advanced in the rectifier pit located inside the substation building and two subsurface soil samples were collected from 2 to 4 and 4 to 6 feet below the pit

bottom for mercury analysis. As the drain associated with this structure was connected to the dry well located to the south of the substation building, any discharge to soil from this structure actually occurred in the dry well. In addition, no other drains were identified within this structure. As such, the rectifier pit is not a UIC structure, and all soil samples collected from beneath this structure have been compared to the Industrial SCO for mercury of 5.7 mg/kg. Of the two subsurface soil samples collected from beneath this structure, one sample exhibited a detectable concentration of mercury in exceedance of the Industrial SCO of 5.7 mg/kg: subsurface soil sample VSSB-03 (2 to 4 feet), exhibited a mercury concentration of 103 mg/kg.

Water Trough Pit

One soil boring (VSSB-02) was advanced in the water trough pit located inside the substation building and two subsurface soil samples were collected from 2 to 4 and 4 to 6 feet below the pit bottom for mercury analysis. As the drain associated with this structure was connected to the dry well located to the south of the substation building, any discharge to soil from this structure actually occurred in the dry well. In addition, no other drains were identified within this structure. As such, the water trough pit is not a UIC structure, and all soil samples collected from beneath this structure have been compared to the Industrial SCO for mercury of 5.7 mg/kg. Of the two subsurface soil samples collected from beneath this structure, one sample exhibited a detectable concentration of mercury in exceedance of the Industrial SCO of 5.7 mg/kg: subsurface soil sample VSSB-02 (2 to 4 feet), exhibited a mercury concentration of 22.7 mg/kg.

Concrete

Two concrete core samples were collected from the interior of the substation building for mercury analysis. Both collected concrete core samples exhibited detectable concentrations of mercury in exceedance of the Industrial SCO for mercury of 5.7 mg/kg, ranging in concentration from 181 mg/kg to a maximum concentration of 580 mg/kg. The maximum concentration of mercury was detected in VSCC-01, collected from the water trough pit, located in the substation building.

IRM Activities

In April 2000, the LIRR conducted an Interim Remedial Measure (IRM), consisting of the removal of 6 inches of contaminated soil and replacement with poly sheeting and crushed stone to the north and east of the Valley Stream Substation in order to reduce the potential for exposure to mercury in surface soil in this area. In addition, due to the presences of visible mercury beading noted in soil located adjacent to the northeast corner of the substation building, this area was excavated to a depth of 1-foot below ground surface. The IRM area is depicted on Figure 1-2. This IRM action was documented in a report prepared by D&B, entitled "Interim Remedial Measure Oversight Report, "dated January 2001. As part of the IRM activities, five post excavation soil samples were collected from the excavated areas. Post excavation sample results are provided in Appendix A. All endpoint soil samples were collected from outside the limits of the fenced-in transformer yard, and as such, have been compared to the Commercial SCOs. All five post excavation soil samples exhibited detectable concentrations of mercury in exceedance of the Commercial SCO for mercury of 2.8 mg/kg, ranging in concentration from 206 mg/kg to a maximum concentration of 4,060 mg/kg. The maximum concentration of mercury was detected in VSEP-04, collected approximately 3 feet off the northeast corner of the substation building.

2.0 INVESTIGATION METHODS

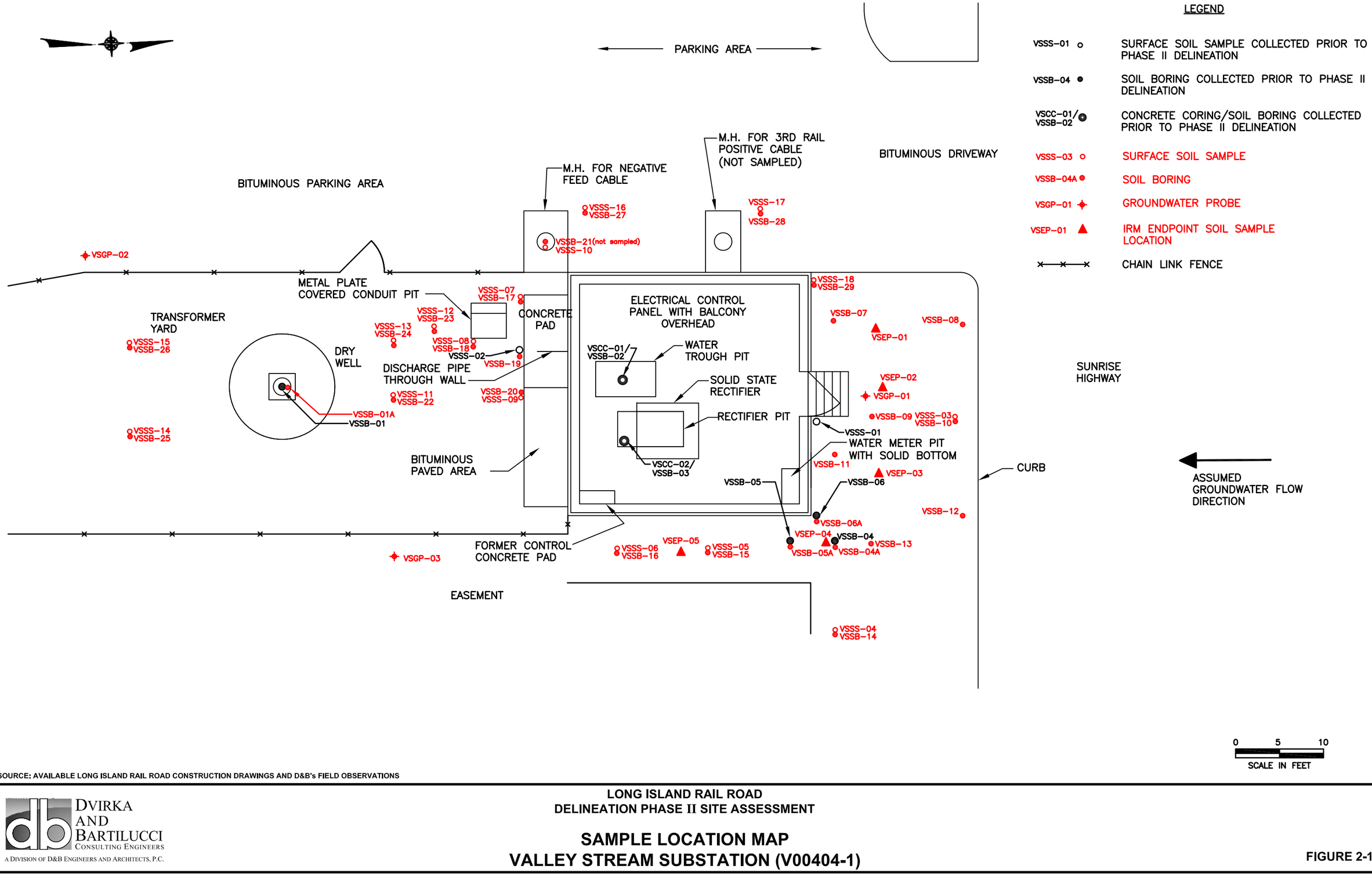
2.1 Introduction

This section provides a description of the field activities conducted at the Valley Stream Substation site as part of the Delineation Phase II Site Assessment. The initial Delineation Phase II Site Assessment scope of work was completed between November 2005 and August 2006 in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved Work Plan, dated June 2005. Based on the results of this sampling, D&B provided the LIRR and the NYSDEC with a November 2006 Preliminary Evaluation as to the nature and extent of contamination along with recommendations for additional sampling and analysis. Based on the findings of the 2005 and 2006 investigations, additional soil samples were collected in June and July 2010 in areas exhibiting the greatest mercury concentrations. It was necessary to complete the additional sampling locations to sufficiently define the extent of elevated mercury concentrations detected in substation property and the eastern and western abutting commercial property soil in order to develop an appropriate remedial plan for the removal of soil in these areas. All additional sampling at the Valley Stream Substation was completed by D&B in July 2010.

Sample locations associated with the 2005 and 2006 Delineation Phase II Site Assessment phases are depicted on Figure 2-1. Figure 2-2 depicts the locations of the 2010 additional delineation sample locations, completed based on the results of the 2005 and 2006 investigation phases. In addition, a sampling and analysis summary for the above listed investigation phases is provided on Table 2-1. Laboratory data generated as part of the Delineation Phase II Site Assessment are provided in Appendix B.

2.2 Surface Soil Sampling

A total of 53 surface soil samples were collected at the Valley Stream Substation as part of the Delineation Phase II Site Assessment. Surface soil samples were collected from a depth of 0 to 2 inches below ground surface. All samples were collected utilizing a dedicated



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

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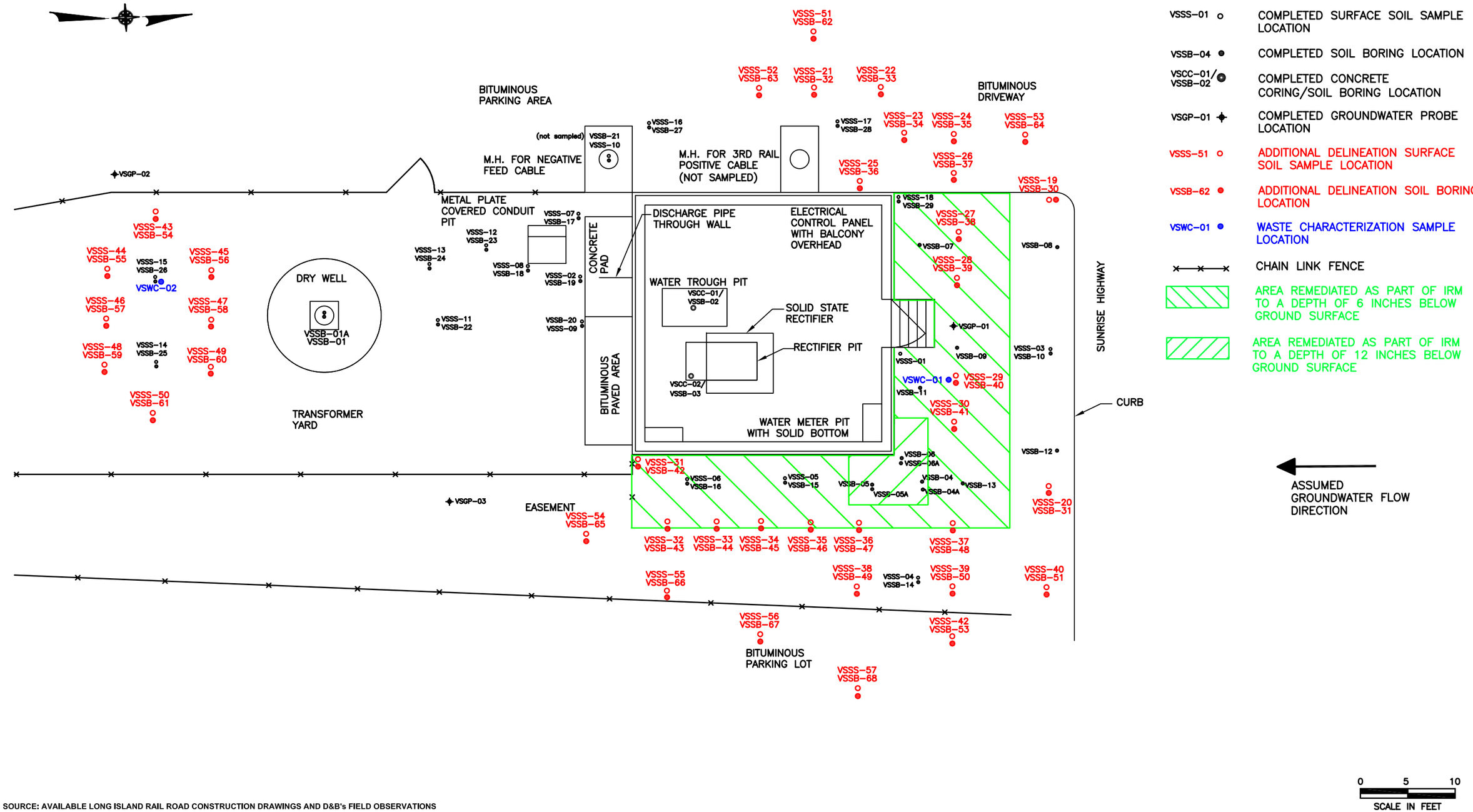
LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

SAMPLE LOCATION MAP
VALLEY STREAM SUBSTATION (V00404-1)

FIGURE 2-1



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LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

ADDITIONAL DELINEATION SAMPLE LOCATION MAP
VALLEY STREAM SUBSTATION (V00404-1)

FIGURE 2-2

LONG ISLAND RAILROAD
DELINEATION PHASE II SITE ASSESSMENT - SEVENTEEN SUBSTATIONS
VALLEY STREAM (V00404-1) - SUMMARY OF COMPLETED WORK (11/18/05 through6/24/10)

Location	Sample Designation	SURFACE SOIL SAMPLES**	SOIL PROBES/BORINGS			GROUNDWATER PROBES		Recommended Analyses							Comments
			No. of Probes	No. of Samples	Soil Sampling Interval	No. of Probes	Approximate Total Depth of Probes	Mercury	RCRA Metals	TAL Metals	PCBs	VOCs	SVOCs	USEPA UIC Constituents *	
North and East Sides of the Substation	VSSB-04A, 05A & 06A	-	3	6	6-10' bgs Cont.	-	-	6	-	-	-	-	-	-	No deviations from original scope.
	VSSS-03 through 06, 19, 20 and 27 through 40, 42, and 54 through 57 VSSB-07 through 16, 30, 31, 38 through 51, 53 and 65 through 68	25	31	108	1-2 ' bgs (VSSB-42 through 44, and 65) 1-2 and 2-4' bgs (VSSB-45 and 51) 1-2 and 2-6' bgs Cont. (VSSB-38 through 40, 46 and 66) 1-2 and 2-8' bgs Cont. (VSSB-41, 47 through 50, 53, and 67 through 68) 1-2 and 2-10' bgs Cont. (VSSB-08, 10, 12, 30 and 31) 2-10' bgs Cont. (VSSB-07, 09, 11 and 13 through 16)	-	-	133	-	-	-	-	-	-	VSSS-05 & 06 and VSSB-15 & 16 were moved east 2' due to utility obstructions. VSSB-09 and13 were moved south 1' and 2', respectively, due to site conditions. Subsurface soil samples at VSSB-08, VSSB-10 and VSSB-12 from 1 to 2 feet below ground surface were collected outside of the scope of work in order to further delineate the shallow subsurface soil conditions in these areas. VSSB-30 & 31 were collected outside of the scope of work in order to further delineate the north side of the substation building, in the vicinity of the road, while the necessary
West Side of the Substation	VSSS-21 through 26, 51 through 53 VSSB-32 through 37, and 62 through 64	9	9	9	1-2' bgs	-	-	18	-	-	-	-	-	-	No deviations from original scope.
South Side of the Substation	VSSS-07 through 09, and 43 through 50 VSSB- 17 through 20, and 54 through 61	11	11	17	1-2' bgs (VSSB-54 through 56) 1-2 and 2-4' bgs (VSSB-57 through 61) 2-4' bgs (VSSB-17 through 20) 1-2 and 4' bgs (VSSB-17 through 20)	-	-	28	-	-	-	-	-	-	No deviations from original scope.
Transformers	VSSS-11 through 15 VSSB-22 through 26	5	5	10	0-4' bgs Cont.	-	-	-	15	-	15	-	15	-	No deviations from original scope.
Potential Releases	VSSS-16 & 17 VSSB-27 & 28	2	2	2	2-4' bgs	-	-	4	-	-	-	-	-	-	No deviations from original scope.
Roof Drains	VSSS-18 VSSB-29	1	1	1	2-4' bgs Cont.	-	-	2	-	-	-	-	-	-	No deviations from original scope.
Negative Feed Electric Manhole	VSSS-10	1	-	-	-	-	-	1	-	-	-	-	-	1	VSSB-21 was not collected due to a concrete bottom in the cable pit.
Underground Injection Control	VSSB-01A	-	1	5	12-22' bgs Cont.	-	-	-	-	-	-	-	-	5	No deviations from original scope.
Waste Characterization	VSWC-01 and 02	2	2	2	2-4' bgs	-	-	4	-	-	-	-	-	-	No deviations from original scope.
Groundwater	VSGP-01 through 03	-	-	-	-	3	9'	-	-	6***	-	3	-	-	No deviations from original scope.
		56	65	160	-	3	-	196	15	6	15	3	15	6	Totals

NOTES:
bgs: below ground surface.
bpb: below pit bottom.
Cont.: Continuous 2-foot soil sampling
-: Not Applicable
* USEPA UIC Constituents include VOCs by Method 8260b, RCRA Metals including Mercury by Methods 6010b/7471a, SVOCs by Method 8270c, PCBs by Method 8082, and TPHs by Method 8015b.
** Surface soil samples to be collected at 0-2" interval.
*** Filtered and Unfiltered Samples

polyethylene scoop and placed into laboratory-supplied glass bottles. Filled sample bottles were then placed into an ice-filled cooler for subsequent shipment to the analytical laboratory.

All samples were screened utilizing a mercury vapor analyzer (MVA) for the presence of mercury vapor and a photoionization detector (PID) for the presence of volatile organic compounds (VOCs). In areas of the substation property where the ground surface was covered with railroad ballast/crushed stone or asphalt, this material was removed prior to collecting the surface soil sample, and returned/refinished with like materials, as appropriate, when sampling was completed.

2.3 Subsurface Soil Sampling

A total of 153 subsurface soil samples were collected at the Valley Stream Substation as part of the Delineation Phase II Site Assessment. All subsurface soil borings were hand-cleared to a depth of five feet below ground surface in order to avoid impacting any underground utilities. In general, subsurface soil samples collected from less than five feet below ground surface were collected using a decontaminated hand auger and/or post hole digger, and subsurface soil samples collected from more than five feet below ground surface were collected using direct push (Geoprobe®) sampling techniques with a decontaminated probe sampler. The samples were screened for mercury vapor utilizing a MVA, and for VOCs utilizing a PID; inspected for staining, discoloration; checked for odors; and logged by a geologist in a dedicated field logbook. Boring logs are provided in Appendix C.

Before commencement of soil probing, all "down-hole" probing equipment (i.e., macro-core samplers, probe rods, etc.) was decontaminated using a steam cleaner/pressure washer and/or Alconox and water prior to use. Soil probe samplers were also decontaminated between each use by thoroughly washing with Alconox and water, using a brush to remove particulate matter or surface film, followed by a thorough rinsing with tap water.

In addition to monitoring VOC and mercury vapor concentrations in the collected soil samples, an MVA and a PID were used to monitor mercury vapor and VOCs, respectively, in the

breathing zone and at the probe holes and boreholes. The PID was calibrated on at least a daily basis, using isobutylene gas at a concentration of 100 parts per million (ppm) in air. The MVA was factory-calibrated as per the manufacture's specifications.

Upon completion of the soil probes, recovered sample material which was not retained for laboratory analysis was returned to the borehole from which it came. The remainder of the borehole was filled with clean sand, bentonite pellets and/or concrete, as appropriate. All probe holes were restored to grade with the same material that was originally in place.

2.4 Groundwater Probe Installations and Sampling

Three groundwater probes, consisting of one probe located upgradient of the substation building, and two probes located downgradient of the substation building were advanced and groundwater samples were collected from these locations. The groundwater samples were collected by driving decontaminated probe rods to the designated sample depth and inserting dedicated polyethylene tubing and a decontaminated stainless steel check valve into the rod assembly. The check valve and tubing were then manually oscillated to purge approximately 2 to 3 gallons of groundwater prior to sample collection. Each groundwater sample, upon retrieval, was analyzed in the field for pH, conductivity, dissolved oxygen, turbidity, and temperature. Groundwater samples were then collected from the tubing/check valve assembly into laboratory-supplied glass bottles. Any evidence of odors, sheens or the presence of free product was noted. All observations and results were logged in the project field books.

Upon completion, each probe hole was backfilled with clean sand and/or bentonite pellets. All probe holes were restored at grade with the same material that was originally in place.

2.5 Underground Injection Control (UIC) and Below Grade Structures

Three below grade structures were investigated for Underground Injection Control (UIC) applicability as part of the Delineation Phase II Site Assessment. The structures investigated

included a dry well located approximately 27 feet south of the substation building, a negative feed cable pit and a manhole for third rail positive cable located adjacent to the west side of the substation building. The investigations were conducted as follows:

Dry Well

In order to further investigate the dry well located approximately 27 feet south of the substation building, one subsurface soil boring (VSSB-01A) was advanced in the dry well and five subsurface soil samples were collected from approximately 12 feet below ground surface to approximately 22 feet below ground surface, in 2-foot continuous intervals.

Negative Feed Cable Pit

In order to investigate the negative feed cable pit located adjacent to the west side of the substation building, one soil sample (VSSS-10) was collected from the sediment accumulated in the pit. Note, this structure was identified as having an earthen bottom, during the Initial Site Assessment; however, the inspection conducted during the Delineation Phase II Site Assessment identified a solid bottom within this structure. As such, subsurface soil samples were not collected from the negative feed cable pit.

Manhole for Third Rail Positive Cable

The third rail positive cable manhole located immediately west of the substation building was visually inspected for the presence of a solid bottom and discharge piping during the Delineation Phase II Site Assessment. A solid bottom was observed in the manhole; therefore, samples were not collected from this structure. In addition, the manhole was designed as an access point for power and was not designed as a drainage structure.

2.6 Air Sampling

As discussed above, a Jerome MVA was utilized to screen all surface and subsurface soil samples for the presence of mercury vapor, and a PID was utilized to screen all surface and subsurface soil samples for the presence of VOCs. The mercury vapor and VOC results for subsurface soil are summarized on the boring logs provided in Appendix C.

3.0 FINDINGS

The findings from the Initial Site Assessment, completed in 1999, were the basis for the sample locations proposed for the "Delineation Phase II Site Assessment," initiated in November 2005 and August 2006, and further delineation activities completed in June and July 2010.

Surface and subsurface soil sample results are compared to the New York State Department of Environmental Conservation (NYSDEC) 6 NYCRR Subpart 375 Soil Cleanup Objectives (SCOs) for Industrial (fenced areas) and Commercial (non-fenced areas) sites. Soil samples collected from Underground Injection Control (UIC) features are compared to the Technical and Administrative Guidance Memorandum (TAGM) 4046 SCOs. Groundwater sample results are compared to the Class GA Groundwater Standards/Guidance Values listed in NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1. Analytical results from the Delineation Phase II Site Assessment are summarized in Appendix B. Boring logs generated from the advancement of subsurface soil borings are provided in Appendix C. A contaminant concentration map, provided as Figure 3-1, depicts the site-wide mercury and arsenic concentration data generated from the 1999 Initial Site Assessment and the initial 2005 and 2006 phase of the Delineation Phase II Site Assessment at the Valley Stream Substation. Figure 3-2 depicts mercury concentration data associated with the additional Delineation Phase II Site Assessment samples collected during the 2010 phases. The additional delineation soil samples were collected in areas where the greatest mercury concentrations were detected, primarily to the northeast and west of the substation building.

Below is a discussion of the evaluation of data generated as part of the Delineation Phase II Site Assessment at the Valley Stream Substation.

