SITE ASSESSMENT OF 20 SUBSTATIONS
FOR MERCURY CONTAMINATION

Prepared for:

METROPOLITAN TRANSPORTATION AUTHORITY
LONG ISLAND RAIL ROAD

Prepared by:

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1.0 INTRODUCTION

As a result of issuing Request for Proposal No. 5567, the Metropolitan Transportation Authority (MTA) Long Island Rail Road (LIRR) selected and retained Dvirka and Bartilucci Consulting Engineers (D&B) to initially conduct Environmental Site Assessments at 20 of its electric substations that utilized mercury-containing rectifiers. According to the LIRR, from the early 1930s through 1951, the LIRR constructed electric substations that utilized mercury rectifiers. These rectifiers allowed the LIRR to receive 60-cycle, alternating current (AC) from local electric utilities and convert it to direct current (DC) for use as a source of electric power for its locomotives and electric passenger car fleet. The LIRR identified a total of 20 substations located throughout Queens, Nassau and Suffolk Counties that once utilized mercury containing rectifiers. These 20 substations are shown on Figure 1-1 - Site Location Map. It is believed that during the early 1980s, the remaining mercury rectifiers were taken out of service and physically removed from these LIRR substations and replaced with non-mercury containing solid state equipment. However, due to uncertainties surrounding the work practices that may have been employed when managing the operation and maintenance of these mercury rectifiers, the LIRR believed it necessary to conduct environmental assessments at these 20 substations to determine the potential effects that may have occurred to the surrounding environment.

1.1 Scope of Work

This Environmental Site Assessment program has been conducted in conformance with the scope of work described in the Request for Proposal entitled, "Site Assessment of 20 Substations for Mercury Contamination," and the quality assurance/quality control requirements specified in the October 21, 1998 LIRR request for additional information. In addition, this program has been conducted in general conformance with the New York State Department of Environmental Conservation (NYSDEC) guidelines for the preparation of Quality Assurance and Quality Control Plans including the 1995 Analytical Services Protocol (ASP).

Figure 1-1

Overall Site Location Map

In order to investigate the environmental impacts of the mercury containing rectifiers, the overall program was organized into the following seven tasks:

Task 1 *- Draft/Final Work Plan*
Task 2 *- Draft/Final Health and Safety Plan*
Task 3 *- Data Review/Records Search*
Task 4 *- Environmentally Sensitive Area Identification and Evaluation*
Task 5 *- Storm/Sanitary Sewer Record Review*
Task 6 *- Substation Investigation Program*
Task *7 - Draft/Final Report*

1.1.1 Task 1 - Draft/Final Work Plan

As part of this task, D&B prepared generic and site specific work plans to provide a detailed description of the proposed field activities that would be conducted as part of Task 6 - Substation Investigation Program. The work plans addressed the following topics: Data Use Objectives; Field Investigation Program; Quality Assurance/Quality Control Samples; Sampling and Handling Procedures; Decontamination Procedures; Laboratory Sample Custody Procedures; Sample Documentation; Equipment Calibration and Preventative Maintenance; Control and Disposal of Investigation-derived Material; Documentation, Data Reduction and Reporting; Data Validation; Performance and System Audits; and Corrective Action.

1.1.2 Task 2 - Draft/Final Health and Safety Plan

As part of this task, D&B has retained the services of Field Safety Corporation (FSC) to prepare a draft and final generic and site-specific health and safety plan (HASP) to address worker safety at the substation sites. It is important to note that FSC also provided a Site Safety Officer during intrusive field investigation activities such as soil sampling beneath rectifiers and within basement areas of each electric substation. In addition, a FSC Certified Industrial Hygienist (CIH) was available for both office and "in-field" consultation (as necessary) throughout the field program.

1.1.3 Task 3 - Data Review/Records Search

As part of this task, D&B reviewed historic records and plans in order to identify and evaluate the historic use of the property associated with each substation. In addition, this program element provided similar information regarding historic land use immediately adjacent to each substation. The results of the data review and record search are presented in Section 2.0 of this report.

1.1.4 Task 4 - Environmentally Sensitive Area Identification and Evaluation

As part of this task, the D&B Project Team identified the location of any environmentally sensitive areas that could have potentially been impacted by the operation and maintenance of rectifiers within the designated electric substations identified as part of this project. Environmentally sensitive areas located at or immediately adjacent to each substation were physically located and summarized in Section 3.0 of this report.

