SUPPLEMENTAL OFF-SITE SOIL INVESTIGATION WORK PLAN

Long Island Rail Road (LIRR)
Far Rockaway Substation
Soil Investigation and Remediation
Redfern Avenue
Far Rockaway, Queens County, New York

NOVEMBER 2022

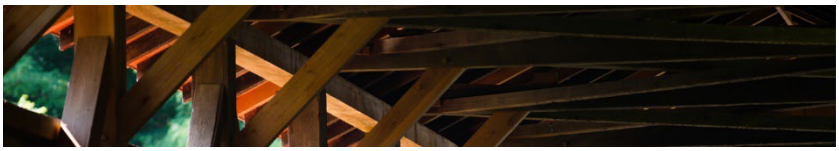
Dewberry

SUBMITTED BY
Dewberry Engineers Inc.
600 Parsippany Road, Suite 301
Parsippany, NJ 07054

PREPARED FOR
LIRR – Department of Program Management
144-41 94th Avenue, MC 1913
Jamaica, New York 11435

Dewberry

TABLE OF CONTENTS




Page

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS/ACRONYMS

CLP	Contract Laboratory Program
COC	Contaminant of Concern
DER	Division of Environmental Remediation
DQO	Data Quality Objective
DUSR	Data Usability Summary Report
EDS	Electronic Document Standard
GC	Gas Chromatography
GIS	Geographic Informational System
LQAM	Laboratory Quality Assurance Manual
LIRR	Long Island Rail Road
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NYSDEC	New York State Department of Conservation
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Remedial Action
RAW	Remedial Action Work Plan
ROD	Record of Decision
RPD	Relative Percent Difference
SAS	Special Analytical Services
SCO	Soil Cleanup Objectives
SOP	Standard Operating Procedure
SI	Off-Site Soil Investigation
SIR	Off-Site Investigation Report
SIW	Off-Site Investigation Work Plan
USEPA	U.S. Environmental Protection Agency

1.0 PROJECT BACKGROUND

Starting in 1999, the Long Island Rail Road (LIRR) conducted environmental assessments of 20 electric substations that utilized mercury-containing rectifiers (devices that convert alternating current (AC) to direct current (DC)). The rectifiers provided DC power to the adjacent electrified LIRR line in order to operate their fleet of electric commuter rail cars. In December 2000, Dvirka and Bartilucci Consulting Engineers (D&B) issued a report "Site Assessment of 20 Substations for Mercury Contamination" describing the assessment of these 20 substations along the LIRR. Mercury was identified to be the contaminant of concern (COC) at each of the substations. Based on this early sampling, in 2001, interim remedial measures (IRM) were implemented at the Far Rockaway Substation, addressing surficial soils (0" – 6") between the on-site building and Redfern Avenue. These soils were excavated, disposed off-site and replaced with gravel (ballast). Subsequent to this the IRM area was capped with concrete.

In 2004, LIRR agreed to complete investigation and remediation of these 20 sites under the New York State Department of Environmental Conservation's (NYSDEC's) Voluntary Cleanup Program (VCP). Subsequent to entering the VCP, in July 2018, LIRR entered an Order on Consent with the NYSDEC to investigate and remediate the substations associated with the LIRR. In October 2021, the NYSDEC amended the Order on Consent to include the Far Rockaway Substation.

Decommissioning of the Far Rockaway (a.k.a. Inwood) Substation was planned for 2009 after a new substation was constructed on a separate property. In February 2006, prior to the decommissioning, D&B completed Phase II delineation sampling on and adjacent to the substation property. The objective of this Phase II sampling was to provide analytical data on the presence of mercury (Hg), identifying areas requiring remediation and additional investigation. The 2006 sampling identified additional areas on and adjacent to the property that required further investigation. The proposed soil sampling locations outlined in the 2006 report were subsequently sampled by D & B, providing further delineation of mercury impacted soil on and off the substation property.

Throughout the investigation of the Far Rockaway Substation, like the other substations, mercury in soil has been identified as the primary contaminant of concern. Delineation of the mercury-impacted soil has been completed on the Far Rockaway substation property. In 2013, D & B prepared a figure of soil sampling results, illustrating the soil sampling locations, the concentrations of mercury identified during multiple sampling events, the area of interim remedial activities, and the proposed depth of excavations to remediate the remaining mercury-impacted soil on the property. Based on previous sampling results on and adjacent to the property, D&B concluded that additional sampling was required on the property adjacent and immediately to the west, as well as on the roadway located adjacent to and north of the substation property.

This supplemental off-site soil investigation sampling plan outlines proposed sampling procedures, soil boring locations, analytical parameters, and Quality Assurance/Quality Control (QA/QC) procedures to follow, to provide the analytical data necessary to prepare remediation plans, completion of which will have the goal of removing elevated levels of mercury from the Far Rockaway substation to the NYSDEC industrial restricted soil cleanup objective (SCO) of 5.7 milligrams per kilogram (mg/kg), and off-site impacted soils to the unrestricted SCO of 0.18 mg/kg.

1.1 Site Description

The site, located on Redfern Avenue does not have a street address, and is an irregular shaped parcel of land comprised of two lots. One lot is in Far Rockaway, Queens County, and the other is in Inwood, located in Nassau County. The substation is approximately 0.19 acres in size, and consists of the two-story brick substation building, a transformer yard, and a small greenspace on the western side of the property. Figure 1 and Figure 2 are a Site Location Map and an Aerial Map respectively. Figure 2 illustrates the county boundary between Nassau and Queens county that extends across the property.

1.1.1 Topography

The topography of the site is generally level; however, the western property boundary is slightly higher in elevation than the central part of the site. In addition, the substation building is four steps above the sidewalk elevation, which in turn is approximately six inches higher than Redfern Ave.

1.1.2 Site Geology

Far Rockaway, located in the southern half of western Long Island, is underlain by glacial outwash sediment that accumulated during melting of the Wisconsinan age glaciers. Development has reworked most of the shallow soils (Urban Land) resulting in limited original depositional structure. Shallow soil on the site is predominantly comprised of Brown to Orange Brown, fine to medium sand with silt and some fine gravel. The shallow soils also contain pieces of brick, concrete and wood.

1.1.3 Hydrogeology

Shallow groundwater was sampled at the site from temporary well points installed to a depth of approximately 9 feet below grade. Groundwater flow direction has not been identified on the site, however sampling of the temporary well points revealed that groundwater was not impacted with mercury or other targeted contaminants.

1.2 Current and Future Use

The Site is currently vacant with one two story brick building located adjacent to the sidewalk along Redfern Avenue used for storage space. Upon completion of the investigation and remediation of mercury-impacted soil, the property will remain owned by LIRR and is expected to be utilized for material storage.

1.3 Surrounding Properties

There are commercial buildings on either side of the substation property, LIRR tracks to the south, and residential properties across Redfern Ave. The commercial property to the west, Elite Airline Linen of New York conducts laundry services for JFK airline operations. The property to the East, Vigar Electronics, reportedly operates as an electronics store, however active operations have not been observed on that property.

1.4 Project Objectives

The goal for the supplemental off-site investigation is to complete delineation of the mercury-impacted soils adjacent to the LIRR property to the NYSDEC unrestricted soil cleanup objective (SCO). Approximately 40 soil samples will be collected for mercury analysis from the adjacent (to the west) off-site property and Redfern Ave. The sampling events are anticipated to be completed over two (separate) days. QA/QC samples will be collected each day of Site Investigation (SI) activities. The soil samples will be collected

using one-time use disposable scoops directly from acetate lined Macrocore samplers advanced into the ground by a direct-push drill rig operated by a licensed Driller from Advanced Drilling and Testing (ADT). Samples will be placed directly into laboratory supplied containers and placed on ice in a cooler during field work. Samples will be delivered to the New York State accredited laboratory, Hampton-Clarke, located in Fairfield, New Jersey under standard chain-of-custody protocols. The methodologies, sample containers, preservation requirements, requirements for collecting QA/QC samples, and holding times for mercury analysis are presented in **Table 1**.

These data will be presented in a Supplemental Off-Site Investigation Report and utilized in a Remedial Action Work Plan to propose a remedial action for the site that will remove mercury impacted soils from on the property to below the industrial restricted SCO of 5.7 milligrams per kilogram (mg/kg), and off-site to the unrestricted SCO of 0.18 mg/kg. The remedial action on-site will also include capping the top 6-inches of excavation areas onsite with crushed stone/ballast and off-site with asphalt and/or concrete.

The supplemental off-site soil investigation will be completed in accordance with the site-specific Health and Safety Plan prepared for this project. The HASP was prepared to comply with *Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.120(b) (4), Hazardous Waste Operations and Emergency Response*. In addition, laboratory data quality will be evaluated through the preparation of a Data Usability Summary Report (DUSR), with all aspects of project quality to conform to the Quality Assurance Project Plan (QAPP) prepared for this project.

The LIRR will oversee and coordinate the project. Dewberry Engineers Inc. (Dewberry) will be responsible for project-specific sampling activities related to the supplemental off-site investigation activities that will be implemented in conformance with the applicable regulations and guidance (ex. DER-10). Those tasks (drilling activities, laboratory analysis) will be completed by subcontractors under the oversight of Dewberry. Dewberry will also provide QA/QC for field activities and deliverables. Deliverables will be issued to the LIRR by Dewberry for submission to NYSDEC, as appropriate.

2.0 PREVIOUS INVESTIGATIONS

2.1 Site Assessment of 20 Substations for Mercury Contamination (December 2000)

D & B conducted soil sampling on behalf of the LIRR at the Far Rockaway Substation as part of the assessment of 20 substations that formerly provided DC power to the electrified rail lines. Each of these substations operated with Rectifiers, mercury containing equipment used to convert electricity from AC to DC. This initial sampling identified mercury as the primary COC at each of these substations. Based on the initial sampling results, an interim remedial action was conducted at this substation in the area of the property between the substation building and Redfern Avenue. Soil in this area was excavated and disposed off-site and replaced with gravel (ballast). The remaining part of the property is fenced, and the IRM was conducted outside of the fence line to reduce the risk of exposure to the public from the mercury impacted soil.

2.2 Delineation Phase II Site Assessment Investigation Report (June 2006)

Subsequent to the initial investigation activities (February 2006), D & B completed a Phase II field investigation at the substation to further delineate impacted soils at the site. The objective of the Phase II delineation sampling program was to identify areas requiring additional investigation and/or remediation. Although the emphasis of the investigation was on the presence of mercury impacted soil, other analytical parameters were analyzed, including Resource Conservation and Recovery Act (RCRA) metals, Target Analyte List (TAL) Metals, Polychlorinated Biphenyls (PCBs), Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs). One sample collected at the Underground Injection Control (UIC) location was analyzed for United States Environmental Protection Agency (USEPA) UIC parameters. UIC parameters include VOCs, RCRA metals, SVOCs, PCBs, and Total Petroleum Hydrocarbons (TPH). The soil sampling analytical results were screened using the NYSDEC Technical and Administration Guidance Memorandum (TAGM) 4046 Recommended Soil Cleanup Objectives (RSCO). The groundwater samples collected during the investigation were analyzed for VOCs and TAL Metals (Filtered and Unfiltered Samples), with results compared to the NYSDEC Class GA Groundwater standards/Guidance values.

The Phase II investigation included the advancement of soil borings from the ground surface to a maximum depth of 20 feet below ground surface (bgs). Seventeen (17) surface soil samples (0’ – 2” bgs) were collected, and 23 soil borings were advanced on the Substation property with a Geoprobe Direct Push drill rig. A total of 64 soil samples were collected from surficial soils and sub-surface soils. Three (3) groundwater samples were collected from the site, two within the substation yard and one from the sidewalk in front of the substation building. A copy of the D & B summary report, including tables, and figures, illustrating the sampling locations and results, is included in **Appendix A**.

2.2.1 Surface Soils

All 17 surficial soil samples collected during the Phase II investigation exhibited detectable concentrations of mercury, ranging from 0.189 milligrams per kilogram (mg/kg) to 317 mg/kg. The highest concentrations of mercury were identified in the water meter pit, located at the northeast corner of the substation building, and approximately 4 feet east of the substation building. Four (4) of the surficial soil samples were analyzed for RCRA metals, and arsenic, cadmium and lead were identified at concentrations above their respective applicable RSCO. Four (4) samples were analyzed for SVOCs and Benzo(a)pyrene was detected above its RSCO in two (2) samples, with a maximum concentration of 190 micrograms per kilogram (µg/kg). PCBs were analyzed from four (4) surficial samples at the site, but not detected above the applicable RSCO.

2.2.2 Sub-Surface Soil

Forty-seven (47) sub-surface soil samples were analyzed for mercury. Twenty-nine (29) of these samples contained mercury above its applicable RSCO, ranging from a concentration of 0.103 mg/kg, to a maximum of 34.8 mg/kg. The highest concentrations from the sub-surface soil samples were collected from within the water meter pit, located at the northeast corner of the substation building. Eight (8) sub-surface soil samples were analyzed for RCRA metals with cadmium exceeding its RSCO, both collected in the transformer yard, south of the substation building. Eight (8) subsurface soil samples were analyzed for SVOCs and like the surficial soils, Benzo(a)pyrene was detected in two (2) sub-surface soil samples, with the highest concentration of 130 µg/kg detected from a location approximately 14 feet south of the substation building. Eight (8) sub-surface soil samples were analyzed for PCBs, with none of the samples exhibiting concentrations above the applicable RSCO.

2.2.3 Groundwater

Three (3) groundwater samples were collected from the site using a Geoprobe groundwater point sampler and a peristaltic pump. The three samples were analyzed for VOCs, and TAL metals. All samples collected in this manner during the investigation were turbid, thus the samples submitted to the laboratory were both unfiltered and filtered samples, in order to evaluate the difference between dissolved metals versus total metals. One unfiltered sample collected from the site contained mercury at a concentration of 0.87 micrograms per liter (µg/L). The Class GA Standard for mercury is 0.7 µg/L. Other metals, including antimony, chromium, iron, manganese, and sodium were detected in unfiltered samples. However, filtered samples collected on site did not exhibit elevated levels of metals. The filtered samples were deemed more likely to reflect the actual groundwater conditions in the underlying aquifer. Several metals, including antimony, iron, sodium and thallium exceeded their respective Class GA Standards from one or more of the unfiltered groundwater samples.

2.2.4 Conclusions and Recommendations

The results of the Phase II investigation determined that mercury in soil was the principal contaminant of concern at the Far Rockaway Substation. In addition, groundwater sampling revealed that mercury was not detected in filtered groundwater samples collected from the site. Therefore, groundwater has not been impacted by the presence of mercury in onsite soil.

In the Phase II Site Assessment Investigation Report, D & B recommended that additional soil sampling for mercury be conducted north of the substation building, on both the east and west sides of the substation building, and within the water meter pit off the northeast corner of the substation building. In addition, the sampling was recommended to be completed in a grid-like pattern and to a depth to provide additional analytical data for the horizontal and vertical delineation of mercury impacted soils on the site. Attachment 5 in the D & B report, (report included herein as **Appendix A**), illustrates the proposed soil sampling locations.

NYSDEC correspondence dated March 5, 2009 requested the collection of additional samples west and north of the conduit pit located on the western side of the substation building. Additional comments were included regarding presentation of information in the Delineation Phase II Site Assessment Investigation Report. Provided in Appendix B is the NYSDEC's March 5, 2009 comment letter.

2.3 Remedial Investigation

Sampling proposed in the 2006 Phase II Site Assessment Investigation Report prepared by D & B and requested by NYSDEC was subsequently completed to further delineate the horizontal and vertical extent of mercury impacted soil on and adjacent to the LIRR Far Rockaway Substation property. Soil samples

were collected from twelve (12) on-site surficial and twelve (12) co-located, sub-surface soil sampling locations surrounding the Dry Well and adjacent to the southwestern corner of the Substation building. In addition, soil was collected from 27 surface and 28 sub-surface sampling locations, along the eastern side of the substation building and from in front of the on-site building within the limits of the sidewalk and Redfern Ave. The samples collected from the sidewalk and street were beyond the area remediated during the IRM event. D & B prepared a figure (December 2011) illustrating sampling results from locations proposed in the Phase II Site Assessment Investigation Report as well as additional locations requiring sampling (**Appendix C**).

Data generated from this round of investigation completed onsite delineation of mercury in soil; however, horizontal and vertical delineation was not completed on the adjacent offsite property to the west and within Redfern Avenue to the north.

2.4 LIRR Remedial Action Work Plan – Anticipated Remedial Areas

Provided in Appendix D is a figure entitled Anticipated Remedial Areas Far Rockaway Substation. This figure, prepared by D & B in 2013, illustrates soil sampling locations from the sampling events summarized in 2.1, 2.2 and 2.3, as well as the mercury analytical results from these sampling locations. As shown on the figure, more than 250 soil samples have been collected at the site for mercury analysis. All analytical results have been previously submitted to NYSDEC and the sampling depicted on this figure documents the on-site delineation of mercury on the substation property. This figure also includes proposed sampling locations on the property to the west and on Redfern Avenue, the completion of which is the subject of this supplemental off-site soil investigation, the focus of this Work Plan.

It should be noted that this figure will be used as a framework for the development of a Remedial Action Work Plan, which will be prepared and submitted to the NYSDEC following the completion of the off-site soil investigation outlined in this Work Plan.

3.0 PROPOSED OFF-SITE SOIL INVESTIGATION

3.1 Soil Sampling

The objective of the Supplemental Off-Site Soil Investigation is to collect additional surficial and sub-surface soil samples to complete horizontal and vertical delineation of mercury impacted soil to the Unrestrictive Soil Cleanup Objective (0.18 mg/kg).

Soil samples will be collected from ten locations using a direct push drill rig that will advance a Macrocore sampler equipped with an acetate liner into the subsurface approximately 6 feet into the ground **(Figure 3)**. When retrieved, the acetate liner will be cut open, and soil samples will be collected from discrete intervals at selected depths (Table 1), starting at the shallowest soil interval immediately beneath the asphalt. The soil samples will be placed into labeled laboratory supplied glassware. Sampling information for each sample collected as part of this supplemental investigation will also be included on a chain-of-custody that will accompany the samples from the field to the laboratory. Samples will be transported to the laboratory in a laboratory supplied cooler, containing ice for preservation purposes. One duplicate sample will be collected in each area for QA purposes.

3.1.1 Geophysical Investigation

The off-site property to the west of the Substation and within Redfern Avenue proposed for sampling will be investigated with non-intrusive geophysical methods to assist in locating subsurface utilities within the investigation areas. Prior to advancing soil borings, ground penetrating radar and magnetometer geophysical techniques will evaluate each proposed soil boring location as well as an area approximately 10 feet in diameter surrounding the location. This plus the utility markout (to be completed by the Driller) will assist in preventing conflict with the advancing soil sampling equipment and sub-surface utilities in the area. Should these investigation techniques identify a potential utility within 5 feet of the proposed soil boring, the location of the boring will be moved to a greater distance from the suspected utility.

3.1.2 Soil Boring Advancement

Each of the proposed soil boring locations is within asphalt paved driveway/parking lot or within the limits of Redfern Avenue, also paved with asphalt. A core bit will be used to advance thru the asphalt to provide a clean edge suitable for repair purposes after completion of the soil boring activities. Once the asphalt has been removed, sub-base gravel or other construction materials associated with the asphalt surface will be removed until soils are encountered. Once soil is exposed, the Macrocore sampler will be advanced with the direct push drill Geoprobe drill rig to a depth corresponding to the length of the Macrocore (4' or 5'). The Macrocore will be retrieved and the recovered soils sampled from the first six inches of soil retrieved and from selected depth intervals to provide horizontal and vertical delineation of mercury exceedances. After equipping the Macrocore with a new liner, the Macrocore will be advanced to approximately 6 feet below grade, to retrieve soils from within the depth of interest for this investigation.

3.1.3 Soil Sampling and Analysis

Upon retrieval of the liner from the Macrocore, the liner will be opened, and observations of the soil characteristics will be noted in the field book and the soil boring log. Sample intervals will be identified and then soil from these intervals will be retrieved with disposable scoops and placed into labeled laboratory

supplied glassware suitable for collection of soil samples to be analyzed for mercury (4-oz to 8-oz clear glass jars with plastic lids). Sample identification and collection information will be recorded on a chain-of-custody and on the label affixed to the sample container as is standard protocol. Each sample will be identified to be analyzed at the lab for total mercury, using EPA method (SW-846) 7471B. After collection the samples will be placed into a laboratory supplied cooler containing ice for preservation. All samples will be analyzed or extracted within the 28-day holding time. Laboratory results will be reported in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm).