PARKING AREA

BITUMINOUS PARKING AREA

TRANSFORMER YARD

BITUMINOUS DRIVEWAY

M.H. FOR NEGATIVE FEED CABLE

M.H. FOR 3RD RAIL POSITIVE CABLE (NOT SAMPLED)

DRY WELL

CONCRETE PAD

DISCHARGE PIPE THROUGH WALL

WATER TROUGH PIT

SOLID STATE RECTIFIER

RECTIFIER PIT

BITUMINOUS PAVED AREA

EASEMENT

DEPTH	Hg CONC.	As CONC.
0–2 in.	0.114	6.03
0–2 ft.	<0.066	18.8
2–4 ft.	<0.067	7.76

DEPTH	Hg CONC.	As CONC.
0–2 in.	<0.060	3.09
0–2 ft.	0.198	3.14
2–4 ft.	0.246	45.4

VSSS-15
VSSB-26

DEPTH	Hg CONC.	As CONC.
0–2 in.	12.2	9.19
0–2 ft.	0.434	65.9
2–4 ft.	0.177	71.8

DEPTH	Hg CONC.	As CONC.
0–2 in.	0.458	9.21
0–2 ft.	25.9	7.26
2–4 ft.	0.855	11.4

VSSS-14
VSSB-25

VSSS-12
VSSB-23

VSSS-13
VSSB-24

VSSS-11
VSSB-22

DEPTH	Hg CONC.	As CONC.
0–2 in.	0.549	7.54
0–2 ft.	0.111	16.0
2–4 ft.	<0.066	7.64

VSSB-01

DEPTH	CONC.
6–8 ft.	1.8
10–12 ft.	1.6

VSSB-01A

DEPTH	CONC.
12–14 ft.	<0.069
14–16 ft.	<0.068
16–18 ft.	<0.068
18–20 ft.	<0.071
20–22 ft.	<0.073

DEPTH	CONC.
2–4 ft.	<0.072

DEPTH	CONC.
2–4 ft.	0.313

DEPTH	CONC.
2–4 ft.	0.224

DEPTH	CONC.
2–4 ft.	0.095

VSSS-10
(1.9)

(1.7)
VSSS-16
VSSB-27

DEPTH	CONC.
2–4 ft.	0.892

(3.0)
VSSS-07
VSSB-17

(0.539)
VSSS-08
VSSB-18

VSSS-02
(22.6)

VSSB-19

VSSS-09
VSSB-20

(0.44)

(283)
VSSS-17

VSSB-28

DEPTH	CONC.
2–4 ft.	<0.007

DEPTH	CONC.
2–4 ft.	3.3

VSSS-18 (231)
VSSB-29

VSSB-07

DEPTH	CONC.
2–4 ft.	7.3
4–6 ft.	0.033
6–8 ft.	<0.007
8–10 ft.	<0.007

VSSB-09

VSSS-01
(249,000)

VSSB-11

VSSB-06

VSSB-06A

VSSB-04

VSSB-04A

VSSB-05A

VSSB-13

VSSB-05

DEPTH	CONC.
2–4 ft.	22.7
4–6 ft.	4.1

(181)
VSCC-01/
VSSB-02

DEPTH	CONC.
2–4 ft.	14.5
4–6 ft.	0.010
6–8 ft.	0.108
8–10 ft.	<0.006

(580)
VSCC-02/
VSSB-03

DEPTH	CONC.
2–4 ft.	103
4–6 ft.	2.0

DEPTH	CONC.
0–2 ft.	5,910
4–6 ft.	2,600

(6.7)
VSSS-06
VSSB-16

DEPTH	CONC.
2–4 ft.	1.8
4–6 ft.	<0.075
6–8 ft.	<0.079
8–10 ft.	<0.072

(95.1)
VSSS-05
VSSB-15

DEPTH	CONC.
2–4 ft.	66.2
4–6 ft.	<0.064
6–8 ft.	<0.066
8–10 ft.	<0.068

DEPTH	CONC.
6–8 ft.	<0.065
8–10 ft.	<0.070

DEPTH	CONC.
6–8 ft.	<0.007
8–10 ft.	<0.007

(0.068)
VSSS-04
VSSB-14

DEPTH	CONC.
2–4 ft.	1.5
4–6 ft.	13.7
6–8 ft.	<0.065
8–10 ft.	<0.069

(2.5)
VSSS-19
VSSB-30

VSSB-08

(0.204)
VSSS-03
VSSB-10

VSSB-12

(51.2)
VSSS-20
VSSB-31

DEPTH	CONC.
1–2 ft.	4.7
2–4 ft.	0.027
4–6 ft.	0.010
6–8 ft.	<0.007
8–10 ft.	<0.007

DEPTH	CONC.
1–2 ft.	3.2
2–4 ft.	0.1
4–6 ft.	<0.006
6–8 ft.	<0.007
8–10 ft.	<0.007

DEPTH	CONC.
1–2 ft.	3.5
2–4 ft.	0.01
4–6 ft.	0.012
6–8 ft.	<0.007
8–10 ft.	<0.066

DEPTH	CONC.
2–4 ft.	2.5
4–6 ft.	0.019
6–8 ft.	<0.006
8–10 ft.	<0.007

DEPTH	CONC.
2–4 ft.	426
4–6 ft.	1,240

DEPTH	CONC.
6–8 ft.	<0.007
8–10 ft.	<0.007

DEPTH	CONC.
2–4 ft.	10.6
4–6 ft.	87.9

DEPTH	CONC.
1–2 ft.	6.2
2–4 ft.	4.8
4–6 ft.	0.075
6–8 ft.	<0.065
8–10 ft.	<0.068

DEPTH	CONC.
1–2 ft.	49.0
2–4 ft.	3.6
4–6 ft.	<0.067
6–8 ft.	<0.068
8–10 ft.	0.084

DEPTH	CONC.
2–4 ft.	28.4
4–6 ft.	0.425
6–8 ft.	0.086
8–10 ft.	0.076

LEGEND

VSSS-01 ○	SURFACE SOIL SAMPLE COLLECTED PRIOR TO PHASE II DELINEATION
VSSB-04 ●	SOIL BORING COLLECTED PRIOR TO PHASE II DELINEATION
VSCC-01/ VSSB-02 ◎	CONCRETE CORING/SOIL BORING COLLECTED PRIOR TO PHASE II DELINEATION
VSSS-16 ○	SURFACE SOIL SAMPLE
VSSB-27 ●	SOIL BORING
×—×—×	CHAIN LINK FENCE
— — —	PIPE CONNECTION BASED ON LIRR CONSTRUCTION DRAWINGS
(1.7) VSSS-16	NUMBER IN PARENTHESIS ADJACENT TO SAMPLE NAME DENOTES MERCURY CONCENTRATION IN SURFACE SOIL.
	"<" QUALIFIER DENOTES A CONCENTRATION BELOW THE GIVEN INSTRUMENT DETECTION LIMIT
	ALL CONCENTRATIONS PRESENTED IN MG/KG
	AREA REMEDIATED AS PART OF IRM TO A DEPTH OF 6 INCHES BELOW GROUND SURFACE
	AREA REMEDIATED AS PART OF IRM TO A DEPTH OF 12 INCHES BELOW GROUND SURFACE

ASSUMED GROUNDWATER FLOW DIRECTION

SUNRISE HIGHWAY

0 5 10
SCALE IN FEET

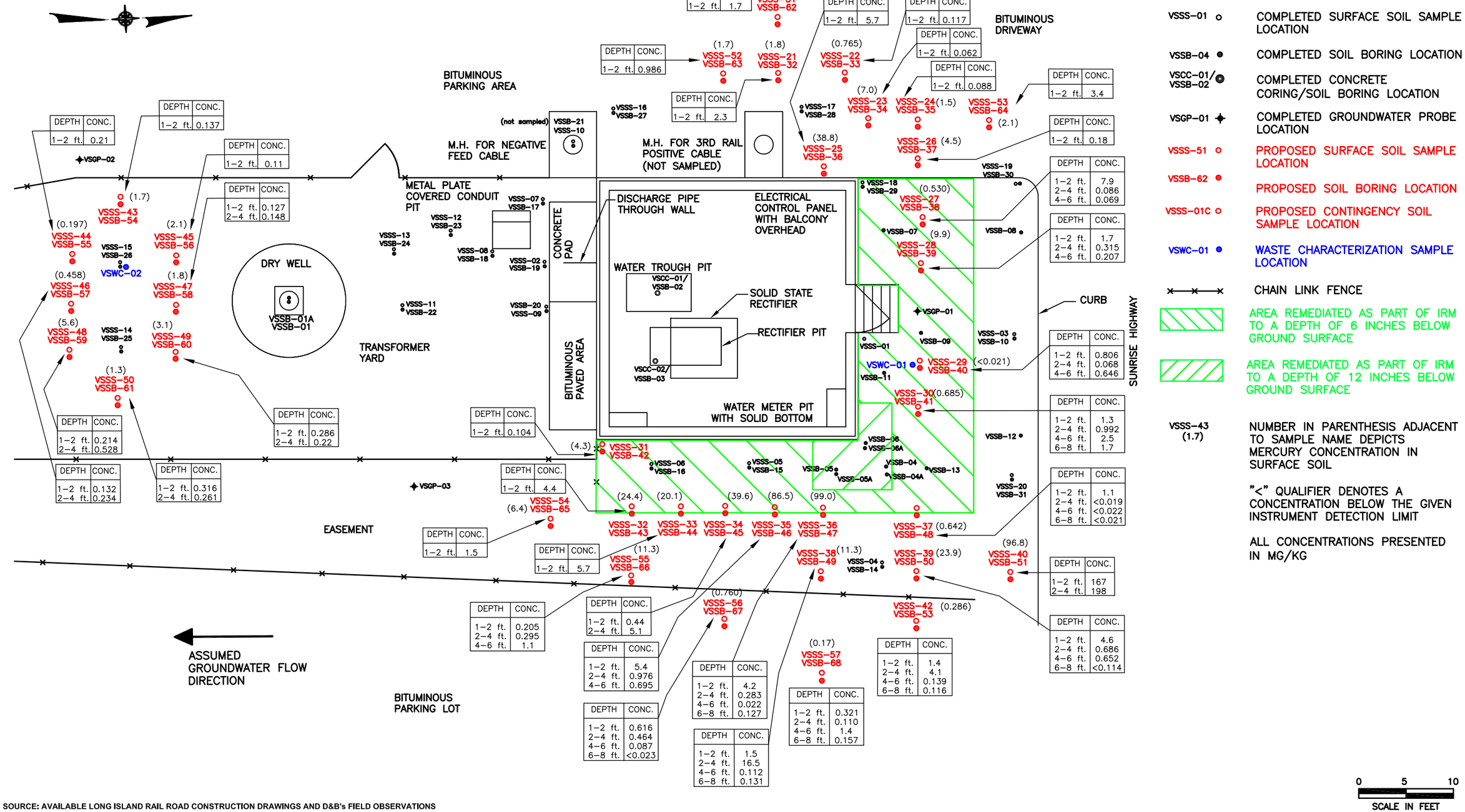
SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
A DIVISION OF D&B ENGINEERS AND ARCHITECTS, P.C.

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

CONTAMINANT CONCENTRATION MAP
VALLEY STREAM SUBSTATION (V00404-1)

FIGURE 3-1



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
A DIVISION OF D&B ENGINEERS AND ARCHITECTS, P.C.

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

ADDITIONAL DELINEATION MERCURY CONCENTRATION MAP
VALLEY STREAM SUBSTATION (V00404-1)

FIGURE 3-2

F:\2229\VALLEY STREAM\2229-Hg Concentration.dwg, 10/16/2012 9:47:33 AM, Adobe PDF

3.1 Surface Soil

Metals

A total of 53 surface soil samples were collected for mercury analysis as part of the Delineation Phase II Site Investigation: 37 from outside the fenced substation area, and 16 from within the fenced substation area. Due to the need to compare the sample data to these two separate SCOs, the below discussion has accordingly been organized into two sections, as follows:

Non-Fenced Area

All mercury concentration data associated with the 37 surface soil samples collected from non-fenced areas have been compared to the Commercial Use SCOs, and are summarized on Table 1, provided in Appendix B. Of the 37 samples analyzed for mercury, twenty-one samples exhibited detectable concentrations of mercury in exceedance of the Commercial SCO of 2.8 mg/kg, ranging in concentration from 4.3 mg/kg to 283 mg/kg. The greatest surface soil mercury concentration was detected in surface soil sample VSSS-17, located approximately 6 feet west of the substation building.

Fenced Area

All mercury concentration data associated with the 16 surface soil samples collected from fenced areas have been compared to the Industrial Use SCOs, and are summarized on Table 2, provided in Appendix B. Of the 16 surface soil samples collected in fenced areas of the Valley Stream Substation, one sample exhibited a detectable concentration of mercury in exceedance of the Industrial SCO of 5.7 mg/kg: surface soil sample VSSS-15, located approximately 50 feet south of the substation building, exhibited a mercury concentration of 12.2 mg/kg.

In addition to mercury, five surface soil samples were analyzed for full Resource Conservation and Recovery Act (RCRA) metals. All RCRA metals data associated with these

surface soil samples, which were all collected from fenced areas of the Valley Stream Substation, and therefore compared to the Industrial Use SCOs, are summarized on Table 3, provided in Appendix B. RCRA metals were not detected at concentrations exceeding their respective Industrial SCOs in any sample.

Semivolatile Organic Compounds

Five surface soil samples were analyzed for semivolatile organic compounds (SVOCs) from fenced areas of the Valley Stream Substation. All SVOC data associated with the fenced (Industrial Use SCOs) surface soil samples are summarized in Table 4, provided in Appendix B. SVOCs were not detected at concentrations exceeding their respective Industrial SCOs in any sample.

Polychlorinated Biphenyls

Five surface soil samples were selected for polychlorinated biphenyls (PCBs) analysis from fenced areas of the Valley Stream Substation. All PCB concentration data associated with the surface soil samples are summarized in Table 5, provided in Appendix B. PCBs were not detected at concentrations exceeding their respective Industrial SCOs in any sample.

3.2 Subsurface Soil

Metals

A total of 153 subsurface soil samples were collected for mercury analysis as part of the Delineation Phase II Site Investigation: 126 from outside the fenced substation areas, and 27 from the within fenced substation area. Due to the need to compare the sample data to these two separate SCOs, the below discussion has accordingly been organized into two sections, as follows:

Non-Fenced Area

All mercury concentration data associated with the 126 subsurface soil samples collected from non-fenced areas have been compared to the Commercial Use SCOs, and are summarized on Table 6, provided in Appendix B. Of the 126 subsurface soil samples analyzed for mercury, 26 samples exhibited detectable concentrations of mercury in exceedance of the Commercial SCO of 2.8 mg/kg, ranging in concentration from 3.2 mg/kg to 198 mg/kg. The greatest subsurface mercury concentration was detected in subsurface soil sample VSSB-51 (2 to 4 feet), located approximately twenty-two feet northeast of the substation building.

Fenced Area

All mercury concentration data associated with the 27 subsurface soil samples collected from fenced areas have been compared to the Industrial Use SCOs, and are summarized on Table 7, provided in Appendix B. Of the 27 subsurface soil samples collected in fenced areas of the Valley Stream Substation, one sample exhibited a detectable concentration of mercury in exceedance of the Industrial SCO of 5.7 mg/kg: subsurface soil sample VSSB-25 (0 to 2 feet), collected approximately 50 feet south of the substation building, exhibited a mercury concentration of 25.9 mg/kg.

In addition to mercury, ten subsurface soil samples were analyzed for full Resource Conservation and Recovery Act (RCRA) metals. All RCRA metals data associated with the subsurface soil samples collected from fenced (Industrial Use SCOs) are summarized on Table 8, provided in Appendix B. RCRA metals were not detected at concentrations exceeding their respective Industrial SCOs in any sample, with the exception of arsenic. Arsenic was detected in exceedance of its TAGM SCO of 7.5 mg/kg in four of the ten collected subsurface soil samples, ranging in concentration from 18.8 mg/kg to 71.8 mg/kg. The greatest subsurface arsenic concentration was detected in subsurface soil sample VSSB-26 (2 to 4 feet), located approximately 50 feet south of the substation building.

Semivolatile Organic Compounds

Ten subsurface soil samples were analyzed for SVOCs from fenced areas of the Valley Stream Substation. All SVOC data associated with the fenced (Industrial Use SCOs) subsurface soil samples are summarized in Table 9, provided in Appendix B. SVOCs were not detected in exceedance of their respective Industrial SCOs in any subsurface soil sample.

Polychlorinated Biphenyls

Ten subsurface soil samples were analyzed for PCBs from fenced areas of the Valley Stream Substation. All PCB concentration data associated with the subsurface soil samples are summarized in Table 10, included in Appendix B. PCBs were not detected at concentrations exceeding their respective SCOs in any subsurface soil sample.

3.3 Groundwater

A total of three groundwater samples were collected for chemical analysis from the Valley Stream Substation using a Geoprobe groundwater point sampler. These groundwater samples were analyzed for Target Analyte List (TAL) metals (including mercury) and VOCs. All metals and VOC data associated with the groundwater samples collected at the Valley Stream Substation are summarized in Tables 11 and 12, respectively, included in Appendix B. Due to the highly turbid nature of the groundwater samples, all samples collected for metals analysis included filtered and unfiltered samples. Below is a discussion of the analytical results:

Metals

Mercury was not detected at concentrations in exceedance of its Class GA Standard of 0.7 ug/l in any of the filtered or unfiltered groundwater samples collected.

Seven metals including arsenic, chromium, iron, lead, manganese, nickel and sodium were detected above their respective Class GA Standards in one or more unfiltered groundwater

sample. However, these same metals were either generally not detected, or detected at much lower concentrations in the filtered samples. Due to the generally high turbidity of groundwater samples collected using Geoprobe equipment, the metals data associated with the unfiltered samples will be biased high. Therefore, the filtered samples will more closely represent true metal concentrations in groundwater.

In filtered groundwater probes VSGP-01 and VSGP-02, sodium exceeded its Class GA Standard. In filtered groundwater probe VSGP-03, arsenic, iron and sodium exceeded their respective Class GA Standards. Although arsenic, iron and sodium were above their respective Class GA Standards in one or more filtered sample, it should be noted that mercury was not detected at concentrations exceeding its Class GA Standard in any groundwater sample.

Volatile Organics

VOCs were not detected in exceedance of their respective Class GA Standards and Guidance Values in any groundwater sample collected at the Valley Stream Substation.

3.4 Underground Injection Control (UIC) and Below Grade Structures

As described in Section 2.5, two below grade structures were investigated for Underground Injection Control (UIC) applicability as part of the Delineation Phase II Site Assessment. The structures investigated included a dry well located approximately 27 feet south of the substation building and a negative feed cable pit located adjacent to the west side of the substation building. The investigations and analytical sample results are described below:

Dry Well

In order to further investigate the dry well located approximately 27 feet south of the substation building, one subsurface soil boring (VSSB-01A) was advanced in the dry well and five subsurface soil samples were collected from approximately 12 feet below ground surface to approximately 22 feet below ground surface, in 2-foot continuous intervals for UIC parameter

analysis, and compared to the TAGM SCOs. All data associated with the dry well are summarized in Tables 13 through 18, included in Appendix B.

Arsenic was detected in exceedance of its TAGM SCO of 7.5 mg/kg in four of the five collected subsurface soil samples, ranging in concentration from 12.0 mg/kg to 43.0 mg/kg. The greatest subsurface arsenic concentration was detected in subsurface soil sample VSSB-01A (18 to 20 feet). No other analyte was detected at a concentration exceeding its respective TAGM SCO in any sample.

Negative Feed Cable Pit

In order to investigate the negative feed cable pit located adjacent to the west side of the substation building, one soil sample (VSSS-10) was collected from the sediment accumulated in the pit, and compared to the Industrial SCOs. Note, discharge piping was not present in this structure and the pit was observed to have been constructed with a solid bottom. As such, the negative feed cable pit is not classified as a UIC structure and subsurface soil samples were not collected from the negative feed cable pit. All data associated with the negative feed cable pit are summarized in Tables 19 through 24, included in Appendix B.

No analyte was detected at concentrations exceeding its respective Industrial SCO, with the exception of arsenic. Arsenic was detected in exceedance of its Industrial SCO of 16.0 mg/kg, at a concentration of 65.5 mg/kg.

3.5 Waste Characterization

A total of four soil samples were collected for waste characterization analysis in order to "pre-characterize" site soil surrounding the substation building. Sample locations were selected in the field and are depicted on Figure 2-2. All waste characterization data are presented in Tables 25 and 26, provided in Appendix B. All waste characterization samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals (including mercury) and RCRA waste characteristics (ignitability, reactivity, etc.). Analytical data have been compared to RCRA

hazardous waste criteria. Barium, cadmium, chromium, lead and mercury, were detected in one or more of the four collected waste characterization samples. However, no exceedances of the RCRA waste criteria were detected in any collected sample.

3.6 Data Usability Summary Report (DUSR)

Surface soil, subsurface soil, groundwater and waste characterization samples were collected as part of the Delineation Phase II Site Assessment at the LIRR Valley Stream Substation, completed in July 2010. The soil samples were primarily analyzed for mercury. Several of the soil samples were analyzed for PCBs, RCRA metals, VOCs and SVOCs. The groundwater samples were analyzed for TAL metals and VOCs. Four waste characterization samples were analyzed for TCLP metals (including mercury), TCLP SVOCs, TCLP VOCs and RCRA waste characteristics (corrosivity, ignitability, reactivity).

Chemtech Laboratories, a subcontractor to D&B, analyzed all samples in accordance with the USEPA SW-846 methods as stipulated in the work plan. The data packages submitted by Chemtech have been reviewed by Ms. Donna Brown, D&B's Quality Assurance/Quality Control (QA/QC) Officer. Ms. Brown meets the NYSDEC requirements of a data validator as listed in the Draft DER-10 Technical Guidance for Site Investigation and Remediation, and her resume is included in Appendix D.

The data packages have been reviewed for completeness and compliance with NYSDEC QA/QC requirements, as well as the requirements for development of Data Usability Summary Reports as listed in Appendix 2B of the Draft DER-10 Technical Guidance for Site Investigations and Remediation dated May 2010. Each data package was reviewed for the following:

- Was a NYSDEC Category B deliverable data package submitted?
- Have all holding times been met?
- Does all QA/QC data fall within QA/QC limits and specifications?

- Were appropriate methods followed?
- Does the raw data conform to that reported on the data summary sheets?
- Have the correct data qualifiers been utilized?

NYSDEC ASP Category B deliverable data packages have been submitted for all sample delivery groups (SDG). The findings of the data review process are summarized below.

All samples were analyzed within the method-specified holding times. All surrogate recoveries, internal standard area counts and spike recoveries were noted to be within QC limits. Initial and continuing calibrations were analyzed at the method specified frequency.

The samples were generally analyzed within the method-specified holding times and the calibrations, surrogate recoveries, internal standard areas, laboratory duplicate and spike recoveries were noted to be within QC limits, except for the following:

- In SDG B2838: Mercury was qualified as estimated (J/UJ) in all samples due to the percent difference (%D) being detected above QC limits in the serial dilution associated with VSSS-37 and VSSB-48 (1 to 2 feet).
- In SDG T5874: Methylene chloride was detected in a method blank and was qualified as non-detect (U) in VSSB-01A (16 to 18 feet) and VSSB-01A (20 to 22 feet). Perylene-d12 was detected at concentrations below QC limits in VSSS-13, VSSS-12, VSSS-11 and VSSB-23(0-2) and their associated reanalyses. Benzo(b)fluoranthene and benzo(a)pyrene were detected at concentrations above the contract required detection limit (CRDL) and were qualified as estimated (J) in VSSS-13, VSSS-11 and/or VSSB-23 (0 to 2 feet). The percent recoveries (%Rs) were below the QC limit of 75% in the spike and post spike sample for mercury, barium and selenium associated with all samples. These metals were qualified as estimated (J/UJ) in all samples. The relative percent difference (RPD) for mercury was above the QC limit of 20% for the laboratory duplicates associated with all samples. Mercury was qualified as estimated (J/UJ) in all samples.
- In SDG X4072: No qualification of the data was necessary.