1.1.5 Task 5 - Storm/Sanitary Sewer Record Review

As part of this task, the D&B Project Team reviewed available record sources to identify the discharge point of substation drains (i.e., rectifier pit drains, utility trench drains, slop sinks, etc.). Emphasis was placed on plumbing, drains, dry wells, cesspools, septic tanks and other potential interior and exterior surface and subsurface contaminant pathways/receptors. The results of a detailed review of available LIRR construction drawings are presented in Section 4.0 of this report.

1.1.6 Task 6 - Substation Investigation Program

As part of this task, the D&B Project Team conducted a field investigation program that included the following elements:

- Site Inspection;

- Mercury Vapor Survey;
- Substation Drain Testing;
- Surface Soil Sampling;
- Groundwater Monitoring Well Installation;
- Groundwater Sampling;
- Concrete Core Sampling; and
- Soil Boring Construction and Subsurface Soil Sampling.

The findings of this task (Substation Investigation) are presented in Section 6.0 of this report.

1.2 Mercury Removal Activities

1.2.1 Removal of Visible Mercury

Prior to initiating this Environmental Site Assessment program, in an effort to address visible mercury contamination, the LIRR completed a mercury removal program at 16 of its electric substations including Little Neck, Bayside, Bellaire, Lindenhurst, Rockville Centre, Nassau Boulevard, Babylon Yard, Floral Park, Hempstead, Port Washington, Massapequa, Island Park, Shea, Manhasset, Far Rockaway and St. Albans. The mercury removal activities are summarized in a document entitled, "Mercury Clean-up Monitoring Report for the Long Island Rail Road Substations - Phases 1 and 2," Galson Corporation, March 1999. The actual mercury removal was conducted by Trade Winds Environmental Restoration Inc. while personnel from Galson Corporation were retained by the LIRR as an independent third party to oversee and monitor the contractor's compliance with the scope of work, worker health and safety, and general compliance with any applicable regulatory requirements. Galson conducted air sampling during all removal activities to ensure compliance with applicable and appropriate health and safety protocols. In addition, Galson performed visual inspections and direct-read air monitoring to verify the clean-up was complete and that the resulting air quality inside the substations was within the applicable regulatory standards for airborne mercury vapors. At the completion of the mercury removal project, Galson concluded that further remedial actions may be necessary at these 16 substations that contain floor drains, sump pits and potential exterior mercury contamination. However, Galson indicated at that time that the results of its monitoring program indicated that the electric substations in question were safe for on-site substation workers until future remediation plans could be designed and implemented.

1.2.2 Interim Remedial Measures

As discussed briefly above, the purpose of this electric substation investigation was to conduct a more focused investigation of drains, piping and slop sinks within the interior of the substations as well as continue the identification of areas exterior to the substation structures potentially impacted by mercury releases. As a result of the preliminary findings of this electric substation investigation program, it was determined that certain substations contained elevated levels of mercury in the soil that had the potential to pose a human exposure pathway. Accordingly, at the request of the LIRR, an Interim Remedial Measures (IRM) program was developed by D&B to attempt to eliminate any potential human exposure pathway by excavating mercury impacted soil for proper off-site transportation and disposal. As an additional remedy, the remediated areas were restored with a blue stone cover. D&B identified 11 substations that required such IRM activities. These included: Valley Stream, Lindenhurst, Far Rockaway, Floral Park, Shea, Bayside, Port Washington, Massapequa, Hempstead, Kew Gardens, and Island Park. The IRM program is documented in the report entitled, "Interim Remedial Measures Oversight and Endpoint Sampling Program - Long Island Rail Road Electric Substations," Dvirka and Bartilucci Consulting Engineers, January 2001.

2.0 DATA REVIEW/RECORDS SEARCH

In order to determine and evaluate the historic use of each of the 20 LIRR electric substations, D&B reviewed historic records and plans associated with all of the substations. As part of this task, D&B reviewed Sanborn maps, aerial photographs and available LIRR construction drawings. In addition, D&B submitted Freedom of Information Law (FOIL) requests and reviewed available files from the following New York City and Long Island municipal agencies:

Queens County

- New York State Department of Environmental Conservation;
- New York City Department of Environmental Protection;
- New York City Fire Department; and
- Queens County Building Department.

Nassau County

- New York State Department of Environmental Conservation;
- Nassau County Department of Health;
- Nassau County Fire Commission;
- Nassau County Planning Department;
- Town of North Hempstead Building Department;
- Town of Hempstead Building Department;
- Village of Hempstead Building Department;
- Town of Oyster Bay Building Department;
- Village of Valley Stream Building Department;
- Village of Island Park Building Department; and

- Incorporated Village of Rockville Centre Building Department.