3.1.4 Data Management and Validation

Laboratory data deliverables prepared by the laboratory will be Category-B deliverables as required by NYSDEC. These data will be validated by the preparation of a Data Usability Summary Report (DUSR), including an evaluation if all holding times have been met, and if Quality Control Data included in the laboratory report falls within required limits and specifications. Data that do not meet these requirements will be qualified as needed.

3.1.5 Management of Investigation Derived Waste

Excess soil generated during soil boring advancement will be returned to the borehole from which it originated. Remaining void space at each boring will be backfilled with bentonite and the surface repaired with asphalt. Should excess soil remain after backfilling the soil borings, the soil will be placed in a secure container and staged on the Substation property, to be disposed of along with mercury impacted soils from the site during future remedial activities.

3.1.6 Air Monitoring

Based on historic sampling at the Far Rockaway Substation site, volatile compounds have not been identified as a contaminant of concern, thus air monitoring with a Photoionization detector (PID) is not warranted. Furthermore, advancing a Macrocore soil sampler into the subsurface does not generate dust. The sampler is advanced downward by the Geoprobe hydraulically, and as it vibrates and pushes the sampler into the ground does not break up and disperse fine (airborne) soil particles away from the boring location. Withdrawal of the Macrocore also does not disperse fine soil particles beyond the soil boring location. Soil from within the liner does not disperse into the atmosphere when opened or when sampling is conducted. Based on these conditions, dust monitoring is not planned for the supplemental off-site soil investigation program.

4.0 APPLICABLE SOIL CLEANUP OBJECTIVES

Soil sampling to be conducted beyond the limits of the Far Rockaway Substation (i.e., off-site) will be completed to support future remediation of mercury impacted soils to the NYSDEC Unrestricted Soil Cleanup Objective for Mercury. The current unrestricted SCO for mercury is 0.18 mg/kg. Sample results generated as part of this supplemental investigation will have detection limits below the applicable unrestricted SCO (0.18 mg/kg).

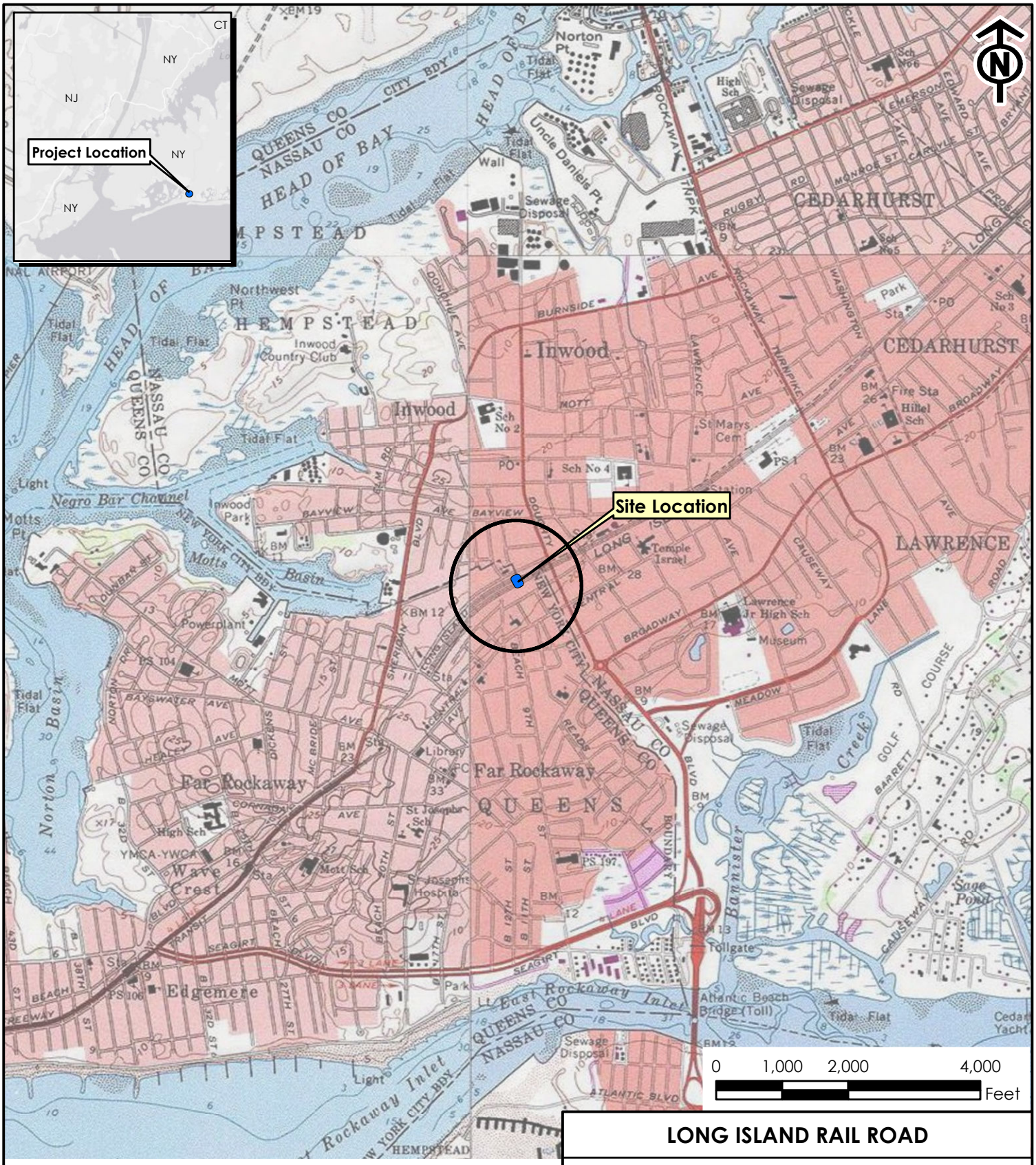
5.0 REPORTING

Upon receipt of the supplemental off-site soil investigation sampling analytical data, a Supplemental Off-Site Soil Investigation Report, combined with a Remedial Action Work Plan, will be prepared in draft form for review by LIRR and then upon approval, will be submitted to NYSDEC for review and approval. NYSDEC comments on the results report and the Remedial Action Work Plan will be incorporated into the report as a revision and then submitted in final form.

6.0 SCHEDULE

Upon NYSDEC approval of this Supplemental Off-Site Soil Investigation Work Plan, Dewberry Engineers will coordinate with LIRR, and our selected sub-contractors to implement the Work Plan. As directed by LIRR, Dewberry will coordinate with the adjacent property owner and with the municipality, regarding access to these areas for the proposed sampling. Prior to sampling, an access agreement will be secured, and a road opening permit will be applied for and secured to facilitate the sampling activities. Figure 4 illustrates the anticipated schedule for completion of the off-site soil delineation and reporting activities thru preparation and submittal of a Remedial Action Work Plan, soil remediation and restoration activities followed by preparation and submittal of the Final Engineering Report and Site Management Plan.

FIGURES



LEGEND

Project Area

Source: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Copyright:© 2013 National Geographic Society, i-cubed

LONG ISLAND RAIL ROAD

SITE LOCATION MAP

LIRR Far Rockaway Substation
Redfern Avenue
Far Rockaway, Queens County, New York

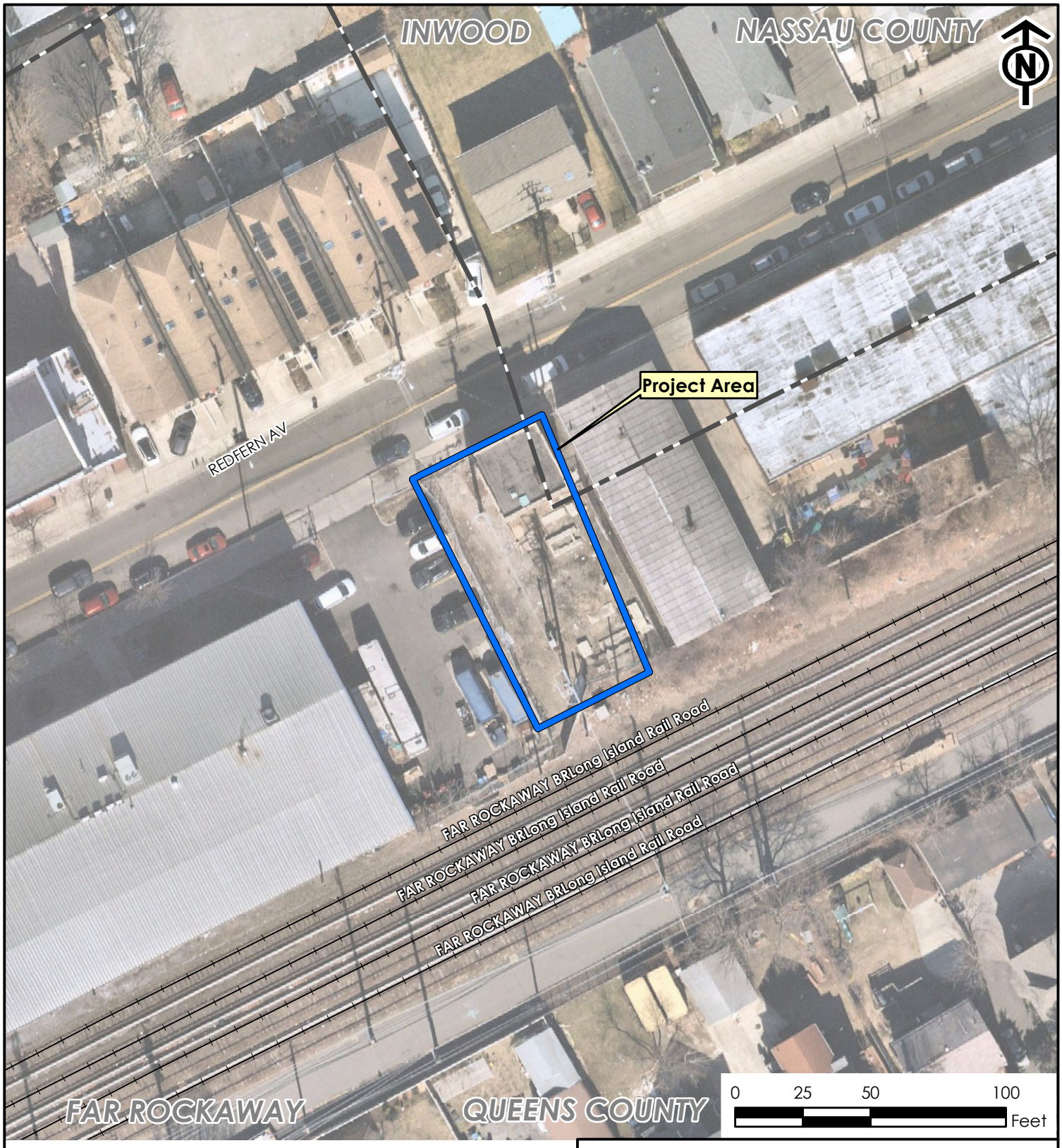
SCALE: 1" = 3000'

DATE: November 2022

Dewberry

FIGURE 1

Path: Q:\50060538\Tech\WO30-LIRR Hg Soil Remediation Far Rockaway\GIS\Mxd\1_MTA_C_D_LIRRFarRockawaySubstation_ProjectLocationMap.mxd



LEGEND

- Project Area
- Railroad
- Municipal/County Boundary

Source: NearMap Imagery Online Service, ESRI. MapPLUTO 17 v2, New York City Department of Planning, Information Technology Division. New York City Department of Information Technology and Telecommunication.

LONG ISLAND RAIL ROAD

AERIAL MAP

LIRR Far Rockaway Substation
Redfern Avenue
Far Rockaway, Queens County, New York

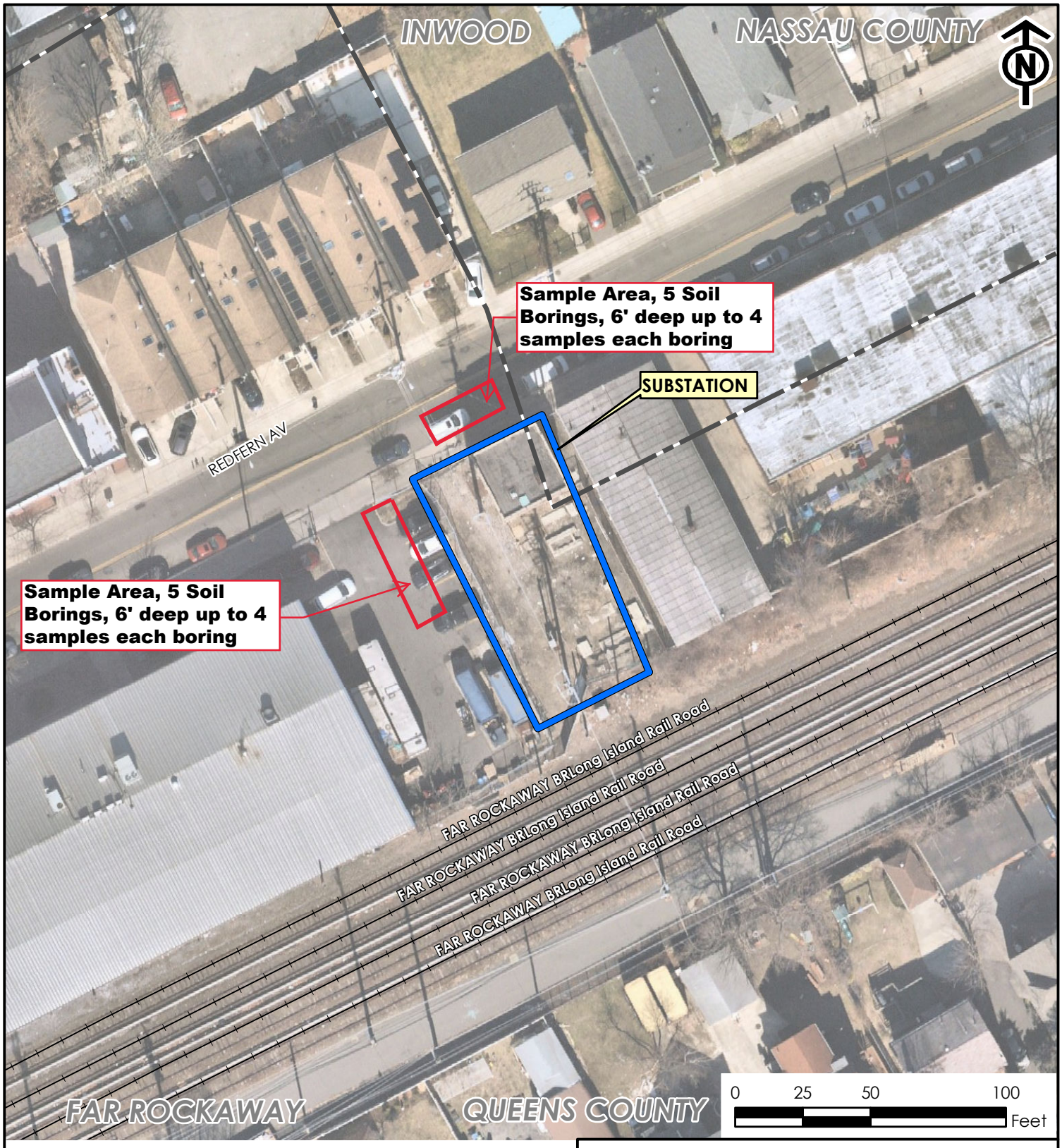
SCALE: 1" = 50'

DATE: November 2022

Dewberry®

FIGURE 2

Path: Q:\50060538\Tech\WO30-LIRR Hg Soil Remediation Far Rockaway\GIS\Mxd\2_MTA_C_D_LIRRFarRockawaySubstation_AerialMap.mxd



LEGEND

- Substation Property
- Railroad
- Municipal/County Boundary

Source: NearMap Imagery Online Service, ESRI. MapPLUTO 17 v2, New York City Department of Planning, Information Technology Division. New York City Department of Information Technology and Telecommunication.

LONG ISLAND RAIL ROAD

SUPPLEMENTAL OFF-SITE SOIL SAMPLING MAP

LIRR Far Rockaway Substation
Redfern Avenue
Far Rockaway, Queens County, New York

SCALE: 1" = 50'

DATE: November 2022

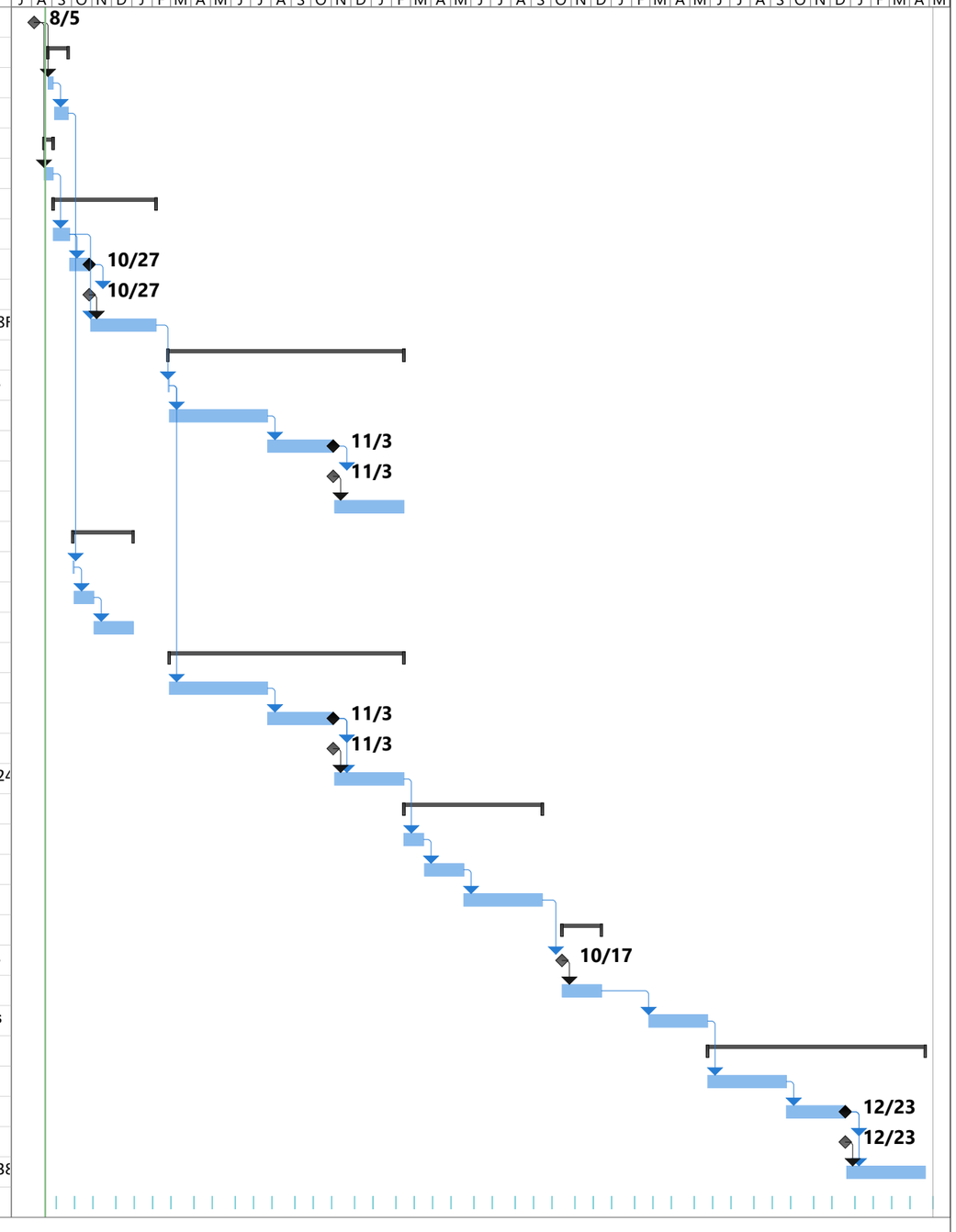
Dewberry®

FIGURE 3

Path: Q:\50060538\Tech\WO30-LIRR Hg Soil Remediation Far Rockaway\GIS\Mxd\2_MTA_C_D_LIRRFarRockawaySubstation_AerialMap.mxd

Long Island Rail Road (LIRR) Far Rockaway Substation Site - Soil Remediation Schedule