No other problems were found with the sample results. All results have been deemed valid and usable, as qualified above, for environmental assessment purposes

4.0 QUALITATIVE EXPOSURE ASSESSMENT

4.1 Introduction

The purpose of this exposure assessment is to determine how and when an individual may be exposed to contaminants of potential concern (COPCs) associated with the LIRR Valley Stream Substation. A COPC is any chemical detected above the NYSDEC cleanup guidelines in a medium, which could produce adverse health effects under the right conditions of dose and exposure. For exposure to occur, there must be a complete "pathway of exposure" where a person can come into contact with contaminants of potential concern. For a pathway to be complete, there must be: 1) a source or medium containing the COPC; 2) a location where human contact could take place (i.e., an exposure point); and 3) a feasible means for the COPC to enter into the person's body. In the case of the LIRR substations, there would be two types of potential receptors, with personnel who work at the facilities considered on-site receptors and individuals who may live or be in close proximity to the substation properties considered off-site receptors. The person who could come into contact with the COPC at an exposure point is called a "receptor." The ways in which the COPC can enter the body are called "routes of exposure." Ingestion (by mouth), dermal (contact with skin) and inhalation (breathing into the lungs) are the routes of exposure considered in this and other human health risk assessments. Consistent with the New York State Department of Health (NYSDOH) and other regulatory agencies, this assessment considers both current and potential future exposures.

As with any exposure assessment, this assessment is not intended to predict disease outcome, but rather, is meant to be used as a tool to make decisions regarding the need for remediation or the institution of precautionary measures, such as limiting the affected area to non-residential land uses. Given the available information and keeping the purpose of the assessment in mind, the following evaluation for the Valley Stream Substation is qualitative in nature.

4.2 Properties, Fate and Transport of COPCs at the Valley Stream Substation

Based on the results of the completed investigations of the Valley Stream Substation, the COPCs are mercury (Hg) and arsenic (As). The following is a summary of the fate and transport properties of mercury and arsenic in surface and subsurface soil:

4.2.1 Mercury

The mercury (Hg) found at the Valley Stream Substation is assumed to have entered the soil in the form of liquid elemental mercury that was utilized in mercury-containing rectifiers. Elemental mercury (Hg^0) is a heavy, silver-white metal with a specific gravity approximately 13.5 times that of water and is the only metal to exist in the liquid phase at room temperature. Hg^0 has a relatively high vapor pressure and is the most volatile of all metals. Overall, however, it is considered only slightly volatile when compared to most liquids. Hg^0 volatilizes into a colorless, odorless and tasteless gas.

Mercury is a naturally occurring element that has been distributed throughout the environment by natural processes. Mercury exists in three possible oxidation states: elemental (Hg^0), mercurous (Hg^{1+}), and mercuric (Hg^{2+} or Hg[II]). Atmospheric deposition to the surface from anthropogenic and natural air emissions is considered a major source of mercury in the environment and is primarily in the form of Hg(II), either during precipitation events or adsorbed onto airborne particulates. The mercurous and mercuric forms of mercury will complex and form numerous organic and inorganic compounds. Hg(II) is commonly found as mercuric sulfide (HgS), a stable inorganic species that is essentially insoluble in water and is therefore considered a major long-term sink for mercury in soil. Moderately soluble forms of Hg(II), such as mercuric chloride ($HgCl_2$), can potentially contaminate surface soil and groundwater. Both the mercurous and mercuric forms of mercury will adsorb to clay minerals, oxides and organic matter and tend not to leach. Methylmercury (MeHg) is the most widespread organic form of mercury in the environment and is formed from the methylation of inorganic mercury by bacteria in aquatic environments. Methylation is generally negligible in terrestrial soil.

Liquid elemental mercury has a tendency to form globules or beads and therefore is generally not uniformly distributed among soil particles. It will sink under the force of gravity and split up into available pore spaces. Despite this fact, Hg^0 is only slightly soluble in water and, therefore, is unlikely to leach into groundwater via infiltrating precipitation. In fact, spills of liquid mercury to shallow subsurface soil have been found to be persistent in this environment. Elemental mercury is assumed to be removed from unsaturated soil primarily through its potential to volatilize to the soil vapor and the outside air. Although liquid mercury is volatile, the volatilization process is not rapid and globules of Hg^0 may persist for a long time before completely volatilizing. In addition, mercury globules can become coated with a stable layer of insoluble HgS, especially in anaerobic conditions, and can remain inert for long periods of time. Mercury vapor released to the outdoor air will dissipate rapidly into the atmosphere.

4.2.2 Arsenic

Arsenic is a naturally occurring tasteless, odorless element that has been distributed throughout the environment by natural and anthropogenic processes. Because arsenic is a natural part of the environment, low levels of arsenic are present in soil, water and air. Atmospheric deposition to the ground surface is considered a major source of anthropogenic arsenic in the environment. Pure arsenic is a gray metal-like material, which is usually found in the environment combined with other elements such as oxygen, chlorine, and sulfur, in the form of inorganic compounds. Arsenic can also combine with carbon and hydrogen to form organic arsenic compounds. Organic forms are usually less toxic than the inorganic forms. Inorganic arsenic occurs naturally in many kinds of rock, especially in ores that contain copper or lead. When these ores are smelted, most of the arsenic enters the air as a fine dust. Smelters collect this dust and purify the arsenic for several uses. The main use is as a preservative for wood to make it resistant to rotting and decay. Arsenic is also used to make several types of herbicides and pesticides.

Due to its relatively soluble nature, arsenic can potentially contaminate surface water and groundwater. Arsenic can leach from soil or rock into filtrating groundwater; however, because many arsenic compounds tend to adsorb to soil and sediment, leaching usually results in

transportation only over short distances. Transportation of arsenic in water is dependent upon its chemical species, oxidation state and on interactions with other minerals present. Soluble forms may be carried long distances through rivers. However, arsenic may be adsorbed from water onto sediment or soil, especially clays, iron oxides, aluminum hydroxides, manganese compounds and organic material. In an oxidized environment, arsenic is generally present as arsenate (As^{5+}), an immobilized form that will be ionically bound to soil. However, under reduced conditions, arsenic is generally present as arsenite (As^{3+}), which is water soluble and therefore, more mobile. Arsenic is not broken down or destroyed in the environment. However, it can change from one form to another by natural chemical reactions, and also by the action of bacteria that live in soil or water. Although some fish and shellfish build up arsenic in their tissues, most of this is in a form (often called "fish arsenic") that is not toxic. Arsenic is considered a moderate inhalation hazard due to its tendency to adsorb to fine soil particles which may become airborne when disturbed.

4.3 General Substation Conditions

This section briefly describes the current and future conditions of the Valley Stream Substation. The Valley Stream Substation has been used by the LIRR to convert alternating current (AC) to direct current DC for use in powering the LIRR's electric train fleet. As discussed in Section 1.1, the substation had been used for this purpose since 1948. The substation is not currently active, as a replacement substation has been constructed to the north of the Valley Stream Substation property and Sunrise Highway.

The Valley Stream Substation is surrounded by commercial properties to the east, west and south, and by Sunrise Highway to the north. The majority of the property is unfenced; however, the transformer yard portion of the property located to the south of the substation building is fenced and is only accessible by authorized LIRR personnel and their contractors, limiting public access to the property. In addition, the majority of the transformer yard, located to the south of the substation building is covered with approximately two inches of crushed stone. The areas immediately surrounding the substation building are partially covered by crushed stone to the north, east and south, and asphalt to the west. The substation is not occupied by LIRR

personnel on a continuous or full-time basis. Under normal operating conditions, the substation property is only accessed when equipment requires monitoring, maintenance or repair. The substation building is locked at all times and all associated outside electrical equipment (i.e., transformers) are secured by a locked fence.

The Valley Stream substation is serviced by public water and on-site groundwater is not used for any purpose.

As part of the LIRR's overall system upgrade in response to increased ridership, the Valley Stream Substation will be decommissioned as part of the next LIRR Capital Program. As part of the decommissioning, all electrical transformers and equipment will be removed from the site. The existing Valley Stream substation building will remain and be used for storage. A new substation building has been constructed to the north of the Valley Stream Substation building and Sunrise Highway. After decommissioning and remediation of the substation property, the LIRR will not be disturbing or excavating in the Valley Stream Substation property for the foreseeable future.

Elevated concentrations of the above-defined COPCs have been detected in surface and subsurface soil surrounding the substation building, in the dry well located to the south of the substation building and in the negative feed cable pit located adjacent to the west side of the substation building. However, the LIRR maintains strict control over conducting soil excavation activities within LIRR properties known to contain contaminants in order to avoid the excavation and handling of contaminated soil without undertaking appropriate health and safety measures. The LIRR Procedure/Instruction EE03-001, which defines the procedures that must be undertaken prior to conducting excavation activities at LIRR properties, is provided as Appendix E.

4.4 Surface and Subsurface Soil

As stated above, elevated concentrations of the above-defined COPCs have been detected in surface and subsurface soil surrounding the substation building, in the dry well located to the south of the substation building and in the negative feed cable pit located adjacent to the west side of the substation building. The highest mercury concentrations were detected in subsurface soil located to the northeast of the substation building, with a maximum mercury concentration of 198 mg/kg. In addition, elevated concentrations of arsenic were detected in subsurface soil to the south of the substation building, with a maximum arsenic concentration of 71.8 mg/kg.

Note that the areas where elevated mercury and arsenic have been detected in exceedance of their respective Industrial and Commercial SCOs are generally covered with crushed stone and asphalt, limiting receptor exposure and contaminant mobility. However, direct exposure to site contamination of LIRR workers and subcontractors (on-site receptors) who are required to periodically enter the site for equipment maintenance and repair is possible in uncovered areas. The areas to the north, east and west of the substation building are accessible to the public, as these areas are not currently fenced; however, the area to the west of the substation building is covered in asphalt. In addition, LIRR workers, subcontractors and the public (off-site receptors) could be potentially exposed to this contaminant source during excavation activities or periods of high wind, as the result of dermal contact and inhalation of windblown dust. However, as discussed above, the LIRR has in place procedures to avoid the excavation and handling of contaminated soil without undertaking appropriate health and safety measures.

4.5 Groundwater

As discussed in Section 3.3, groundwater has not been adversely impacted by the presence of mercury in on-site soil. In addition, on-site groundwater is not used as a potable water source or for any other uses. Therefore, groundwater is not considered a potential exposure pathway.

4.6 Air

VOCs were not detected in site soil. As a result, inhalation of VOCs released to the air through volatilization from surface and subsurface soil does not represent a potential exposure pathway for on-site or off-site receptors. While the volatilization of mercury present in the surface and subsurface soil can occur, the volatilization process occurs at a very slow rate and inhalation of mercury vapor from on-site sources is not expected to be a significant exposure pathway. Inhalation of windblown dust of surface soil does represent a potential for exposure to on-site and off-site receptors. However, as discussed above, the majority of the areas exhibiting exceedances of their respective Commercial and Industrial SCOs are generally covered in crushed stone and/or asphalt, limiting the potential for soil in these areas to be disturbed or become airborne. In addition, as stated above, the LIRR has in place procedures to avoid the excavation and handling of contaminated soil without undertaking appropriate healthy and safety measures.

4.7 Future Use of the Valley Stream Substation

As part of the LIRR's overall system upgrade in response to increased ridership, the Valley Stream Substation will be decommissioned as part of the next LIRR Capital Program. The existing Valley Stream substation building will remain and be used for storage. As described above, a new substation building has been constructed to the north of the existing substation building and Sunrise Highway. After remediation, the LIRR will not be disturbing or excavating in the Valley Stream Substation property for the foreseeable future. Note that a mercury vapor survey, consistent with the NYSDOH's Soil Vapor Intrusion Guidance (SVIG), was completed in the existing substation building in July 1999. Results of the survey are provided in Appendix F.

The mercury vapor evaluation consisted of a 29-pont mercury vapor survey, with 23 mercury vapor sample locations collected surrounding the exterior of the substation building and 6 mercury vapor sample locations collected from the interior of the substation building. All mercury vapor samples were collected with a Jerome 431X mercury vapor analyzer (MVA) and

have been re-evaluated and compared to the Public Employee Safety and Health (PESH) 8-hour time weighted average (TWA) concentration of 0.050 mg/m^3. Mercury vapor was not detected in any substation interior mercury vapor sample. However, as detailed below, mercury vapor was detected in six exterior mercury vapor samples, which were all collected off the northeast corner of the substation building.

Of the six exterior mercury vapor samples exhibiting detectable mercury vapor concentrations off the northeast corner of the substation building, three samples exhibited mercury vapor concentrations in exceedance of the PESH TWA concentration limit of 0.050 mg/m^3, ranging in concentration from 0.060 mg/m^3 to 0.660 mg/m^3. Visible mercury beading was observed in this area during the mercury vapor survey. In addition, note this area was excavated to a depth ranging from 6 inches to 1-foot below ground surface, during the above-referenced 2000 IRM activities. As mercury vapor was not detected within the substation building, and the area exhibiting mercury beading and mercury vapor exceedances was excavated during the 2000 IRM, further investigation of mercury vapor at the Valley Stream Substation property is not warranted. As detailed below, this area is proposed to be further excavated as part of the remedial activities proposed in Section 5.2. In addition, as the new substation building has been constructed to the north of the existing Valley Stream Substation building and Sunrise Highway, a mercury vapor investigation of this structure is not warranted.

The LIRR intends to remediate the most significant mercury and arsenic contamination identified at and in the vicinity of the Valley Stream Substation by excavation and off-site disposal. Therefore the planned decommissioning of the Valley Stream Substation and remediation of the substation and surrounding property will remove the most significant soil contamination. As a result future exposure to mercury and arsenic contamination at and in the vicinity of the Valley Stream Substation site is not expected.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a discussion of the conclusions and recommendations associated with the investigation of the Valley Stream Substation. Note that the conclusions and recommendations presented take into consideration the findings of the Qualitative Human Health Exposure Assessment presented in Section 4.0, as well as the intended future use of the Valley Stream Substation site.

Upon receiving NYSDEC approval of the recommendations for site remediation presented in this investigation report, the LIRR intends to quickly proceed with development of a Remedial Action Work Plan (RAWP) which will detail the selected remedial technologies that will be used to remediate the Valley Stream Substation.

5.1 Nature and Extent of Contamination

Mercury was detected in surface and shallow subsurface soil at the Valley Stream Substation. Elevated concentrations of mercury were detected in surface and subsurface soil surrounding the substation building, in the dry well located to the south of the substation building and in the negative feed cable pit located adjacent to the west side of the substation building. The highest mercury concentrations were detected in subsurface soil located to the northeast of the substation building, with a maximum mercury concentration of 198 mg/kg. In addition, elevated concentrations of arsenic were detected in several subsurface soil samples collected from the transformer yard, in the dry well located to the south of the substation building and in the negative feed cable pit located adjacent to the west side of the substation building. The highest arsenic concentrations were detected in subsurface soil located to the south of the substation building, with a maximum arsenic concentration of 71.8 mg/kg.

Groundwater has not been impacted by the presence of mercury in on-site soil.

The Valley Stream Substation is surrounded by commercial properties to the east, west and south, and by Sunrise Highway to the north. The majority of the property is unfenced; however, the transformer yard portion of the property located to the south of the substation

building is fenced and is only accessible by authorized LIRR personnel and their contractors, limiting public access to the property. In addition, the majority of the transformer yard, located to the south of the substation building is covered with approximately two inches of crushed stone. The areas immediately surrounding the substation building are partially covered by crushed stone to the north, east and south, and asphalt to the west. The substation is not occupied by LIRR personnel on a continuous or full-time basis. Under normal operating conditions, the substation property is only accessed when equipment requires monitoring, maintenance or repair. The substation building is locked at all times and all associated outside electrical equipment (i.e., transformers) are secured by a locked fence.

Elevated concentrations of the above-defined COPCs have been detected in surface and subsurface soil surrounding the substation building, in the dry well located to the south of the substation building and in the negative feed cable pit located adjacent to the west side of the substation building. However, the LIRR maintains strict control over conducting soil excavation activities within LIRR properties known to contain contaminants in order to avoid the excavation and handling of contaminated soil without undertaking appropriate health and safety measures. The LIRR Procedure/Instruction EE03-001, which defines the procedures that must be undertaken prior to conducting excavation activities at LIRR properties, is provided as Appendix E.

Note that a mercury vapor survey, consistent with the NYSDOH's Soil Vapor Intrusion Guidance (SVIG), was completed in the existing substation building in July 1999. As described in Section 4.7, further investigation of mercury vapor at the Valley Stream Substation property is not warranted.

5.2 Recommendations

As part of the LIRR's overall system upgrade in response to increased ridership, the Valley Stream Substation will be decommissioned as part of the next LIRR Capital Program. The existing Valley Stream substation building will remain and be used for storage. Note that a new substation building has been constructed to the north of the existing substation building and Sunrise Highway. After decommissioning of the existing substation building, the LIRR will not

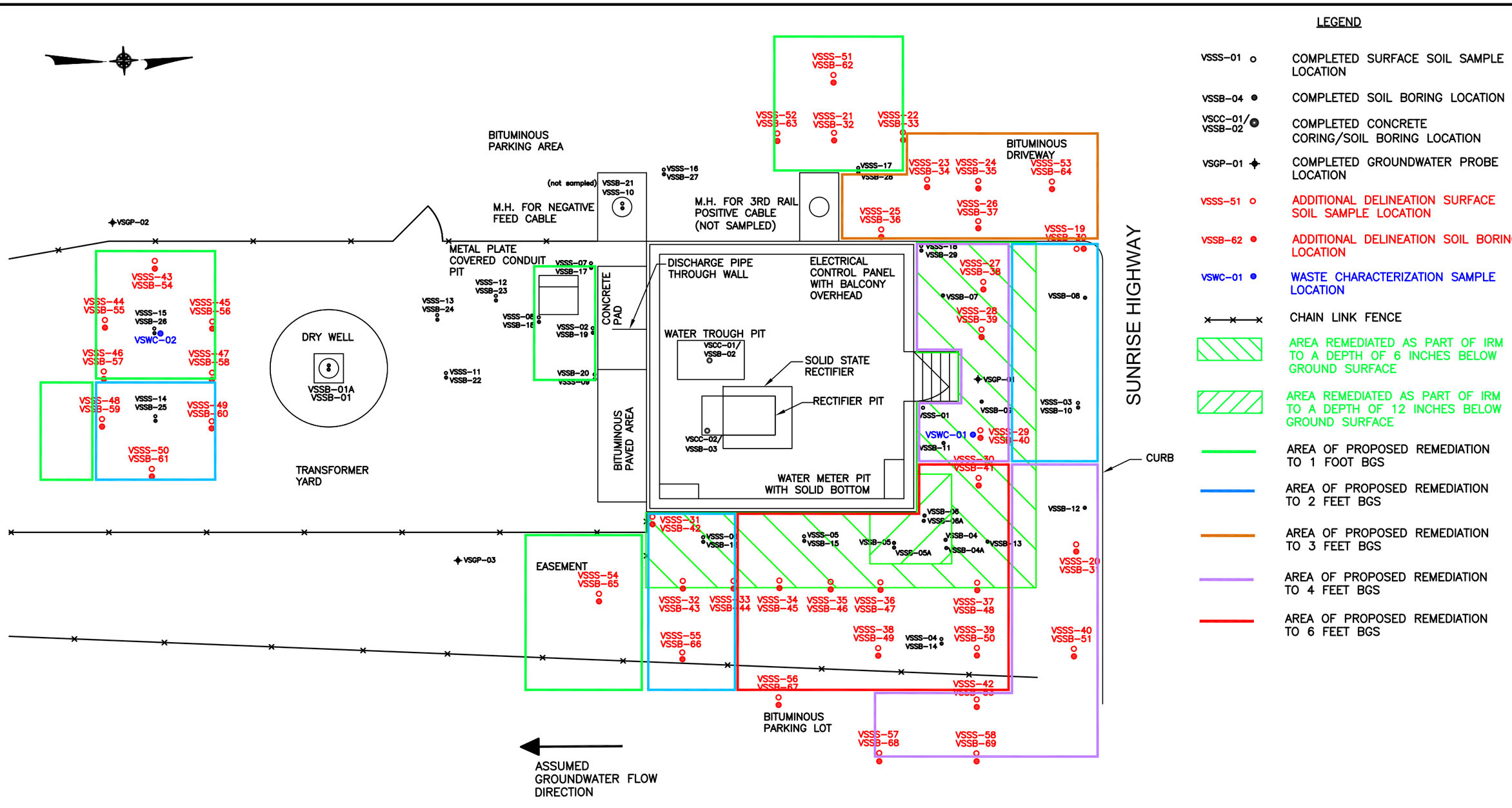
be disturbing or excavating at the Valley Stream Substation for the foreseeable future. In addition, after decommissioning of the existing substation building the LIRR intends to remediate the most significant mercury and arsenic contamination identified at and in the vicinity of the site by excavation and off-site disposal. Therefore the planned decommissioning of the Valley Stream Substation and remediation of on-site and off-site soil will remove the most significant soil contamination, and as a result, future exposure to mercury and arsenic contamination at and in the vicinity of the Valley Stream Substation site is not expected.

As discussed previously, upon approval of the recommendations described below, the LIRR intends to proceed with the development of a RAWP that will fully detail the methods and procedures that will be employed by the LIRR in order to execute the below recommendations. In addition, the RAWP will include provisions for a Community Air Monitoring Plan (CAMP) to be included in the Contractor Health and Safety Plan (CHASP) to be submitted by the remedial contractor to the LIRR and the NYSDEC for review and approval. Note that, as will be stated in the RAWP, the CAMP will comply with the requirements of the New York State Department of Health (NYSDOH) Generic CAMP, which will also be included in the RAWP.

On-Site and Off-Site Soil

In order to remediate the highest mercury and arsenic concentrations detected in on-site and off-site soil at the Valley Stream Substation, the LIRR proposes to excavate soil surrounding the substation building to a depth ranging from 1 to 6 feet below ground surface, as depicted on Figure 5-1.

Due to the irregular distribution of mercury and arsenic in on-site and off-site soil, the excavation of soil exhibiting elevated mercury and arsenic concentrations have been divided into five 1-foot excavation areas, three 2-foot excavation areas, one 3-foot excavation area, two 4-foot excavation areas and one 6-foot excavation area. The proposed 1-foot excavations are approximately 654 square feet in total area, and will require the excavation of approximately 25 cubic yards of soil. The proposed 2-foot excavations are approximately 475 square feet in total area, and will require the excavation of approximately 35 cubic yards of soil. The proposed



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
A DIVISION OF D&B ENGINEERS AND ARCHITECTS, P.C.

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

PROPOSED AREAS OF REMEDIATION MAP
VALLEY STREAM SUBSTATION (V00404-1)

FIGURE 5-1

3 foot excavation is approximately 253 square feet in total area, and will require the excavation of approximately 28 cubic yards of soil. The proposed 4-foot excavations are approximately 535 square feet in total area, and will require the excavation of approximately 80 cubic yards of soil. The proposed 6-foot excavation is approximately 545 square feet in total area, and will require the excavation of approximately 121 cubic yards of soil.

These areas are approximately 2,462 square feet in total area, and will require the excavation of a combined total of approximately 289 cubic yards of soil, not including the soil to be excavated as part of the remediation/closure of the below grade and UIC structures, which are detailed below. Note that the excavation areas located to the north of the substation building will remove all soil ranging from 2 to 6 feet below grade up to Sunrise Highway, effectively removing all potentially contaminated soil in these areas. After removal of the soil, post excavation samples will be collected for mercury and arsenic analysis, as appropriate, in order to document the effectiveness of the remediation and any residual mercury and/or arsenic remaining. In addition, side wall samples for mercury analysis will be collected from the westernmost remedial excavation, to the west of surface soil sample location VSSS-51. After excavation, the remediated areas will be backfilled with clean fill meeting the requirements of the Industrial and Commercial SCOs, at a minimum, and as appropriate.