Suffolk County

- New York State Department of Environmental Conservation;
- Suffolk County Department of Health services;
- Suffolk County Planning Department;
- Town of Babylon Building Department;
- Village of Babylon Department; and
- Village of Lindenhurst Department.

It should be noted that, although a thorough search of municipal sources was conducted, useful information was not easily available due to the fact that section, lot and block tax information was not typically available for the 20 electric substation properties.

2.1 Sanborn Fire Insurance Map Review

D&B also reviewed, available Sanborn Fire Insurance Maps provided by Environmental Data Resources (EDR), Southport, Connecticut. According to EDR, Sanborn maps for Lindenhurst and Babylon Yard were not available, therefore these two sites could not be reviewed and are not included in this section. The purpose of this review was to identify historic information concerning past land-use surrounding each substation site.

The following subsections provide a site by site description of areas of past land use identified for each LIRR substation site as a result of conducting a detailed review of available Sanborn maps.

2.1.1 Manhasset - N10

Sanborn maps for the years 1936, 1951, 1961, and 1980 were obtained and reviewed. The 1936 Sanborn map indicated the presence of the LIRR Manhasset substation (the site) and transformers located immediately adjacent to the east of the site. The 1951 Sanborn map appears to indicate the same features as the 1936 Sanborn map, with the addition of a bus garage which is located approximately 300 feet southeast of the site. The 1961 Sanborn map appears to indicate the same features indicated on the 1951 Sanborn map. The 1980 Sanborn map appears to indicate the same features as the 1961 Sanborn map, with the addition of a Nassau County Department of Public Works building located approximately 650 feet southwest of the site.

2.1.2 Shea - N02

Sanborn maps for the years 1901, 1915, 1931, 1950, 1981, 1991, 1992, 1993, 1994, and 1995 were obtained and reviewed. The 1901 and 1915 Sanborn maps did not indicate the presence of the Shea substation or any noteworthy areas of environmental concern. The 1931 Sanborn map did not indicate the presence of the substation; however, an I.R.T./B.M.T. Car Barn and Repair Shop appears to be located within the site area. The presence of the Brooklyn Ash Removal Co. is located approximately 750 feet west/northwest of the site area. The 1950 Sanborn map appears to indicate the same features as the 1931 Sanborn map. The 1981 Sanborn map indicated the presence of the LIRR Shea Substation (the site) and the presence of the Flushing Bus Garage, which is located approximately 240 feet north of the site area. The 1991 Sanborn map appears to indicate the same features as the 1981 Sanborn map; however, the Flushing Bus Garage is no longer present. The 1992 Sanborn map appears to indicate the same features as the 1991 Sanborn map; however, the presence of a bus parking lot (formally the Flushing Bus Garage) is located approximately 240 feet north of the site area. The 1993 Sanborn map appears to indicate the same features as the 1992 Sanborn map. The 1994 Sanborn map appears to indicate the same features as the 1993 Sanborn map; however, the presence the Metro-North Garage is located between approximately 240 feet and 480 feet north/northeast of the site area, and an Auto Repair Shop is located approximately 450 feet southwest of the site area. The 1995 Sanborn map appears to indicate the same features as the 1994 Sanborn map.

2.1.3 Far Rockaway - F03

Sanborn maps for the years 1901, 1940, 1950, 1961, and 1972 were obtained and reviewed. The 1901 Sanborn map did not indicate the presence of the Far Rockaway substation; however, the Frank R. Smith Straw and Feed building appeared to be located approximately 200 feet to the east of the site area. The 1940 Sanborn map appears to indicate the same features as the 1901 Sanborn map, with the addition of the Geo Adams Lumber Co., Inc. (formally Frank R. Smith Straw and Feed) which is located approximately 200 feet to the east of the site. The Far Rockaway substation is also shown in the 1940 Sanborn map. A gasoline filling station appears to be located approximately 440 feet southeast of the substation. The 1950 Sanborn map appears to indicate the same features as the 1940 Sanborn map. The 1961 Sanborn map no longer indicates the presence of the Geo Adams Lumber Company to the east of the substation; however, a heating equipment warehouse, a rubber chemical manufacturer, and a Marine Moisture Control Service center appears to be located between approximately 60 feet and 400 feet east of the site area. Also noteworthy, is the Barrows Chemical Co., Inc. located approximately 300 feet northeast of the site area. The 1972 Sanborn map appears to indicate the same features as the 1961 Sanborn map.