ID	Task Name	Duration	Start	Finish	Predecessors
1	Notice of Award (NOA)	0 days	Fri 8/5/22	Fri 8/5/22	
2	**Subtask 1 - Health and Safety Plan (HASP)**	**31 days**	**Fri 8/26/22**	**Sun 9/25/22**	
3	Draft HASP	8 days	Fri 8/26/22	Fri 9/2/22	1
4	LIRR Review and Final HASP	21 days	Mon 9/5/22	Sun 9/25/22	3FS+2 days
5	**Subtask 2 - Existing Data Review**	**14 days**	**Sat 8/20/22**	**Fri 9/2/22**	
6	Review Existing Data	14 days	Sat 8/20/22	Fri 9/2/22	1FS+15 days
7	**Subtask 3 - Supplemental Off-site Investigation Sampling Work Plan (Work Plan)**	**157 days**	**Sat 9/3/22**	**Mon 2/6/23**	
8	Preliminary Draft Supplemental Work Plan	25 days	Sat 9/3/22	Tue 9/27/22	6
9	LIRR Review and Revision	30 days	Wed 9/28/22	Thu 10/27/22	8
10	Submit Draft Supplemental Work Plan to NYSDEC	0 days	Thu 10/27/22	Thu 10/27/22	9
11	NYSDEC Review and Approval	100 days	Sun 10/30/22	Mon 2/6/23	10FS+2 days,8F
12	**Subtask 4 - Supplemental Off-site Investigation Sampling Work Plan Implementation**	**360 days**	**Sat 2/25/23**	**Mon 2/19/24**	
13	Field Investigation Implementation	2 days	Sat 2/25/23	Sun 2/26/23	11FS+18 days
14	Preliminary Draft Supplemental Off-site Investigation Sampling Report (Sampling Report)	150 days	Mon 2/27/23	Wed 7/26/23	13
15	LIRR Review and Revision	100 days	Thu 7/27/23	Fri 11/3/23	14
16	Submit Draft Sampling Report to NYSDEC	0 days	Fri 11/3/23	Fri 11/3/23	15
17	NYSDEC Review and Approval	106 days	Mon 11/6/23	Mon 2/19/24	16FS+2 days
18	**Subtask 5 - Metes and Bounds Survey**	**92 days**	**Mon 10/3/22**	**Mon 1/2/23**	
19	Field Survey	2 days	Mon 10/3/22	Tue 10/4/22	4FS+7 days
20	Draft Metes and Bounds Survey	30 days	Wed 10/5/22	Thu 11/3/22	19
21	LIRR Review and Final Metes and Bounds Survey	60 days	Fri 11/4/22	Mon 1/2/23	20
22	**Subtask 6 - Remedial Action Work Plan (RAWP)**	**358 days**	**Mon 2/27/23**	**Mon 2/19/24**	
23	Preliminary Draft RAWP	150 days	Mon 2/27/23	Wed 7/26/23	13
24	LIRR Review and Revision	100 days	Thu 7/27/23	Fri 11/3/23	23
25	Submit RAWP to NYSDEC	0 days	Fri 11/3/23	Fri 11/3/23	24
26	NYSDEC Review and Approval	106 days	Mon 11/6/23	Mon 2/19/24	25FS+2 days,24
27	**Subtask 7 - Remedial Design**	**211 days**	**Tue 2/20/24**	**Tue 9/17/24**	
28	90% Plans and Specifications	30 days	Tue 2/20/24	Wed 3/20/24	26
29	LIRR Review	60 days	Fri 3/22/24	Mon 5/20/24	28FS+1 day
30	Submit 100% Plans and Specifications and Approval	120 days	Tue 5/21/24	Tue 9/17/24	29
31	**Subtask 8 - Bid Documents and Bid Phase Services**	**60 days**	**Thu 10/17/24**	**Mon 12/16/24**	
32	Attend Pre-Bid Conference Meeting and Site Tour	0 days	Thu 10/17/24	Thu 10/17/24	30FS+30 days
33	Prepare Response to Bidders' Questions and Issue Addenda, and Final Selection of Bidder	60 days	Fri 10/18/24	Mon 12/16/24	32
34	**Subtask 9 - Remediation/Site Restoration Oversight (Periodic Inspections and Data Collection)**	**90 days**	**Thu 2/27/25**	**Tue 5/27/25**	**33FS+72 days**
35	**Subtask 10 - Preparation of Final Engineering Report and Site Management Plan**	**332 days**	**Wed 5/28/25**	**Fri 4/24/26**	
36	Preliminary Draft Final Engineering Report (FER)	120 days	Wed 5/28/25	Wed 9/24/25	34
37	LIRR Review and Revision	90 days	Thu 9/25/25	Tue 12/23/25	36
38	Submit Draft FER to NYSDEC	0 days	Tue 12/23/25	Tue 12/23/25	37
39	NYSDEC Review and Approval	120 days	Fri 12/26/25	Fri 4/24/26	37FS+2 days,38
40	**Subtask 11 - Meetings, Monthly Progress Reports and Technical Letters**	**1338 days**	**Wed 9/7/22**	**Wed 5/6/26**	



Project: LIRR Far Rockaway
Date: Mon 8/22/22

Task — Summary — Manual Summary Rollup
Milestone — Manual Task — Manual Summary

TABLES

TABLE 1
Proposed Soil Sampling and Analysis Plan
Long Island Rail Road
Far Rockaway Substation Off-Site Investigation
Far Rockaway, Queens County, New York

Boring ID	Sample Depth (feet)*	Proposed Analytical Parameters	Sampling Objective
FRSS-86	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on the Elite Airline Linen of NY Property
FRSB-93	1.0-2.0	Mercury	
FRSB-93	2.0-4.0	Mercury	
FRSB-93	4.0-6.0	Mercury	
FRSB-93	6.0 - 8.0	Mercury (Contingent)	
FRSS-87	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on the Elite Airline Linen of NY Property
FRSB-94	1.0-2.0	Mercury	
FRSB-94	2.0-4.0	Mercury	
FRSB-94	4.0-6.0	Mercury	
FRSS-88	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on the Elite Airline Linen of NY Property
FRSB-95	1.0-2.0	Mercury	
FRSB-95	2.0-4.0	Mercury	
FRSB-95	4.0-6.0	Mercury	
FRSS-89	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on the Elite Airline Linen of NY Property
FRSB-96	1.0-2.0	Mercury	
FRSB-96	2.0-4.0	Mercury	
FRSB-96	4.0-6.0	Mercury	
FRSS-90	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on the Elite Airline Linen of NY Property
FRSB-97	1.0-2.0	Mercury	
FRSB-97	2.0-4.0	Mercury	
FRSB-97	4.0-6.0	Mercury	
FRSS-91	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on Redfern Avenue
FRSB-98	1.0-2.0	Mercury	
FRSB-98	2.0-4.0	Mercury	
FRSB-98	4.0-6.0	Mercury	
FRSS-92	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on Redfern Avenue
FRSB-99	1.0-2.0	Mercury	
FRSB-99	2.0-4.0	Mercury	
FRSB-99	4.0-6.0	Mercury	
FRSS-93	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on Redfern Avenue
FRSB-100	1.0-2.0	Mercury	
FRSB-100	2.0-4.0	Mercury	
FRSB-100	4.0-6.0	Mercury	
FRSS-94	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on Redfern Avenue
FRSB-101	1.0-2.0	Mercury	
FRSB-101	2.0-4.0	Mercury	
FRSB-101	4.0-6.0	Mercury	
FRSS-95	0.0-0.5	Mercury	Delineation of Mercury Impacted Soils above the NYSDEC Unrestricted SCO of 0.18 mg/kg., on Redfern Avenue
FRSB-102	1.0-2.0	Mercury	
FRSB-102	2.0-4.0	Mercury	
FRSB-102	4.0-6.0	Mercury	

* From Top of Soil Surface

APPENDIX A: Substation Delineation Phase II Site Assessment Investigation Report

Substation Delineation Phase II Site Assessment of 17 LIRR Substations

Preliminary Data Evaluation and Recommendations
for
LIRR Far Rockaway Substation
(NYSDEC VCA No. V00391-1)

June 2006

INTRODUCTION

In February 2006, Dvirka and Bartilucci Consulting Engineers (D&B) completed the Delineation Phase II Field Investigation at the Long Island Rail Road (LIRR) Far Rockaway Substation in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved Substation Delineation Phase II Site Assessment Work Plan, dated June 2005. The objective of the Substation Delineation Phase II Site Assessment is to assess the nature and extent of contamination at the 17 LIRR substations, with emphasis on mercury contamination associated with the historic use of mercury rectifiers. The objective of this preliminary evaluation of analytical data is to identify areas that may require additional investigation and/or remediation while the field investigation team is available and prior to submission of a final report. This information will assist the LIRR in making timely management decisions with regard to future investigation and/or remedial activities that may be undertaken at each substation.

Provided with this document are the following attachments:

- Attachment 1 - Sample Location Map
- Attachment 2 - Summary of Completed Field Activities
- Attachment 3 - Boring Logs
- Attachment 4 - Data Qualifiers/ Summary Analytical Data Tables
- Attachment 5 – Proposed Sample Location Maps

The analytical data for the surface soil and subsurface soil samples collected at the Far Rockaway Substation were screened utilizing the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Soil Cleanup Objectives (RSCOs). Groundwater sample results were screened utilizing the NYSDEC Class GA Groundwater Standards/Guidance Values.

The following is a summary of key findings with regard to contaminant concentrations and distribution in sampled media:

PRELIMINARY EVALUATION

Surface Soil

Metals

Of the 17 surface soil samples collected, all 17 exhibited detectable concentrations of mercury in exceedance of the RSCO for mercury (0.1 mg/kg), ranging from 0.189 mg/kg to a maximum of 317 mg/kg. However, six of these samples exhibited mercury at concentrations of less than 5.0 mg/kg. Eight samples exhibited mercury at a concentration of greater than 10.0 mg/kg, and three samples exhibited mercury at a concentration of greater than 100.0 mg/kg, including:

- FRSS-13, at 317 mg/kg, located at the northeast corner of the substation building, within the water meter pit.
- FRSS-20, at 119 mg/kg, located approximately four feet to the east of the substation building.
- FRSS-21, at 110 mg/kg, located approximately four feet to the east of the substation building.

In addition to mercury, four surface soil samples were analyzed for RCRA Metals. Arsenic, cadmium and lead were found to exceed the RSCOs (7.5 mg/kg, 10 mg/kg and 400 mg/kg, respectively) in one or more of the four collected samples. The maximum

concentrations of arsenic (12.1 mg/kg) and cadmium (35.0 mg/kg) were detected in surface soil sample FRSS-15, located approximately 14 feet south of the southeast corner of the substation building, in the transformer yard. The maximum concentration of lead (1,000 mg/kg) was detected in surface soil sample FRSS-17, located approximately 38 feet south of the southeast corner of the substation building, in the transformer yard.

Semivolatile Organics

Four surface soil samples were analyzed for semivolatile organic compounds (SVOCs). Benzo(a)pyrene was detected above its RSCO of 61 ug/kg in two surface soil samples, with the maximum concentration of 190 ug/kg detected in surface soil sample FRSS-17. FRSS-17 is located approximately 38 feet south of the southeast corner of the substation building, in the transformer yard. However, the surface soil samples did not exceed the RSCO for total SVOCs of 500 mg/kg.

PCBs

Four surface soil samples were analyzed for PCBs. PCBs were not detected at concentrations above the RSCOs for surface soil.

Subsurface Soil

Metals

Forty-seven subsurface soil samples were analyzed for mercury with 29 samples exhibiting detectable concentrations above the RSCO for mercury (0.1 mg/kg), ranging from a minimum of 0.103 mg/kg to a maximum of 34.8 mg/kg. Fourteen of the 29 samples exhibited mercury at concentrations exceeding 1.0 mg/kg. Seven of the 29 samples exhibited mercury at concentrations exceeding 5.0 mg/kg. Two of the 29 samples exhibited mercury at concentrations exceeding 10.0 mg/kg, including:

- FRSB-12 (2 to 4 feet), at 26.3 mg/kg, located approximately 10 feet to the north of the substation building.

- FRSB-20 (2 to 4 feet), at 34.8 mg/kg, located at the northeast corner of the substation building, within the water meter pit.

In addition to mercury, eight subsurface soil samples were analyzed for RCRA metals. Cadmium slightly exceeded its RSCO of 10 mg/kg in two samples, collected from the transformer yard to the south of the substation building. The maximum concentration of 10.8 mg/kg was detected in subsurface soil sample FRSB-21 (0 to 2 feet), located approximately 14 feet south of the substation building.

Semivolatile Organics

Eight subsurface soil samples were analyzed for semivolatile organic compounds (SVOCs). Benzo(a)pyrene was detected above its RSCO of 61 ug/kg in two subsurface soil samples, with the maximum concentration of 130 ug/kg detected in subsurface soil sample FRSB-21 (0 to 2 feet), located approximately 14 feet south of the substation building, in the transformer yard. However, the subsurface soil samples did not exceed the RSCO for total SVOCs of 500 mg/kg.

PCBs

Eight subsurface soil samples were analyzed for PCBs. PCBs were not detected at concentrations above the RSCOs for subsurface soil.

Groundwater

A total of three groundwater samples were collected for chemical analysis from the site using a Geoprobe groundwater point sampler and a peristaltic pump. All samples were analyzed for TAL Metals (including mercury) and VOCs. Due to the highly turbid nature of the groundwater samples, all samples collected for metals analysis included filtered and unfiltered samples.

Metals

Groundwater probes FRGP-01, FRGP-02 and FRGP-03 did not exceed the NYSDEC Class GA Standard of 0.7 ug/l for mercury in any of the collected samples, with the exception of unfiltered groundwater probe FRGP-01. Unfiltered groundwater probe FRGP-01 slightly exceeded the Class GA Standard for mercury with a concentration of 0.87 ug/l. It should be noted, however, that FRGP-01 was collected upgradient of the site, and the filtered groundwater sample collected at this location did not exhibit an exceedance of mercury.

Several other metals, including antimony, chromium, iron, manganese and sodium, were detected above their respective Class GA Standards in one or more unfiltered samples. However, these same metals were either generally not detected or detected at lower concentrations in the filtered samples. Due to the high turbidity of the 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 probe FRGP-01, antimony and iron exceeded their respective Class GA Standards. In filtered groundwater probe FRGP-03, iron, sodium and thallium exceeded their respective Class GA Standards. However, as noted previously, mercury did not exceed its Class GA Standard in any filtered sample.

Volatile Organics

VOCs were not detected at concentrations above NYSDEC Class GA Standards.

On-Site Dry Wells

As shown on Figure 1, one subsurface soil sample designated as FRSB-03A (6 to 8 feet) was collected from a dry well located approximately 3 feet south of the substation building in the

transformer yard, and was analyzed for mercury. Mercury was detected above its RSCO of 0.1 mg/kg at a concentration of 4.2 mg/kg.

As shown on Figure 1, soil boring FRSB-05A was completed within a dry well located approximately 25 feet south of the substation building, in the transformer yard. Subsurface soil samples were collected from a depth of 8 to 20 feet below ground surface, in continuous, 2-foot intervals. All subsurface soil samples were analyzed for PCBs, RCRA Metals, SVOCs, TPHs and VOCs. Mercury was detected at concentrations slightly above its RSCO of 0.1 mg/kg in two sample intervals with the maximum concentration of 1.0 mg/kg occurring in the 8- to 10-foot interval. There were no other exceedances of the RSCOs for any other analytes in the dry well.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the Delineation Phase II Site Assessment of the Far Rockaway Substation, mercury has been detected in surface soil and subsurface soil above the RSCOs. The higher mercury concentrations were detected in surface soil and shallow subsurface soil in the vicinity of the north and east sides of the substation building, as well as the southwest corner of the substation building. The highest mercury concentrations were detected in surface soil sample FRSS-13 and subsurface soil sample FRSB-20 (2 to 4 feet), at 317 mg/kg and 34.8 mg/kg, respectively. Both of these soil samples were collected from the water meter pit, located at the northeast corner of the substation building.

All 17 of the collected surface soil samples were found to exceed the RSCO for mercury of 0.1 mg/kg, where 65% of the collected samples exhibited mercury above 5.0 mg/kg, 47% of the collected samples exhibited mercury above 10.0 mg/kg, and 18% of the samples collected exhibited mercury above 100.0 mg/kg. Thirty-two out of 54 subsurface soil samples (including the subsurface soil samples collected from the dry wells) were found to exceed the RSCO for mercury of 0.1 mg/kg, where 30% of the samples collected exhibited mercury at or above 1.0 mg/kg, 13% of the samples collected exhibited mercury above 5.0 mg/kg and only two of the collected samples exhibited mercury above 10.0 mg/kg. Furthermore, based on a review of the groundwater data, groundwater has not been impacted by the presence of mercury in on-site soil.

Based on these findings, D&B recommends that additional sampling be undertaken in the vicinity of the north side of the substation building to determine the extent of mercury contamination in this area. This proposed sampling takes into consideration existing soil data generated as part of the initial site assessment conducted in July of 1999, and the Interim Remedial Measures Oversight (IRM) remediation conducted in April of 2000, where the area shaded in green, as depicted in Figures 1 and 2, was excavated to a depth of 6 inches below ground surface, and replaced with poly sheeting and crushed stone. Figures 1 and 2 are provided in Attachments 1 and 5, respectively.

As depicted on Figure 2, in Attachment 5, it is recommended that 18 additional sample locations (FRSS-22 through FRSS-39 for surface soil samples and FRSB-29 through FRSB-46 for subsurface soil samples) be completed on the north side of the substation, in the area of previously collected surface soil samples FRSS-06, FRSS-07 and FRSS-08. Each sample location will be arranged in a grid-like fashion, spread approximately 5 feet apart. At each location, one surface soil sample (0 to 2 inches) and one subsurface soil sample (1 to 2 feet) will be collected and analyzed for mercury.

In addition, in order to define the vertical limits of mercury contamination, several deeper subsurface soil samples will be collected on the north side of the substation building, as follows:

- The six subsurface soil borings to be completed in the vicinity of FRSB-12, including FRSB-35, FRSB-36, FRSB-38, FRSB-39, FRSB-40 and FRSB-41, will be advanced to a depth of 6 feet below ground surface, and two additional samples will be collected from each location from 2 to 4 and 4 to 6 feet below ground surface for mercury analysis.

- The two soil borings to be completed in the vicinity of FRSB-01, including FRSB-31 and FRSB-33, are to be advanced to a depth of 4 feet below ground surface, and one additional sample will be collected from each location from 2 to 4 feet below ground surface for mercury analysis.

As depicted on Figure 2, in Attachment 5, it is recommended that nine additional sample locations (FRSS-40 through FRSS-48 for surface soil samples and FRSB-47 through FRSB-55

for subsurface soil samples) be completed on the east side of the substation building in the areas of previously collected surface soil samples FRSS-20 and FRSS-21. Each sample location will be arranged in a grid-like fashion, spread approximately 6 feet apart. At each location, one surface soil sample (0 to 2 inches) and one subsurface soil sample (1 to 2 feet) will be collected and analyzed for mercury.

As depicted on Figure 2, in Attachment 5, it is recommended that one additional subsurface soil boring (FRSB-20A) be completed in the water meter pit, with samples collected from 4 to 6 and 6 to 8 feet below the pit bottom for mercury analysis.

As depicted on Figure 3, in Attachment 5, it is recommended that 12 additional sample locations (FRSS-49 through FRSS-60 for surface soil samples and FRSB-56 through FRSB-67 for subsurface soil samples) be completed off the southwest corner of the substation building, and in the vicinity of previously collected surface soil samples FRSS-09 and FRSS-10. Each sample location will be arranged in a grid-like fashion, spread approximately 4 feet apart. At each location, one surface soil sample (0 to 2 inches) and one subsurface soil sample (1 to 2 feet) will be collected and analyzed for mercury to further investigate the extent of mercury contamination in these locations.

All soil sampling will be conducted in a manner consistent with the provisions of the approved Investigation Work Plan, dated June 2005. QA/QC samples will be collected as part of the additional sampling program consistent with the approved work plan. All sample analysis and data validation will be conducted in accordance with the NYSDEC 6/2000 Analytical Services Protocol (ASP).

Please be advised that the LIRR has scheduled the decommissioning and abatement of the Far Rockaway Substation for 2009. However, the substation building will remain in place and will be used for storage. Therefore, the substation building will continue to serve as a structurally sound concrete cap that will prevent direct exposure to mercury-contaminated soil under the building, as well as prevent any mercury migration through the subsurface soil immediately beneath the structure. All equipment, including the rectifier, high-tension rack and

transformers will be removed. A new substation building will be constructed in an alternate location. The LIRR will provide the NYSDEC with a proposed site plan in the near future.