Note that, in addition to on-site and off-site soil remediation, the LIRR intends to close and/or remediate soil associated with the dry well located approximately 27 feet south of the substation building, the negative feed cable pit located adjacent to the west of the substation building, and the rectifier pit and water trough pits located within the substation building, as described below:

Dry Well

Due to a mercury concentration ranging from 1.6 mg/kg to 1.8 mg/kg detected from 6 to 12 feet below ground surface and an arsenic concentration ranging from 12.0 mg/kg to 43.0 mg/kg detected from 14 to 22 feet below ground surface in the dry well located approximately 27 feet south of the substation building, the LIRR recommends that soil be removed from this structure to a depth of 22 feet below ground surface, or as deep as is safely

possible. Note, the bottom of the dry well is approximately six feet below ground surface. In addition, this structure is recommended to be closed in accordance with all United States Environmental Protection Agency (USEPA) and Nassau County Department of Health (NCDOH) requirements. As part of the UIC closure, the support rings and cover will be removed and disposed of and the discharge piping extending from the substation building will be plugged with a concrete cap.

Assuming a dry well diameter of 12 feet and all proposed soil is able to safely be removed to a depth of 22 feet below grade, it is calculated that up to 67 cubic yards of soil may be removed in association with the remediation and closure of the dry well. Upon completion of the remedial excavation, one post excavation soil sample will be collected for UIC parameter analysis. The dry well will then be backfilled with clean fill to grade.

Negative Feed Cable Pit

Due to an arsenic concentration of 65.5 mg/kg detected in the sediment accumulated in the negative feed cable pit located adjacent to the west of the substation building, the LIRR recommends that all sediment be removed from this structure. It is anticipated that a negligible amount of soil will be removed from this structure. As the conduit pit is a solid-bottom structure, the collection of post remediation soil samples following sediment removal is not warranted.

Rectifier Pit

Due to a mercury concentration of 103 mg/kg detected in soil from 2 to 4 feet below the rectifier pit located inside the substation building during the Initial Site Assessment, the LIRR recommends that soil be removed from this structure to a depth of 4 feet below the pit bottom, as described below.

An approximate 2-foot by 2-foot perimeter will be saw cut around the rectifier pit drain and associated concrete around the drain will be demolished and removed. Guzzler extraction will be used to remove soil to a depth of 4 feet below the rectifier pit bottom. It is anticipated that approximately 8 cubic feet of soil will be removed from this structure.

As subsurface soil samples were previously collected and documented at concentrations below the Industrial SCOs at a depth of 4 to 6 feet below the pit bottom in this structure, the collection of post-excavation samples is not warranted. The 2-foot by 2-foot saw cut area will then be backfilled to the pit bottom with clean fill. In addition, in order to isolate on-site receptors from the elevated mercury concentrations detected in rectifier pit concrete, the LIRR intends to seal the rectifier pit bottom with a thin mix of a concrete-based self-leveling grout.

Water Trough Pit

Due to a mercury concentration of 22.7 mg/kg detected in soil from 2 to 4 feet below the water trough pit located inside the substation building during the Initial Site Assessment, the LIRR recommends that soil be removed from this structure to a depth of 4 feet below the pit bottom, as described below.

An approximate 2-foot by 2-foot perimeter will be saw cut around the water trough pit drain and associated concrete around the drain will be demolished and removed. Guzzler extraction will be used to remove soil to a depth of 4 feet below the water trough pit bottom. It is anticipated that approximately 8 cubic feet of soil will be removed from this structure.

As subsurface soil samples were previously collected and documented at concentrations below the Industrial SCOs at a depth of 4 to 6 feet below the pit bottom in this structure, the collection of post-excavation samples is not warranted. The 2-foot by 2-foot saw cut area will then be backfilled to the pit bottom with clean fill. In addition, in order to isolate on-site receptors from the elevated mercury concentrations detected in water trough pit concrete, the LIRR intends to seal the water trough pit bottom with a thin mix of a concrete-based self-leveling grout.

As stated above, upon approval of the recommendations described above, the LIRR intends to proceed with the development of a RAWP that will fully detail the methods and procedures that will be employed by the LIRR in order to execute the above recommendations. In addition, the RAWP will include provisions for a Community Air Monitoring Plan (CAMP) to

be included in the Contractor Health and Safety Plan (CHASP) to be submitted by the remedial contractor to the LIRR and the NYSDEC for review and approval. Note that, as will be stated in the RAWP, the CAMP will comply with the requirements of the NYSDOH Generic CAMP, which will also be included in the RAWP.

Furthermore, the LIRR has elected to file a Declaration of Covenant and Restrictions for the Valley Stream Substation property, which will be provided in an upcoming Site Management Plan.

APPENDIX A

EXISTING INITIAL SITE ASSESSMENT AND IRM ENDPOINT ANALYTICAL DATA

TABLE D-4A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - VALLEY STREAM-S04
MERCURY

LOCATION	Dry Well		Water Trough Pit West of Rectifier Pit		Rectifier Pit			
SAMPLE ID	VSSB-01	VSSB-01	VSSB-02	VSSB-02	VSSB-03	VSSB-03	Instrument	Eastern USA
SAMPLE DEPTH (ft.)	6-8	10-12	2-4	4-6	2-4	4-6	Detection	Background
DATE OF COLLECTION	7/20/99	7/20/99	7/20/99	7/20/99	7/21/99	7/21/99	Limits	Levels[1]
PERCENT SOLIDS	96	80	91	91	95	91		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	1.8	1.6	22.7	4.1	103	2	0.1	0.001 - 0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-4A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - VALLEY STREAM-S04
MERCURY

LOCATION	Northeast Exterior Corner of Substation		Northeast Exterior Corner of Substation		Northeast Exterior Corner of Substation			
SAMPLE ID	VSSB-04	VSSB-04	VSSB-05	VSSB-05	VSSB-06	VSSB-06	Instrument	Eastern USA
SAMPLE DEPTH (ft.)	2-4	4-6	0-2	4-6	2-4	4-6	Detection	Background
DATE OF COLLECTION	7/21/99	7/21/99	7/21/99	7/21/99	7/21/99	7/21/99	Limits	Levels[1]
PERCENT SOLIDS	80	91	94	93	91	90		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	10.6	87.9	5,910	2,600	426	1,240	0.1	0.001 - 0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-4B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - VALLEY STREAM-S04
MERCURY

LOCATION	East of North Concrete Steps	Southwest Exterior of Substation						
SAMPLE ID	VSSS-01	VSSS-02					Instrument Detection Limits	Eastern USA Background Levels[1]
SAMPLE DEPTH (in.)	0-6	0-6						
DATE OF COLLECTION	7/20/99	7/20/99						
PERCENT SOLIDS	86	82						
UNITS	(mg/kg)	(mg/kg)					(ug/L)	(mg/kg)
Mercury	249,000	22.6					0.1	0.001 - 0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-4C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - VALLEY STREAM-S04
MERCURY

LOCATION	Water Trough Pit	Rectifier Pit					
SAMPLE ID	VSCC-01	VSCC-02	VSFB-02				Instrument Detection Limits
DATE OF COLLECTION	7/20/99	7/21/99	7/20/99				
PERCENT SOLIDS	90	97	----				
UNITS	(mg/kg)	(mg/kg)	(ug/L)				(ug/L)
Mercury	181	580	1.5				0.1

NOTES:
----: Not applicable.

TABLE 4-1

LONG ISLAND RAIL ROAD SUBSTATION IRM
ENDPOINT SAMPLING RESULTS - VALLEY STREAM-S04
MERCURY

SAMPLE ID	VSEP-01	VSEP-02	VSEP-03	VSEP-04	VSEP-05	Instrument Detection Limits	Eastern USA Background Levels[1]
SAMPLE DEPTH (IN.)	6	6	6	6	6		
DATE OF COLLECTIC	4/4/00	4/4/00	4/4/00	4/4/00	4/10/00		
PERCENT SOLIDS	87	87	87	89	78		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	206	420	795	4060	319	0.1	0.001 - 0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

APPENDIX B

DELINEATION PHASE II ANALYTICAL DATA

TABLE 1
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSS-03 VSSS-03 11/22/2005	VSSS-04 VSSS-04 11/22/2005	VSSS-05 VSSS-05 11/22/2005	VSSS-06 VSSS-06 11/22/2005	VSSS-16 VSSS-16 11/18/2005	VSSS-17 VSSS-17 11/18/2005	VSSS-18 VSSS-18 11/18/2005
Mercury	(mg/kg)	2.8	0.204	0.068 B	95.1	6.7	1.7	283	231

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 1
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSS-19 VSSS-19 8/10/2006	VSSS-20 VSSS-20 8/10/2006	VSSS-21 VSSS-21 6/24/2010	VSSS-22 VSSS-22 6/24/2010	VSSS-23 VSSS-23 6/24/2010	VSSS-24 VSSS-24 6/24/2010	VSSS-25 VSSS-25 6/24/2010
Mercury	(mg/kg)	2.8	2.5	**51.2**	1.8	0.765	**7.0**	1.5	**38.8**

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 1
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSS-26 VSSS-26 6/24/2010	VSSS-27 VSSS-27 6/23/2010	VSSS-28 VSSS-28 6/23/2010	VSSS-29 VSSS-29 6/24/2010	VSSS-30 VSSS-30 6/23/2010	VSSS-31 VSSS-31 6/23/2010	VSSS-32 VSSS-32 6/23/2010
Mercury	(mg/kg)	2.8	**4.5**	0.53	**9.9**	0.021 U	0.685	**4.3**	**24.4**

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 1
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSS-33 VSSS-33 6/24/2010	VSSS-34 VSSS-34 6/24/2010	VSSS-35 VSSS-35 6/24/2010	VSSS-36 VSSS-36 6/24/2010	VSSS-37 VSSS-37 6/24/2010	VSSS-38 VSSS-38 6/24/2010	VSSS-39 VSSS-39 6/24/2010
Mercury	(mg/kg)	2.8	**20.1**	**39.6**	**86.5**	**99.0**	0.642	**11.3**	**23.9**

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 1
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSS-40 VSSS-40 7/8/2010	VSSS-42 VSSS-42 6/24/2010	VSSS-51 VSSS-51 6/24/2010	VSSS-52 VSSS-52 6/24/2010	VSSS-53 VSSS-53 7/8/2010	VSSS-54 VSSS-54 6/23/2010	VSSS-55 VSSS-55 6/24/2010
Mercury	(mg/kg)	2.8	**96.8**	0.286	**17.3**	1.7	2.1	**6.4**	**11.3**

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 1
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSS-56 VSSS-56 6/24/2010	VSSS-57 VSSS-57 6/24/2010
Mercury	(mg/kg)	2.8	0.76	0.17

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.

Boxed and shaded exceed standard

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-07 VSSS-07 11/21/2005	VSSS-08 VSSS-08 11/21/2005	VSSS-09 VSSS-09 11/21/2005	VSSS-11 VSSS-11 11/21/2005	VSSS-12 VSSS-12 11/21/2005	VSSS-13 VSSS-13 11/21/2005	VSSS-14 VSSS-14 11/21/2005
Mercury	(mg/kg)	5.7	3.0	0.539	0.44	0.549	0.114	0.066 U	0.458

mg/kg: Milligrams per kilogram.
U: Not detected.

Boxed and shaded exceed standard

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-15 VSSS-15 11/21/2005	VSSS-43 VSSS-43 6/23/2010	VSSS-44 VSSS-44 6/23/2010	VSSS-45 VSSS-45 6/23/2010	VSSS-46 VSSS-46 6/23/2010	VSSS-47 VSSS-47 6/23/2010	VSSS-48 VSSS-48 6/23/2010
Mercury	(mg/kg)	5.7	12.2	1.7	0.197	2.1	0.458	1.8	5.6

mg/kg: Milligrams per kilogram.
U: Not detected.

Boxed and shaded exceed standard

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-49 VSSS-49 6/23/2010	VSSS-50 VSSS-50 6/23/2010
Mercury	(mg/kg)	5.7	3.1	1.3

mg/kg: Milligrams per kilogram.
U: Not detected.

Boxed and shaded exceed standard

TABLE 3
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
RCRA METALS NOT INCLUDING MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-11 VSSS-11 11/21/2005	VSSS-12 VSSS-12 11/21/2005	VSSS-13 VSSS-13 11/21/2005	VSSS-14 VSSS-14 11/21/2005	VSSS-15 VSSS-15 11/21/2005
Arsenic	(mg/kg)	16.0	7.54	6.03	3.09	9.21	9.19
Barium	(mg/kg)	10000	94.6	45.0	50.3	59.1	121
Cadmium	(mg/kg)	60.0	13.6	51.6	0.223 B	1.45	4.01
Chromium	(mg/kg)	6800	12.7	10.2	5.32	33.8	16.9
Lead	(mg/kg)	3900	446	134	83.1	821	1320
Selenium	(mg/kg)	6800	0.643 B	0.429 B	0.390 U	0.385 U	0.418 U
Silver	(mg/kg)	6800	0.094 U	0.089 U	0.090 U	0.089 U	0.097 U

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.

TABLE 4
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-11 VSSS-11 11/21/2005	VSSS-12 VSSS-12 11/21/2005	VSSS-13 VSSS-13 11/21/2005	VSSS-14 VSSS-14 11/21/2005	VSSS-15 VSSS-15 11/21/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)	--	63 U	60 U	61 U	59 U	64 U
2,4,5-Trichlorophenol	(ug/kg)	--	60 U	57 U	58 U	56 U	61 U
2,4,6-Trichlorophenol	(ug/kg)	--	57 U	55 U	55 U	54 U	59 U
2,4-Dichlorophenol	(ug/kg)	--	72 U	69 U	70 U	68 U	74 U
2,4-Dimethylphenol	(ug/kg)	--	73 J	59 U	60 U	58 U	63 U
2,4-Dinitrophenol	(ug/kg)	--	330 U	320 U	320 U	320 U	340 U
2,4-Dinitrotoluene	(ug/kg)	--	57 U	55 U	55 U	54 U	59 U
2,6-Dinitrotoluene	(ug/kg)	--	55 U	53 U	53 U	52 U	56 U
2-Chloronaphthalene	(ug/kg)	--	65 U	62 U	63 U	61 U	66 U
2-Chlorophenol	(ug/kg)	--	62 U	60 U	60 U	59 U	64 U
2-Methylnaphthalene	(ug/kg)	--	82 J	62 U	63 U	62 U	140 J
3,3-Dichlorobenzidine	(ug/kg)	--	67 U	64 U	65 U	63 U	68 U
4,6-Dinitro-o-cresol	(ug/kg)	--	76 U	73 U	73 U	71 U	77 U
4-Bromofluorobenzene	(ug/kg)	--	58 U	56 U	56 U	55 U	60 U
4-Chlorophenylphenyl ether	(ug/kg)	--	62 U	59 U	60 U	58 U	63 U
Acenaphthene	(ug/kg)	1000000	69 U	67 U	67 U	66 U	71 U
Acenaphthylene	(ug/kg)	1000000	96 J	61 U	61 U	60 U	65 U
Acetophenone	(ug/kg)	--	110 J	55 U	55 U	54 U	58 U
Anthracene	(ug/kg)	1000000	410	56 U	57 U	62 J	83 J
Atrazine	(ug/kg)	--	60 U	57 U	58 U	61 J	170 J
Benzaldehyde	(ug/kg)	--	80 U	77 U	78 U	76 U	82 U
Benzo(a)anthracene	(ug/kg)	11000	330 J	52 U	160 J	220 J	160 J
Benzo(a)pyrene	(ug/kg)	1100	350 J	100 J	160 J	200 J	170 J
Benzo(b)fluoranthene	(ug/kg)	11000	650 J	290 J	410 J	310 J	290 J
Benzo(ghi)perylene	(ug/kg)	1000000	360 J	140 J	120 J	100 J	110 J
Benzo(k)fluoranthene	(ug/kg)	110000	190 J	82 U	83 U	130 J	88 U

ug/kg: Micrograms per kilogram.
--: No standard.
U: Not detected.
J: Estimated value.

TABLE 4
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-11 VSSS-11 11/21/2005	VSSS-12 VSSS-12 11/21/2005	VSSS-13 VSSS-13 11/21/2005	VSSS-14 VSSS-14 11/21/2005	VSSS-15 VSSS-15 11/21/2005
Biphenyl	(ug/kg)	--	64 U	62 U	62 U	61 U	66 U
Bis(2-chloroethoxy)methane	(ug/kg)	--	64 U	61 U	62 U	61 U	66 U
Bis(2-chloroethyl)ether	(ug/kg)	--	62 U	59 U	60 U	58 U	63 U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	--	1400	72 U	73 U	210 J	77 U
Butyl benzyl phthalate	(ug/kg)	--	63 U	60 U	61 U	60 U	65 U
Caprolactam	(ug/kg)	--	63 U	60 U	61 U	59 U	64 U
Carbazole	(ug/kg)	--	60 U	57 U	58 U	60 J	61 U
Chrysene	(ug/kg)	110000	500	67 U	230 J	270 J	300 J
Dibenzo(a,h)anthracene	(ug/kg)	1100	49 U	47 U	47 U	46 U	50 U
Dibenzofuran	(ug/kg)	1000000	64 U	62 U	62 U	61 U	66 U
Diethyl phthalate	(ug/kg)	--	67 U	64 U	65 U	64 U	69 U
Dimethyl phthalate	(ug/kg)	--	63 U	60 U	61 U	59 U	64 U
Di-n-butyl phthalate	(ug/kg)	--	59 U	57 U	58 U	56 U	61 U
Di-n-octyl phthalate	(ug/kg)	--	66 U	64 U	64 U	63 U	68 U
Fluoranthene	(ug/kg)	1000000	58 U	56 U	410	550	560
Fluorene	(ug/kg)	1000000	66 U	63 U	64 U	62 U	67 U
Hexachlorobenzene	(ug/kg)	12000	62 U	60 U	60 U	59 U	64 U
Hexachlorobutadiene	(ug/kg)	--	60 U	57 U	58 U	57 U	61 U
Hexachlorocyclopentadiene	(ug/kg)	--	62 U	60 U	60 U	59 U	64 U
Hexachloroethane	(ug/kg)	--	66 U	63 U	64 U	63 U	68 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	11000	53 J	47 U	48 U	85 J	81 J
Isophorone	(ug/kg)	--	59 U	56 U	57 U	55 U	60 U
m-Nitroaniline	(ug/kg)	--	51 U	49 U	49 U	48 U	52 U
Naphthalene	(ug/kg)	1000000	73 J	64 U	65 U	63 U	160 J
Nitrobenzene	(ug/kg)	--	85 U	82 U	82 U	80 U	87 U
N-Nitrosodiphenylamine	(ug/kg)	--	64 U	62 U	62 U	61 U	66 U
N-Nitrosodipropylamine	(ug/kg)	--	65 U	62 U	63 U	61 U	66 U

ug/kg: Micrograms per kilogram.
--: No standard.
U: Not detected.
J: Estimated value.

TABLE 4
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-11 VSSS-11 11/21/2005	VSSS-12 VSSS-12 11/21/2005	VSSS-13 VSSS-13 11/21/2005	VSSS-14 VSSS-14 11/21/2005	VSSS-15 VSSS-15 11/21/2005
o-Cresol	(ug/kg)	1000000	65 U	62 U	63 U	61 U	66 U
o-Nitroaniline	(ug/kg)	--	50 U	47 U	48 U	47 U	51 U
o-Nitrophenol	(ug/kg)	--	60 U	57 U	58 U	57 U	61 U
p-Chloroaniline	(ug/kg)	--	46 U	45 U	45 U	44 U	48 U
p-Chloro-m-cresol	(ug/kg)	--	54 U	52 U	52 U	51 U	55 U
PCP	(ug/kg)	55000	90 U	87 U	87 U	85 U	92 U
p-Cresol	(ug/kg)	1000000	190 J	59 U	60 U	58 U	63 U
Phenanthrene	(ug/kg)	1000000	170 J	60 U	60 U	330 J	410
Phenol	(ug/kg)	1000000	59 U	57 U	57 U	56 U	60 U
p-Nitroaniline	(ug/kg)	--	67 U	64 U	65 U	63 U	68 U
p-Nitrophenol	(ug/kg)	--	48 U	46 U	47 U	46 U	49 U
Pyrene	(ug/kg)	1000000	69 U	66 U	430	510	630
Total Semivolatile Organics	(ug/kg)	--	5037	530	1920	3098	3264

ug/kg: Micrograms per kilogram.
--: No standard.
U: Not detected.
J: Estimated value.

TABLE 5
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-11 VSSS-11 11/21/2005	VSSS-12 VSSS-12 11/21/2005	VSSS-13 VSSS-13 11/21/2005	VSSS-14 VSSS-14 11/21/2005	VSSS-15 VSSS-15 11/21/2005
Aroclor 1016	(ug/kg)	--	3.0 U	2.8 U	2.9 U	2.8 U	3.0 U
Aroclor 1221	(ug/kg)	--	4.6 U	4.4 U	4.5 U	4.3 U	4.7 U
Aroclor 1232	(ug/kg)	--	6.9 U	6.5 U	6.7 U	6.5 U	7.1 U
Aroclor 1242	(ug/kg)	--	6.2 U	5.8 U	5.9 U	5.8 U	6.3 U
Aroclor 1248	(ug/kg)	--	3.0 U	2.8 U	2.9 U	2.8 U	3.1 U
Aroclor 1254	(ug/kg)	--	190	1.8 U	1.9 U	1.8 U	2.0 U
Aroclor 1260	(ug/kg)	--	5.0 U	4.7 U	4.8 U	130	5.0 U
Total PCBs (surface soil)	(ug/kg)	25000	190	0	0	130	0

ug/kg: Micrograms per kilogram.
U: Not detected.
--: No standard.