2.1.4 Valley Stream - S04

Sanborn maps for the years 1910, 1918, 1924, 1951, 1961, and 1969 were obtained and reviewed. The 1910 Sanborn map did not indicate the presence of the substation; however, the Henry M. Rusch, Jr. Co. appears to be located approximately 250 feet south of the site area. The 1918 Sanborn map appears to indicate the same features as the 1910 Sanborn map except the Henry M. Rusch, Jr. Co. is referred to as the H.M. Rusch, Jr. Coal Yard. The 1924 Sanborn map indicates the presence of a service station located approximately 330 feet southeast of the site area. The 1951 Sanborn map appears to indicate the same features as the 1924 Sanborn map; however, the substation is present and Brooklyn Avenue has been reconfigured for the construction of Sunrise Highway. The Sanborn map appears to indicate the same features as the 1951 Sanborn map; however, a filling station is located approximately 100 feet north/northeast of the substation. The 1961 Sanborn map indicates the presence of an additional filling station located approximately 75 feet northeast of the substation. The 1969 Sanborn map indicates the presence of a dry cleaner located approximately 350 feet east of the site, an auto laundry business, filling station and auto repair shop located between approximately 200 feet and 320 feet east of the site, two filling stations and an auto laundry business located between approximately 120 feet and 500 feet southwest of the site, a filling station located approximately 340 feet southwest of the site and an auto brake and muffler service station located approximately 900 feet south of the substation.

2.1.5 Rockville Centre - S07

Sanborn maps for the years 1919, 1924, 1950, 1961, and 1970 were obtained and reviewed. The 1919 Sanborn map did not indicate the substation, but did indicate the presence of a service garage located approximately 1,000 feet southwest of the site. The 1924 Sanborn map appears to indicate the same features as the 1919 Sanborn map. The 1950 Sanborn map indicates the presence of the substation and a garage located approximately 150 feet west of the site. The photo quality of the 1961 Sanborn map was poor; however, a garage depot appears to be located approximately 400 feet east of the site. The 1970 Sanborn map indicates the presence of a publishers warehouse located adjacent and southeast of the site, an auto parts service center and warehouse located approximately 160 feet east, and a machine shop located approximately 340 feet east of the site.

2.1.6 Port Washington - N12

Sanborn maps for the years 1925, 1931, 1936, 1951, 1961, and 1980 were reviewed. The 1925 Sanborn map reviewed, did not indicate the substation, but did indicate the presence of a coal yard and the Donald D. Wysong Building Materials Co. located approximately 350 feet north of the site. The 1931 Sanborn map appears to indicate the same features as the 1925 Sanborn map, with the addition of the Latham Brothers Sash & Door Manufacturer located approximately 250 feet south of the site, a Sash, Door, Storage & Trimming business located approximately 570 feet east of the site and a gasoline station located about 500 feet southeast of the site. The 1936 Sanborn map appears to indicate the same features as the 1931 Sanborn map, with the addition of a millwork business (formerly the Latham Brothers Sash & Door Manufacturer) located approximately 250 feet south of the site, a gas station located approximately 450 feet south/southeast of the site and the Long Island Lighting Company Substation located approximately 600 feet northwest of the site area. The 1951 Sanborn map appears to indicate the same features as the 1936 Sanborn map, with the addition of the substation. This map also indicates the presence of a sign and paint business located approximately 250 feet northeast of the site, a diesel filling station located approximately 230 feet north/northeast of the site, coal bins located approximately 350 feet north of the site, and the Port Washington Lumber Company located approximately 320 feet south of the site. The 1961 Sanborn map appears to indicate the same features as the 1951 Sanborn map, with the addition of an auto electronics and laundry business located approximately 400 feet southeast of the site, a coal storage yard located approximately 120 feet south of the site, and an auto body shop located approximately 220 feet northeast of the site. The 1980 Sanborn map appears to indicate the same features as the 1961 Sanborn map, with the addition of an electronics equipment manufacturer located approximately 20 feet east of the site, an auto repair shop located approximately 180 feet east of the site, an electronics manufacturer located approximately 60 feet southeast of the site, a machine shop and research testing laboratories located approximately 580 feet southeast of the site, a blue printing Company located approximately 50 feet of the site, a construction storage yard (formerly the coal storage yard) located approximately 120 feet south of the site, and an auto body shop and filling station are located approximately 220 feet south of the site.