The analytical data obtained from this recommended supplemental sample collection and analysis program will be evaluated in conjunction with the existing data to determine the extent of mercury contamination at each location, as well as the need for remediation.

LIRR FAR ROCKAWAY SUBSTATION
ATTACHMENT 1

SAMPLE LOCATION MAP

PRIVATE PARKING LOT

CONCRETE SIDEWALK

REDFERN AVENUE

GATE

STORAGE YARD

EXISTING RAILROAD TRACKS

LIPA METERING BOX

FRGP-03

FRSS-18
FRSB-25

DOUBLE SWING GATE

FRSS-19
FRSB-26

CONDUIT PIT WITH EARTHEN BOTTOM

FRSS-05
FRSB-08

FRSB-02

FLOOR DRAIN

DRY WELL

FRSS-09
FRSB-15

FRGP-02

FRSS-01

FRSB-09

FRSB-03A

FRSB-03

FRSS-10
FRSB-16

FRSS-04

FRSB-17

ELECTRICAL CONTROL PANEL WITH BALCONY OVERHEAD

FRSS-16
FRSB-23

TRANSFORMER YARD

FRSS-14
FRSB-21

M.H. FOR CONTROL CABLE

FRSS-12

FRSS-11
FRSB-18

FRCC-03/
FRSB-07

FRSB-01A

FRSB-01

FRSS-06
FRSB-10

WATER TROUGH PIT

CONCRETE STEPS

MOTOR GENERATOR

FRSS-02

FRCC-02/
FRSB-06

FRSS-07
FRSB-12

FRSB-11

RECTIFIER PIT

FRCC-01/
FRSB-04

FRSS-03

DRY WELL

FRSB-05

FRSB-05A

FRSS-17
FRSB-24

FRSS-15
FRSB-22

PIPE TRENCH AND COVER

FRSS-13
FRSB-20

FRSB-13

FRSS-20
FRSB-27

LIRR EASEMENT

FRGP-01

FRSS-21
FRSB-28

WATER METER PIT WITH EARTHEN BOTTOM

FRSS-08
FRSB-14

ASSUMED GROUNDWATER FLOW DIRECTION

EXISTING BUILDING

0 5 10
SCALE IN FEET

LEGEND

FRSS-01 ○	PREVIOUS SURFACE SOIL SAMPLE
FRSB-01 ●	PREVIOUS SOIL BORING
FRCC-01/ FRSB-04 ◉	PREVIOUS CONCRETE CORING/SOIL BORING
FRSS-05 ○	SURFACE SOIL SAMPLE
FRSB-08 ●	SOIL BORING
FRGP-01 ✦	GROUNDWATER PROBE
⊡	SUB-BASEMENT AND/OR SUB-GRADE FLOOR DRAIN (F.D.)
— — —	PIPE CONNECTION BASED ON LIRR CONSTRUCTION DRAWINGS
×—×—×	CHAIN LINK FENCE
▨	AREA REMEDIATED AS PART OF IRM

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

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

SAMPLE LOCATION MAP
FAR ROCKAWAY SUBSTATION (V00391-1)

FIGURE 1

F:\2229\2229-3B.dwg, LOCATION, 05/16/06 05:29:25 PM, FDeVita

LIRR FAR ROCKAWAY SUBSTATION
ATTACHMENT 2

SUMMARY OF COMPLETED FIELD ACTIVITIES

LONG ISLAND RAILROAD
DELINEATION PHASE II SITE ASSESSMENT - SEVENTEEN SUBSTATIONS
FAR ROCKAWAY (V00391-1) - SUMMARY OF COMPLETED WORK (8/29/05 through 2/27/06)

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 Side of Substation	FRSB-01A	-	1	2	6-10' bgs Cont.	-	-	2	-	-	-	-	-	-	No deviations from original scope.
	FRSS-05 through 08 FRSB-08 through 14	4	7	28	2-10' bgs Cont.	-	-	32	-	-	-	-	-	-	FRSS-07 and FRSB-12 were moved approximately 2' west due to utility obstructions.
South Side of Substation	FRSS-09 through 11 FRSB-15 through 18	3	4	4	2-4' bgs Cont.	-	-	7	-	-	-	-	-	-	FRSS-09 and FRSB-15 were moved 4' west due to utility obstructions.
Dry Well Off Southwest Corner of Substation	FRSB-03A	-	1	1	6-8' bgs	-	-	1	-	-	-	-	-	-	No deviations from original scope.
Water Meter Pit and Control Cable Manhole	FRSS-12 & 13 FRSB- 20	2	1	1	2-4' bpb Cont.	-	-	3	-	-	-	-	-	-	Subsurface soil sample FRSB-19 was cancelled due to a solid manhole bottom.
Roof Drains	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Roof drains terminating above ground were not observed at the substation.
Underground Injection Control	FRSB-05A	-	1	6	8-20' bgs Cont.	-	-	-	-	-	-	-	-	6	FRSB-05A encountered refusal at 20' bgs.
Groundwater	FRGP-01 through 03	-	-	-	-	3	9'	-	-	6***	-	3	-	-	FRGP-01 was moved approximately 3' southeast due to utility obstructions.
Transformers	FRSS-14 through 17 FRSB-21 through 24	4	4	8	0-4' bgs Cont.	-	-	-	12	-	12	-	12	-	No deviations from original scope of work.
Potential Releases	FRSS-18 through 21 FRSB-25 through 28	4	4	4	2-4' bgs Cont.	-	-	8	-	-	-	-	-	-	No deviations from original scope of work.
		17	23	54	-	3	-	53	12	6	12	3	12	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

LIRR FAR ROCKAWAY SUBSTATION
ATTACHMENT 3

BORING LOGS

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-01A** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/27/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/27/05	**Boring Completion Depth:** 10' **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'	0	HA	24	0.000	0.0	0-6" CONCRETE 6"-8" Crushed Stone and poly sheeting. 8"-2' Brown, fine to medium SILTY SAND, little fine gravel and clay.	
2' - 4'	0	HA	24	0.000	0.0	Brown to light brown, fine SAND, little clayey silty medium sand, trace fine gravel, moist.	
4' - 6'	0	GP	24	0.000	0.0	Brown, fine to medium CLAYEY SAND and fine GRAVEL, some medium gravel, little coarse gravel, moist.	
6' - 8'	1	GP	24	0.000	0.0	Brown, medium SAND and fine to medium GRAVEL, some coarse sand and silt.	
8' - 10'	2	GP	24	0.000	0.0	Brown medium SAND and fine to medium GRAVEL, some fine sand.	

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 Railroad Far Rockaway Substation	**Boring No.: FRSB-03A** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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' - 4'6"	0	NA	NA	NA	NA	Void.	
4'6" - 6'	0	GP	24	0.000	0.0	Brown, fine to medium SAND, and fine to medium GRAVEL.	
6' - 8'	1	GP	24	0.000	0.0	Tannish brown fine to medium SAND, some fine to medium gravel.	

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

NOTES:
Sample for mercury was collected from 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-05A** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**Boring Completion Depth:** 20' **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' - 8'	-	-	-	-	-	Void.	
8' - 10'	1	GP	24	0.000	0.0	Brown, fine to course SAND, some fine to medium gravel, wet.	
10' - 12'	2	GP	24	0.000	0.0	Tan fine to medium SAND, little fine to medium gravel, wet.	
12' - 14'	3	GP	24	0.000	0.0	Same as above.	
14' - 16'	4	GP	24	0.000	0.0	Tannish-brown, fine to medium CLAYEY SAND and fine GRAVEL, some medium gravel, wet.	
16' - 18'	5	GP	24	0.000	0.0	Orange to brown, fine to medium SAND, some clay and fine gravel, some medium gravel, wet.	
18' - 20'	6	GP	24	0.000	0.0	Brownish orange, fine to medium SILTY, CLAYEY SAND, some fine gravel, wet. Refusal at 20'.	

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

NOTES:
Samples for UIC constituents were collected at 8'-10', 10'-12', 12'-14', 14'-16', 16'-18' and 18'-20'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-08** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Dark brown to brown, fine to medium SAND, little fine gravel and silt.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, little fine gravel and silt.	
4' - 6'	2	GP	24	0.000	0.0	Tannish- brown, fine to medium SAND, little fine to medium gravel.	
6' - 8'	3	GP	24	0.000	0.0	Tannish- brown, fine to medium SAND, some fine to medium gravel.	
8' - 10'	4	GP	24	0.000	0.0	Brown to tan, medium to coarse SAND, some medium gravel, wet.	

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 Railroad Far Rockaway Substation		**Boring No.: FRSB-09** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/27/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/27/05	**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" CONCRETE 6"-8" Crushed stone and poly sheeting. 8"-2' Brown, fine to medium SILTY SAND, little fine gravel and clay.	
2' - 4'	1	HA	24	0.000	0.0	Brown to light brown, fine SAND, little clayey, silty medium sand, trace fine gravel, moist.	
4' - 6'	2	GP	24	0.000	0.0	Brown, fine to medium CLAYEY SAND and fine GRAVEL, some medium gravel, little coarse gravel, moist.	
6' - 8'	3	GP	24	0.000	0.0	Brown, fine to medium SAND and fine GRAVEL, little medium gravel.	
8' - 10'	4	GP	24	0.000	0.0	Brown medium SAND, some fine sand and fine to medium gravel.	

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 Railroad Far Rockaway Substation	**Boring No.: FRSB-10** **Sheet** _1_ **of** _1_ **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 2/27/06	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 2/27/06	**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" CONCRETE 6"-2' Blackish- brown, fine to medium silty SAND, some crushed stone.	
2' - 4'	1	HA	24	0.006	0.0	Orange-brown, fine SILTY SAND, some fine to medium gravel.	
4' - 6'	2	GP	24	0.000	0.0	Same as above. Groundwater encountered at 5 feet.	
6' - 8'	3	GP	24	0.000	0.0	Brown, fine to medium SAND, some clay and fine GRAVEL.	
8' - 10'	4	GP	24	0.000	0.0	Tan, medium SAND, some fine gravel.	

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 Railroad Far Rockaway Substation	**Boring No.: FRSB-11** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/27/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/27/05	**Boring Completion Depth:** 10' **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'	0	HA	24	0.330	0.0	0-6" CONCRETE 6"-2' Brown, fine SAND, some fine gravel and silt, trace mercury beads observed.	
2' - 4'	1	HA	24	0.229	0.0	Light brown, fine SILTY SAND, some fine gravel and medium sand.	
4' - 6'	2	GP	24	0.004	0.0	Brown to light brown, fine to medium SAND and fine to medium GRAVEL. Groundwater encountered at 5 feet.	
6' - 8'	3	GP	24	0.000	0.0	Brown to light brown, fine to medium SAND and fine to medium GRAVEL.	
8' - 10'	4	GP	24	0.000	0.0	Brown to light brown, fine to medium SAND, some fine gravel, little medium gravel.	

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 Railroad Far Rockaway Substation	**Boring No.: FRSB-12** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 2/27/06	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 2/27/06	**Boring Completion Depth:** 10' **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'	0	HA	24	0.000	0.0	0-6" Concrete. 6"-2' Blackish-brown, fine to medium SAND, some silt and fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Orange brown, fine SAND, some medium sand and fine to medium gravel.	
4' - 6'	2	GP	24	0.005	0.0	Brown, fine to medium clayey SAND, some fine gravel, trace medium gravel. Groundwater encountered at 5'.	
6' - 8'	3	GP	24	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL.	
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 Railroad Far Rockaway Substation		**Boring No.: FRSB-13** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/27/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/27/05	**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	0-5" Crushed STONE, brown, fine to medium SAND and polysheeting. 5"-2' Orange brown, fine SAND, little medium sand and fine gravel.	
2' - 4'	1	HA	24	0.000	0.0	Orange brown, fine SAND, little medium sand and fine gravel.	
4' - 6'	2	GP	24	0.000	0.0	Orange brown, fine to medium SAND, some fine gravel, some silt and clay.	
6' - 8'	3	GP	24	0.000	0.0	Brown, medium SAND, some fine sand and fine to medium gravel.	
8' - 10'	4	GP	24	0.000	0.0	Brown, medium SAND, some fine sand and fine to medium gravel.	

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 Railroad Far Rockaway Substation	**Boring No.: FRSB-14** **Sheet** 1 **of** 1 **By:** Monica Sellberg
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/27/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/27/05	**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	Brown, fine to medium SAND, some silty fine to medium gravel and crushed stone.	
2' - 4'	1	HA	24	0.000	0.0	Orange-brown, fine SAND, some medium sand, little fine gravel.	
4' - 6'	2	GP	24	0.000	0.0	Orange-brown, fine SAND, some medium sand and clay, trace fine gravel, wet.	
6' - 8'	3	GP	24	0.000	0.0	Brown, fine to medium SAND, and fine GRAVEL, some medium gravel.	
8' - 10'	4	GP	24	0.000	0.0	Brown to light brown, fine to medium SAND, some fine gravel, little medium gravel.	

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 Railroad Far Rockaway Substation	**Boring No.: FRSB-15** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Brown, fine to medium SAND, little gravel and red brick fragments.	
2' - 4'	1	HA	24	0.003	0.0	Brown, fine to medium SAND, little gravel, slit and red brick fragments.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-16** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Light-brown, fine to medium SAND, some gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine SAND, some silt, little gravel, moist.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-17** **Sheet** _1_ **of** _1_ **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Brown, fine to medium SAND, little silt and gravel, dry.	
2' - 4'	1	HA	24	0.000	0.0	Brown-light brown, fine SILTY SAND, little gravel, moist.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-18** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Brown, fine to medium SILTY SAND, some fine to course gravel.	
2' - 4'	1	HA	24	0.000	0.0	Orange- brown, fine to course SAND, little fine gravel.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-20** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Black, fine to medium SILTY SAND, some fine to medium gravel, wet. Small mercury beads observed.	
2' - 4'	1	HA	24	0.003	0.0	Tan to orange, fine to course SAND, and fine to medium GRAVEL, some clayey silt.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-21** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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'	1	HA	24	0.000	0.0	Dark brown, medium to course GRAVEL and BLUESTONE, some medium sand, loose.	
2' - 4'	2	HA	24	0.003	0.0	Brown, fine to medium SAND, loose.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2229 **Project Name:** Long Island Railroad Far Rockaway Substation		**Boring No.: FRSB-22** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Dark brown, medium to course GRAVEL, some fine sand, loose, dry.	
2' - 4'	2	HA	24	0.003	0.0	Light brown, fine to medium SAND, loose.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-23** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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'	1	HA	24	0.000	0.0	Dark brown, medium to course GRAVEL, some medium sand, loose, dry.	
2' - 4'	2	HA	24	0.003	0.0	Light brown, fine to medium SAND, loose, dry.	

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

NOTES:
Samples for PCBs, RCRA metals and SVOCs analysis were collected at 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2229 **Project Name:** Long Island Railroad Far Rockaway Substation		**Boring No.: FRSB-24** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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'	1	HA	24	0.000	0.0	Dark brown, medium to course GRAVEL, some fine to medium sand, loose, dry.	
2' - 4'	2	HA	24	0.003	0.0	Light brown, fine to medium SAND, loose, dry.	

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

NOTES:
Samples for PCBs, RCRA metals and SVOCs analysis were collected at 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-25** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	0.034	0.0	Dark brown, fine to medium SAND, some gravel, dry.	
2' - 4'	1	HA	24	0.000	0.0	Dark brown, fine to medium SAND, some gravel, dry.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-26** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Brown, fine to medium SAND, some gravel.	
2' - 4'	1	HA	24	0.000	0.0	Tan, fine to medium SAND, moist.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-27** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Black, fine SILTY SAND, little fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Orange to tan, fine to medium SAND and fine GRAVEL, some medium gravel.	

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

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

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Far Rockaway Substation	**Boring No.: FRSB-28** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 8/29/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 8/29/05	**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	Black, fine SILTY SAND, some medium sand, little fine gravel.	
2' - 4'	1	HA	24	0.000	0.0	Orange to tan, fine to medium SAND, some fine to medium gravel.	

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

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

LIRR FAR ROCKAWAY SUBSTATION
ATTACHMENT 4

DATA QUALIFIERS/
CHEMICAL DATA TABLES

Data Flag/Qualifiers:

U Not Detected. This compound was analyzed-for but not detected. For Organics analysis the reporting limit (lowest standard concentration) is the value listed. For Inorganics analysis, the value listed is the detection limit. For Inorganics analyzed using SW-846 methods, the detection limit is the Method Detection Limit, for Inorganics analyzed using EPA CLP and NY ASP CLP methods, the detection limit is the Instrument Detection Limit.

J For Organics analysis, this flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B For Organic analyses, this flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a diluted analysis

E For Organics analysis, this flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for Pesticides/PCB/Herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for Primary and Confirmation analyses. This difference typically indicates an interference, causing one value to be unusually high. The **lower** of the two values is reported in the Analysis Report.

A Used to flag Semivolatile Organic Tentatively Identified Compound library search results for compounds identified as aldol condensation byproducts.

N Used to flag results for Volatile and Semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

TABLE 1
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-05 FRSS-05 08/29/2005 0.00	FRSS-06 FRSS-06 02/27/2006 0.00	FRSS-07 FRSS-07 02/27/2006 0.00	FRSS-08 FRSS-08 02/27/2006 0.00	FRSS-09 FRSS-09 08/29/2005 0.00
Mercury	(mg/kg)	0.10	[6.0]	[16]	[74.6]	[21.60]	[13.900]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 1
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-10 FRSS-10 08/29/2005 0.00	FRSS-11 FRSS-11 08/29/2005 0.00	FRSS-12 FRSS-12 08/29/2005 0.00	FRSS-13 FRSS-13 08/29/2005 0.00	FRSS-14 FRSS-14 08/29/2005 0.00
Mercury	(mg/kg)	0.10	[10.500]	[7.6]	[1.3]	[317]	[1.3]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 1
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-15 FRSS-15 08/29/2005 0.00	FRSS-16 FRSS-16 08/29/2005 0.00	FRSS-17 FRSS-17 08/29/2005 0.00	FRSS-18 FRSS-18 08/29/2005 0.00	FRSS-19 FRSS-19 08/29/2005 0.00
Mercury	(mg/kg)	0.10	[3.0]	[0.189]	[2.4]	[3.9]	[6.2]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 1
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-20 FRSS-20 08/29/2005 0.00	FRSS-21 FRSS-21 08/29/2005 0.00
Mercury	(mg/kg)	0.10	[119]	[110]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

Table 2
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
RCRA METALS

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-14 FRSS-14 08/29/2005 0.00	FRSS-15 FRSS-15 08/29/2005 0.00	FRSS-16 FRSS-16 08/29/2005 0.00	FRSS-17 FRSS-17 08/29/2005 0.00
Arsenic	(mg/kg)	7.5	[8.4]	[12.1]	2.6	[9.7]
Barium	(mg/kg)	300	106	138	31.6	235
Cadmium	(mg/kg)	10	[23.4]	[35.0]	0.04 U	5.4
Chromium	(mg/kg)	50	17.7	18.5	7.5	19.1
Lead	(mg/kg)	400	[490]	[777]	49.1	[1000]
Selenium	(mg/kg)	2	1.7	1.4	1.3	1.2
Silver	(mg/kg)		0.55 B	0.48 B	0.08 U	0.38 B