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-04A VSSB-04A(6-8) 11/18/2005	VSSB-04A VSSB-04A(8-10) 11/18/2005	VSSB-05A VSSB-05A(6-8) 11/22/2005	VSSB-05A VSSB-05A(8-10) 11/22/2005	VSSB-06A VSSB-06A(6-8) 11/18/2005	VSSB-06A VSSB-06A(8-10) 11/18/2005	VSSB-07 VSSB-07(2-4) 11/18/2005
Mercury	(mg/kg)	2.8	0.007 U	0.007 U	0.065 U	0.070 U	0.007 B	0.007 U	7.3

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-07 VSSB-07(4-6) 11/18/2005	VSSB-07 VSSB-07(6-8) 11/18/2005	VSSB-07 VSSB-07(8-10) 11/18/2005	VSSB-08 VSSB-08(1-2) 8/10/2006	VSSB-08 VSSB-08(2-4) 8/10/2006	VSSB-08 VSSB-08(4-6) 8/10/2006	VSSB-08 VSSB-08(6-8) 8/10/2006
Mercury	(mg/kg)	2.8	0.033	0.007 U	0.007 U	3.2	0.1	0.006 U	0.007 U

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-08 VSSB-08(8-10) 8/10/2006	VSSB-09 VSSB-09(2-4) 11/18/2005	VSSB-09 VSSB-09(4-6) 11/18/2005	VSSB-09 VSSB-09(6-8) 11/18/2005	VSSB-09 VSSB-09(8-10) 11/18/2005	VSSB-10 VSSB-10(1-2) 8/10/2006	VSSB-10 VSSB-10(2-4) 8/10/2006
Mercury	(mg/kg)	2.8	0.007 U	14.5	0.010 B	0.108	0.006 U	3.5	0.010 B

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-10 VSSB-10(4-6) 8/10/2006	VSSB-10 VSSB-10(6-8) 8/10/2006	VSSB-10 VSSB-10(8-10) 8/10/2006	VSSB-11 VSSB-11(2-4) 11/18/2005	VSSB-11 VSSB-11(4-6) 11/18/2005	VSSB-11 VSSB-11(6-8) 11/18/2005	VSSB-11 VSSB-11(8-10) 11/18/2005
Mercury	(mg/kg)	2.8	0.012	0.007 U	0.066 U	2.5	0.019	0.006 U	0.007 U

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-12 VSSB-12(1-2) 8/10/2006	VSSB-12 VSSB-12(2-4) 8/10/2006	VSSB-12 VSSB-12(4-6) 8/10/2006	VSSB-12 VSSB-12(6-8) 8/10/2006	VSSB-12 VSSB-12(8-10) 8/10/2006	VSSB-13 VSSB-13(2-4) 11/22/2005	VSSB-13 VSSB-13(4-6) 11/22/2005
Mercury	(mg/kg)	2.8	6.2	4.8	0.075 B	0.065 U	0.068 U	28.4	0.425

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-13 VSSB-13(6-8) 11/22/2005	VSSB-13 VSSB-13(8-10) 11/22/2005	VSSB-14 VSSB-14(2-4) 11/22/2005	VSSB-14 VSSB-14(4-6) 11/22/2005	VSSB-14 VSSB-14(6-8) 11/22/2005	VSSB-14 VSSB-14(8-10) 11/22/2005	VSSB-15 VSSB-15(2-4) 11/22/2005
Mercury	(mg/kg)	2.8	0.086 B	0.076 B	1.5	13.7	0.065 U	0.069 U	66.2

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-15 VSSB-15(4-6) 11/22/2005	VSSB-15 VSSB-15(6-8) 11/22/2005	VSSB-15 VSSB-15(8-10) 11/22/2005	VSSB-16 VSSB-16(2-4) 11/22/2005	VSSB-16 VSSB-16(4-6) 11/22/2005	VSSB-16 VSSB-16(6-8) 11/22/2005	VSSB-16 VSSB-16(8-10) 11/22/2005
Mercury	(mg/kg)	2.8	0.064 U	0.066 U	0.068 U	1.8	0.075 U	0.079 U	0.072 U

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-27 VSSB-27(2-4) 11/18/2005	VSSB-28 VSSB-28(2-4) 11/18/2005	VSSB-29 VSSB-29(2-4) 11/18/2005	VSSB-30 VSSB-30(1-2) 8/10/2006	VSSB-30 VSSB-30(2-4) 8/10/2006	VSSB-30 VSSB-30(4-6) 8/10/2006	VSSB-30 VSSB-30(6-8) 8/10/2006
Mercury	(mg/kg)	2.8	0.892	0.007 U	3.3	4.7	0.027	0.010 B	0.007 U

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-30 VSSB-30(8-10) 8/10/2006	VSSB-31 VSSB-31(1-2) 8/10/2006	VSSB-31 VSSB-31(2-4) 8/10/2006	VSSB-31 VSSB-31(4-6) 8/10/2006	VSSB-31 VSSB-31(6-8) 8/10/2006	VSSB-31 VSSB-31(8-10) 8/10/2006	VSSB-32 VSSB-32(1-2) 6/24/2010
Mercury	(mg/kg)	2.8	0.007 U	49.0	3.6	0.067 U	0.068 U	0.084 B	2.3

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-33 VSSB-33(1-2) 6/24/2010	VSSB-34 VSSB-34(1-2) 6/24/2010	VSSB-35 VSSB-35(1-2) 6/24/2010	VSSB-36 VSSB-36(1-2) 6/24/2010	VSSB-37 VSSB-37(1-2) 6/24/2010	VSSB-38 VSSB-38(1-2) 6/23/2010	VSSB-38 VSSB-38(2-4) 6/23/2010
Mercury	(mg/kg)	2.8	0.117 U	0.062 J	0.088 J	5.7	0.18	7.9	0.086 J

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-38 VSSB-38(4-6) 6/23/2010	VSSB-39 VSSB-39(1-2) 6/23/2010	VSSB-39 VSSB-39(2-4) 6/23/2010	VSSB-39 VSSB-39(4-6) 6/23/2010	VSSB-40 VSSB-40(1-2) 6/24/2010	VSSB-40 VSSB-40(2-4) 6/24/2010	VSSB-40 VSSB-40(4-6) 6/24/2010
Mercury	(mg/kg)	2.8	0.069 J	1.7	0.315	0.207	0.806	0.068 J	0.646

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-41 VSSB-41(1-2) 6/23/2010	VSSB-41 VSSB-41(2-4) 6/23/2010	VSSB-41 VSSB-41(4-6) 6/23/2010	VSSB-41 VSSB-41(6-8) 6/23/2010	VSSB-42 VSSB-42(1-2) 6/23/2010	VSSB-43 VSSB-43(1-2) 6/23/2010	VSSB-44 VSSB-44(1-2) 6/24/2010
Mercury	(mg/kg)	2.8	1.3	0.992	2.5	1.7	0.104 J	4.4	5.7

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-45 VSSB-45(1-2) 6/24/2010	VSSB-45 VSSB-45(2-4) 6/24/2010	VSSB-46 VSSB-46(1-2) 6/24/2010	VSSB-46 VSSB-46(2-4) 6/24/2010	VSSB-46 VSSB-46(4-6) 6/24/2010	VSSB-47 VSSB-47(1-2) 6/24/2010	VSSB-47 VSSB-47(2-4) 6/24/2010
Mercury	(mg/kg)	2.8	0.44	5.1	5.4	0.976	0.695	4.2	0.283

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-47 VSSB-47(4-6) 6/24/2010	VSSB-47 VSSB-47(6-8) 6/24/2010	VSSB-48 VSSB-48(1-2) 6/24/2010	VSSB-48 VSSB-48(2-4) 6/24/2010	VSSB-48 VSSB-48(4-6) 6/24/2010	VSSB-48 VSSB-48(6-8) 6/24/2010	VSSB-49 VSSB-49(1-2) 6/24/2010
Mercury	(mg/kg)	2.8	0.022 J	0.127 U	1.1	0.019 U	0.022 U	0.021 U	1.5

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-49 VSSB-49(2-4) 6/24/2010	VSSB-49 VSSB-49(4-6) 6/24/2010	VSSB-49 VSSB-49(6-8) 6/24/2010	VSSB-50 VSSB-50(1-2) 6/24/2010	VSSB-50 VSSB-50(2-4) 6/24/2010	VSSB-50 VSSB-50(4-6) 6/24/2010	VSSB-50 VSSB-50(6-8) 6/24/2010
Mercury	(mg/kg)	2.8	16.5	0.112 U	0.131 U	4.6	0.686	0.652	0.114 U

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-51 VSSB-51 (1-2) 7/8/2010	VSSB-51 VSSB-51 (2-4) 7/8/2010	VSSB-53 VSSB-53(1-2) 6/24/2010	VSSB-53 VSSB-53(2-4) 6/24/2010	VSSB-53 VSSB-53(4-6) 6/24/2010	VSSB-53 VSSB-53(6-8) 6/24/2010	VSSB-62 VSSB-62(1-2) 6/24/2010
Mercury	(mg/kg)	2.8	167	198	1.4	4.1	0.139	0.116 J	1.7

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-63 VSSB-63(1-2) 6/24/2010	VSSB-64 VSSB-64(1-2) 7/8/2010	VSSB-65 VSSB-65(1-2) 6/23/2010	VSSB-66 VSSB-66(1-2) 6/24/2010	VSSB-66 VSSB-66(2-4) 6/24/2010	VSSB-66 VSSB-66(4-6) 6/24/2010	VSSB-67 VSSB-67(1-2) 6/24/2010
Mercury	(mg/kg)	2.8	0.986	3.4	1.5	0.205	0.295	1.1	0.616

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
COMMERCIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Commercial Use SCOs	VSSB-67 VSSB-67(2-4) 6/24/2010	VSSB-67 VSSB-67(4-6) 6/24/2010	VSSB-67 VSSB-67(6-8) 6/24/2010	VSSB-68 VSSB-68(1-2) 6/24/2010	VSSB-68 VSSB-68(2-4) 6/24/2010	VSSB-68 VSSB-68(4-6) 6/24/2010	VSSB-68 VSSB-68(6-8) 6/24/2010
Mercury	(mg/kg)	2.8	0.464	0.087 J	0.023 U	0.321	0.11 J	1.4	0.157

mg/kg: Milligrams per kilogram.
U: Not detected.
J: Estimated value.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-17 VSSB-17(2-4) 11/21/2005	VSSB-18 VSSB-18(2-4) 11/21/2005	VSSB-19 VSSB-19(2-4) 11/21/2005	VSSB-20 VSSB-20(2-4) 11/21/2005	VSSB-22 VSSB-22(0-2) 11/21/2005	VSSB-22 VSSB-22(2-4) 11/21/2005	VSSB-23 VSSB-23(0-2) 11/21/2005
Mercury	(mg/kg)	5.7	0.313	0.072 U	0.224	0.095 B	0.111 B	0.066 U	0.066 U

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-23 VSSB-23(2-4) 11/21/2005	VSSB-24 VSSB-24(0-2) 11/21/2005	VSSB-24 VSSB-24(2-4) 11/21/2005	VSSB-25 VSSB-25(0-2) 11/21/2005	VSSB-25 VSSB-25(2-4) 11/21/2005	VSSB-26 VSSB-26(0-2) 11/21/2005	VSSB-26 VSSB-26(2-4) 11/21/2005
Mercury	(mg/kg)	5.7	0.067 U	0.198	0.246	25.9	0.855	0.434	0.177

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-54 VSSB-54(1-2) 6/23/2010	VSSB-55 VSSB-55(1-2) 6/23/2010	VSSB-56 VSSB-56(1-2) 6/23/2010	VSSB-57 VSSB-57(1-2) 6/23/2010	VSSB-57 VSSB-57(2-4) 6/23/2010	VSSB-58 VSSB-58(1-2) 6/23/2010	VSSB-58 VSSB-58(2-4) 6/23/2010
Mercury	(mg/kg)	5.7	0.137	0.21	0.11 U	0.132	0.234	0.127	0.148

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-59 VSSB-59(1-2) 6/23/2010	VSSB-59 VSSB-59(2-4) 6/23/2010	VSSB-60 VSSB-60(1-2) 6/23/2010	VSSB-60 VSSB-60(2-4) 6/23/2010	VSSB-61 VSSB-61(1-2) 6/23/2010	VSSB-61 VSSB-61(2-4) 6/23/2010
Mercury	(mg/kg)	5.7	0.214	0.528	0.286	0.22	0.316	0.261

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 8
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
RCRA METALS NOT INCLUDING MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-22 VSSB-22(0-2) 11/21/2005	VSSB-22 VSSB-22(2-4) 11/21/2005	VSSB-23 VSSB-23(0-2) 11/21/2005	VSSB-23 VSSB-23(2-4) 11/21/2005	VSSB-24 VSSB-24(0-2) 11/21/2005	VSSB-24 VSSB-24(2-4) 11/21/2005	VSSB-25 VSSB-25(0-2) 11/21/2005	VSSB-25 VSSB-25(2-4) 11/21/2005	VSSB-26 VSSB-26(0-2) 11/21/2005	VSSB-26 VSSB-26(2-4) 11/21/2005
Arsenic	(mg/kg)	16.0	16.0	7.64	18.8	7.76	3.14	45.4	7.26	11.4	65.9	71.8
Barium	(mg/kg)	10000	57.1	33.1	41.1	18.1 B	43.3	37.3	75.3	49.4	48.3	28.0
Cadmium	(mg/kg)	60.0	7.13	0.037 U	37.5	0.164 B	0.709	0.038 U	1.9	0.038 U	0.038 U	0.039 U
Chromium	(mg/kg)	6800	9.95	38.1	12.4	10	7.35	18.8	25.4	19.7	11.6	10.4
Lead	(mg/kg)	3900	241	73.0	76.8	31.1	161	128.0	655	342	257	61.8
Selenium	(mg/kg)	6800	0.399 B	0.442 B	0.466 B	0.564 B	0.369 U	0.392 U	0.380 U	0.390 U	0.617 B	0.463 B
Silver	(mg/kg)	6800	0.087 U	0.089 U	0.090 U	0.079 U	0.085 U	0.091 U	0.088 U	0.090 U	0.090 U	0.094 U

mg/kg: Milligrams per kilogram.
U: Not detected.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-22 VSSB-22(0-2) 11/21/2005	VSSB-22 VSSB-22(2-4) 11/21/2005	VSSB-23 VSSB-23(0-2) 11/21/2005	VSSB-23 VSSB-23(2-4) 11/21/2005	VSSB-24 VSSB-24(0-2) 11/21/2005	VSSB-24 VSSB-24(2-4) 11/21/2005	VSSB-25 VSSB-25(0-2) 11/21/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)	--	59 U	60 U	61 U	61 U	57 U	62 U	60 U
2,4,5-Trichlorophenol	(ug/kg)	--	56 U	57 U	58 U	58 U	55 U	59 U	57 U
2,4,6-Trichlorophenol	(ug/kg)	--	54 U	55 U	56 U	56 U	52 U	57 U	55 U
2,4-Dichlorophenol	(ug/kg)	--	68 U	69 U	70 U	70 U	66 U	72 U	69 U
2,4-Dimethylphenol	(ug/kg)	--	59 U	59 U	60 U	60 U	57 U	61 U	59 U
2,4-Dinitrophenol	(ug/kg)	--	320 U	320 U	320 U	320 U	300 U	330 U	320 U
2,4-Dinitrotoluene	(ug/kg)	--	54 U	55 U	56 U	56 U	52 U	57 U	55 U
2,6-Dinitrotoluene	(ug/kg)	--	52 U	53 U	53 U	53 U	50 U	55 U	53 U
2-Chloronaphthalene	(ug/kg)	--	61 U	62 U	63 U	63 U	59 U	64 U	62 U
2-Chlorophenol	(ug/kg)	--	59 U	60 U	60 U	60 U	57 U	62 U	59 U
2-Methylnaphthalene	(ug/kg)	--	62 U	63 U	63 U	63 U	60 U	65 U	62 U
3,3-Dichlorobenzidine	(ug/kg)	--	63 U	64 U	65 U	65 U	61 U	66 U	64 U
4,6-Dinitro-o-cresol	(ug/kg)	--	72 U	73 U	73 U	73 U	69 U	75 U	72 U
4-Bromofluorobenzene	(ug/kg)	--	55 U	56 U	56 U	56 U	53 U	58 U	56 U
4-Chlorophenylphenyl ether	(ug/kg)	--	58 U	59 U	60 U	60 U	56 U	61 U	59 U
Acenaphthene	(ug/kg)	1000000	66 U	67 U	67 U	67 U	63 U	69 U	66 U
Acenaphthylene	(ug/kg)	1000000	60 U	61 U	120 J	61 U	58 U	63 U	60 U
Acetophenone	(ug/kg)	--	54 U	55 U	55 U	55 U	52 U	57 U	54 U
Anthracene	(ug/kg)	1000000	60 J	56 U	57 U	57 U	54 U	58 U	58 J
Atrazine	(ug/kg)	--	57 U	57 U	58 U	58 U	55 U	59 U	57 U
Benzaldehyde	(ug/kg)	--	76 U	77 U	78 U	78 U	73 U	79 U	76 U
Benzo(a)anthracene	(ug/kg)	11000	190 J	52 U	310 J	110 J	50 U	54 U	200 J
Benzo(a)pyrene	(ug/kg)	1100	210 J	60 U	410 J	160 J	57 U	62 U	180 J
Benzo(b)fluoranthene	(ug/kg)	11000	420	220 J	590 J	290 J	79 J	57 J	290 J
Benzo(ghi)perylene	(ug/kg)	1000000	89 J	62 U	210 J	130 J	59 U	64 U	100 J
Benzo(k)fluoranthene	(ug/kg)	110000	81 U	82 U	160 J	83 U	78 U	85 U	95 J

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No standard.

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-22 VSSB-22(0-2) 11/21/2005	VSSB-22 VSSB-22(2-4) 11/21/2005	VSSB-23 VSSB-23(0-2) 11/21/2005	VSSB-23 VSSB-23(2-4) 11/21/2005	VSSB-24 VSSB-24(0-2) 11/21/2005	VSSB-24 VSSB-24(2-4) 11/21/2005	VSSB-25 VSSB-25(0-2) 11/21/2005
Biphenyl	(ug/kg)	--	61 U	62 U	62 U	62 U	59 U	64 U	61 U
Bis(2-chloroethoxy)methane	(ug/kg)	--	61 U	61 U	62 U	62 U	59 U	64 U	61 U
Bis(2-chloroethyl)ether	(ug/kg)	--	58 U	59 U	60 U	60 U	56 U	61 U	59 U
Bis(2-ethylhexyl)phthalate	(ug/kg)	--	71 U	72 U	73 U	73 U	68 U	74 U	71 U
Butylbenzylphthalate	(ug/kg)	--	60 U	60 U	61 U	61 U	58 U	63 U	60 U
Caprolactam	(ug/kg)	--	59 U	60 U	61 U	61 U	57 U	62 U	60 U
Carbazole	(ug/kg)	--	56 U	57 U	58 U	58 U	54 U	59 U	57 U
Chrysene	(ug/kg)	110000	260 J	67 U	410	180 J	71 J	69 U	250 J
Dibenz(a,h)anthracene	(ug/kg)	1100	46 U	47 U	47 U	47 U	45 U	49 U	47 U
Dibenzofuran	(ug/kg)	1000000	61 U	62 U	62 U	62 U	59 U	64 U	61 U
Diethylphthalate	(ug/kg)	--	64 U	65 U	65 U	65 U	62 U	67 U	64 U
Dimethylphthalate	(ug/kg)	--	59 U	60 U	61 U	61 U	57 U	62 U	60 U
Di-n-butylphthalate	(ug/kg)	--	56 U	57 U	58 U	58 U	54 U	59 U	220 J
Di-n-octyl phthalate	(ug/kg)	--	63 U	64 U	64 U	64 U	61 U	66 U	63 U
Fluoranthene	(ug/kg)	1000000	470	82 J	470	84 J	53 U	130 J	510
Fluorene	(ug/kg)	1000000	62 U	63 U	64 U	64 U	60 U	65 U	63 U
Hexachlorobenzene	(ug/kg)	12000	59 U	60 U	60 U	60 U	57 U	62 U	59 U
Hexachlorobutadiene	(ug/kg)	--	57 U	58 U	58 U	58 U	55 U	60 U	57 U
Hexachlorocyclopentadiene	(ug/kg)	--	59 U	60 U	60 U	60 U	57 U	62 U	59 U
Hexachloroethane	(ug/kg)	--	63 U	64 U	64 U	64 U	61 U	66 U	63 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	11000	47 U	47 U	55 J	110 J	45 U	49 U	88 J
Isophorone	(ug/kg)	--	55 U	56 U	57 U	57 U	54 U	58 U	56 U
3-Nitroaniline	(ug/kg)	--	48 U	49 U	49 U	49 U	46 U	50 U	48 U
Naphthalene	(ug/kg)	1000000	63 U	64 U	65 U	65 U	61 U	66 U	63 U
Nitrobenzene	(ug/kg)	--	80 U	82 U	82 U	82 U	78 U	84 U	81 U
N-Nitrosodiphenylamine	(ug/kg)	--	61 U	62 U	62 U	62 U	59 U	64 U	61 U
N-Nitroso-di-n-propylamine	(ug/kg)	--	61 U	62 U	63 U	63 U	59 U	64 U	62 U

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No standard.

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-22 VSSB-22(0-2) 11/21/2005	VSSB-22 VSSB-22(2-4) 11/21/2005	VSSB-23 VSSB-23(0-2) 11/21/2005	VSSB-23 VSSB-23(2-4) 11/21/2005	VSSB-24 VSSB-24(0-2) 11/21/2005	VSSB-24 VSSB-24(2-4) 11/21/2005	VSSB-25 VSSB-25(0-2) 11/21/2005
2-Methylphenol	(ug/kg)	1000000	61 U	62 U	63 U	63 U	59 U	64 U	62 U
2-Nitroaniline	(ug/kg)	--	47 U	47 U	48 U	48 U	45 U	49 U	47 U
2-Nitrophenol	(ug/kg)	--	57 U	58 U	58 U	58 U	55 U	60 U	57 U
4-Chloroaniline	(ug/kg)	--	44 U	45 U	45 U	45 U	42 U	46 U	44 U
4-Chloro-3-methylphenol	(ug/kg)	--	51 U	52 U	52 U	52 U	49 U	53 U	51 U
Pentachlorophenol	(ug/kg)	55000	85 U	87 U	88 U	87 U	83 U	90 U	86 U
3-Methylphenol/4-Methylphenol	(ug/kg)	1000000	58 U	59 U	60 U	60 U	56 U	61 U	59 U
Phenanthrene	(ug/kg)	1000000	260 J	60 U	60 U	60 U	57 U	62 U	300 J
Phenol	(ug/kg)	1000000	56 U	57 U	57 U	57 U	54 U	59 U	56 U
4-Nitroaniline	(ug/kg)	--	63 U	64 U	65 U	65 U	61 U	66 U	63 U
4-Nitrophenol	(ug/kg)	--	46 U	46 U	47 U	47 U	44 U	48 U	46 U
Pyrene	(ug/kg)	1000000	430	69 J	940	130 J	63 U	130 J	470
Total Semivolatile Organics	(ug/kg)	--	2389	371	3675	1194	150	317	2761

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No standard.

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-25 VSSB-25(2-4) 11/21/2005	VSSB-26 VSSB-26(0-2) 11/21/2005	VSSB-26 VSSB-26(2-4) 11/21/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)	--	61 U	61 U	64 U
2,4,5-Trichlorophenol	(ug/kg)	--	57 U	58 U	61 U
2,4,6-Trichlorophenol	(ug/kg)	--	55 U	55 U	59 U
2,4-Dichlorophenol	(ug/kg)	--	70 U	70 U	74 U
2,4-Dimethylphenol	(ug/kg)	--	60 U	60 U	63 U
2,4-Dinitrophenol	(ug/kg)	--	320 U	320 U	340 U
2,4-Dinitrotoluene	(ug/kg)	--	55 U	55 U	59 U
2,6-Dinitrotoluene	(ug/kg)	--	53 U	53 U	57 U
2-Chloronaphthalene	(ug/kg)	--	62 U	63 U	66 U
2-Chlorophenol	(ug/kg)	--	60 U	60 U	64 U
2-Methylnaphthalene	(ug/kg)	--	63 U	63 U	67 U
3,3-Dichlorobenzidine	(ug/kg)	--	64 U	64 U	68 U
4,6-Dinitro-o-cresol	(ug/kg)	--	73 U	73 U	78 U
4-Bromofluorobenzene	(ug/kg)	--	56 U	56 U	60 U
4-Chlorophenylphenyl ether	(ug/kg)	--	59 U	60 U	63 U
Acenaphthene	(ug/kg)	1000000	67 U	67 U	71 U
Acenaphthylene	(ug/kg)	1000000	61 U	61 U	65 U
Acetophenone	(ug/kg)	--	55 U	55 U	59 U
Anthracene	(ug/kg)	1000000	57 U	57 U	60 U
Atrazine	(ug/kg)	--	58 U	58 U	61 U
Benzaldehyde	(ug/kg)	--	77 U	77 U	82 U
Benzo(a)anthracene	(ug/kg)	11000	81 J	180 J	56 U
Benzo(a)pyrene	(ug/kg)	1100	73 J	190 J	64 U
Benzo(b)fluoranthene	(ug/kg)	11000	110 J	340 J	44 U
Benzo(ghi)perylene	(ug/kg)	1000000	62 U	180 J	66 U
Benzo(k)fluoranthene	(ug/kg)	110000	83 U	99 J	88 U

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No standard.