2.1.7 Island Park - L03

Sanborn maps for the years 1955, 1966, 1968 were obtained and reviewed. The 1955 Sanborn map indicates the presence of the Island Park substation, transformers located approximately 40 feet southwest of the site, a passenger station located approximately 175 feet southwest of the site, a filling station located approximately 700 feet south of the site, and a machine shop located about 300 feet northeast of the site. The 1966 Sanborn map appears to indicate the same features as the 1955 Sanborn map. The 1968 Sanborn map appears to indicate the same features as the 1966 Sanborn map.

2.1.8 Floral Park - G13

Sanborn maps for the years 1910, 1917, 1934, 1950 and 1969 were obtained and reviewed. The 1910 Sanborn map did not indicate the presence of the substation or any noteworthy areas of environmental concern. The 1917 Sanborn did not indicate the presence of the substation but did indicate the Childs Press located approximately 125 feet northwest of the site, a freight house located approximately 100 feet northeast of the site, a lumber storage and carpentry shop located about 250 feet to the southeast of the site and a florist facility located about 350 feet to the southwest of the site. The 1934 Sanborn map indicated the presence of the Floral Park substation and the Mayflower Press Printing Company (formerly the Child's Press Printing Co.) located approximately 100 feet northwest of the site, and a mortuary supply house located approximately 240 feet southeast of the site. The florist facility located to the southwest of the site is no longer present in the 1934 Sanborn map. The 1934 Sanborn map also indicated the presence of a switch house located about 120 feet west of the substation. The 1950 Sanborn map indicated the presence of the Jamaica Plate Glass Company located approximately 400 feet northwest of the site. The 1969 Sanborn map indicated the presence of two machine shops located approximately 200 feet northwest of the site, and a tinsmith located approximately 200 feet southeast of the site. It should be noted that the switch house to the west of the substation is no longer present in the 1969 Sanborn map.

2.1.9 Mineola - G16

Sanborn maps for the years 1908, 1917, 1925, 1936, 1950, 1961, 1963, 1970 were obtained and reviewed. The 1908 Sanborn map did not indicate the presence of the substation; however, a freight house is located approximately 300 feet north/northeast of the site area, and the Mineola station is located approximately 20 feet northwest of the site area. The 1908 Sanborn map also indicates the presence of a tool storage and lamp house located about 350 feet northeast of the site. The 1917 Sanborn map indicates the presence of the Mineola substation and a switch tower located approximately 20 feet north of the substation, and a platform (formally the freight house) located approximately 300 feet north/northeast of the site. The 1925

Sanborn map appears to indicate the same features as the 1917 Sanborn map; however, the Mineola station is no longer present and a printing company appears to be located approximately 100 feet east of the site. The 1925 Sanborn map also indicates the presence of the Birdsall Coal Co. located approximately 450 feet to the northeast of the site, a paint store located about 450 feet to the northeast of the site and an auto repair and painting facility located approximately 400 feet to the southwest of the site. The 1936 Sanborn map appears to indicate the same features as the 1925 Sanborn map, with the addition of the Long Island Lubricating Co. located approximately 150 feet south of the site. The 1950 Sanborn map appears to indicate the same features as the 1936 Sanborn map; however, the presence of two machine storage houses and a refrigeration manufacturer are located between approximately 50 feet and 350 feet southwest of the site. The 1950 Sanborn map also indicates an auto sales and service center and a welding supply business located approximately 170 feet north/northwest of the site, a photo engraving shop located approximately 150 feet north of the site, a laundry business located approximately 330 feet north/northwest of the site, a tinsmith located approximately 120 feet southeast of the site and a filling station located about 450 feet south of the substation. The 1961 Sanborn map appears to indicate the same features as the 1950 Sanborn map with the addition of the New York Telephone Co. (formally the tinsmith) located approximately 120 feet southeast of the site, research laboratories located approximately 80 feet east of the site, an auto repair and painting facility located approximately 400 feet east of the site, a machine and radiator shop located approximately 160 feet north/northwest of the site, and an engraving company located approximately 170 feet north/northwest of the site. The 1963 Sanborn map appears to indicate the same features as the 1961 Sanborn map with the addition of a venetian blind cleaning business (formally the refrigeration manufacturer) located approximately 350 feet southwest of the site. The 1970 Sanborn map appears to indicate the same features as the 1963 Sanborn map.