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 3
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-14 FRSS-14 08/29/2005 0.00	FRSS-15 FRSS-15 08/29/2005 0.00	FRSS-16 FRSS-16 08/29/2005 0.00	FRSS-17 FRSS-17 08/29/2005 0.00
2,2-oxyblis (1-chloropropane)	(ug/kg)		110 U	590 U	57 U	110 U
2,4,5-Trichlorophenol	(ug/kg)	100	100 U	560 U	54 U	100 U
2,4,6-Trichlorophenol	(ug/kg)		100 U	530 U	52 U	99 U
2,4-Dichlorophenol	(ug/kg)	400	130 U	670 U	65 U	120 U
2,4-Dimethylphenol	(ug/kg)		110 U	580 U	56 U	110 U
2,4-Dinitrophenol	(ug/kg)	200	580 U	3100 U	300 U	580 U
2,4-Dinitrotoluene	(ug/kg)		100 U	530 U	52 U	99 U
2,6-Dinitrotoluene	(ug/kg)	1000	96 U	510 U	50 U	95 U
2-Chloronaphthalene	(ug/kg)		110 U	600 U	58 U	110 U
2-Chlorophenol	(ug/kg)	800	110 U	580 U	56 U	110 U
2-Methylnaphthalene	(ug/kg)	36400	110 U	610 U	59 U	110 U
3,3-Dichlorobenzidine	(ug/kg)		120 U	620 U	60 U	120 U
4,6-Dinitro-o-cresol	(ug/kg)		130 U	710 U	68 U	130 U
4-Bromofluorobenzene	(ug/kg)		100 U	540 U	52 U	100 U
4-Chlorophenyl phenyl ether	(ug/kg)		110 U	570 U	56 U	110 U
Acenaphthene	(ug/kg)	50000	120 U	650 U	63 U	120 U
Acenaphthylene	(ug/kg)	41000	110 U	590 U	57 U	110 U
Acetophenone	(ug/kg)		99 U	530 U	51 U	98 U
Anthracene	(ug/kg)	50000	100 U	550 U	53 U	100 U
Atrazine	(ug/kg)		100 U	560 U	54 U	100 U
Benzaldehyde	(ug/kg)		140 U	750 U	72 U	140 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 3
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-14 FRSS-14 08/29/2005 0.00	FRSS-15 FRSS-15 08/29/2005 0.00	FRSS-16 FRSS-16 08/29/2005 0.00	FRSS-17 FRSS-17 08/29/2005 0.00
Benzo(a)anthracene	(ug/kg)	224	180 J	510 U	49 U	160 J
Benzo(a)pyrene	(ug/kg)	61	[160] J	580 U	56 U	[190] J
Benzo(b)fluoranthene	(ug/kg)	1100	250 J	400 U	39 U	360 J
Benzo(ghi)perylene	(ug/kg)	50000	130 J	600 U	58 U	110 U
Benzo(k)fluoranthene	(ug/kg)	1100	150 U	800 U	77 U	150 U
Biphenyl	(ug/kg)		110 U	600 U	58 U	110 U
Bis(2-chloroethoxy)methane	(ug/kg)		110 U	600 U	58 U	110 U
Bis(2-chloroethyl)ether	(ug/kg)		110 U	570 U	56 U	110 U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	50000	130 U	700 U	67 U	140 J
Butyl benzyl phthalate	(ug/kg)	50000	110 U	590 U	57 U	110 U
Caprolactam	(ug/kg)		110 U	580 U	56 U	110 U
Carbazole	(ug/kg)		100 U	560 U	54 U	100 U
Chrysene	(ug/kg)	400	270 J	650 U	63 U	230 J
Dibenzo(a,h)anthracene	(ug/kg)	14	85 U	460 U	44 U	84 U
Dibenzofuran	(ug/kg)	6200	110 U	600 U	58 U	110 U
Diethyl phthalate	(ug/kg)	7100	120 U	630 U	61 U	120 U
Dimethyl phthalate	(ug/kg)	2000	110 U	580 U	56 U	110 U
Di-n-butyl phthalate	(ug/kg)	8100	100 U	550 U	54 U	100 U
Di-n-octyl phthalate	(ug/kg)	50000	120 U	620 U	60 U	110 U
Fluoranthene	(ug/kg)	50000	290 J	540 U	52 U	390 J
Fluorene	(ug/kg)	50000	110 U	610 U	59 U	110 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 3
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-14 FRSS-14 08/29/2005 0.00	FRSS-15 FRSS-15 08/29/2005 0.00	FRSS-16 FRSS-16 08/29/2005 0.00	FRSS-17 FRSS-17 08/29/2005 0.00
Hexachlorobenzene	(ug/kg)	410	110 U	580 U	56 U	110 U
Hexachlorobutadiene	(ug/kg)		100 U	560 U	54 U	100 U
Hexachlorocyclopentadiene	(ug/kg)		110 U	580 U	56 U	110 U
Hexachloroethane	(ug/kg)		120 U	620 U	60 U	110 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3200	86 U	460 U	45 U	85 U
Isophorone	(ug/kg)	4400	100 U	550 U	53 U	100 U
m-Nitroaniline	(ug/kg)	500	89 U	470 U	46 U	88 U
Naphthalene	(ug/kg)	13000	120 U	620 U	60 U	110 U
Nitrobenzene	(ug/kg)	200	150 U	790 U	77 U	150 U
N-Nitrosodiphenylamine	(ug/kg)		110 U	600 U	58 U	110 U
N-Nitrosodipropylamine	(ug/kg)		110 U	600 U	58 U	110 U
2-Methylphenol	(ug/kg)	100	110 U	600 U	58 U	110 U
2-Nitroaniline	(ug/kg)	430	86 U	460 U	45 U	85 U
2-Nitrophenol	(ug/kg)	330	100 U	560 U	54 U	100 U
4-Chloroaniline	(ug/kg)	220	81 U	430 U	42 U	80 U
4-Chloro-3-methylphenol	(ug/kg)	240	94 U	500 U	49 U	93 U
Pentachlorophenol	(ug/kg)	1000	160 U	840 U	81 U	160 U
4-Methylphenol	(ug/kg)	900	110 U	570 U	55 U	110 U
Phenanthrene	(ug/kg)	50000	240 J	580 U	56 U	290 J
Phenol	(ug/kg)	30	100 U	550 U	53 U	100 U
4-Nitroaniline	(ug/kg)		120 U	620 U	60 U	110 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 3
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-14 FRSS-14 08/29/2005 0.00	FRSS-15 FRSS-15 08/29/2005 0.00	FRSS-16 FRSS-16 08/29/2005 0.00	FRSS-17 FRSS-17 08/29/2005 0.00
4-Nitrophenol	(ug/kg)	100	84 U	450 U	44 U	83 U
Pyrene	(ug/kg)	50000	330 J	640 U	62 U	280 J
Total PAHs	(ug/kg)	500000	1850	0	0	1900
Total Semivolatile Organics	(ug/kg)	500000	1850	0	0	2040

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 4
LONG ISLAND RAILROAD- 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SURFACE SOIL SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSS-14 FRSS-14 08/29/2005 0.00	FRSS-15 FRSS-15 08/29/2005 0.00	FRSS-16 FRSS-16 08/29/2005 0.00	FRSS-17 FRSS-17 08/29/2005 0.00
Aroclor 1016	(ug/kg)	1000	2.6 U	2.8 U	2.7 U	2.6 U
Aroclor 1221	(ug/kg)	1000	4.1 U	4.3 U	4.2 U	4.0 U
Aroclor 1232	(ug/kg)	1000	6.1 U	6.5 U	6.3 U	5.9 U
Aroclor 1242	(ug/kg)	1000	5.4 U	5.8 U	5.6 U	5.3 U
Aroclor 1248	(ug/kg)	1000	2.6 U	2.8 U	2.7 U	2.6 U
Aroclor 1254	(ug/kg)	1000	1.7 U	1.8 U	1.8 U	1.7 U
Aroclor 1260	(ug/kg)	1000	30	83	4.5 U	140
Total PCBs	(ug/kg)	1000	30	83	0	140

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-01A FRSB-01A (6-8) 02/27/2006 8.00	FRSB-01A FRSB-01A(8-10) 02/27/2006 10.00	FRSB-08 FRSB-08(2-4) 08/29/2005 4.00	FRSB-08 FRSB-08(4-6) 08/29/2005 6.00	FRSB-08 FRSB-08(6-8) 08/29/2005 8.00
Mercury	(mg/kg)	0.10	[7]	[8.7]	[0.110]	0.099	0.007 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-08 FRSB-08(8-10) 08/29/2005 10.00	FRSB-09 FRSB-09(2-4) 02/27/2006 4.00	FRSB-09 FRSB-09(4-6) 02/27/2006 6.00	FRSB-09 FRSB-09(6-8) 02/27/2006 8.00	FRSB-09 FRSB-09(8-10) 02/27/2006 10.00
Mercury	(mg/kg)	0.10	0.007 U	[3.6]	[0.103]	0.064	[0.399]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-10 FRSB-10(2-4) 02/27/2006 4.00	FRSB-10 FRSB-10(4-6) 02/27/2006 6.00	FRSB-10 FRSB-10(6-8) 02/27/2006 8.00	FRSB-10 FRSB-10(8-10) 02/27/2006 10.00	FRSB-11 FRSB-11(2-4) 02/27/2006 4.00
Mercury	(mg/kg)	0.10	[2.0]	[0.157]	0.047	[0.236]	[5.1]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-11 FRSB-11(4-6) 02/27/2006 6.00	FRSB-11 FRSB-11(6-8) 02/27/2006 8.00	FRSB-11 FRSB-11(8-10) 02/27/2006 10.00	FRSB-12 FRSB-12(2-4) 02/27/2006 4.00	FRSB-12 FRSB-12 (4-6) 02/27/2006 6.00
Mercury	(mg/kg)	0.10	0.026	0.035	0.007 U	[26.3]	[0.85]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-12 FRSB-12(6-8) 02/27/2006 8.00	FRSB-12 FRSB-12(8-10) 02/27/2006 10.00	FRSB-13 FRSB-13(2-4) 02/27/2006 4.00	FRSB-13 FRSB-13(4-6) 02/27/2006 6.00	FRSB-13 FRSB-13(6-8) 02/27/2006 8.00
Mercury	(mg/kg)	0.10	[0.352]	[0.243]	[0.677]	0.009 B	0.006 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-13 FRSB-13(8-10) 02/27/2006 10.00	FRSB-14 FRSB-14(2-4) 02/27/2006 4.00	FRSB-14 FRSB-14(4-6) 02/27/2006 6.00	FRSB-14 FRSB-14(6-8) 02/27/2006 8.00	FRSB-14 FRSB-14(8-10) 02/27/2006 10.00
Mercury	(mg/kg)	0.10	0.007 U	[0.214]	0.015	0.020	0.007 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-15 FRSB-15(2-4) 08/29/2005 4.00	FRSB-16 FRSB-16(2-4) 08/29/2005 4.00	FRSB-17 FRSB-17(2-4) 08/29/2005 4.00	FRSB-18 FRSB-18(2-4) 08/29/2005 4.00	FRSB-20 FRSB-20(2-4) 08/29/2005 4.00
Mercury	(mg/kg)	0.10	[2.1]	[7.1]	[3.1]	[3.5]	[34.800]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-21 FRSB-21(2-4) 08/29/2005 4.00	FRSB-21 FRSB-21(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(2-4) 08/29/2005 4.00	FRSB-23 FRSB-23(0-2) 08/29/2005 2.00
Mercury	(mg/kg)	0.10	[0.269]	[0.761]	[0.875]	0.053	[0.118]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-23 FRSB-23(2-4) 08/29/2005 4.00	FRSB-24 FRSB-24(0-2) 08/29/2005 2.00	FRSB-24 FRSB-24(2-4) 08/29/2005 4.00	FRSB-25 FRSB-25(2-4) 08/29/2005 4.00	FRSB-26 FRSB-26(2-4) 08/29/2005 4.00
Mercury	(mg/kg)	0.10	0.026	[0.211]	0.056	[3.5]	0.039

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 5
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-27 FRSB-27(2-4) 08/29/2005 4.00	FRSB-28 FRSB-28(2-4) 08/29/2005 4.00
Mercury	(mg/kg)	0.10	[4.3]	[7.9]

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 6
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
RCRA METALS

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-21 FRSB-21(2-4) 08/29/2005 4.00	FRSB-21 FRSB-21(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(2-4) 08/29/2005 4.00	FRSB-23 FRSB-23(0-2) 08/29/2005 2.00
Arsenic	(mg/kg)	7.5	2.9	4.3	3.0	1.3	2.9
Barium	(mg/kg)	300	51.7	79.2	66.3	17.9 B	25.5
Cadmium	(mg/kg)	10	0.28 B	[10.8]	[10.2]	0.04 U	0.04 U
Chromium	(mg/kg)	50	9.5	12.9	8.1	7.6	7.8
Lead	(mg/kg)	400	58.5	348	160	6.6	49.1
Selenium	(mg/kg)	2	1.3	1.3	0.93 B	1.2	0.84 B
Silver	(mg/kg)		0.09 U	0.09 U	0.08 U	0.09 U	0.09 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 6
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
RCRA METALS

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-23 FRSB-23(2-4) 08/29/2005 4.00	FRSB-24 FRSB-24(0-2) 08/29/2005 2.00	FRSB-24 FRSB-24(2-4) 08/29/2005 4.00
Arsenic	(mg/kg)	7.5	1.8	3.3	1.7
Barium	(mg/kg)	300	17.6 B	50.2	18.4 B
Cadmium	(mg/kg)	10	0.03 U	0.03 U	0.03 U
Chromium	(mg/kg)	50	10.0	9.2	7.3
Lead	(mg/kg)	400	10.4	95.5	32.7
Selenium	(mg/kg)	2	0.79 B	0.88 B	0.68 B
Silver	(mg/kg)		0.08 U	0.08 U	0.08 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-21 FRSB-21(2-4) 08/29/2005 4.00	FRSB-21 FRSB-21(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(2-4) 08/29/2005 4.00	FRSB-23 FRSB-23(0-2) 08/29/2005 2.00
2,2-oxyblis (1-chloropropane)	(ug/kg)		58 U	110 U	57 U	57 U	57 U
2,4,5-Trichlorophenol	(ug/kg)	100	55 U	110 U	54 U	54 U	54 U
2,4,6-Trichlorophenol	(ug/kg)		52 U	100 U	52 U	52 U	52 U
2,4-Dichlorophenol	(ug/kg)	400	66 U	130 U	65 U	66 U	65 U
2,4-Dimethylphenol	(ug/kg)		57 U	110 U	56 U	56 U	56 U
2,4-Dinitrophenol	(ug/kg)	200	310 U	600 U	300 U	300 U	300 U
2,4-Dinitrotoluene	(ug/kg)		52 U	100 U	52 U	52 U	52 U
2,6-Dinitrotoluene	(ug/kg)	1000	51 U	100 U	50 U	50 U	50 U
2-Chloronaphthalene	(ug/kg)		59 U	120 U	59 U	59 U	58 U
2-Chlorophenol	(ug/kg)	800	57 U	110 U	56 U	57 U	56 U
2-Methylnaphthalene	(ug/kg)	36400	60 U	120 U	59 U	59 U	59 U
3,3-Dichlorobenzidine	(ug/kg)		61 U	120 U	60 U	61 U	60 U
4,6-Dinitro-o-cresol	(ug/kg)		69 U	140 U	69 U	69 U	68 U
4-Bromofluorobenzene	(ug/kg)		53 U	110 U	53 U	53 U	52 U
4-Chlorophenyl phenyl ether	(ug/kg)		56 U	110 U	56 U	56 U	56 U
Acenaphthene	(ug/kg)	50000	64 U	130 U	63 U	63 U	63 U
Acenaphthylene	(ug/kg)	41000	58 U	110 U	57 U	58 U	57 U
Acetophenone	(ug/kg)		52 U	100 U	52 U	52 U	51 U
Anthracene	(ug/kg)	50000	54 U	110 U	53 U	53 U	53 U
Atrazine	(ug/kg)		55 U	110 U	54 U	54 U	54 U
Benzaldehyde	(ug/kg)		73 U	140 U	73 U	73 U	72 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-21 FRSB-21(2-4) 08/29/2005 4.00	FRSB-21 FRSB-21(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(2-4) 08/29/2005 4.00	FRSB-23 FRSB-23(0-2) 08/29/2005 2.00
Benzo(a)anthracene	(ug/kg)	224	50 U	120 J	67 J	50 U	49 U
Benzo(a)pyrene	(ug/kg)	61	57 U	[130] J	[71] J	57 U	56 U
Benzo(b)fluoranthene	(ug/kg)	1100	39 U	230 J	120 J	39 U	39 U
Benzo(ghi)perylene	(ug/kg)	50000	59 U	120 U	58 U	59 U	58 U
Benzo(k)fluoranthene	(ug/kg)	1100	79 U	160 U	78 U	78 U	77 U
Biphenyl	(ug/kg)		59 U	120 U	58 U	58 U	58 U
Bis(2-chloroethoxy)methane	(ug/kg)		59 U	120 U	58 U	58 U	58 U
Bis(2-chloroethyl)ether	(ug/kg)		56 U	110 U	56 U	56 U	56 U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	50000	69 U	140 U	68 U	68 U	67 U
Butyl benzyl phthalate	(ug/kg)	50000	58 U	110 U	57 U	57 U	57 U
Caprolactam	(ug/kg)		57 U	110 U	57 U	57 U	57 U
Carbazole	(ug/kg)		55 U	110 U	54 U	54 U	54 U
Chrysene	(ug/kg)	400	64 U	150 J	92 J	64 U	63 U
Dibenzo(a,h)anthracene	(ug/kg)	14	45 U	88 U	44 U	44 U	44 U
Dibenzofuran	(ug/kg)	6200	59 U	120 U	58 U	59 U	58 U
Diethyl phthalate	(ug/kg)	7100	62 U	120 U	61 U	61 U	61 U
Dimethyl phthalate	(ug/kg)	2000	57 U	110 U	57 U	57 U	57 U
Di-n-butyl phthalate	(ug/kg)	8100	54 U	110 U	54 U	54 U	54 U
Di-n-octyl phthalate	(ug/kg)	50000	61 U	120 U	60 U	60 U	60 U
Fluoranthene	(ug/kg)	50000	53 U	250 J	150 J	53 U	52 U
Fluorene	(ug/kg)	50000	60 U	120 U	60 U	60 U	59 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-21 FRSB-21(2-4) 08/29/2005 4.00	FRSB-21 FRSB-21(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(2-4) 08/29/2005 4.00	FRSB-23 FRSB-23(0-2) 08/29/2005 2.00
Hexachlorobenzene	(ug/kg)	410	57 U	110 U	57 U	57 U	56 U
Hexachlorobutadiene	(ug/kg)		55 U	110 U	54 U	55 U	54 U
Hexachlorocyclopentadiene	(ug/kg)		57 U	110 U	56 U	57 U	56 U
Hexachloroethane	(ug/kg)		61 U	120 U	60 U	60 U	60 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3200	45 U	89 U	45 U	45 U	45 U
Isophorone	(ug/kg)	4400	54 U	110 U	53 U	53 U	53 U
m-Nitroaniline	(ug/kg)	500	47 U	92 U	46 U	46 U	46 U
Naphthalene	(ug/kg)	13000	61 U	120 U	60 U	61 U	60 U
Nitrobenzene	(ug/kg)	200	78 U	150 U	77 U	77 U	77 U
N-Nitrosodiphenylamine	(ug/kg)		59 U	120 U	58 U	58 U	58 U
N-Nitrosodipropylamine	(ug/kg)		59 U	120 U	59 U	59 U	58 U
o-Cresol	(ug/kg)	100	59 U	120 U	59 U	59 U	58 U
o-Nitroaniline	(ug/kg)	430	45 U	89 U	45 U	45 U	45 U
o-Nitrophenol	(ug/kg)	330	55 U	110 U	54 U	55 U	54 U
p-Chloroaniline	(ug/kg)	220	43 U	84 U	42 U	42 U	42 U
p-Chloro-m-cresol	(ug/kg)	240	49 U	97 U	49 U	49 U	49 U
PCP	(ug/kg)	1000	83 U	160 U	82 U	82 U	81 U
p-Cresol	(ug/kg)	900	56 U	110 U	56 U	56 U	55 U
Phenanthrene	(ug/kg)	50000	57 U	160 J	71 J	56 U	56 U
Phenol	(ug/kg)	30	54 U	110 U	54 U	54 U	53 U
p-Nitroaniline	(ug/kg)		61 U	120 U	60 U	61 U	60 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-21 FRSB-21(2-4) 08/29/2005 4.00	FRSB-21 FRSB-21(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(2-4) 08/29/2005 4.00	FRSB-23 FRSB-23(0-2) 08/29/2005 2.00
p-Nitrophenol	(ug/kg)	100	44 U	87 U	44 U	44 U	44 U
Pyrene	(ug/kg)	50000	63 U	170 J	140 J	63 U	62 U
Total PAHs	(ug/kg)	500000	0	1210	711	0	0
Total Semivolatile Organics	(ug/kg)	500000	0	1210	711	0	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-23 FRSB-23(2-4) 08/29/2005 4.00	FRSB-24 FRSB-24(0-2) 08/29/2005 2.00	FRSB-24 FRSB-24(2-4) 08/29/2005 4.00
2,2-oxyblis (1-chloropropane)	(ug/kg)		57 U	55 U	56 U
2,4,5-Trichlorophenol	(ug/kg)	100	54 U	52 U	53 U
2,4,6-Trichlorophenol	(ug/kg)		52 U	50 U	51 U
2,4-Dichlorophenol	(ug/kg)	400	65 U	63 U	64 U
2,4-Dimethylphenol	(ug/kg)		56 U	54 U	55 U
2,4-Dinitrophenol	(ug/kg)	200	300 U	290 U	300 U
2,4-Dinitrotoluene	(ug/kg)		52 U	50 U	51 U
2,6-Dinitrotoluene	(ug/kg)	1000	50 U	49 U	49 U
2-Chloronaphthalene	(ug/kg)		58 U	57 U	57 U
2-Chlorophenol	(ug/kg)	800	56 U	55 U	55 U
2-Methylnaphthalene	(ug/kg)	36400	59 U	57 U	58 U
3,3-Dichlorobenzidine	(ug/kg)		60 U	59 U	59 U
4,6-Dinitro-o-cresol	(ug/kg)		68 U	67 U	67 U
4-Bromofluorobenzene	(ug/kg)		52 U	51 U	52 U
4-Chlorophenyl phenyl ether	(ug/kg)		55 U	54 U	55 U
Acenaphthene	(ug/kg)	50000	62 U	61 U	62 U
Acenaphthylene	(ug/kg)	41000	57 U	56 U	56 U
Acetophenone	(ug/kg)		51 U	50 U	51 U
Anthracene	(ug/kg)	50000	53 U	52 U	52 U
Atrazine	(ug/kg)		54 U	53 U	53 U
Benzaldehyde	(ug/kg)		72 U	70 U	71 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-23 FRSB-23(2-4) 08/29/2005 4.00	FRSB-24 FRSB-24(0-2) 08/29/2005 2.00	FRSB-24 FRSB-24(2-4) 08/29/2005 4.00
Benzo(a)anthracene	(ug/kg)	224	49 U	48 U	48 U
Benzo(a)pyrene	(ug/kg)	61	56 U	55 U	55 U
Benzo(b)fluoranthene	(ug/kg)	1100	39 U	38 U	38 U
Benzo(ghi)perylene	(ug/kg)	50000	58 U	57 U	57 U
Benzo(k)fluoranthene	(ug/kg)	1100	77 U	75 U	76 U
Biphenyl	(ug/kg)		58 U	57 U	57 U
Bis(2-chloroethoxy)methane	(ug/kg)		58 U	56 U	57 U
Bis(2-chloroethyl)ether	(ug/kg)		55 U	54 U	55 U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	50000	67 U	66 U	66 U
Butyl benzyl phthalate	(ug/kg)	50000	57 U	55 U	56 U
Caprolactam	(ug/kg)		56 U	55 U	56 U
Carbazole	(ug/kg)		54 U	52 U	53 U
Chrysene	(ug/kg)	400	63 U	73 J	62 U
Dibenzo(a,h)anthracene	(ug/kg)	14	44 U	43 U	43 U
Dibenzofuran	(ug/kg)	6200	58 U	57 U	57 U
Diethyl phthalate	(ug/kg)	7100	61 U	59 U	60 U
Dimethyl phthalate	(ug/kg)	2000	56 U	55 U	56 U
Di-n-butyl phthalate	(ug/kg)	8100	53 U	52 U	53 U
Di-n-octyl phthalate	(ug/kg)	50000	60 U	58 U	59 U
Fluoranthene	(ug/kg)	50000	52 U	51 U	51 U
Fluorene	(ug/kg)	50000	59 U	58 U	58 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-23 FRSB-23(2-4) 08/29/2005 4.00	FRSB-24 FRSB-24(0-2) 08/29/2005 2.00	FRSB-24 FRSB-24(2-4) 08/29/2005 4.00
Hexachlorobenzene	(ug/kg)	410	56 U	55 U	55 U
Hexachlorobutadiene	(ug/kg)		54 U	53 U	53 U
Hexachlorocyclopentadiene	(ug/kg)		56 U	55 U	55 U
Hexachloroethane	(ug/kg)		60 U	58 U	59 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3200	45 U	44 U	44 U
Isophorone	(ug/kg)	4400	53 U	52 U	52 U
m-Nitroaniline	(ug/kg)	500	46 U	45 U	45 U
Naphthalene	(ug/kg)	13000	60 U	59 U	59 U
Nitrobenzene	(ug/kg)	200	77 U	75 U	75 U
N-Nitrosodiphenylamine	(ug/kg)		58 U	57 U	57 U
N-Nitrosodipropylamine	(ug/kg)		58 U	57 U	57 U
o-Cresol	(ug/kg)	100	58 U	57 U	57 U
o-Nitroaniline	(ug/kg)	430	45 U	44 U	44 U
o-Nitrophenol	(ug/kg)	330	54 U	53 U	53 U
p-Chloroaniline	(ug/kg)	220	42 U	41 U	41 U
p-Chloro-m-cresol	(ug/kg)	240	48 U	47 U	48 U
PCP	(ug/kg)	1000	81 U	79 U	80 U
p-Cresol	(ug/kg)	900	55 U	54 U	55 U
Phenanthrene	(ug/kg)	50000	56 U	91 J	55 U
Phenol	(ug/kg)	30	53 U	52 U	52 U
p-Nitroaniline	(ug/kg)		60 U	59 U	59 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 7
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-23 FRSB-23(2-4) 08/29/2005 4.00	FRSB-24 FRSB-24(0-2) 08/29/2005 2.00	FRSB-24 FRSB-24(2-4) 08/29/2005 4.00
p-Nitrophenol	(ug/kg)	100	44 U	43 U	43 U
Pyrene	(ug/kg)	50000	62 U	61 U	61 U
Total PAHs	(ug/kg)	500000	0	164	0
Total Semivolatile Organics	(ug/kg)	500000	0	164	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 8
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-21 FRSB-21(2-4) 08/29/2005 4.00	FRSB-21 FRSB-21(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(0-2) 08/29/2005 2.00	FRSB-22 FRSB-22(2-4) 08/29/2005 4.00	FRSB-23 FRSB-23(0-2) 08/29/2005 2.00
Aroclor 1016	(ug/kg)	10000	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
Aroclor 1221	(ug/kg)	10000	4.3 U	4.2 U	4.2 U	4.2 U	4.2 U
Aroclor 1232	(ug/kg)	10000	6.4 U	6.3 U	6.3 U	6.4 U	6.2 U
Aroclor 1242	(ug/kg)	10000	5.7 U	5.6 U	5.6 U	5.6 U	5.6 U
Aroclor 1248	(ug/kg)	10000	2.8 U	2.7 U	2.7 U	2.7 U	2.7 U
Aroclor 1254	(ug/kg)	10000	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Aroclor 1260	(ug/kg)	10000	4.6 U	33	4.5 U	4.5 U	4.5 U
Total PCBs	(ug/kg)	10000	0	33	0	0	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 8
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-23 FRSB-23(2-4) 08/29/2005 4.00	FRSB-24 FRSB-24(0-2) 08/29/2005 2.00	FRSB-24 FRSB-24(2-4) 08/29/2005 4.00
Aroclor 1016	(ug/kg)	10000	2.7 U	2.6 U	2.6 U
Aroclor 1221	(ug/kg)	10000	4.2 U	4.1 U	4.1 U
Aroclor 1232	(ug/kg)	10000	6.3 U	6.1 U	6.1 U
Aroclor 1242	(ug/kg)	10000	5.6 U	5.5 U	5.4 U
Aroclor 1248	(ug/kg)	10000	2.7 U	2.7 U	2.6 U
Aroclor 1254	(ug/kg)	10000	1.8 U	1.7 U	1.7 U
Aroclor 1260	(ug/kg)	10000	4.5 U	4.4 U	4.4 U
Total PCBs	(ug/kg)	10000	0	0	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 9
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
TARGET ANALYTE LIST METALS