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-25 VSSB-25(2-4) 11/21/2005	VSSB-26 VSSB-26(0-2) 11/21/2005	VSSB-26 VSSB-26(2-4) 11/21/2005
Biphenyl	(ug/kg)	--	62 U	62 U	66 U
Bis(2-chloroethoxy)methane	(ug/kg)	--	62 U	62 U	66 U
Bis(2-chloroethyl)ether	(ug/kg)	--	59 U	60 U	63 U
Bis(2-ethylhexyl)phthalate	(ug/kg)	--	72 U	72 U	77 U
Butylbenzylphthalate	(ug/kg)	--	61 U	61 U	65 U
Caprolactam	(ug/kg)	--	60 U	61 U	64 U
Carbazole	(ug/kg)	--	57 U	58 U	61 U
Chrysene	(ug/kg)	110000	88 J	230 J	72 U
Dibenz(a,h)anthracene	(ug/kg)	1100	47 U	55 J	50 U
Dibenzofuran	(ug/kg)	1000000	62 U	62 U	66 U
Diethylphthalate	(ug/kg)	--	65 U	65 U	69 U
Dimethylphthalate	(ug/kg)	--	60 U	61 U	64 U
Di-n-butylphthalate	(ug/kg)	--	57 U	190 J	61 U
Di-n-octyl phthalate	(ug/kg)	--	64 U	64 U	68 U
Fluoranthene	(ug/kg)	1000000	210 J	390	60 U
Fluorene	(ug/kg)	1000000	63 U	64 U	67 U
Hexachlorobenzene	(ug/kg)	12000	60 U	60 U	64 U
Hexachlorobutadiene	(ug/kg)	--	58 U	58 U	62 U
Hexachlorocyclopentadiene	(ug/kg)	--	60 U	60 U	64 U
Hexachloroethane	(ug/kg)	--	64 U	64 U	68 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	11000	48 U	160 J	51 U
Isophorone	(ug/kg)	--	56 U	57 U	60 U
3-Nitroaniline	(ug/kg)	--	49 U	49 U	52 U
Naphthalene	(ug/kg)	1000000	64 U	64 U	68 U
Nitrobenzene	(ug/kg)	--	82 U	82 U	87 U
N-Nitrosodiphenylamine	(ug/kg)	--	62 U	62 U	66 U
N-Nitroso-di-n-propylamine	(ug/kg)	--	62 U	62 U	66 U

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No standard.

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-25 VSSB-25(2-4) 11/21/2005	VSSB-26 VSSB-26(0-2) 11/21/2005	VSSB-26 VSSB-26(2-4) 11/21/2005
2-Methylphenol	(ug/kg)	1000000	62 U	63 U	67 U
2-Nitroaniline	(ug/kg)	--	48 U	48 U	51 U
2-Nitrophenol	(ug/kg)	--	58 U	58 U	62 U
4-Chloroaniline	(ug/kg)	--	45 U	45 U	48 U
4-Chloro-3-methylphenol	(ug/kg)	--	52 U	52 U	55 U
Pentachlorophenol	(ug/kg)	55000	87 U	87 U	93 U
3-Methylphenol/4-Methylphenol	(ug/kg)	1000000	59 U	59 U	63 U
Phenanthrene	(ug/kg)	1000000	60 U	190 J	64 U
Phenol	(ug/kg)	1000000	57 U	57 U	61 U
4-Nitroaniline	(ug/kg)	--	64 U	64 U	68 U
4-Nitrophenol	(ug/kg)	--	47 U	47 U	50 U
Pyrene	(ug/kg)	1000000	180 J	420	71 U
Total Semivolatile Organics	(ug/kg)	--	742	2624	0

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No standard.

TABLE 10
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSB-22 VSSB-22(0-2) 11/21/2005	VSSB-22 VSSB-22(2-4) 11/21/2005	VSSB-23 VSSB-23(0-2) 11/21/2005	VSSB-23 VSSB-23(2-4) 11/21/2005	VSSB-24 VSSB-24(0-2) 11/21/2005	VSSB-24 VSSB-24(2-4) 11/21/2005	VSSB-25 VSSB-25(0-2) 11/21/2005	VSSB-25 VSSB-25(2-4) 11/21/2005	VSSB-26 VSSB-26(0-2) 11/21/2005	VSSB-26 VSSB-26(2-4) 11/21/2005
Aroclor 1016	(ug/kg)	--	2.8 U	2.9 U	2.9 U	2.9 U	2.7 U	2.9 U	2.8 U	2.9 U	2.9 U	3.0 U
Aroclor 1221	(ug/kg)	--	4.4 U	4.4 U	4.4 U	4.4 U	4.2 U	4.6 U	4.4 U	4.5 U	4.5 U	4.7 U
Aroclor 1232	(ug/kg)	--	6.5 U	6.6 U	6.6 U	6.7 U	6.3 U	6.8 U	6.6 U	6.7 U	6.7 U	7.0 U
Aroclor 1242	(ug/kg)	--	5.8 U	5.9 U	5.9 U	5.9 U	5.6 U	6.1 U	5.9 U	6.0 U	5.9 U	6.3 U
Aroclor 1248	(ug/kg)	--	2.8 U	2.9 U	2.9 U	2.9 U	2.7 U	3.0 U	2.9 U	2.9 U	2.9 U	3.0 U
Aroclor 1254	(ug/kg)	--	26.0	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	35.0	1.9 U	1.9 U	2.0 U
Aroclor 1260	(ug/kg)	--	4.7 U	4.7 U	4.7 U	4.8 U	4.5 U	4.9 U	4.7 U	4.8 U	4.8 U	5.0 U
Total PCBs	(ug/kg)	25000	26.0	0	0	0	0	0	35.0	0	0	0
(subsurface soil)												

ug/kg: Micrograms per kilogram.
U: Not detected.
--: No Standard.

TABLE 11
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
TARGET ANALYTE LIST METALS

SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	VSGP-01 VSGP-01 11/18/2005	VSGP-01 VSGP-01(F) 11/18/2005	VSGP-02 VSGP-02 11/18/2005	VSGP-02 VSGP-02(F) 11/18/2005	VSGP-03 VSGP-03 11/22/2005	VSGP-03 VSGP-03(F) 11/22/2005
Aluminum	(ug/l)	--	3970	69.9	191	5.310 U	48800	346
Antimony	(ug/l)	3	3.170 U	3.170 U	3.170 U	3.170 U	3.170 U	3.170 U
Arsenic	(ug/l)	25	3.320 U	3.320 U	3.320 U	3.320 U	6800	74.8
Barium	(ug/l)	1,000	31.1	21.3	31.7	30.4	225	49.2 J
Beryllium	(ug/l)	3	0.19	0.090 U	0.090 U	0.090 U	2.030 J	0.090 U
Cadmium	(ug/l)	5	0.327 U	0.327 U	0.41	0.327 U	0.327 U	0.327 U
Calcium	(ug/l)	--	30700	29800	57700	57500	95400	93000
Chromium	(ug/l)	50	12.9	1.33	2.33	0.9	287	2.620 J
Cobalt	(ug/l)	--	0.43	0.370 U	0.52	0.370 U	32.0 J	2.440 J
Copper	(ug/l)	200	9.05	9.16	3.640 U	6.82	132	3.640 U
Iron	(ug/l)	300	4410	209	1250	282	80400	1570
Lead	(ug/l)	25	2.180 U	2.180 U	2.180 U	2.180 U	38.8	2.180 U
Magnesium	(ug/l)	35,000	8140	7520	8020	8070	19000	11500
Manganese	(ug/l)	300	52.2	42.5	132	127	643	212
Mercury	(ug/l)	0.7	0.17	0.030 U	0.030 U	0.05	0.43	0.1500 J
Nickel	(ug/l)	100	1.560 U	1.560 U	1.560 U	1.560 U	176	8.530 J
Potassium	(ug/l)	--	4080	4260	4480	4450	20200	15100
Selenium	(ug/l)	10	3.040 U	3.040 U	3.040 U	3.040 U	5.740 J	3.040 U
Silver	(ug/l)	50	1.640 U	1.640 U	1.640 U	1.640 U	1.640 U	1.640 U
Sodium	(ug/l)	20,000	98500	101000	25800	25500	235000	239000
Thallium	(ug/l)	0.5	3.050 U	3.050 U	3.050 U	3.050 U	3.050 U	3.050 U
Vanadium	(ug/l)	--	0.701 U	0.701 U	0.701 U	0.701 U	157	0.701 U
Zinc	(ug/l)	2,000	4.1	0.611 U	5.82	7.03	609	42.2

ug/l: Micrograms per liter
U: Not detected.
--: No Standard.
J: Estimated value.

Sample id (F): Filtered sample, results are for dissolved metals.

Boxed and shaded exceed standard

TABLE 12
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	VSGP-01 VSGP-01 11/18/2005	VSGP-02 VSGP-02 11/18/2005	VSGP-03 VSGP-03 11/22/2005
1,1,1-Trichloroethane	(ug/l)	5	0.32 U	0.32 U	0.32 U
1,1,2,2-Tetrachloroethane	(ug/l)	5	0.30 U	0.30 U	0.30 U
1,1,2-Trichloroethane	(ug/l)	1	0.41 U	0.41 U	0.41 U
1,1-Dichloroethane	(ug/l)	5	0.38 U	0.38 U	0.38 U
1,1-Dichloroethene	(ug/l)	5	0.42 U	0.42 U	0.42 U
1,2,4-Trichlorobenzene	(ug/l)	5	0.46 U	0.46 U	0.46 U
1,2-Dichloroethane	(ug/l)	0.6	0.34 U	0.34 U	0.34 U
1,2-Dichloropropane	(ug/l)	1	0.40 U	0.40 U	0.40 U
2-Hexanone	(ug/l)	50	1.7 U	1.7 U	1.7 U
Acetone	(ug/l)	50	2.3 U	2.3 U	2.3 U
Benzene	(ug/l)	1	0.39 U	0.39 U	0.39 U
Isopropylbenzene	(ug/l)	5	0.44 U	0.44 U	0.44 U
Bromochloromethane	(ug/l)	5	0.33 U	0.33 U	0.33 U
Bromoform	(ug/l)	50	0.32 U	0.32 U	0.32 U
Carbon Disulfide	(ug/l)	60	0.40 U	0.40 U	0.40 U
Carbon Tetrachloride	(ug/l)	5	1.1 U	1.1 U	1.1 U
Chlorobenzene	(ug/l)	5	0.47 U	0.47 U	0.47 U
Chloroethane	(ug/l)	5	0.83 U	0.83 U	0.83 U
Chloroform	(ug/l)	7	0.33 U	0.33 U	0.33 U
cis-1,2-Dichloroethene	(ug/l)	5	0.29 U	0.29 U	0.29 U
cis-1,3-Dichloropropene	(ug/l)	0.4	0.36 U	0.36 U	0.36 U
Cyclohexane	(ug/l)	--	0.36 U	0.36 U	0.36 U
1,2-Dibromo-3-chloropropane	(ug/l)	0.04	0.38 U	0.38 U	0.38 U
Dibromochloromethane	(ug/l)	50	0.26 U	0.26 U	0.26 U
Dichlorodifluoromethane	(ug/l)	5	0.17 U	0.17 U	0.17 U
1,2-Dibromoethane EDB	(ug/l)	0.0006	0.32 U	0.32 U	0.32 U
trans-1,2-Dichloroethene	(ug/l)	5	0.40 U	0.40 U	0.40 U

ug/l: Micrograms per liter
U: Not detected.
J: Estimated value.
--: No Standard.

TABLE 12
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	VSGP-01 VSGP-01 11/18/2005	VSGP-02 VSGP-02 11/18/2005	VSGP-03 VSGP-03 11/22/2005
Ethylbenzene	(ug/l)	5	0.45 U	0.45 U	0.45 U
Trichlorotrifluoroethane	(ug/l)	5	1.3 U	1.3 U	1.3 U
1,3-Dichlorobenzene	(ug/l)	3	0.50 U	0.50 U	0.50 U
Methyl methyl acetate	(ug/l)	50	0.20 U	0.20 U	0.20 U
Bromomethane	(ug/l)	5	0.41 U	0.41 U	0.41 U
Chloromethane	(ug/l)	5	0.34 U	0.34 U	0.34 U
2-Butanone (MEK)	(ug/l)	50	1.1 U	1.1 U	1.1 U
4-Methyl-2-pentanone (MIBK)	(ug/l)	--	1.6 U	1.6 U	1.6 U
Methylcyclohexane	(ug/l)	--	0.34 U	0.34 U	0.34 U
Methylene Chloride	(ug/l)	5	0.43 U	0.43 U	0.43 U
Methyl tert-butyl ether	(ug/l)	10	0.28 U	0.28 U	0.28 U
1,2-Dichlorobenzene	(ug/l)	3	0.44 U	0.44 U	0.44 U
o-Xylene	(ug/l)	5	0.46 U	0.46 U	0.46 U
1,4-Dichlorobenzene	(ug/l)	3	0.54 U	0.54 U	0.54 U
m+p-Xylene	(ug/l)	5	1.2 U	1.2 U	1.2 U
Styrene	(ug/l)	5	0.41 U	0.41 U	0.41 U
Tetrachloroethene	(ug/l)	5	4.6 J	0.48 U	0.48 U
Toluene	(ug/l)	5	0.36 U	0.36 U	0.36 U
trans-1,3-Dichloropropene	(ug/l)	0.4	0.32 U	0.32 U	0.32 U
Trichloroethene	(ug/l)	5	0.46 U	0.46 U	0.46 U
Trichlorofluoromethane	(ug/l)	5	0.22 U	0.22 U	0.22 U
Vinyl Chloride	(ug/l)	2	0.33 U	0.33 U	0.33 U
Total Volatile Organic Compounds	(ug/l)	--	4.6	0	0

ug/l: Micrograms per liter
U: Not detected.
J: Estimated value.
--: No Standard.

TABLE 13
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
Mercury	(mg/kg)	0.1	0.069 U	0.068 U	0.068 U	0.071 U	0.073 U

mg/kg: Milligrams per kilogram.
U: Not detected.

TABLE 14
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES
RCRA METALS NOT INCLUDING MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
Arsenic	(mg/kg)	7.5	4.2	13.6	12.0	43.0	19.7
Barium	(mg/kg)	300	3.4 B	8.53 B	6.32 B	2.490 B	2.080 B
Cadmium	(mg/kg)	1.0	0.039 U	0.038 U	0.038 U	0.040 U	0.042 U
Chromium	(mg/kg)	10	4.01	5.32	3.31	3.37	2.9
Lead	(mg/kg)	500*	1.0	0.887	0.388 B	0.431 B	0.839
Selenium	(mg/kg)	2.0	0.401 U	0.392 U	0.392 U	0.411 U	0.429 U
Silver	(mg/kg)	--	0.093 U	0.091 U	0.091 U	0.095 U	0.099 U

mg/kg: Milligrams per kilogram.
U: Not detected.
--: No standard.
*: Maximum concentration for metropolitan areas.
B: Detected between IDL and CRDL.
IDL: Instrument detection limit.
CRDL: Contract required detection limit.
Boxed and shaded exceed standard

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
1,1,1-Trichloroethane	(ug/kg)	800	0.50 U	0.49 U	0.49 U	0.51 U	0.52 U
1,1,2,2-Tetrachloroethane	(ug/kg)	600	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U
1,1,2-Trichloroethane	(ug/kg)	--	0.79 U	0.78 U	0.78 U	0.81 U	0.83 U
1,1-Dichloroethane	(ug/kg)	200	0.35 U	0.35 U	0.35 U	0.36 U	0.37 U
1,1-Dichloroethylene	(ug/kg)	400	0.32 U	0.32 U	0.32 U	0.33 U	0.34 U
1,2,4-Trichlorobenzene	(ug/kg)	3400	0.68 U	0.67 U	0.67 U	0.70 U	0.72 U
1,2-Dichloroethane	(ug/kg)	100	0.81 U	0.80 U	0.80 U	0.83 U	0.85 U
1,2-Dichloropropane	(ug/kg)	--	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
2-Hexanone	(ug/kg)	--	0.48 U	0.47 U	0.47 U	0.49 U	0.50 U
Acetone	(ug/kg)	200	0.46 U	0.45 U	0.45 U	0.47 U	0.48 U
Benzene	(ug/kg)	60	0.37 U	0.36 U	0.36 U	0.37 U	0.38 U
Benzene, 1-methylethyl-	(ug/kg)	--	0.47 U	0.47 U	0.47 U	0.48 U	0.50 U
Bromodichloromethane	(ug/kg)	--	0.66 U	0.66 U	0.66 U	0.68 U	0.70 U
Bromoform	(ug/kg)	--	0.65 U	0.64 U	0.64 U	0.66 U	0.68 U
Carbon disulfide	(ug/kg)	2700	3.4 U	3.3 U	3.3 U	3.4 U	3.5 U
Carbon tetrachloride	(ug/kg)	600	4.3 U	4.2 U	4.2 U	4.4 U	4.5 U
Chlorobenzene	(ug/kg)	1700	2.4 U	2.3 U	2.3 U	2.4 U	2.5 U
Chloroethane	(ug/kg)	1900	4.0 U	4.0 U	4.0 U	4.1 U	4.2 U
Chloroform	(ug/kg)	300	0.48 U	0.47 U	0.47 U	0.49 U	0.50 U
cis-1,2-Dichloroethylene	(ug/kg)	--	0.40 U	0.39 U	0.39 U	0.41 U	0.42 U
cis-1,3-Dichloropropene	(ug/kg)	--	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U
Cyclohexane	(ug/kg)	--	2.4 U	2.4 U	2.4 U	2.5 U	2.5 U
DBCP	(ug/kg)	--	0.44 U	0.43 U	0.43 U	0.45 U	0.46 U
Dibromochloromethane	(ug/kg)	--	0.53 U	0.52 U	0.52 U	0.54 U	0.55 U
Dichlorodifluoromethane	(ug/kg)	--	0.43 U	0.43 U	0.43 U	0.44 U	0.45 U
EDB	(ug/kg)	--	2.5 U	2.5 U	2.5 U	2.6 U	2.7 U
trans- 1,2-dichloroethene	(ug/kg)	300	0.41 U	0.41 U	0.41 U	0.42 U	0.44 U

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No Standard.

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
Ethylbenzene	(ug/kg)	5500	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U
Freon 113	(ug/kg)	6000	0.39 U	0.38 U	0.38 U	0.40 U	0.40 U
m-Dichlorobenzene	(ug/kg)	1600	0.27 U	0.27 U	0.27 U	0.28 U	0.29 U
Methyl Acetate	(ug/kg)	--	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U
Methyl bromide	(ug/kg)	--	0.42 U	0.42 U	0.42 U	0.43 U	0.44 U
Methyl chloride	(ug/kg)	--	0.50 U	0.49 U	0.49 U	0.51 U	0.52 U
Methyl ethyl ketone	(ug/kg)	300	1.0 U	1.0 U	1.0 U	1.1 U	1.1 U
Methyl isobutylketone (MIBK)	(ug/kg)	1000	0.44 U	0.43 U	0.43 U	0.45 U	0.46 U
Methylcyclohexane	(ug/kg)	--	0.50 U	0.49 U	0.49 U	0.51 U	0.52 U
Methylene chloride	(ug/kg)	100	2.2 U	2.1 U	4.9 U	2.2 U	25.0 U
Methyltert-butylether	(ug/kg)	--	0.55 U	0.54 U	0.54 U	0.56 U	0.57 U
o-Dichlorobenzene	(ug/kg)	7900	0.87 U	0.86 U	0.86 U	0.89 U	0.91 U
o-Xylene	(ug/kg)	1200	0.48 U	0.48 U	0.48 U	0.49 U	0.51 U
p-Dichlorobenzene	(ug/kg)	8500	0.37 U	0.36 U	0.36 U	0.38 U	0.38 U
m&p-Xylene	(ug/kg)	1200	1.5 U	1.5 U	1.5 U	1.5 U	1.6 U
Styrene	(ug/kg)	--	0.98 U	0.97 U	0.97 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	(ug/kg)	--	0.39 U	0.38 U	0.38 U	0.40 U	0.41 U
Trichloroethylene	(ug/kg)	700	0.39 U	0.39 U	0.39 U	0.40 U	0.41 U
Trichlorofluoromethane	(ug/kg)	--	1.0 U	1.0 U	1.0 U	1.1 U	1.1 U
Vinyl chloride	(ug/kg)	200	0.46 U	0.45 U	0.45 U	0.47 U	0.48 U
Tetrachloroethylene	(ug/kg)	1400	0.43 U	0.43 U	0.43 U	0.44 U	0.45 U
Toluene	(ug/kg)	1500	0.76 U	0.75 U	0.75 U	0.78 U	0.80 U
TOTAL VOLATILE ORGANICS	(ug/kg)	10000	0	0	0	0	0

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
--: No Standard.

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)	50,000*	63 U	62 U	62 U	65 U	67 U
2,4,5-Trichlorophenol	(ug/kg)	100	60 U	59 U	59 U	62 U	63 U
2,4,6-Trichlorophenol	(ug/kg)	50,000*	58 U	57 U	57 U	59 U	61 U
2,4-Dichlorophenol	(ug/kg)	400	72 U	72 U	72 U	74 U	77 U
2,4-Dimethylphenol	(ug/kg)	50,000*	62 U	61 U	61 U	64 U	66 U
2,4-Dinitrophenol	(ug/kg)	200 or MDL	340 U	330 U	330 U	340 U	360 U
2,4-Dinitrotoluene	(ug/kg)	50,000*	58 U	57 U	57 U	59 U	61 U
2,6-Dinitrotoluene	(ug/kg)	1,000	55 U	55 U	55 U	57 U	59 U
2-Chloronaphthalene	(ug/kg)	50,000*	65 U	64 U	64 U	67 U	69 U
2-Chlorophenol	(ug/kg)	800	63 U	62 U	62 U	64 U	66 U
2-Methylnaphthalene	(ug/kg)	36,400	66 U	65 U	65 U	67 U	69 U
3,3-Dichlorobenzidine	(ug/kg)	50,000*	67 U	66 U	66 U	69 U	71 U
4,6-Dinitro-o-cresol	(ug/kg)	50,000*	76 U	75 U	75 U	78 U	81 U
4-Bromofluorobenzene	(ug/kg)	50,000*	59 U	58 U	58 U	60 U	62 U
4-Chlorophenylphenyl ether	(ug/kg)	50,000*	62 U	61 U	61 U	64 U	66 U
Acenaphthene	(ug/kg)	50,000*	70 U	69 U	69 U	72 U	74 U
Acenaphthylene	(ug/kg)	41,000	64 U	63 U	63 U	65 U	67 U
Acetophenone	(ug/kg)	50,000*	57 U	57 U	57 U	59 U	61 U
Anthracene	(ug/kg)	50,000*	59 U	58 U	58 U	61 U	63 U
Atrazine	(ug/kg)	50,000*	60 U	59 U	59 U	62 U	64 U
Benzaldehyde	(ug/kg)	50,000*	80 U	79 U	79 U	83 U	85 U
Benzo(a)anthracene	(ug/kg)	224 or MDL	55 U	54 U	54 U	56 U	58 U
Benzo(a)pyrene	(ug/kg)	61 or MDL	63 U	62 U	62 U	64 U	66 U
Benzo(b)fluoranthene	(ug/kg)	1,100	43 U	43 U	43 U	44 U	46 U
Benzo(ghi)perylene	(ug/kg)	50,000*	65 U	64 U	64 U	67 U	69 U
Benzo(k)fluoranthene	(ug/kg)	1,100	86 U	85 U	85 U	89 U	91 U

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
B: Detected in associated blank
--: No Standard or not analyzed.
*: As per 4046 individual SVOCs.
MDL: Method detection limit.