2.1.10 Hempstead - H03

Sanborn maps for the years 1919, 1925, 1936, 1950, 1961, 1963, and 1970 were obtained and reviewed. The 1919 Sanborn map did not indicate the presence of the Hempstead substation, but did indicate the presence of the Main Street Garage located approximately 700 feet to the southwest of the site. In addition, the Jag. Ruppert Garage was located about

1,200 feet to the southwest of the site. The 1925 Sanborn map appears to indicate the same features as the 1919 Sanborn map, with the addition of the Sheffield Farms Co., Inc. located approximately 900 feet west of the site. The 1936 Sanborn map appears to indicate the same features as the 1925 Sanborn map with the addition of an automatic laundry facility located approximately 1,500 feet south of the site. The 1950 Sanborn map appears to indicate the same features as the 1936 map with the addition of the Hempstead substation and a filling station located approximately 700 feet west of the site. The 1950 Sanborn map also indicates the presence of three filling stations located between 700 and 1,000 feet southwest of the site, and two machine shops located about 1300 feet southwest of the site. The 1961, 1963 and 1970 Sanborn maps appear to indicate the same features as the 1950 Sanborn map.

2.1.11 Nassau Boulevard - H01

Sanborn maps for the years 1961 and 1969 were obtained and reviewed. The 1961 Sanborn map indicated the presence of the substation and no noteworthy areas of environmental concern. The 1969 Sanborn map appeared to indicate the same features as the 1961 Sanborn map.

2.1.12 Massapequa - S15

Sanborn maps for the years 1948 and 1961 were obtained and reviewed. The 1948 Sanborn map indicated the presence of the substation. According to the Sanborn map, a transfer yard and freight station appears to be located approximately 175 feet east of the site, and the Massapequa train station appeared to be located approximately 450 feet east of the site. The 1961 Sanborn map appeared to indicate the same features as the 1948 Sanborn map, with the addition of two auto repair shops and three filling stations appeared to be located between approximately 350 feet and 1,500 feet southwest of the site.

2.1.13 Bayside - N06

Sanborn maps for the years 1903, 1917, 1934, 1951, 1980, 1991, 1992, 1993, 1994, and 1995 were obtained and reviewed. The 1903 Sanborn map did not indicate the presence of the substation, but did indicate the G.S. Roe Lumber Yard located approximately 200 feet southwest of the site. The 1903 Sanborn map also indicated a cemetery located about 100 feet southwest of the site. The 1917 Sanborn map indicated the presence of a freight house, and the C.H. Hawley & Son coal yard located between approximately 350 feet and 380 feet west/southwest of the site area. It should be noted that the G.S. Roe Lumber Yard was renamed the Bayside Lumber Co. The 1934 Sanborn map did not indicate the presence of the cemetery; however, the Bayside Lumber Co. was renamed the Queensborough Lumber Co. The 1951 Sanborn map indicates the same features as the 1934 Sanborn map, with the addition of the Bayside substation and a laundry facility located about 200 feet northwest of the site. The 1980 Sanborn map appears to indicate the same features as the 1951 Sanborn map, with the addition of the New York Telephone Co. and a parking garage (formally Queensborough Lumber Co.) located approximately 270 feet southwest of the site. An auto repair facility is located approximately 290 feet southwest of the site. The 1991, 1992, 1993, 1994, 1995 Sanborn maps appear to indicate the same features as the 1980 Sanborn map.

2.1.14 Little Neck - N08

Sanborn maps for the years 1931, 1936, 1950, 1961, and 1970 were obtained and reviewed. The 1931 Sanborn map did not indicate the presence of the Little Neck substation; however, the Citizens Water Supply Co. appears to be located approximately 200 feet southeast of site. The 1931 Sanborn map also indicates the Elmhurst Lumber and Trim Co., Inc. located about 800 feet east of the site and the Belgrave Sewer District Treatment works located approximately 800 feet west of the site. The 1936 Sanborn map appears to indicate the same features as the 1931 Sanborn map, with the addition of the Little Neck substation and an auto repair shop. The 1950 Sanborn map appears to indicate the same features as the 1936 Sanborn map with the addition of several commercial businesses located between 400 and 800 feet southeast of the site. The 1961 Sanborn map appears to indicate the same features as the 1950 map.