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	FRGP-01 FRGP-01 02/27/2006	FRGP-01 FRGP-01F 02/27/2006	FRGP-02 FRGP-02 02/01/2006	FRGP-02 FRGP-02F 02/01/2006	FRGP-03 FRGP-03 08/29/2005
Aluminum	(ug/l)		9350	420	55.5 B	14.1 B	4270
Antimony	(ug/l)	3	[30] B	[8.4] B	3.2 U	3.2 U	3.2 U
Arsenic	(ug/l)	25	6.6 B	3.3 U	3.3 U	3.3 U	3.3 U
Barium	(ug/l)	1000	42.3 B	19 B	22.0 B	19.1 B	69.3 B
Beryllium	(ug/l)	3	0.73 B	0.09 U	0.09 U	0.09 U	0.09 U
Cadmium	(ug/l)	5	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Calcium	(ug/l)		27000	25000	29600	25900	34400
Chromium	(ug/l)	50	[67.3]	1.9 B	1.8 B	1.2 B	[104]
Cobalt	(ug/l)		10.6 B	2 B	2.0 B	1.6 B	4.8 B
Copper	(ug/l)	200	35.2	6.7 B	9.0 B	8.3 B	26.5
Iron	(ug/l)	300	[40600]	[1480]	[324]	203	[21400]
Lead	(ug/l)	25	24.8	5.5	2.8 U	2.8 U	5.8
Magnesium	(ug/l)	35000	5610	4360 B	6330	5580	6930
Manganese	(ug/l)	300	[371]	161	211	181	195
Mercury	(ug/l)	0.7	[0.87]	0.0300 U	0.0300 U	0.0300 U	0.4800
Nickel	(ug/l)	100	19.4 B	5 B	1.6 U	1.6 U	38.2 B
Potassium	(ug/l)		3310 B	2670 B	2810 B	2440 B	6510
Selenium	(ug/l)	10	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Silver	(ug/l)	50	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	(ug/l)	20000	15100	13200	9300	7930	[63500]
Thallium	(ug/l)	0.5	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U

ug/l: microgram/liter

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 9
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
TARGET ANALYTE LIST METALS

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	FRGP-01 FRGP-01 02/27/2006	FRGP-01 FRGP-01F 02/27/2006	FRGP-02 FRGP-02 02/01/2006	FRGP-02 FRGP-02F 02/01/2006	FRGP-03 FRGP-03 08/29/2005
Vanadium	(ug/l)		51.7	2.5 B	0.70 U	0.70 U	25.0 B
Zinc	(ug/l)	2000	113	36.4	42.2	39.9	177

ug/l: microgram/liter

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 9
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
TARGET ANALYTE LIST METALS

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	FRGP-03 FRGP-03F 08/29/2005
Aluminum	(ug/l)		30.6 B
Antimony	(ug/l)	3	3.2 U
Arsenic	(ug/l)	25	3.3 U
Barium	(ug/l)	1000	57.6 B
Beryllium	(ug/l)	3	0.09 U
Cadmium	(ug/l)	5	0.33 U
Calcium	(ug/l)		35200
Chromium	(ug/l)	50	0.34 U
Cobalt	(ug/l)		1.2 B
Copper	(ug/l)	200	5.9 B
Iron	(ug/l)	300	[1610]
Lead	(ug/l)	25	2.8 U
Magnesium	(ug/l)	35000	6700
Manganese	(ug/l)	300	102
Mercury	(ug/l)	0.7	0.0300 U
Nickel	(ug/l)	100	6.7 B
Potassium	(ug/l)		6720
Selenium	(ug/l)	10	3.0 U
Silver	(ug/l)	50	1.6 U
Sodium	(ug/l)	20000	[68100]
Thallium	(ug/l)	0.5	[3.8] B

ug/l: microgram/liter

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 9
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
TARGET ANALYTE LIST METALS

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	FRGP-03 FRGP-03F 08/29/2005
Vanadium	(ug/l)		0.70 U
Zinc	(ug/l)	2000	72.0

ug/l: microgram/liter

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 10
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	FRGP-01 FRGP-01 02/27/2006	FRGP-02 FRGP-02 02/01/2006	FRGP-03 FRGP-03 08/29/2005
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-Dichloroethylene	(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	0.39 U	0.39 U	0.39 U
Benzene, 1-methylethyl-	(ug/l)	5	0.44 U	0.44 U	0.44 U
Bromodichloromethane	(ug/l)	50	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)		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-Dichloroethylene	(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

ug/l: microgram per liter

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 10
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	FRGP-01 FRGP-01 02/27/2006	FRGP-02 FRGP-02 02/01/2006	FRGP-03 FRGP-03 08/29/2005
Cyclohexane	(ug/l)		0.36 U	0.36 U	0.36 U
Dibromochloropropane	(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	(ug/l)	0.0006	0.32 U	0.32 U	0.32 U
Ethene, 1,2-dichloro-, (E)-	(ug/l)	5	0.40 U	0.40 U	0.40 U
Ethylbenzene	(ug/l)	5	0.45 U	0.45 U	0.45 U
Freon 113	(ug/l)		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 Acetate	(ug/l)		0.20 U	0.20 U	0.20 U
Methyl bromide	(ug/l)	5	0.41 U	0.41 U	0.41 U
Methyl chloride	(ug/l)	5	0.34 U	0.34 U	0.34 U
Methyl ethyl ketone	(ug/l)	50	1.1 U	1.1 U	1.1 U
Methyl isobutylketone (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
Methyltert-butylether	(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)		0.46 U	0.46 U	0.46 U
1,4-Dichlorobenzene	(ug/l)	3	0.54 U	0.54 U	0.54 U
p-Xylene	(ug/l)		1.2 U	1.2 U	1.2 U

ug/l: microgram per liter

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 10
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
GROUNDWATER PROBE SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 02/27/2006 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	FRGP-01 FRGP-01 02/27/2006	FRGP-02 FRGP-02 02/01/2006	FRGP-03 FRGP-03 08/29/2005
Styrene	(ug/l)	5	0.41 U	0.41 U	0.41 U
Tetrachloroethylene	(ug/l)	5	0.48 U	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
Trichloroethylene	(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 ORGANICS	(ug/l)		0.00	0.00	0.00

ug/l: microgram per liter

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 11
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-03A FRSB-03A(6-8) 08/29/2005 8.00	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00
Mercury	(mg/kg)	0.10	[4.2]	[1.0]	[0.135]	0.006 U	0.006 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 11
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
MERCURY

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
Mercury	(mg/kg)	0.10	0.007 U	0.007 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 12
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
RCRA METALS

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
Arsenic	(mg/kg)	7.5	1.2	0.45 U	1.2	2.6	3.5
Barium	(mg/kg)	300	8.8 B	1.1 B	0.83 B	3.3 B	2.5 B
Cadmium	(mg/kg)	10	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chromium	(mg/kg)	50	9.0	1.5	2.4	5.1	4.0
Lead	(mg/kg)	400	9.7	2.6	2.6	2.9	2.3
Selenium	(mg/kg)	2	0.81 B	0.84 B	0.61 B	1.1 B	0.73 B
Silver	(mg/kg)		0.09 U	0.09 U	0.09 U	0.09 U	0.09 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 12
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
RCRA METALS

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
Arsenic	(mg/kg)	7.5	3.9
Barium	(mg/kg)	300	4.2 B
Cadmium	(mg/kg)	10	0.04 U
Chromium	(mg/kg)	50	4.8
Lead	(mg/kg)	400	3.0
Selenium	(mg/kg)	2	1.5
Silver	(mg/kg)		0.10 U

mg/kg: milligram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 13
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
1,1,1-Trichloroethane	(ug/kg)	800	0.48 U	0.48 U	0.46 U	0.47 U	0.48 U
1,1,2,2-Tetrachloroethane	(ug/kg)	600	0.35 U	0.35 U	0.34 U	0.35 U	0.36 U
1,1,2-Trichloroethane	(ug/kg)		0.34 U	0.33 U	0.32 U	0.33 U	0.34 U
1,1-Dichloroethane	(ug/kg)	200	0.31 U	0.31 U	0.30 U	0.30 U	0.31 U
1,1-Dichloroethylene	(ug/kg)	400	0.65 U	0.65 U	0.63 U	0.64 U	0.66 U
1,2,4-Trichlorobenzene	(ug/kg)	3400	0.78 U	0.78 U	0.75 U	0.76 U	0.79 U
1,2-Dichloroethane	(ug/kg)	100	0.35 U	0.35 U	0.34 U	0.34 U	0.36 U
1,2-Dichloropropane	(ug/kg)		0.45 U	0.45 U	0.44 U	0.44 U	0.46 U
2-Hexanone	(ug/kg)		4.1 U	4.1 U	4.0 U	4.0 U	4.2 U
Acetone	(ug/kg)	200	3.8 U	3.8 U	3.7 U	9.7 J	3.9 U
Benzene	(ug/kg)	60	0.46 U	0.45 U	0.44 U	0.45 U	0.46 U
Benzene, 1-methylethyl-	(ug/kg)		0.47 U	0.47 U	0.46 U	0.46 U	0.48 U
Bromodichloromethane	(ug/kg)		0.38 U	0.38 U	0.37 U	0.37 U	0.39 U
Bromoform	(ug/kg)		0.35 U	0.35 U	0.34 U	0.35 U	0.36 U
Carbon disulfide	(ug/kg)	2700	0.42 U	0.42 U	0.40 U	0.41 U	0.43 U
Carbon tetrachloride	(ug/kg)	600	0.51 U	0.50 U	0.49 U	0.49 U	0.51 U
Chlorobenzene	(ug/kg)	1700	0.41 U	0.41 U	0.40 U	0.40 U	0.42 U
Chloroethane	(ug/kg)	1900	2.4 U	2.4 U	2.3 U	2.4 U	2.5 U
Chloroform	(ug/kg)	300	0.40 U	0.40 U	0.38 U	0.39 U	0.40 U
cis-1,2-Dichloroethylene	(ug/kg)		0.37 U	0.37 U	0.36 U	0.36 U	0.38 U
cis-1,3-Dichloropropene	(ug/kg)		0.38 U	0.38 U	0.36 U	0.37 U	0.38 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 13
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
Cyclohexane	(ug/kg)		0.37 U	0.37 U	0.36 U	0.36 U	0.38 U
DBCP	(ug/kg)		1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Dibromochloromethane	(ug/kg)		0.26 U	0.26 U	0.25 U	0.26 U	0.27 U
Dichlorodifluoromethane	(ug/kg)		0.98 U	0.97 U	0.94 U	0.95 U	0.99 U
EDB	(ug/kg)		0.46 U	0.46 U	0.44 U	0.45 U	0.47 U
Ethene, 1,2-dichloro-, (E)-	(ug/kg)		0.73 U	0.73 U	0.70 U	0.71 U	0.74 U
Ethylbenzene	(ug/kg)	5500	0.40 U	0.40 U	0.39 U	0.39 U	0.41 U
Freon 113	(ug/kg)		0.76 U	0.76 U	0.73 U	0.74 U	0.77 U
m-Dichlorobenzene	(ug/kg)	1600	0.64 U	0.63 U	0.61 U	0.62 U	0.65 U
Methyl Acetate	(ug/kg)		0.99 U	0.98 U	0.95 U	0.96 U	1.0 U
Methyl bromide	(ug/kg)		2.3 U	2.3 U	2.2 U	2.3 U	2.3 U
Methyl chloride	(ug/kg)		0.97 U	0.97 U	0.94 U	0.95 U	0.99 U
Methyl ethyl ketone	(ug/kg)	300	3.2 U	3.2 U	3.1 U	3.1 U	3.3 U
Methyl isobutylketone (MIBK)	(ug/kg)	1000	2.3 U	2.2 U	2.2 U	2.2 U	2.3 U
Methylcyclohexane	(ug/kg)		0.48 U	0.48 U	0.46 U	0.47 U	0.49 U
Methylene chloride	(ug/kg)	100	11	15	11	9.9	11
Methyltert-butylether	(ug/kg)		0.42 U	0.42 U	0.40 U	0.41 U	0.43 U
o-Dichlorobenzene	(ug/kg)	7900	0.44 U	0.44 U	0.42 U	0.43 U	0.45 U
o-Xylene	(ug/kg)		0.44 U	0.44 U	0.42 U	0.43 U	0.44 U
p-Dichlorobenzene	(ug/kg)	8500	0.62 U	0.62 U	0.60 U	0.61 U	0.63 U
p-Xylene	(ug/kg)		0.99 U	0.98 U	0.95 U	0.96 U	1.0 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 13
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
Styrene	(ug/kg)		0.52 U	0.52 U	0.50 U	0.51 U	0.53 U
Tetrachloroethylene	(ug/kg)	1400	0.83 U	0.83 U	0.80 U	0.81 U	0.85 U
Toluene	(ug/kg)	1500	0.46 U	0.46 U	0.44 U	0.45 U	0.47 U
Trans-1,3-Dichloropropene	(ug/kg)		0.41 U	0.41 U	0.40 U	0.40 U	0.42 U
Trichloroethylene	(ug/kg)	700	0.35 U	0.35 U	0.34 U	0.34 U	0.36 U
Trichlorofluoromethane	(ug/kg)	6000	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Vinyl chloride	(ug/kg)	200	0.94 U	0.94 U	0.90 U	0.92 U	0.95 U
TOTAL VOLATILE ORGANICS	(ug/kg)	10000	11	15	11	19.60	11