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
Biphenyl	(ug/kg)		65 U	64 U	64 U	66 U	68 U
Bis(2-chloroethoxy)methane	(ug/kg)	50,000*	64 U	64 U	64 U	66 U	68 U
Bis(2-chloroethyl)ether	(ug/kg)	50,000*	62 U	61 U	61 U	64 U	66 U
Bis(2-ethylhexyl)phthalate	(ug/kg)	50,000*	75 U	74 U	74 U	77 U	80 U
Butylbenzylphthalate	(ug/kg)	50,000*	63 U	63 U	63 U	65 U	67 U
Caprolactam	(ug/kg)	50,000*	63 U	62 U	62 U	65 U	67 U
Carbazole	(ug/kg)	50,000*	60 U	59 U	59 U	61 U	63 U
Chrysene	(ug/kg)	400	70 U	69 U	69 U	72 U	75 U
Dibenz(a,h)anthracene	(ug/kg)	14 or MDL	49 U	49 U	49 U	50 U	52 U
Dibenzofuran	(ug/kg)	6,200	65 U	64 U	64 U	67 U	69 U
Diethylphthalate	(ug/kg)	7,100	68 U	67 U	67 U	69 U	72 U
Dimethylphthalate	(ug/kg)	2,000	63 U	62 U	62 U	65 U	67 U
Di-n-butylphthalate	(ug/kg)	8,100	60 U	59 U	59 U	61 U	63 U
Di-n-octyl phthalate	(ug/kg)	50,000*	67 U	66 U	66 U	68 U	71 U
Fluoranthene	(ug/kg)	50,000*	58 U	58 U	58 U	60 U	62 U
Fluorene	(ug/kg)	50,000*	66 U	65 U	65 U	68 U	70 U
Hexachlorobenzene	(ug/kg)	410	63 U	62 U	62 U	64 U	66 U
Hexachlorobutadiene	(ug/kg)	50,000*	60 U	60 U	60 U	62 U	64 U
Hexachlorocyclopentadiene	(ug/kg)	50,000*	63 U	62 U	62 U	64 U	66 U
Hexachloroethane	(ug/kg)	50,000*	67 U	66 U	66 U	68 U	71 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3,200	50 U	49 U	49 U	51 U	53 U
Isophorone	(ug/kg)	4,400	59 U	58 U	58 U	60 U	62 U
3-Nitroaniline	(ug/kg)	500 or MDL	51 U	50 U	50 U	52 U	54 U
Naphthalene	(ug/kg)	13,000	67 U	66 U	66 U	69 U	71 U
Nitrobenzene	(ug/kg)	200 or MDL	86 U	84 U	84 U	88 U	91 U
N-Nitrosodiphenylamine	(ug/kg)	50,000*	65 U	64 U	64 U	66 U	68 U
N-Nitroso-di-n-propylamine	(ug/kg)	50,000*	65 U	64 U	64 U	67 U	69 U

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
B: Detected in associated blank

--: No Standard or not analyzed.
*: Standard for individual SVOCs as per 4046.
MDL: Method detection limit.

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
2-Methylphenol	(ug/kg)	100 or MDL	65 U	64 U	64 U	67 U	69 U
2-Nitroaniline	(ug/kg)	430 or MDL	50 U	49 U	49 U	51 U	53 U
2-Nitrophenol	(ug/kg)	330 or MDL	60 U	60 U	60 U	62 U	64 U
4-Chloroaniline	(ug/kg)	220 or MDL	47 U	46 U	46 U	48 U	49 U
4-Chloro-3-methylphenol	(ug/kg)	240 or MDL	54 U	53 U	53 U	56 U	57 U
Pentachlorophenol	(ug/kg)	1,000 or MDL	91 U	90 U	90 U	93 U	96 U
3-Methylphenol/4-Methylphenol	(ug/kg)	900	62 U	61 U	61 U	63 U	65 U
Phenanthrene	(ug/kg)	50,000*	62 U	62 U	62 U	64 U	66 U
Phenol	(ug/kg)	30 or MDL	59 U	59 U	59 U	61 U	63 U
4-Nitroaniline	(ug/kg)	50,000*	67 U	66 U	66 U	69 U	71 U
4-Nitrophenol	(ug/kg)	100 or MDL	49 U	48 U	48 U	50 U	51 U
Pyrene	(ug/kg)	50,000*	69 U	68 U	68 U	71 U	73 U
Total Semivolatile Organics	(ug/kg)	500,000	0	0	0	0	0

ug/kg: Micrograms per kilogram.
U: Not detected.
J: Estimated value.
B: Detected in associated blank

--: No Standard or not analyzed.
*: Standard for individual SVOCs as per 4046.
MDL: Method detection limit.

TABLE 17
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
Aroclor 1016	(ug/kg)	10,000	3.0 U	2.9 U	2.9 U	3.0 U	3.1 U
Aroclor 1221	(ug/kg)	10,000	4.6 U	4.6 U	4.5 U	4.7 U	4.9 U
Aroclor 1232	(ug/kg)	10,000	6.9 U	6.8 U	6.8 U	7.1 U	7.3 U
Aroclor 1242	(ug/kg)	10,000	6.1 U	6.1 U	6.0 U	6.3 U	6.5 U
Aroclor 1248	(ug/kg)	10,000	3.0 U	2.9 U	2.9 U	3.1 U	3.1 U
Aroclor 1254	(ug/kg)	10,000	1.9 U	1.9 U	1.9 U	2.0 U	2.0 U
Aroclor 1260	(ug/kg)	10,000	4.9 U	4.9 U	4.9 U	5.1 U	5.2 U
Total PCBs (subsurface soil)	(ug/kg)	10,000	0	0	0	0	0

ug/kg: Micrograms per kilogram.
U: Not detected.
--: No Standard.

TABLE 18
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
DRYWELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM SOIL CLEANUP OBJECTIVES
TOTAL PETROLEUM HYDROCARBONS (TPH)

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 SCO	VSSB-01A VSSB-01A(12-14) 11/21/2005	VSSB-01A VSSB-01A(14-16) 11/21/2005	VSSB-01A VSSB-01A(16-18) 11/21/2005	VSSB-01A VSSB-01A(18-20) 11/21/2005	VSSB-01A VSSB-01A(20-22) 11/21/2005
TPH	(ug/kg)	--	7476 U	7335 U	7359 U	7617 U	7846 U

ug/kg: Micrograms per kilogram.
--: No Standard.

TABLE 19
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
Mercury	(mg/kg)	5.7	1.9

mg/kg: Milligrams per kilogram.

TABLE 20
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
RCRA METALS NOT INCLUDING MERCURY

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
Arsenic	(mg/kg)	16.0	65.5
Barium	(mg/kg)	10000	55.8
Cadmium	(mg/kg)	60.0	0.042 U
Chromium	(mg/kg)	6800	44.6
Lead	(mg/kg)	3900	116
Selenium	(mg/kg)	6800	0.436 U
Silver	(mg/kg)	6800	5.34

mg/kg: Milligrams per kilogram.
U: Not detected.
Boxed and shaded exceed standard

TABLE 21
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
1,1,1-Trichloroethane	(ug/kg)	--	0.55 U
1,1,2,2-Tetrachloroethane	(ug/kg)	--	0.41 U
1,1,2-Trichlorotrifluoroethane	(ug/kg)	--	0.87 U
1,1,2-Trichloroethane	(ug/kg)	--	0.38 U
1,1-Dichloroethane	(ug/kg)	--	0.35 U
1,1-Dichloroethene	(ug/kg)	--	0.75 U
1,2,4-Trichlorobenzene	(ug/kg)	--	0.89 U
1,2-Dibromo-3-chloropropane	(ug/kg)	--	1.2 U
1,2-Dibromoethane	(ug/kg)	--	0.53 U
1,2-Dichlorobenzene	(ug/kg)	1000000	0.50 U
1,2-Dichloroethane	(ug/kg)	--	0.40 U
1,2-Dichloropropane	(ug/kg)	--	0.52 U
1,3-Dichlorobenzene	(ug/kg)	--	0.73 U
1,4-Dichlorobenzene	(ug/kg)	--	0.71 U
2-Butanone	(ug/kg)	--	3.7 U
2-Hexanone	(ug/kg)	--	4.7 U
4-Methyl-2-pentanone	(ug/kg)	1000000	2.6 U
Acetone	(ug/kg)	--	4.4 U
Benzene	(ug/kg)	--	0.52 U
Bromodichloromethane	(ug/kg)	--	0.44 U
Bromoform	(ug/kg)	--	0.41 U
Bromomethane	(ug/kg)	--	2.6 U
Carbon disulfide	(ug/kg)	--	0.48 U
Carbon tetrachloride	(ug/kg)	--	0.58 U
Chlorobenzene	(ug/kg)	--	0.47 U
Chloroethane	(ug/kg)	--	2.8 U
Chloroform	(ug/kg)	1000000	0.45 U

ug/kg: Micrograms per kilogram.
U: Not detected.
--: No Standard.

TABLE 21
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
Chloromethane	(ug/kg)	--	1.1 U
Cyclohexane	(ug/kg)	--	0.42 U
Dibromochloromethane	(ug/kg)	560000	0.30 U
Dichlorodifluoromethane	(ug/kg)	--	1.1 U
Ethyl benzene	(ug/kg)	--	0.46 U
Isopropylbenzene	(ug/kg)	--	0.54 U
Methyl Acetate	(ug/kg)	1000000	1.1 U
Methyl tert-butyl ether	(ug/kg)	--	0.48 U
Methylcyclohexane	(ug/kg)	--	0.55 U
Methylene chloride	(ug/kg)	1000000	2.4 U
Styrene	(ug/kg)	1000000	0.60 U
Tetrachloroethene	(ug/kg)	1000000	0.95 U
Toluene	(ug/kg)	--	0.53 U
Trichloroethene	(ug/kg)	250000	0.40 U
Trichlorofluoromethane	(ug/kg)	--	1.6 U
Vinyl chloride	(ug/kg)	--	1.1 U
cis-1,2-Dichloroethene	(ug/kg)	--	0.42 U
cis-1,3-Dichloropropene	(ug/kg)	--	0.43 U
m,p-Xylene	(ug/kg)	--	1.1 U
o-Xylene	(ug/kg)	--	0.50 U
t-1,3-Dichloropropene	(ug/kg)	--	0.47 U
trans-1,2-Dichloroethene	(ug/kg)	--	0.83 U
TOTAL VOLATILE ORGANICS	(ug/kg)	--	0

ug/kg: Micrograms per kilogram.
U: Not detected.
--: No Standard.

TABLE 22
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)	--	69 U
2,4,5-Trichlorophenol	(ug/kg)	--	65 U
2,4,6-Trichlorophenol	(ug/kg)	--	63 U
2,4-Dichlorophenol	(ug/kg)	--	79 U
2,4-Dimethylphenol	(ug/kg)	--	68 U
2,4-Dinitrophenol	(ug/kg)	--	360 U
2,4-Dinitrotoluene	(ug/kg)	--	63 U
2,6-Dinitrotoluene	(ug/kg)	--	60 U
2-Chloronaphthalene	(ug/kg)	--	71 U
2-Chlorophenol	(ug/kg)	--	68 U
2-Methylnaphthalene	(ug/kg)	--	71 U
3,3-Dichlorobenzidine	(ug/kg)	--	73 U
4,6-Dinitro-o-cresol	(ug/kg)	--	83 U
4-Bromofluorobenzene	(ug/kg)	--	64 U
4-Chlorophenylphenyl ether	(ug/kg)	--	67 U
Acenaphthene	(ug/kg)	1000000	76 U
Acenaphthylene	(ug/kg)	1000000	69 U
Acetophenone	(ug/kg)	--	62 U
Anthracene	(ug/kg)	1000000	64 U
Atrazine	(ug/kg)	--	65 U
Benzaldehyde	(ug/kg)	--	87 U
Benzo(a)anthracene	(ug/kg)	11000	300 B
Benzo(a)pyrene	(ug/kg)	1100	290 B
Benzo(b)fluoranthene	(ug/kg)	11000	420 B
Benzo(ghi)perylene	(ug/kg)	1000000	120 B
Benzo(k)fluoranthene	(ug/kg)	110000	94 U

ug/kg: Micrograms per kilogram.
U: Not detected.
B: Detected in associated blank
--: No Standard.

TABLE 22
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
Biphenyl	(ug/kg)	--	70 U
Bis(2-chloroethoxy)methane	(ug/kg)	--	70 U
Bis(2-chloroethyl)ether	(ug/kg)	--	67 U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	--	82 U
Butyl benzyl phthalate	(ug/kg)	--	69 U
Caprolactam	(ug/kg)	--	68 U
Carbazole	(ug/kg)	--	65 U
Chrysene	(ug/kg)	110000	340 B
Dibenzo(a,h)anthracene	(ug/kg)	1100	53 U
Dibenzofuran	(ug/kg)	1000000	70 U
Diethyl phthalate	(ug/kg)	--	73 U
Dimethyl phthalate	(ug/kg)	--	68 U
Di-n-butyl phthalate	(ug/kg)	--	67 B
Di-n-octyl phthalate	(ug/kg)	--	72 U
Fluoranthene	(ug/kg)	1000000	340 B
Fluorene	(ug/kg)	1000000	72 U
Hexachlorobenzene	(ug/kg)	12000	68 U
Hexachlorobutadiene	(ug/kg)	--	66 U
Hexachlorocyclopentadiene	(ug/kg)	--	68 U
Hexachloroethane	(ug/kg)	--	72 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	11000	75 B
Isophorone	(ug/kg)	--	64 U
m-Nitroaniline	(ug/kg)	--	55 U
Naphthalene	(ug/kg)	1000000	73 U
Nitrobenzene	(ug/kg)	--	93 U
N-Nitrosodiphenylamine	(ug/kg)	--	70 U
N-Nitrosodipropylamine	(ug/kg)	--	71 U

ug/kg: Micrograms per kilogram.
U: Not detected.
B: Detected in associated blank
--: No Standard.

SAMPLE TYPE: Soil

TABLE 22
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
o-Cresol	(ug/kg)	1000000	71 U
o-Nitroaniline	(ug/kg)	--	54 U
o-Nitrophenol	(ug/kg)	--	66 U
p-Chloroaniline	(ug/kg)	--	51 U
p-Chloro-m-cresol	(ug/kg)	--	59 U
PCP	(ug/kg)	55000	99 U
p-Cresol	(ug/kg)	1000000	67 U
Phenanthrene	(ug/kg)	1000000	140 B
Phenol	(ug/kg)	1000000	64 U
p-Nitroaniline	(ug/kg)	--	73 U
p-Nitrophenol	(ug/kg)	--	53 U
Pyrene	(ug/kg)	1000000	550
Total Semivolatile Organics	(ug/kg)	--	2642

ug/kg: Micrograms per kilogram.
U: Not detected.
B: Detected in associated blank
--: No Standard.

TABLE 23
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
Aroclor 1016	(ug/kg)	--	3.3 U
Aroclor 1221	(ug/kg)	--	5.1 U
Aroclor 1232	(ug/kg)	--	7.6 U
Aroclor 1242	(ug/kg)	--	6.7 U
Aroclor 1248	(ug/kg)	--	3.3 U
Aroclor 1254	(ug/kg)	--	230
Aroclor 1260	(ug/kg)	--	5.4 U
Total PCBs (surface soil)	(ug/kg)	25000	230

ug/kg: Micrograms per kilogram.
U: Not detected.
--: No Standard.

TABLE 24
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
NEGATIVE FEED CABLE PIT SEDIMENT SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
TOTAL PETROLEUM HYDROCARBONS (TPH)

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Industrial Use SCOs	VSSS-10 VSSS-10 11/22/2005
TPH	(ug/kg)	--	25400

ug/kg: Micrograms per kilogram.
--: No Standard.

TABLE 25
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Toxicity Characteristic Leaching Procedure	VSWC-01 VSWC-01(0-2) 6/24/2010	VSWC-01 VSWC-0-1(2-4) 6/24/2010	VSWC-02 VSWC-02(0-2) 6/23/2010	VSWC-02 VSWC-02(2-4) 6/23/2010
1,1-Dichloroethylene	(ug/l)	700	2.4 U	2.4 U	2.4 U	2.4 U
1,2-Dichloroethane	(ug/l)	500	2.4 U	2.4 U	2.4 U	2.4 U
Benzene	(ug/l)	500	1.6 U	1.6 U	1.6 U	1.6 U
Carbon tetrachloride	(ug/l)	500	3.1 U	3.1 U	3.1 U	3.1 U
Chlorobenzene	(ug/l)	100000	2.4 U	2.4 U	2.4 U	2.4 U
Chloroform	(ug/l)	6000	1.7 U	1.7 U	1.7 U	1.7 U
Tetrachloroethylene	(ug/l)	700	1.4 U	1.4 U	1.4 U	1.4 U
Trichloroethylene	(ug/l)	500	1.4 U	1.4 U	1.4 U	1.4 U
Vinyl chloride	(ug/l)	200	1.7 U	1.7 U	1.7 U	1.7 U
Methyl ethyl ketone	(ug/l)	200000	6.6 U	6.6 U	6.6 U	6.6 U
2,4,5-Trichlorophenol	(ug/l)	400000	4 U	4 U	4 U	4 U
2,4,6-Trichlorophenol	(ug/l)	2000	5.6 U	5.6 U	5.6 U	5.6 U
2,4-Dinitrotoluene	(ug/l)	130	10 U	10 U	10 U	10 U
Hexachlorobenzene	(ug/l)	130	1.8 U	1.8 U	1.8 U	1.8 U
Hexachlorobutadiene	(ug/l)	500	2.5 U	2.5 U	2.5 U	2.5 U
Hexachloroethane	(ug/l)	3000	2.5 U	2.5 U	2.5 U	2.5 U
Nitrobenzene	(ug/l)	2000	6.8 U	6.8 U	6.8 U	6.8 U
o-Cresol	(ug/l)	200000	2.4 U	2.4 U	2.4 U	2.4 U
PCP	(ug/l)	100000	17 U	17 U	17 U	17 U
p-Cresol	(ug/l)	200000	3.8 U	3.8 U	3.8 U	3.8 U
p-Dichlorobenzene	(ug/l)	7500	2 U	2 U	2 U	2 U
2,4-D	(ug/l)	10000	3.48 U	3.48 U	3.48 U	3.48 U
Chlordane	(ug/l)	30	3.1 U	3.1 U	3.1 U	3.1 U
Endrin	(ug/l)	20	0.058 U	0.058 U	0.058 U	0.058 U
Heptachlor	(ug/l)	8	0.069 U	0.069 U	0.069 U	0.069 U
Heptachlor epoxide	(ug/l)	8	0.067 U	0.067 U	0.067 U	0.067 U
Lindane	(ug/l)	400	0.055 U	0.055 U	0.055 U	0.055 U

ug/l: Micrograms per liter.
U: Not detected.
J: Estimated value.

TABLE 25
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Toxicity Characteristic Leaching Procedure	VSWC-01 VSWC-01(0-2) 6/24/2010	VSWC-01 VSWC-0-1(2-4) 6/24/2010	VSWC-02 VSWC-02(0-2) 6/23/2010	VSWC-02 VSWC-02(2-4) 6/23/2010
Methoxychlor	(ug/l)	10000	0.042 U	0.042 U	0.042 U	0.042 U
Pyridine	(ug/l)	5000	43 U	43 U	43 U	43 U
Toxaphene	(ug/l)	500	3.6 U	3.6 U	3.6 U	3.6 U
Silvex	(ug/l)	1000	1.51 U	1.51 U	1.51 U	1.51 U
Arsenic	(ug/l)	5000	42 U	42 U	42 U	42 U
Barium	(ug/l)	100000	137 J	107 J	229 J	146 J
Cadmium	(ug/l)	1000	5 U	5 U	45.9	5 U
Chromium	(ug/l)	5000	13 J	16.4 J	11 U	11 U
Lead	(ug/l)	5000	26 U	26 U	558	26 U
Mercury	(ug/l)	200	0.91 U	2.7	0.93 J	0.91 U
Selenium	(ug/l)	1000	48 U	48 U	48 U	48 U
Silver	(ug/l)	5000	15 U	15 U	15 U	15 U

ug/l: Micrograms per liter.
U: Not detected.
J: Estimated value.

TABLE 26
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
VALLEY STREAM SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
RCRA CHARACTERISTICS

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	VSWC-01 VSWC-01(0-2) 6/24/2010	VSWC-01 VSWC-0-1(2-4) 6/24/2010	VSWC-02 VSWC-02(0-2) 6/23/2010	VSWC-02 VSWC-02(2-4) 6/23/2010
Corrosivity	(mg/kg)	6.98	6.37	6.47	6.04
Cyanide(reactive)	(mg/kg)	10 U	10 U	10 U	10 U
Ignitability	(mg/kg)	NI	NI	NI	NI
Sulfide	(mg/kg)	40 U	40 U	40 U	40 U

mg/kg: Milligrams per kilogram.
U: Not detected.
NI: Not ignitable.