2.1.15 Bellaire - G-11

Sanborn maps for the 1912, 1926, 1951, 1980, 1991, 1992, 1993, 1994, and 1996 were obtained and reviewed. The 1912 Sanborn map did not indicate the Bellaire substation but did show a lumber warehouse located approximately 120 feet south of the site. The 1912 Sanborn map also indicated a door sash and blind factory located about 360 feet southwest of the site. The 1926 Sanborn map appears to indicate the same features as the 1912 map with the addition of a filling station located approximately 900 feet southeast of the site and a freight depot located about 1100 feet east of the site. The 1951 Sanborn map appeared to indicate the same features as the 1926 map with the addition of the Bellaire substation, a clothing manufacturing building located approximately 700 feet east of the site, an auto repair shop and filling station located about 700 feet northeast of the site, a filling station located about 1000 feet northeast of the site, and a machine shop located approximately 1100 feet southeast of the site. The 1951 Sanborn map also indicates three auto repair shops located about 200 feet south of the site, two filling stations located approximately 200 feet south of the site, a filling station located about 840 feet southeast of the site, and a water supply facility located about 540 feet from the site. The 1980 Sanborn map appears to indicate the same features as the 1951 map except the freight depot is no longer present. The 1991 and 1996 Sanborn maps appear to indicate the same features as the 1980 map.

2.1.16 Cedar Manor - A08

Sanborn maps for the years 1911, 1926, 1950, 1991, 1992, 1993, 1994, and 1995 were obtained and reviewed. The 1911 and 1926 Sanborn maps did not indicate the presence of the Cedar Manor substation or any noteworthy areas of environmental concern. The 1950 Sanborn map appears to indicate the same features as the 1911 and 1926 Sanborn maps, with the addition of the substation and transfer yard. The 1991, 1992, 1993, 1994 and 1995 Sanborn maps did not indicate any noteworthy areas of environmental concern.

2.1.17 Kew Gardens - G07

Sanborn maps for the years 1901, 1911, 1925, 1942, 1951, 1980, 1991, 1992, 1993, 1995, 1996 were obtained and reviewed. The 1901 through 1942 Sanborn maps did not indicate the presence of the substation or any noteworthy areas of environmental concern. The 1951 Sanborn map appeared to indicate the same features as the 1901 through 1942 Sanborn maps, with the addition of the Kew Gardens substation and transformers. The remaining Sanborn maps reviewed did not indicate any noteworthy areas of environmental concern.

2.1.18 St. Albans - S01

Sanborn maps for the years 1926, 1951, 1981, 1991, 1992, 1993, 1995, 1996 were obtained and reviewed. The 1926 Sanborn map did not indicate the St. Albans substation or any noteworthy areas of environmental concern. The 1951 Sanborn map indicates the presence of the substation as well as the Mallis Wood Products Inc. located approximately 160 feet southeast of the site. The 1951 Sanborn map also indicates a drum solvent storage area located approximately 215 feet south of the site, a metal spinning shop located about 530 feet southeast of the site and two filling stations located approximately 700 feet south of the site. The 1981 Sanborn map appears to indicate the same features as the 1951 map; however, the metal spinning shop is no longer present. The 1991 through 1996 Sanborn maps appear to indicate the same features as the 1981 map.

2.2 Aerial Photograph Review

Aerial photographs located at the New York City Queens Public Library (Long Island Historical Division), the Nassau County Department of Public Works, and the Suffolk County Planning Department were reviewed for each of the 20 LIRR substation sites. However, the large scale and lack of detail associated with a majority of the aerial photographs reviewed did not allow for the identification or confirmation of any features of environmental concern. Consequently, an aerial photograph review was not considered useful for this investigation.

3.0 ENVIRONMENTALLY SENSITIVE AREA IDENTIFICATION AND EVALUATION

The information presented in this section is based on a review of the overall environmental setting for each of the 20 LIRR substation sites. Based on D&B's experience, a half mile (2,700 feet) search radius from each substation was utilized throughout the review. The purpose of this review was to identify potentially sensitive and/or significant environmental areas in the vicinity of each LIRR substation site. The following environmental parameters were considered in the review process:

- Regulated Wetlands;
- Coastal Zone Boundary Management/Local Waterfront Revitalization Program Areas;
- Special Groundwater Protection Areas on Long Island;
- New York State Designated Wild, Scenic, or Recreational River Corridors;
- Parks and Recreation Areas;
- Endangered, Rare, Threatened, and Unprotected Species; and
- Designated Significant Fish and Wildlife Habitats.

A brief description of each environmental parameter evaluated as part of this portion of the substation investigation is provided below.

Regulated Wetlands

A review of New York State and Federal Wetlands Maps associated with each substation site was conducted to identify regulated wetlands within a half mile search radius. New York State regulated wetlands are shown on New York State Department of Environmental Conservation (NYSDEC) Freshwater and Tidal Wetlands maps. Federally regulated freshwater and marine wetlands are shown on the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory (NWI) maps.