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 13
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
1,1,1-Trichloroethane	(ug/kg)	800	0.52 U
1,1,2,2-Tetrachloroethane	(ug/kg)	600	0.39 U
1,1,2-Trichloroethane	(ug/kg)		0.37 U
1,1-Dichloroethane	(ug/kg)	200	0.34 U
1,1-Dichloroethylene	(ug/kg)	400	0.71 U
1,2,4-Trichlorobenzene	(ug/kg)	3400	0.85 U
1,2-Dichloroethane	(ug/kg)	100	0.38 U
1,2-Dichloropropane	(ug/kg)		0.50 U
2-Hexanone	(ug/kg)		4.5 U
Acetone	(ug/kg)	200	8.8 J
Benzene	(ug/kg)	60	0.50 U
Benzene, 1-methylethyl-	(ug/kg)		0.52 U
Bromodichloromethane	(ug/kg)		0.42 U
Bromoform	(ug/kg)		0.39 U
Carbon disulfide	(ug/kg)	2700	0.46 U
Carbon tetrachloride	(ug/kg)	600	0.55 U
Chlorobenzene	(ug/kg)	1700	0.45 U
Chloroethane	(ug/kg)	1900	2.7 U
Chloroform	(ug/kg)	300	0.43 U
cis-1,2-Dichloroethylene	(ug/kg)		0.41 U
cis-1,3-Dichloropropene	(ug/kg)		0.41 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 13
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
Cyclohexane	(ug/kg)		0.40 U
DBCP	(ug/kg)		1.2 U
Dibromochloromethane	(ug/kg)		0.29 U
Dichlorodifluoromethane	(ug/kg)		1.1 U
EDB	(ug/kg)		0.50 U
Ethene, 1,2-dichloro-, (E)-	(ug/kg)		0.80 U
Ethylbenzene	(ug/kg)	5500	0.44 U
Freon 113	(ug/kg)		0.83 U
m-Dichlorobenzene	(ug/kg)	1600	0.70 U
Methyl Acetate	(ug/kg)		1.1 U
Methyl bromide	(ug/kg)		2.5 U
Methyl chloride	(ug/kg)		1.1 U
Methyl ethyl ketone	(ug/kg)	300	3.5 U
Methyl isobutylketone (MIBK)	(ug/kg)	1000	2.5 U
Methylcyclohexane	(ug/kg)		0.52 U
Methylene chloride	(ug/kg)	100	19
Methyltert-butylether	(ug/kg)		0.46 U
o-Dichlorobenzene	(ug/kg)	7900	0.48 U
o-Xylene	(ug/kg)		0.48 U
p-Dichlorobenzene	(ug/kg)	8500	0.68 U
p-Xylene	(ug/kg)		1.1 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 13
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
Styrene	(ug/kg)		0.57 U
Tetrachloroethylene	(ug/kg)	1400	0.91 U
Toluene	(ug/kg)	1500	0.51 U
Trans-1,3-Dichloropropene	(ug/kg)		0.45 U
Trichloroethylene	(ug/kg)	700	0.38 U
Trichlorofluoromethane	(ug/kg)	6000	1.6 U
Vinyl chloride	(ug/kg)	200	1.0 U
TOTAL VOLATILE ORGANICS	(ug/kg)	10000	27.80

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
2,2-oxyblis (1-chloropropane)	(ug/kg)		60 U	60 U	58 U	120 U	61 U
2,4,5-Trichlorophenol	(ug/kg)	100	57 U	57 U	55 U	110 U	58 U
2,4,6-Trichlorophenol	(ug/kg)		54 U	54 U	53 U	110 U	56 U
2,4-Dichlorophenol	(ug/kg)	400	69 U	68 U	66 U	130 U	70 U
2,4-Dimethylphenol	(ug/kg)		59 U	59 U	57 U	120 U	60 U
2,4-Dinitrophenol	(ug/kg)	200	320 U	320 U	310 U	620 U	330 U
2,4-Dinitrotoluene	(ug/kg)		54 U	54 U	53 U	110 U	56 U
2,6-Dinitrotoluene	(ug/kg)	1000	52 U	52 U	51 U	100 U	54 U
2-Chloronaphthalene	(ug/kg)		61 U	61 U	60 U	120 U	63 U
2-Chlorophenol	(ug/kg)	800	59 U	59 U	57 U	120 U	61 U
2-Methylnaphthalene	(ug/kg)	36400	62 U	62 U	60 U	120 U	64 U
3,3-Dichlorobenzidine	(ug/kg)		63 U	63 U	61 U	120 U	65 U
4,6-Dinitro-o-cresol	(ug/kg)		72 U	72 U	70 U	140 U	74 U
4-Bromofluorobenzene	(ug/kg)		55 U	55 U	54 U	110 U	57 U
4-Chlorophenyl phenyl ether	(ug/kg)		59 U	58 U	57 U	120 U	60 U
Acenaphthene	(ug/kg)	50000	66 U	66 U	64 U	130 U	68 U
Acenaphthylene	(ug/kg)	41000	60 U	60 U	58 U	120 U	62 U
Acetophenone	(ug/kg)		54 U	54 U	53 U	110 U	56 U
Anthracene	(ug/kg)	50000	56 U	56 U	54 U	110 U	57 U
Atrazine	(ug/kg)		57 U	57 U	55 U	110 U	58 U
Benzaldehyde	(ug/kg)		76 U	76 U	74 U	150 U	78 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
Benzo(a)anthracene	(ug/kg)	224	52 U	52 U	50 U	100 U	53 U
Benzo(a)pyrene	(ug/kg)	61	59 U	59 U	57 U	120 U	61 U
Benzo(b)fluoranthene	(ug/kg)	1100	41 U	41 U	39 U	80 U	42 U
Benzo(ghi)perylene	(ug/kg)	50000	61 U	61 U	59 U	120 U	63 U
Benzo(k)fluoranthene	(ug/kg)	1100	82 U	81 U	79 U	160 U	84 U
Biphenyl	(ug/kg)		61 U	61 U	59 U	120 U	63 U
Bis(2-chloroethoxy)methane	(ug/kg)		61 U	61 U	59 U	120 U	63 U
Bis(2-chloroethyl)ether	(ug/kg)		59 U	58 U	57 U	120 U	60 U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	50000	71 U	71 U	69 U	140 U	73 U
Butyl benzyl phthalate	(ug/kg)	50000	60 U	60 U	58 U	120 U	62 U
Caprolactam	(ug/kg)		60 U	60 U	58 U	120 U	61 U
Carbazole	(ug/kg)		57 U	56 U	55 U	110 U	58 U
Chrysene	(ug/kg)	400	67 U	66 U	64 U	130 U	68 U
Dibenzo(a,h)anthracene	(ug/kg)	14	46 U	46 U	45 U	91 U	48 U
Dibenzofuran	(ug/kg)	6200	61 U	61 U	59 U	120 U	63 U
Diethyl phthalate	(ug/kg)	7100	64 U	64 U	62 U	130 U	66 U
Dimethyl phthalate	(ug/kg)	2000	60 U	60 U	58 U	120 U	61 U
Di-n-butyl phthalate	(ug/kg)	8100	56 U	56 U	55 U	110 U	58 U
Di-n-octyl phthalate	(ug/kg)	50000	63 U	63 U	61 U	120 U	65 U
Fluoranthene	(ug/kg)	50000	55 U	55 U	53 U	110 U	57 U
Fluorene	(ug/kg)	50000	62 U	62 U	61 U	120 U	64 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
Hexachlorobenzene	(ug/kg)	410	59 U	59 U	57 U	120 U	61 U
Hexachlorobutadiene	(ug/kg)		57 U	57 U	55 U	110 U	59 U
Hexachlorocyclopentadiene	(ug/kg)		59 U	59 U	57 U	120 U	61 U
Hexachloroethane	(ug/kg)		63 U	63 U	61 U	120 U	65 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3200	47 U	47 U	46 U	93 U	48 U
Isophorone	(ug/kg)	4400	56 U	56 U	54 U	110 U	57 U
m-Nitroaniline	(ug/kg)	500	48 U	48 U	47 U	95 U	50 U
Naphthalene	(ug/kg)	13000	63 U	63 U	61 U	120 U	65 U
Nitrobenzene	(ug/kg)	200	81 U	81 U	78 U	160 U	83 U
N-Nitrosodiphenylamine	(ug/kg)		61 U	61 U	59 U	120 U	63 U
N-Nitrosodipropylamine	(ug/kg)		61 U	61 U	59 U	120 U	63 U
o-Cresol	(ug/kg)	100	62 U	62 U	60 U	120 U	63 U
o-Nitroaniline	(ug/kg)	430	47 U	47 U	46 U	93 U	48 U
o-Nitrophenol	(ug/kg)	330	57 U	57 U	55 U	110 U	59 U
p-Chloroaniline	(ug/kg)	220	44 U	44 U	43 U	87 U	45 U
p-Chloro-m-cresol	(ug/kg)	240	51 U	51 U	50 U	100 U	53 U
PCP	(ug/kg)	1000	86 U	86 U	83 U	170 U	88 U
p-Cresol	(ug/kg)	900	58 U	58 U	57 U	120 U	60 U
Phenanthrene	(ug/kg)	50000	59 U	59 U	57 U	120 U	61 U
Phenol	(ug/kg)	30	56 U	56 U	54 U	110 U	58 U
p-Nitroaniline	(ug/kg)		63 U	63 U	61 U	120 U	65 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
p-Nitrophenol	(ug/kg)	100	46 U	46 U	44 U	90 U	47 U
Pyrene	(ug/kg)	50000	66 U	65 U	63 U	130 U	67 U
Total PAHs	(ug/kg)	500000	0	0	0	0	0
Total Semivolatile Organics	(ug/kg)	500000	0	0	0	0	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
2,2-oxyblis (1-chloropropane)	(ug/kg)		66 U
2,4,5-Trichlorophenol	(ug/kg)	100	62 U
2,4,6-Trichlorophenol	(ug/kg)		60 U
2,4-Dichlorophenol	(ug/kg)	400	75 U
2,4-Dimethylphenol	(ug/kg)		65 U
2,4-Dinitrophenol	(ug/kg)	200	350 U
2,4-Dinitrotoluene	(ug/kg)		60 U
2,6-Dinitrotoluene	(ug/kg)	1000	58 U
2-Chloronaphthalene	(ug/kg)		68 U
2-Chlorophenol	(ug/kg)	800	65 U
2-Methylnaphthalene	(ug/kg)	36400	68 U
3,3-Dichlorobenzidine	(ug/kg)		70 U
4,6-Dinitro-o-cresol	(ug/kg)		79 U
4-Bromofluorobenzene	(ug/kg)		61 U
4-Chlorophenyl phenyl ether	(ug/kg)		64 U
Acenaphthene	(ug/kg)	50000	73 U
Acenaphthylene	(ug/kg)	41000	66 U
Acetophenone	(ug/kg)		60 U
Anthracene	(ug/kg)	50000	62 U
Atrazine	(ug/kg)		62 U
Benzaldehyde	(ug/kg)		84 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
Benzo(a)anthracene	(ug/kg)	224	57 U
Benzo(a)pyrene	(ug/kg)	61	65 U
Benzo(b)fluoranthene	(ug/kg)	1100	45 U
Benzo(ghi)perylene	(ug/kg)	50000	67 U
Benzo(k)fluoranthene	(ug/kg)	1100	90 U
Biphenyl	(ug/kg)		67 U
Bis(2-chloroethoxy)methane	(ug/kg)		67 U
Bis(2-chloroethyl)ether	(ug/kg)		64 U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	50000	78 U
Butyl benzyl phthalate	(ug/kg)	50000	66 U
Caprolactam	(ug/kg)		66 U
Carbazole	(ug/kg)		62 U
Chrysene	(ug/kg)	400	73 U
Dibenzo(a,h)anthracene	(ug/kg)	14	51 U
Dibenzofuran	(ug/kg)	6200	67 U
Diethyl phthalate	(ug/kg)	7100	70 U
Dimethyl phthalate	(ug/kg)	2000	66 U
Di-n-butyl phthalate	(ug/kg)	8100	62 U
Di-n-octyl phthalate	(ug/kg)	50000	69 U
Fluoranthene	(ug/kg)	50000	61 U
Fluorene	(ug/kg)	50000	69 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
Hexachlorobenzene	(ug/kg)	410	65 U
Hexachlorobutadiene	(ug/kg)		63 U
Hexachlorocyclopentadiene	(ug/kg)		65 U
Hexachloroethane	(ug/kg)		69 U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3200	52 U
Isophorone	(ug/kg)	4400	61 U
m-Nitroaniline	(ug/kg)	500	53 U
Naphthalene	(ug/kg)	13000	70 U
Nitrobenzene	(ug/kg)	200	89 U
N-Nitrosodiphenylamine	(ug/kg)		67 U
N-Nitrosodipropylamine	(ug/kg)		68 U
o-Cresol	(ug/kg)	100	68 U
o-Nitroaniline	(ug/kg)	430	52 U
o-Nitrophenol	(ug/kg)	330	63 U
p-Chloroaniline	(ug/kg)	220	49 U
p-Chloro-m-cresol	(ug/kg)	240	56 U
PCP	(ug/kg)	1000	94 U
p-Cresol	(ug/kg)	900	64 U
Phenanthrene	(ug/kg)	50000	65 U
Phenol	(ug/kg)	30	62 U
p-Nitroaniline	(ug/kg)		70 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 14
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
p-Nitrophenol	(ug/kg)	100	51 U
Pyrene	(ug/kg)	50000	72 U
Total PAHs	(ug/kg)	500000	0
Total Semivolatile Organics	(ug/kg)	500000	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 15
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
Aroclor 1016	(ug/kg)	10000	2.9 U	2.8 U	2.8 U	2.8 U	2.9 U
Aroclor 1221	(ug/kg)	10000	4.4 U	4.4 U	4.3 U	4.4 U	4.5 U
Aroclor 1232	(ug/kg)	10000	6.6 U	6.6 U	6.4 U	6.5 U	6.8 U
Aroclor 1242	(ug/kg)	10000	5.9 U	5.9 U	5.7 U	5.8 U	6.0 U
Aroclor 1248	(ug/kg)	10000	2.9 U	2.9 U	2.8 U	2.8 U	2.9 U
Aroclor 1254	(ug/kg)	10000	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U
Aroclor 1260	(ug/kg)	10000	4.7 U	4.7 U	4.6 U	4.7 U	4.8 U
Total PCBs	(ug/kg)	10000	0	0	0	0	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 15
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(18-20) 08/29/2005 20.00
Aroclor 1016	(ug/kg)	10000	3.1 U
Aroclor 1221	(ug/kg)	10000	4.9 U
Aroclor 1232	(ug/kg)	10000	7.3 U
Aroclor 1242	(ug/kg)	10000	6.5 U
Aroclor 1248	(ug/kg)	10000	3.1 U
Aroclor 1254	(ug/kg)	10000	2.0 U
Aroclor 1260	(ug/kg)	10000	5.2 U
Total PCBs	(ug/kg)	10000	0

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 16
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE DEPTH (ft)	NYSDEC SCG	FRSB-05A FRSB-05A(8-10) 08/29/2005 10.00	FRSB-05A FRSB-05A(10-12) 08/29/2005 12.00	FRSB-05A FRSB-05A(12-14) 08/29/2005 14.00	FRSB-05A FRSB-05A(14-16) 08/29/2005 16.00	FRSB-05A FRSB-05A(16-18) 08/29/2005 18.00
TPH	(ug/kg)		7128 U	7145 U	6845 U	6984 U	7286 U

ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

TABLE 16
LONG ISLAND RAILROAD - 17 SUBSTATIONS
FAR ROCKAWAY SUBSTATION
DRYWELL SOIL SAMPLE RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)

PERIOD: From 08/29/2005 thru 08/29/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT			
	SITE		FRSB-05A
	SAMPLE ID	NYSDEC	FRSB-05A(18-20)
	DATE	SCG	08/29/2005
	DEPTH (ft)		20.00
TPH	(ug/kg)		7792 U