APPENDIX C

DELINEATION PHASE II BORING LOGS

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-01A Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/21/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/21/05	Boring Completion Depth: 22' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 6'	0	---	72	0.000	0.0	VOID	
6' - 8'	0	GP	24	0.000	0.0	6'-6.5' Dark brown, fine to medium SILTY CLAYEY SAND, some fine to medium gravel, loose. 6.5'-8' Tan-orange, fine to medium SAND, trace fine to medium gravel, loose.	
8' - 10'	0	GP	24	0.006	0.0	Same as 6.5'-8'.	
10' - 12'	0	GP	24	0.004	0.0	Tan, fine to medium SAND, trace fine to medium gravel, loose.	
12' - 14'	1	GP	24	0.004	0.0	Orange-tan, fine to medium SAND, little fine to medium gravel, loose.	
14' - 16'	2	GP	24	0.004	0.0	Tan-light brown, fine to medium SAND, trace fine gravel, loose.	
16' - 18'	3	GP	24	0.006	0.0	Tan, fine SAND, some medium sand, trace fine gravel, loose.	
18' - 20'	4	GP	24	0.000	0.0	Same as above.	
20' - 22'	5	GP	24	0.00	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for UIC constituent analysis were collected from 12'-14', 14'-16', 16'-18', 18'-20' and 20'-22'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-04A Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/18/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/18/05	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" Crushed STONE. 6"-2' Brown, fine to medium SILTY SAND, some clay and fine to coarse gravel, loose.	
2' - 4'	1	HA	24	0.007	0.0	Dark brown, fine to medium CLAYEY SAND, little fine to medium gravel, dense.	
4' - 6'	2	HA	24	0.004	0.0	4'-5' Tan, fine SAND and CLAY, trace fine gravel. 5'-6' Tan fine SAND, little fine gravel and clay.	
6' - 8'	3	HA	24	0.004	0.0	Orange to tan fine SAND, little medium sand and fine gravel, loose.	
8' - 10'	4	HA	24	0.000	0.0	Tan to orange, fine SAND, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 6'-8', and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-05A Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/18/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/27/05	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" Crushed STONE. 6"-2' Brown, fine to medium SILTY SAND and fine to medium GRAVEL, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some clay and fine to medium gravel, loose.	
4' - 6'	2	HA	24	0.000	0.0	4'-5' Orange brown, fine to medium SAND and CLAY, little fine gravel.	
6' - 8'	3	HA	24	0.000	0.0	Tan, fine SAND, little fine gravel, some clay, loose.	
8' - 10'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-06A** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/18/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/18/05	**Boring Completion Depth:** 10' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-1' Crushed STONE. 1'-2' Brown to dark brown, fine to medium CLAYEY SAND, some fine to coarse gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium CLAYEY SAND, little fine to medium gravel, loose.	
4' - 6'	2	HA	24	0.000	0.0	Tan, fine SAND, some medium sand and fine gravel, loose.	
6' - 8'	3	HA	24	0.000	0.0	Orange to tan, fine to medium SAND, little fine to medium gravel.	
8' - 10'	4	HA	24	0.000	0.0	Orange to tan, fine to medium SAND, some fine gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 6'-8', and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-07** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/18/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/18/05	**Boring Completion Depth:** 10' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.008	0.0	0-1' Crushed STONE 1'-2' Dark brown, fine to medium SILTY SAND, some fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Orange brown, fine to medium SAND, some fine to coarse gravel, some clay.	
4' - 6'	2	HA	24	0.000	0.0	Orange brown, fine to medium SAND and CLAY, some fine to medium gravel, dense.	
6' - 8'	3	GP	24	0.000	0.0	Tan, fine SAND, some medium sand and fine gravel, dense.	
8' - 10'	4	GP	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-08 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 8/10/06	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 8/10/06	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" Brown, fine SILTY SAND, some fine to medium gravel and ballast, loose, dry. 6"-2' Brown, fine SILTY SAND, some coal clinker, little fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine SILTY SAND, little fine to medium gravel, loose, dry.	
4' - 6'	2	HA	24	0.000	0.0	Tan-brown, fine to medium clayey SAND, little fine gravel and clay, loose.	
6' - 8'	3	GP	24	0.000	0.0	Tan-light brown, fine to medium GRAVEL, some fine to medium sand, loose, moist.	
8' - 10'	4	GP	24	0.000	0.0	Tan, fine to medium SAND, little fine gravel, loose, moist. Groundwater at 9'.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6', 6'-8', and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-09** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/18/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/18/05	**Boring Completion Depth:** 10' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-8" Crushed STONE. 8"-2' Dark brown, fine to medium SILTY SAND, some fine to coarse gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some clay and fine to medium gravel, loose.	
4' - 6'	2	HA	24	0.000	0.0	Orange brown, fine to medium CLAYEY SAND, some medium gravel, loose.	
6' - 8'	3	HA	24	0.000	0.0	Tan, fine SAND, some medium sand and fine gravel, loose.	
8' - 10'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-10 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 8/10/06	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 8/10/06	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" Brown, fine SILTY SAND, some fine to medium gravel and ballast, loose, dry. 6"-2' Brown, fine SILTY SAND, some slag, little fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine SILTY SAND, little fine to medium gravel, loose, dry.	
4' - 6'	2	HA	24	0.000	0.0	Tan-brown, fine to medium CLAYEY SAND, little fine gravel and clay, loose.	
6' - 8'	3	GP	24	0.000	0.0	Tan-light brown, fine to medium GRAVEL, some fine to medium sand, loose, moist.	
8' - 10'	4	GP	24	0.000	0.0	Tan, fine to medium SAND, little fine gravel, loose, moist. Groundwater at 9'.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6', 6'-8', and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-11 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/18/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/18/05	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-1' Crushed STONE. 1'-2' Orange brown, fine to medium SAND, some clay and fine to coarse gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Orange brown, fine to medium CLAYEY SAND, some fine gravel, loose.	
4' - 6'	2	HA	24	0.000	0.0	Tan, fine to medium SAND, some fine gravel.	
6' - 8'	3	HA	24	0.000	0.0	Same as above.	
8' - 10'	4	HA	24	0.000	0.0	Tan, fine to medium SAND and fine GRAVEL, trace medium gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-12** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/10/06	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/10/06	**Boring Completion Depth:** 10' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" Brown, fine SILTY SAND, little medium sand and ballast, loose, dry. 6-"2' Brown, fine SILTY SAND, little fine gravel, loose, dry.	
2' - 4'	1	HA	24	0.000	0.0	Brown-dark brown, fine SAND, some fine to coarse gravel, loose, dry.	
4' - 6'	2	HA	24	0.000	0.0	Brown to dark-brown, fine to medium CLAYEY SAND, little fine to coarse gravel, loose.	
6' - 8'	3	GP	24	0.000	0.0	Brown to dark-brown, fine to medium CLAYEY SAND, little fine to coarse gravel, loose, moist.	
8' - 10'	4	GP	24	0.000	0.0	Tan, fine to medium CLAYEY SAND, some fine gravel, loose, moist. Groundwater at 9'.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-13 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/22/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/22/05	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-5" Crushed STONE. 5"-2' Dark brown, fine to medium SILTY SAND, some clay and fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Orange tan, fine SAND and CLAY.	
4' - 6'	2	HA	24	0.000	0.0	Tan to gray, fine SAND, some clay and fine gravel, loose.	
6' - 8'	3	HA	24	0.000	0.0	Same as above.	
8' - 10'	4	HA	24	0.000	0.0	Brown, fine to coarse SAND, trace fine gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-14** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/22/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/22/05	**Boring Completion Depth:** 10' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brown, fine to medium SILTY SAND, some clay and fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	
4' - 6'	2	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine gravel and clay, loose.	
6' - 8'	3	HA	24	0.000	0.0	Tan-brown, fine to medium SAND, some fine to medium gravel and clay.	
8' - 10'	4	HA	24	0.000	0.0	Tan, fine SAND, some medium sand and fine gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-15 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/22/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/22/05	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-4" Crushed STONE. 4"-2' Dark brown, fine to medium SILTY SAND, some clay and fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Dark brown, fine to medium SAND, some clay and fine to medium gravel.	
4' - 6'	2	HA	24	0.000	0.0	Orange-tan, fine SAND, some clay and medium sand, tan fine gravel, loose.	
6' - 8'	3	HA	24	0.000	0.0	Same as above.	
8' - 10'	4	HA	24	0.000	0.0	Tan, fine SAND, little fine gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 2'-4', 4'-6', 6'-8', and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-16** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/22/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/22/05	**Boring Completion Depth:** 10' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-4" Crushed STONE. 4"-2' Dark brown, fine to medium SILTY SAND, some fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some clay, little fine to coarse gravel, loose.	
4' - 6'	2	HA	24	0.000	0.0	Orange brown, fine SAND, little clay, trace fine gravel, loose.	
6' - 8'	3	HA	24	0.000	0.0	Orange brown to tan, fine SAND, little clay, trace fine gravel.	
8' - 10'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-17 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/21/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/21/05	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Orange brown, fine to medium SILTY SAND, some clay and fine to coarse gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-18 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/21/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/21/05	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SILTY SAND, some fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-19** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/21/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/21/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SILTY SAND, little fine to coarse gravel and brick fragments, loose.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-20 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/21/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/21/05	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SILTY SAND, some fine to medium gravel and brick fragments, loose.	
2' - 4'	1	HA	24	0.000	0.0	Dark brown to brown, fine to medium SILTY SAND, some fine gravel, little medium to coarse gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-22** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/21/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/21/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SAND, some fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA metals and SVOC analysis were collected from 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-23** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/21/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/21/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SILTY SAND, some fine to coarse gravel, some coal clinker, some clay, some small cobbles, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium CLAYEY SAND, little fine to medium gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA metals and SVOC analysis were collected from 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-24 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/21/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/21/05	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-3" Dark brown, fine to medium SILTY SAND, some fine to medium gravel, loose. 3"-2' Orange brown, fine SAND, some fine to medium gravel and clay, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown to dark brown, fine CLAYEY SAND, some fine to medium gravel and medium sand, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA metals and SVOC analysis were collected from 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-25 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/21/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/21/05	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SILTY SAND, some clay and fine gravel.	
2' - 4'	1	HA	24	0.003	0.0	Dark brown, fine to medium SAND and COAL CLINKER, some fine to medium gravel and clay.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA metals and SVOC analysis were collected from 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-26** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/21/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/21/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SILTY SAND, some clay and fine gravel.	
2' - 4'	1	HA	24	0.000	0.0	Dark brown, fine to medium SAND and COAL CLINKER, some fine to medium gravel and clay.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA metals and SVOC analysis were collected from 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-27 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/18/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/18/05	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-3" Asphalt. 3"-2' Dark brown, fine to medium SILTY SAND, some fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Orange brown, fine to medium CLAYEY SAND, some fine to coarse gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-28 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 11/18/05	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 11/18/05	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-3" Asphalt. 3"-2' Dark brown, fine to medium SILTY SAND, some fine to medium gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Orange brown, fine to medium CLAYEY SAND, some fine to coarse gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-29** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 11/18/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 11/18/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, fine to medium SILTY SAND, some fine to coarse gravel and clay, loose.	
2' - 4'	1	HA	24	0.012	0.0	Brown, fine to coarse CLAYEY SAND, some fine to coarse gravel, loose.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-30 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 8/10/06	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 8/10/06	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" Brown, fine SILTY SAND, some medium gravel and ballast, dry. 6"-2' Brown-dark brown, fine SILTY SAND, some fine sand, little fine gravel, loose.	
2' - 4'	1	HA	24	0.000	0.0	Brown-light brown, fine to medium CLAYEY SAND, little fine to medium gravel, loose, dry.	
4' - 6'	2	HA	24	0.000	0.0	Tan-brown, fine to medium CLAYEY SAND, some fine grave, little medium gravel, loose.	
6' - 8'	3	GP	24	0.000	0.0	Same as above.	
8' - 10'	4	GP	24	0.000	0.0	Tan-light brown, fine to medium SAND, little fine gravel, loose, moist.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2229 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-31 Sheet 1 of 1 By: Monica Sellberg
Drilling Contractor: L.A.W.E.S. Driller: --- Drill Rig: Geoprobe Date Started: 8/10/06	Geologist: Stephen Tauss Drilling Method: --- Drive Hammer Weight: NA Date Completed: 8/10/06	Boring Completion Depth: 10' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brown, fine SILTY SAND, some medium sand and fine to coarse gravel, loose, dry.	
2' - 4'	1	HA	24	0.000	0.0	Brown-dark brown, fine SAND, some fine to medium gravel, loose, dry.	
4' - 6'	2	HA	24	0.000	0.0	Tan-brown, fine SAND, some clay and medium sand, loose, dense.	
6' - 8'	3	GP	24	0.000	0.0	6'-7' Tan CLAY, trace fine sand, plastic fragments. 7'-8' Grayish-tan, fine to medium CLAYEY SAND, little fine to medium gravel, loose.	
8' - 10'	4	GP	24	0.000	0.0	Grayish-tan, fine to medium CLAYEY SAND, little fine to medium gravel, loose, moist.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6', 6'-8' and 8'-10'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-32** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-Brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.:** VSSB-33 **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-34 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: Zebra Driller: --- Drill Rig: --- Date Started: 6/24/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/24/10	Boring Completion Depth: 2' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-Brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-35** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-Brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-36** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-Brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.:** VSSB-37 **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-Brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.:** VSSB-38 **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Black, fine to medium SAND and ballast. 1 – 2' Orange-Brown, fine SAND, trace silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Orange-Brown, fine SAND, trace silt, loose, dry, no odor, no staining.	
4' - 6'	3	HA	24	0.000	0.0	Orange, fine SAND, trace silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4' and 4'-6'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.:** VSSB-39 **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Black, fine to medium SAND and ballast. 1 – 2' Orange-Brown, fine SAND, trace silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Orange-Brown, fine SAND, trace silt, loose, dry, no odor, no staining.	
4' - 6'	3	HA	24	0.000	0.0	Orange, fine SAND, trace silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4' and 4'-6'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-40** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark Brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark Brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark Brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-Brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4' and 4'-6'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-41 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: --- Driller: --- Drill Rig: --- Date Started: 6/23/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/23/10	Boring Completion Depth: 8' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Black, fine to medium SAND and ballast. 1 – 2' Orange-brown, fine SAND, some peat gravel, trace silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Orange-brown, fine to medium SAND and peat GRAVEL, trace silt, loose, dry, no odor, no staining.	
4' - 6'	3	HA	24	0.000	0.0	Same as above.	
6' - 8'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.:** VSSB-42 **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 6" Ballast. 6" – 12" Brown, medium to fine SAND, some silt and organics, loose, dry, no odor, no staining. 1 – 2' Orange-Brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-43** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Ballast. 1 – 2' Orange-Brown, fine to medium SAND, trace silt and clay, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-44** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Ballast. 1 – 2' Orange-brown, fine to medium SAND, trace silt and clay, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-45** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Ballast. 1 – 2' Orange-brown, fine to medium SAND, trace silt and clay, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining. Refusal at 4'.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2' and 2'-4'.
Refusal encountered at 4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-46** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4' and 4'-6'.

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2801 **Project Name:** Long Island Rail Road Valley Stream Substation		**Boring No.: VSSB-47** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	
6' – 8'	4	GP	24	0.000	0.0	Tan-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-48** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	
6' – 8'	4	GP	24	0.000	0.0	Tan-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-49** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	
6' – 8'	4	GP	24	0.000	0.0	Tan-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.:** VSSB-50 **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	
6' – 8'	4	GP	24	0.000	0.0	Tan-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-51 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: Zebra Driller: --- Drill Rig: --- Date Started: 7/8/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 7/8/10	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	--	--	0 – 2" Top soil. 2" – 2' Dark brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	--	--	Brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.:** VSSB-53 **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	
6' – 8'	4	GP	24	0.000	0.0	Tan-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-54** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-55 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: --- Driller: --- Drill Rig: --- Date Started: 6/23/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/23/10	Boring Completion Depth: 2' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-56 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: --- Driller: --- Drill Rig: --- Date Started: 6/23/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/23/10	Boring Completion Depth: 2' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-57** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-58** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-59 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: --- Driller: --- Drill Rig: --- Date Started: 6/23/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/23/10	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-60** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-61 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: --- Driller: --- Drill Rig: --- Date Started: 6/23/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/23/10	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, some white ash on the surface, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-62 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: Zebra Driller: --- Drill Rig: --- Date Started: 6/24/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/24/10	Boring Completion Depth: 2' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-Brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSSB-63 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: Zebra Driller: --- Drill Rig: --- Date Started: 6/24/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/24/10	Boring Completion Depth: 2' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-64** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 4" Asphalt. 4" – 2' Dark Brown-brown, medium to fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-65** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: --- **Driller:** --- **Drill Rig:** --- **Date Started:** 6/23/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/23/10	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown, medium to fine SAND, some silt and organic material, loose, dry, no odor, no staining. 1 – 2' Orange-brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected from 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-66** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4' and 4'-6'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-67** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	
6' – 8'	4	GP	24	0.000	0.0	Tan-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSSB-68** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
4' – 6'	3	GP	24	0.000	0.0	Orange-brown, fine SAND, some silt, loose, dry, no odor, no staining.	
6' – 8'	4	GP	24	0.000	0.0	Tan-brown, fine SAND, some silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected from 1'-2', 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Rail Road Valley Stream Substation	**Boring No.: VSWC-01** **Sheet** 1 **of** 1 **By:** Chris Kiernan
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 6/24/10	**Geologist:** Chris Kiernan **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 6/24/10	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Dark brown, medium to fine SAND, some fine gravel, trace silt, loose, dry, no odor, no staining. 1 – 2' Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	
2' – 4'	2	HA	24	0.000	0.0	Dark brown, fine to medium SAND, trace silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for Full TCLP RCRA Waste Characteristics analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 2801 Project Name: Long Island Rail Road Valley Stream Substation	Boring No.: VSWC-02 Sheet 1 of 1 By: Chris Kiernan
Drilling Contractor: --- Driller: --- Drill Rig: --- Date Started: 6/23/10	Geologist: Chris Kiernan Drilling Method: --- Drive Hammer Weight: NA Date Completed: 6/23/10	Boring Completion Depth: 4' Ground Surface Elevation: --- Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0 – 1' Brown-black, fine to medium SAND, loose, dry, no odor, no staining. 1 – 2' Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	
2' - 4'	2	HA	24	0.000	0.0	Tan-orange, fine to medium SAND, little silt, loose, dry, no odor, no staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for Full TCLP RCRA Waste Characteristics analysis was collected at 2'-4'.

APPENDIX D

DATA VALIDATOR RESUME

DONNA M. BROWN

Corporate Title
Senior Geologist III

Education
N.Y. Institute of Technology, Westbury, New York, M.S. (Environmental Technology) - 2000

State University of New York at Stony Brook, B.S. (Geology) - 1992

Years Experience
19+

Office Location
Woodbury, NY

Contact
dbrown@db-eng.com

Professional Experience

Ms. Brown has over 19 years of experience in project management, data validation, data management and field geology. As part of a broad spectrum of environmental remediation assignments she has worked as the site geologist at a variety of commercial and industrial sites undergoing remedial/site investigations, as well as conducted Phase I and Phase II Environmental Site Assessments in accordance with the American Society for Testing and Materials Standards, federal, state and local agencies, in addition to guidelines established by various lending institutions. Her experience with field activities include supervision of the installation of groundwater monitoring wells, temporary well points, and soil borings in support of subsurface investigations; groundwater and soil sampling for quantitative analysis; obtaining water level measurements; and utilizing portable field instruments.

Ms. Brown developed and managed the Data Validation and Data Management Group for the northeast region of a worldwide environmental consulting firm and was responsible for coordination of validation work load for over 40 projects. In addition, she was responsible for training data validators, providing cost estimates for validation work, preparation of Quality Assurance Project Plans (QAPPs) and Sampling and Analysis Plans (SAPs), validation of data in accordance with the USEPA National Functional Guidelines, USEPA Region II and III, New York State Department of Environmental Conservation (NYSDEC) ASP, New Jersey Department of Environmental Protection, and USEPA Hazardous Waste Support. Ms. Brown also managed and maintained over 20 projects in the GIS/Key database system, interfaced with the analytical laboratories to ensure the successful transfer of electronic laboratory data into the database system; and manipulation of geologic, laboratory, and hydrogeologic data within the Fox Pro, GIS/Key, MS Access, Grapher, Surfer, and AutoCAD programs .

In addition, Ms. Brown is trained in and utilized Environmental Visualization System (EVS) software. EVS software enables the user to provide three-dimensional animations to illustrate subsurface technical issues.

Ms. Brown was responsible for performing data validation of chemical data collected on and offsite at a clean fill demolition debris site and at several aerospace industrial client sites on Long Island utilizing the following protocols:

- USEPA Contract Laboratory Program National Functional Guidelines Organic and Inorganic;
- USEPA Hazardous Waste Support Branch, Validating Air Samples; and
- USEPA Region II, Volatile Organics Analysis of Ambient Air in Canisters By Method TO-15.

In addition, she updated GIS/Key database for chemistry and water level data, proved tables, graphs, and figures associated with project reports; conducted water level and water quality sampling; and prepared quarterly groundwater quality monitoring reports.

She also was responsible for performing data validation of chemical data collected at automotive industry owned sites in New Jersey using New Jersey Department of Environmental Protection Quality Assurance Data Validation of Analytical Deliverables TCL-Organics and TAL-Inorganics, and USEPA Hazardous Waste Support Branch, Validating Air Samples, Volatile Organics Analysis of Ambient Air in Canisters By Method TO-15.

As a Project Manager she was responsible for client communications, coordination of field sampling, reviewed and interpreted geologic, hydrogeologic, and chemistry data, report preparation, maintained the database, and data validation for former chemical site in upstate New York.

Ms. Brown was responsible for maintaining the database which contains information from over 20 years of quarterly groundwater monitoring wells and four recovery well; performed data validation of chemical data using USEPA Contract Laboratory Program National Functional Guidelines Organic and Inorganic; proved tables, graphs, and figures associated with project reports, and updated GIS/Key database for chemistry and water level data at a chemical manufacturing site in Albuquerque, New Mexico.

Since joining D&B, Ms. Brown has supported the following activities:

- She is a Quality Assurance/Quality Control officer for the firm and reports to the Quality Assurance/Quality Control Program Manager (Ms. Petrella). Ms. Brown's responsibilities include reviewing all work relating to Quality Assurance/Quality Control for hazardous waste, hazardous substance, manufactured gas plant and solid waste projects undertaken by the firm.

- Ms. Brown is responsible for the data validation and data management (importing data into GIS/Key database and reporting results) of all data packages from ongoing hydrogeologic investigation and landfill closure investigations in Brookhaven and Hauppauge, New York.

- She is responsible for maintaining and updating twelve ongoing projects that use GIS/Key database system.

- For the Former Kings Park Psychiatric Center Project, Ms. Brown is responsible for reviewing all laboratory invoices, confirmation of chemical analysis with the laboratory, conducting data validation and importing all chemistry data and gps site locations into GIS/Key database system, in addition to providing tables, graphs, and AutoCAD figures.

- Ms. Brown has prepared data validation/usability reports for remedial investigation and feasibility studies conducted at numerous New York State Registry Sites, including Active Industrial, LIRR sites, Franklin Cleaners, Petro Oil, and Vanbro. These tasks involved evaluation of the laboratory data to determine compliance with NYSDEC Analytical Services Protocols (ASP), as well as to determine the usability of the data particularly if it was not consistent with ASP requirements.

APPENDIX E

LIRR PROCEDURE/INSTRUCTION EE03-001

Procedure/Instruction: EE03-001
EXCAVATING SOILS AT RAILROAD LOCATIONS **Effective DATE: August 11, 2003**

A. Introduction:

At existing railroad shops, yards, substations, right-of-ways and other locations, past operations may have resulted in the chance of soils containing very low levels of chemical substances. Examples may include; trace levels of metals around old painted structures, oils and greases around train yards and repair locations, greasy or sooty compounds left from coal ash ("clinker").

This Procedure/Instruction has been prepared to eliminate any risk that may be posed to LIRR workers who must dig in these locations. It is to be applied on a case by case basis, with any questions referred to Department Management and System Safety.

B. Required Steps/Actions:

1. The first step of any LIRR excavation, regarding the soil composition and possible presence of contaminates, is to review the current System Safety Environmental Audit Map. This map includes all LIRR sites with documented soil contaminates. If your site appears on the map in red it may have soil concerns that could affect your project, contact System Safety before proceeding. If your site is not shown or is shown in black (does not have soil concerns) proceed to Step 2 as follows;

2. When digging at an existing railroad facility, the recommended procedures include:
   a. Wherever possible excavate with mechanical means, such as backhoes, ditch-witches or excavators.

   b. Wash facilities must be available for use by workers at the end of the task, before breaks, before meals, or at the end-of-shift. For field operations, wet-wipes are acceptable for fulfilling this requirement.

   c. Where hand digging must be used, workers must be instructed to brush soil from clothing and shoes. Disposable coveralls, shoe coverings and gloves should be made available upon workers request. Work clothing should be laundered.

   d. All equipment should be cleaned before leaving the worksite. The preferred method is hosing down with water, removing any clumps of dirt and soil. If water is not available, equipment should be brushed clean of any dirt and soil using a broom or stiff brush. Disposable items can be placed in the trash, no special disposal is necessary.

3. Where evidence of soil contamination is found, such as an odor, a stain or visible contaminant, the soil feels greasy, or results from laboratory analysis indicate a contaminant;

   a. Stop any excavation work or only excavate by mechanical means and

   b. Immediately Contact System Safety (information below) to assess the situation.

C. Regulations or Policy References: LIRR Corporate Environmental Policy; Section IV, B, 5

D. System Safety Contacts:

Environmental Engineer;	718-558-3252
Environmental Field Engineer;	718-558-3081

E. Forms & Attachments: None.

APPENDIX F

MERCURY VAPOR SURVEY RESULTS

TABLE 1

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - VALLEY STREAM

(July 16, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
VSMV-01	0.000
VSMV-02	0.000
VSMV-03	0.000
VSMV-04	0.010
VSMV-05	0.660
VSMV-06	0.190
VSMV-07	0.000
VSMV-08	0.060
VSMV-09	0.000
VSMV-10	0.000
VSMV-11	0.010
VSMV-12	0.000
VSMV-13	0.000
VSMV-14	0.000
VSMV-15	0.000
VSMV-16	0.020
VSMV-17	0.000
VSMV-18	0.000
VSMV-19	0.000
VSMV-20	0.000
VSMV-21	0.000
VSMV-22	0.000
VSMV-23	0.000
VSMV-24	0.000
VSMV-25	0.000
VSMV-26	0.000
VSMV-27	0.000
VSMV-28	0.000
VSMV-29	0.000

Notes:
MVA: Mercury vapor analyzer
Mg/m^3 Hg: Milligrams per meter cubed mercury vapor
Instrument detection limit is 0.003 mg/m^3