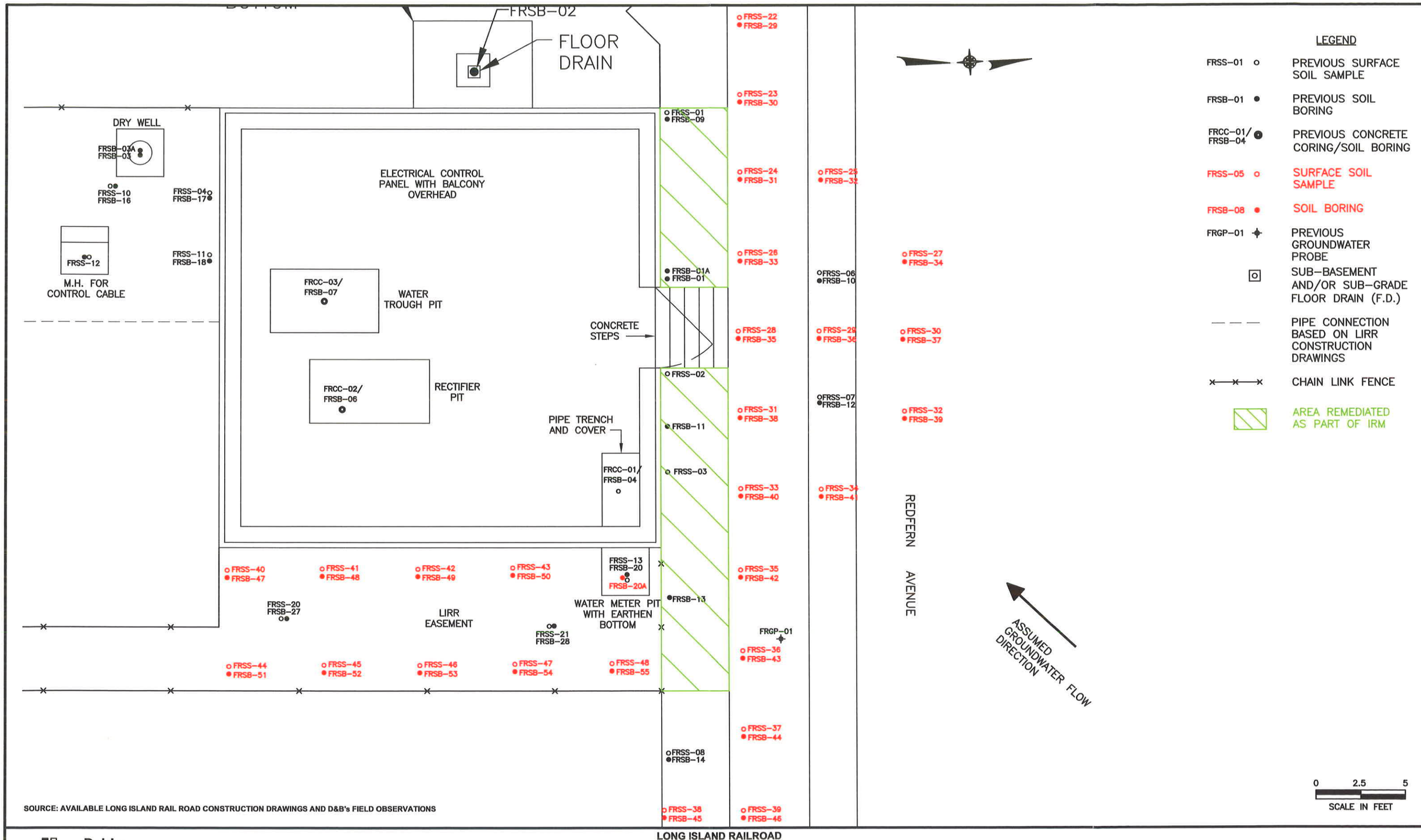
ug/kg: microgram/kilogram

Qualifiers defined in Attachment 4: Data Flag/Qualifiers

[ ]: Value exceeds NYSDEC SCG

LIRR FAR ROCKAWAY SUBSTATION
ATTACHMENT 5

PROPOSED
SAMPLE LOCATION MAPS



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

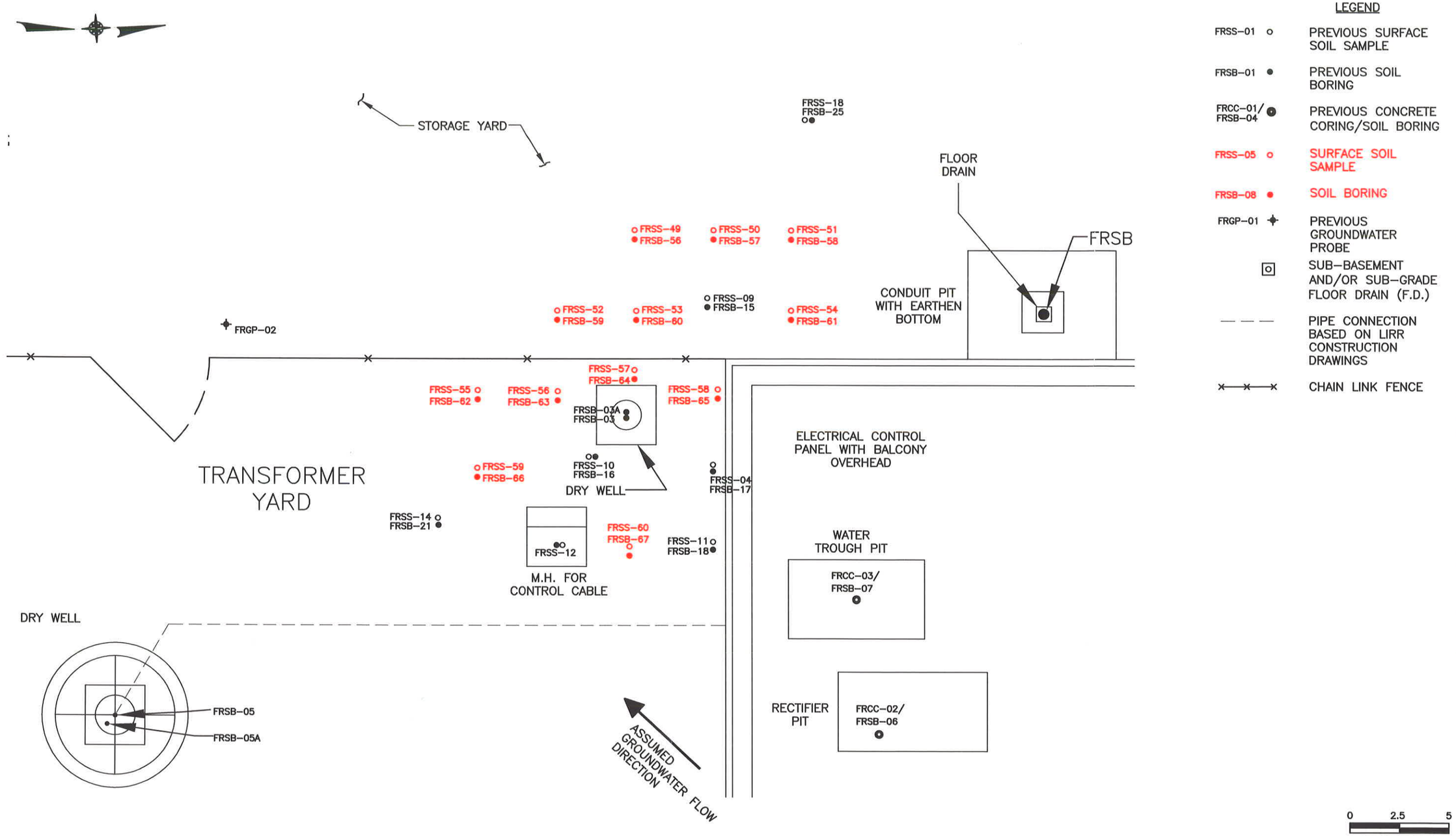
Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

LONG ISLAND RAILROAD
DELINEATION PHASE II SITE ASSESSMENT

PROPOSED SAMPLE LOCATION MAP
FAR ROCKAWAY SUBSTATION (V00391-1)

FIGURE 2

\\Nt4\CADwork\2229\2229-6B.dwg, LAYOUT, 05/23/06 11:57:23 AM, STauss



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

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

PROPOSED SAMPLE LOCATION MAP
FAR ROCKAWAY SUBSTATION (V00391-1)

FIGURE 3

APPENDIX B: NYSDEC March 5, 2009 Comment Letter

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A
625 Broadway, 11th Floor
Albany, New York 12233-7015
Phone: (518) 402-9621 • **Fax:** (518) 402-9627
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

March 5, 2009

Mr. Andrew Wilson
MTA-LIRR
90-27 Sutphin Boulevard, 4th Floor
Dept. #0435
Jamaica, NY 11435

RE: LIRR - Inwood - Far Rockaway Substation #V-00391-1
Delineation Phase II Site Assessment Investigation Report

Dear Mr. Wilson:

The Department has completed its review of the Delineation Phase II Site Assessment Investigation Report, dated June 2006. The report cannot be approved until the following items are addressed:

- Please include one sample just west and one just north of the conduit pit which is located on the northwest corner of the substation.
- Conclusions & Recommendations, Page 8 - Please ensure that all sampling analysis and data validation follows the most up to date Analytical Services Protocol which is currently NYSDEC 7/2005.
- Conclusions & Recommendations, Page 8 - Please update the abatement date.
- Conclusions & Recommendations, Page 8 - Please include the proposed building plan mentioned in this section, as a figure, specifically to show the intended location.
- Please ensure that all sample data, both historical and current are included in the Investigation Report both in text and graphical formats.
- For the Remedial Action Work Plan (RAWP), please describe in detail how you intend to implement a structurally sound concrete cap.

Please make these changes and submit a new report by March 16, 2009.

Sincerely,

Tara Diaz
Project Manager/Project Engineer
Remedial Section A

ec: T. Fox, Dvirka & Bartilucci
S. Tauss, Dvirka & Bartilucci
G. Bobersky, NYSDEC
W. Parish, NYSDEC Region 1
S. Messier, NYSDOH
C. Pareja, NCDH

APPENDIX C: Additional Delineation Mercury Concentration Map (West) Far Rockaway Substation (V00391-1)

PRIVATE PARKING LOT

ASSUMED GROUNDWATER FLOW DIRECTION

FRSS-82 / FRSB-89

DEPTH	CONC.
0–2 in.	7.01
1–2 ft.	0.605
2–4 ft.	0.714
4–6 ft.	0.356

DEPTH	CONC.
0–2 in.	0.215
1–2 ft.	1.38
2–4 ft.	3.42
4–6 ft.	0.075

FRSS-78 / FRSB-85

DEPTH	CONC.
0–2 in.	1.8
1–2 ft.	1.96
2–4 ft.	3.82

FRSS-83 / FRSB-90

DEPTH	CONC.
0–2 in.	0.504
1–2 ft.	0.428

FRSS-79 / FRSB-86

DEPTH	CONC.
0–2 in.	1.22
1–2 ft.	0.815
2–4 ft.	0.366
4–6 ft.	<0.115

FRSS-84 / FRSB-91

DEPTH	CONC.
0–2 in.	2.48
1–2 ft.	1.41

FRSS-85 / FRSB-92

DEPTH	CONC.
0–2 in.	12.3
1–2 ft.	1.92
2–4 ft.	1.54
4–6 ft.	<0.102

FRSS-80 / FRSB-87

DEPTH	CONC.
0–2 in.	0.593
1–2 ft.	4.89

DEPTH	CONC.
0–2 in.	2.39
1–2 ft.	8.11
2–4 ft.	8.13

DEPTH	CONC.
0–2 in.	3.29
1–2 ft.	1.05
2–4 ft.	4.22

FRSS-71 / FRSB-78

FRSS-72 / FRSB-79

FRSS-73 / FRSB-80

FRGP-03

DEPTH	CONC.
0–2 in.	0.737
1–2 ft.	9.25
2–4 ft.	1.53

FRSS-81 / FRSB-88

FRSS-77 / FRSB-84

DEPTH	CONC.
0–2 in.	0.748
1–2 ft.	0.825

FRSS-75 / FRSB-82

DEPTH	CONC.
0–2 in.	1.88
1–2 ft.	<0.022

FRSS-70 / FRSB-77

FRSS-67 / FRSB-74

DEPTH	CONC.
0–2 in.	3.92
1–2 ft.	0.927

FRSS-68 / FRSB-75

DEPTH	CONC.
0–2 in.	1.58
1–2 ft.	13.3

FRSS-74 / FRSB-81

DEPTH	CONC.
0–2 in.	2.52
1–2 ft.	8.24
2–4 ft.	0.632

FRSS-18 / FRSB-25

DOUBLE SWING GATE

FRSS-19 / FRSB-26

DEPTH	CONC.
0–2 in.	8.79
1–2 ft.	1.53

FRSS-53 / FRSB-60

FRSS-54 / FRSB-61

DEPTH	CONC.
0–2 in.	5.5
1–2 ft.	6.58

DEPTH	CONC.
0–2 in.	9.5
1–2 ft.	0.18

STORAGE YARD

DEPTH	CONC.
0–2 in.	3.92
1–2 ft.	2.65
2–4 ft.	1.19
4–6 ft.	0.092

DEPTH	CONC.
0–2 in.	3.0
1–2 ft.	0.089

FRSS-49 / FRSB-56

DEPTH	CONC.
0–2 in.	8.6
1–2 ft.	0.076

FRSS-50 / FRSB-57

FRSS-51 / FRSB-58

DEPTH	CONC.
0–2 in.	7.6
1–2 ft.	1.2

FRSS-52 / FRSB-59

DEPTH	CONC.
0–2 in.	3.99
1–2 ft.	1.34

FRSS-05 / FRSB-08

FRSS-65 / FRSB-72

FRSB-02

CONCRETE PAD

FRGP-02

FRSS-09 / FRSB-15

CONDUIT PIT WITH EARTHEN BOTTOM

FRSS-66 / FRSB-73

DEPTH	CONC.
0–2 in.	116
1–2 ft.	10.7

FRSS-57 / FRSB-64 / FRWC-03

FRSS-55 / FRSB-62

FRSS-56 / FRSB-63

DRY WELL

FRSB-03A

FRSB-03

FRSS-01 / FRSB-09

ELECTRICAL CONTROL PANEL WITH BALCONY OVERHEAD

M.H. FOR CONTROL CABLE

FRSS-10 / FRSB-16

FRSS-58 / FRSB-65

FRSS-04 / FRSB-17

TRANSFORMER YARD

FRSS-59 / FRSB-66

FRSS-14 / FRSB-21

APPROXIMATE LOCATION OF TRANSFORMER

(not sampled) FRSB-19 / FRSS-12

FRSS-11 / FRSB-18

FRSS-60 / FRSB-67

FRSS-69 / FRSB-76

CONCRETE PAD

FRCC-03/ FRSB-07

WATER TROUGH PIT

FRSB-01A / FRSB-01

CONCRETE STEPS

FRSS-28 / FRWC-01 / FRSB-35

FRSS-02

FRCC-02/ FRSB-06

RECTIFIER PIT

FRSS-07 / FRSB-12

FRSS-06 / FRSB-10

FRSS-29 / FRSB-36

FRSS-26 / FRSB-33

FRSS-24 / FRSB-31

FRSS-25 / FRSB-32

FRSS-23 / FRSB-30

FRSS-61 / FRSB-68

FRSS-22 / FRSB-29

FRSS-62 / FRSB-69

CONCRETE SIDEWALK

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

LEGEND

- FRSS-01 ○ — SURFACE SOIL SAMPLE LOCATION COMPLETED PRIOR TO PHASE II DELINEATION
- FRSB-01 ● — SOIL BORING LOCATION COMPLETED PRIOR TO PHASE II DELINEATION
- FRCC-02/ FRSB-06 ⊕ — COMPLETED CONCRETE CORING/SOIL BORING LOCATION COMPLETED PRIOR TO PHASE II DELINEATION
- FRSS-22 ○ — SURFACE SOIL SAMPLE LOCATION
- FRSB-29 ● — SOIL BORING LOCATION
- FRSS-22 ○ / FRSB-29 ● — SURFACE SOIL/SOIL BORING CONTINGENCY LOCATION
- FRWC-01 ● — WASTE CHARACTERIZATION SAMPLE LOCATION
- FRGP-02 ✦ — COMPLETED GROUNDWATER PROBE
- SUB–BASEMENT AND/OR SUB–GRADE FLOOR DRAIN (F.D.)
- PIPE CONNECTION BASED ON LIRR CONSTRUCTION DRAWINGS
- CHAIN LINK FENCE
- AREA REMEDIATED TO 6" AS PART OF IRM

"<" QUALIFIER DENOTES A CONCENTRATION BELOW THE GIVEN INSTRUMENT DETECTION LIMIT

ALL CONCENTRATIONS PRESENTED IN MG/KG

0 2.5 5

SCALE IN FEET

F:\2801\dwg\FAR ROCKAWAY\New 2011 Dwgs\2801 Sample Loc Concentration Map 12_20_11.dwg, CONC WEST, 1/24/2012 8:49:22 AM, dbcadd

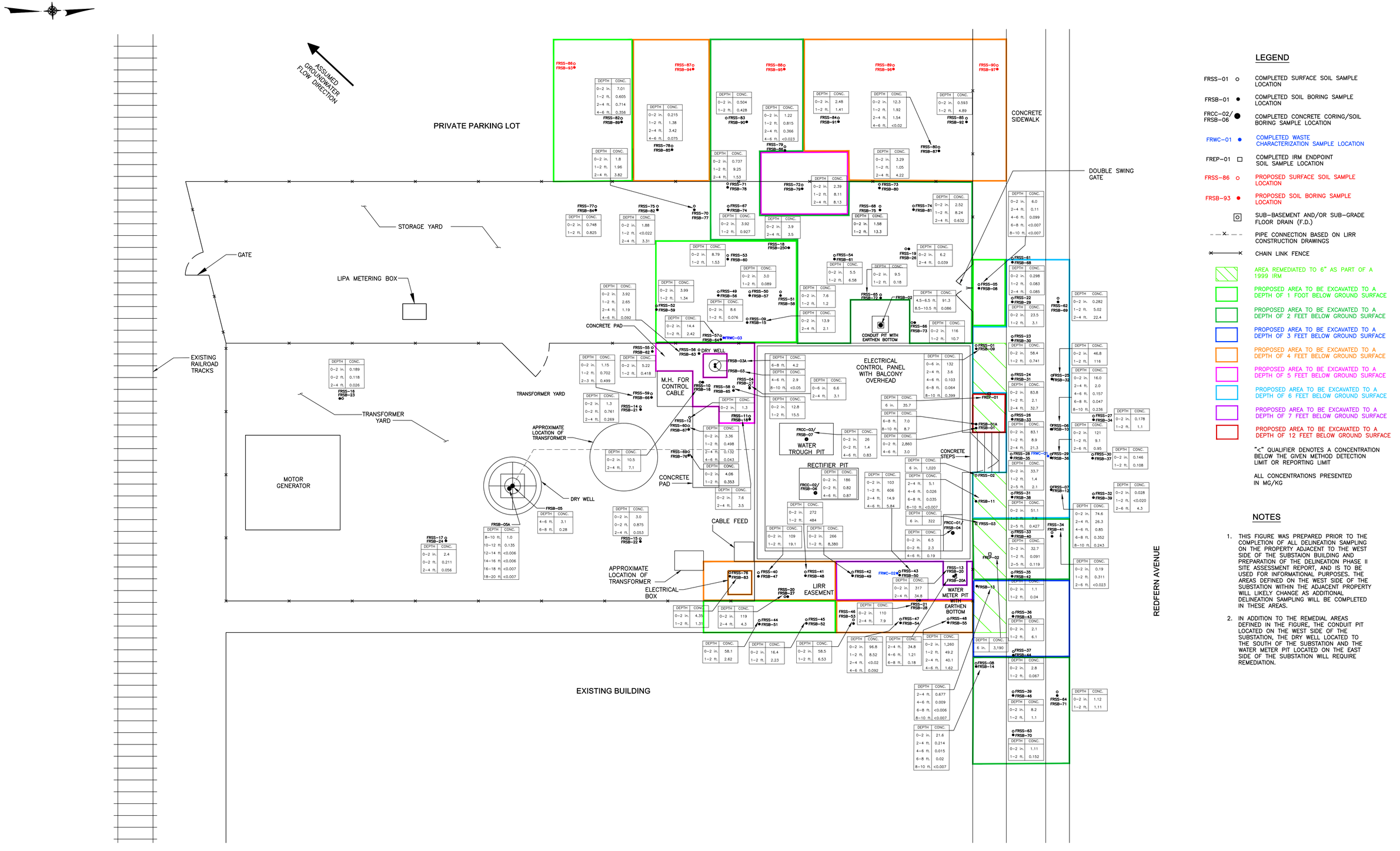
Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

LONG ISLAND RAILROAD
DELINEATION PHASE II SITE ASSESSMENT

ADDITIONAL DELINEATION MERCURY CONCENTRATION MAP (WEST)
FAR ROCKAWAY SUBSTATION (V00391-1)

FIGURE 1

APPENDIX D: Anticipated Remedial Areas Far Rockaway Substation (V00391-1)



LEGEND

- FRSS-01 ○ — COMPLETED SURFACE SOIL SAMPLE LOCATION
- FRSB-01 ● — COMPLETED SOIL BORING SAMPLE LOCATION
- FRCC-02/FRSB-06 ● — COMPLETED CONCRETE CORING/SOIL BORING SAMPLE LOCATION
- FRWC-01 ● — COMPLETED WASTE CHARACTERIZATION SAMPLE LOCATION
- FREP-01 □ — COMPLETED IRM ENDPOINT SOIL SAMPLE LOCATION
- FRSS-86 ○ — PROPOSED SURFACE SOIL SAMPLE LOCATION
- FRSB-93 ● — PROPOSED SOIL BORING SAMPLE LOCATION
- SUB-BASEMENT AND/OR SUB-GRADE FLOOR DRAIN (F.D.)
- PIPE CONNECTION BASED ON LIRR CONSTRUCTION DRAWINGS
- CHAIN LINK FENCE
- AREA REMEDIATED TO 6" AS PART OF A 1999 IRM
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 1 FOOT BELOW GROUND SURFACE
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 2 FEET BELOW GROUND SURFACE
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 3 FEET BELOW GROUND SURFACE
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 4 FEET BELOW GROUND SURFACE
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 5 FEET BELOW GROUND SURFACE
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 6 FEET BELOW GROUND SURFACE
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 7 FEET BELOW GROUND SURFACE
- PROPOSED AREA TO BE EXCAVATED TO A DEPTH OF 12 FEET BELOW GROUND SURFACE

"<" QUALIFIER DENOTES A CONCENTRATION BELOW THE GIVEN METHOD DETECTION LIMIT OR REPORTING LIMIT

ALL CONCENTRATIONS PRESENTED IN MG/KG

NOTES

1. THIS FIGURE WAS PREPARED PRIOR TO THE COMPLETION OF ALL DELINEATION SAMPLING ON THE PROPERTY ADJACENT TO THE WEST SIDE OF THE SUBSTAION BUILDING AND PREPARATION OF THE DELINEATION PHASE II SITE ASSESSMENT REPORT, AND IS TO BE USED FOR INFORMATIONAL PURPOSES. THE AREAS DEFINED ON THE WEST SIDE OF THE SUBSTATION WITHIN THE ADJACENT PROPERTY WILL LIKELY CHANGE AS ADDITIONAL DELINEATION SAMPLING WILL BE COMPLETED IN THESE AREAS.
2. IN ADDITION TO THE REMEDIAL AREAS DEFINED IN THE FIGURE, THE CONDUIT PIT LOCATED ON THE WEST SIDE OF THE SUBSTATION, THE DRY WELL LOCATED TO THE SOUTH OF THE SUBSTATION AND THE WATER METER PIT LOCATED ON THE EAST SIDE OF THE SUBSTATION WILL REQUIRE REMEDIATION.

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

SCALE: 3/16"=1'-0"

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

LONG ISLAND RAILROAD
REMEDIAL ACTION WORK PLAN

ANTICIPATED REMEDIAL AREAS
FAR ROCKAWAY SUBSTATION (V00391-1)

FIGURE 1

NOVEMBER 2022

Dewberry

SUBMITTED BY
Dewberry Engineers Inc.
600 Parsippany Road, Suite 301
Parsippany, NJ 07054