Coastal Zone Management Areas

The guiding principal of the New York City Waterfront Revitalization Program, and the New York State Coastal Management Program are to maximize the benefits derived from public use of the waterfront, economic development, and environmental preservation, while minimizing the conflicts among these objectives. These coastal zone management areas have been identified on maps maintained by the New York State Department of State.

Special Groundwater Protection Area

Special Groundwater Protection Areas (SGPA) were identified in the Groundwater Management Program for Long Island (NYSDEC, 1983) and in the 208 Non-point Source Management Handbook (Long Island Regional Planning Board, 1994). These areas are defined as significant, largely undeveloped or sparsely developed geographic areas of Long Island that provide recharge to portions of the deep flow aquifer system.

Designated Wild, Scenic, and Recreational Rivers

Pursuant to the New York State Wild, Scenic and Recreational River System Act, several rivers in New York State which possess outstanding natural, scenic, historic, ecological, and recreational value shall be preserved and protected. Designated wild, scenic and recreational rivers have been identified by reviewing 6 NYCRR Part 666 – Regulation for Administration and Management of the Wild, Scenic and Recreational Rivers System in New York State Excepting Private Land in the Adirondack Park.

Parks and Recreational Areas

There is a growing need for NYSDEC management attention to parks and recreation areas in order to maintain them as confined ecological areas to preserve existing and continuing habitats for flora and fauna, in addition to human recreational activities. These areas have been identified utilizing United States Geological Survey maps and/or Hagstrom Atlas maps.

Endangered, Rare, Threatened, and Unprotected Species

The NYSDEC Natural Heritage Program maintains files and databases on recorded occurrences of endangered, rare, threatened, and unprotected species. In order to safeguard the species, the exact locations of the occurrences are not revealed in the reports. The reports indicate a map coordinate and a radius within which the occurrences were recorded. From this information, it can generally be determined whether or not there are recorded occurrences of such species in, adjacent to, or in the vicinity of the site. The actual existence of such species can only be determined from field investigations performed by qualified ecologist, biologist, or habitat specialists.

Designated Significant Fish and Wildlife Habitats

The NYSDEC Natural Heritage Program reports (referenced above) also indicate whether or not the subject sites are within, adjacent to, or in the vicinity of Designated Significant Fish and Wildlife Habitats.

The following sections provide a description of any identified environmentally sensitive areas at or adjacent to each of the LIRR electric substations based on the review of the potential environmentally sensitive areas listed above.

3.1 Manhasset - N10

According to the New York State Freshwater Wetlands map prepared by the NYSDEC, Sea Cliff Quadrangle, dated 1975, regulated wetlands are not located on the site or adjacent properties. However, two regulated wetlands are located within a half mile radius of the site. A wetland in the vicinity of an unnamed park is located approximately 1,400 feet south/southwest of the site, and a wetland in the vicinity of Whitney Pond is located approximately 2,700 feet south/southwest of the site.

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Sea Cliff Quadrangle, dated 1994, regulated wetlands are not located on the site or adjacent properties. However, three regulated wetlands are located within a half mile radius of the site. Wetlands are located approximately 1,400 feet southwest, 1,200 feet west, and 2,000 feet west of the site. These wetlands are in the vicinity of Manhasset Bay and Whitney Lake.

Based upon review of the New York State Coastal Zone Management Program maps, the Manhasset substation is located within a coastal zone boundary.

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, Manhasset Valley Park is located approximately 1,400 feet west of the site, and an unnamed park is located approximately 500 feet east/southeast of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.2 Shea - N02

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Flushing Quadrangle, (date unavailable) regulated wetlands are not located on the site or adjacent properties. However, two regulated wetlands associated with Flushing Creek are located within a half mile radius of the site. Wetlands are located approximately 1,200 feet east and approximately 2,000 feet southeast of the site.

Based upon review of the New York City and New York State Coastal Zone Management Program maps, the Shea substation is located within a coastal zone boundary.

According to the Topographic Map of Flushing, New York Quadrangle, U.S. Geologic Survey (USGS), dated 1966, photorevised 1979, Flushing Meadow Corona Park is located adjacent to and south of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.3 Far Rockaway - F03

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Lawrence Quadrangle, (date unavailable) regulated wetlands are not located on the site or adjacent properties. However, two regulated wetlands are located within an approximate half mile radius of the site. A wetlands associated with Bannister Creek is located approximately 2,600 feet east/southeast of the site, and a wetland associated with Motts Basin is located approximately 2,700 feet west of the site.

Based upon review of the New York State Coastal Zone Management Program maps, the Far Rockaway substation is located within a coastal zone boundary.

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, an unnamed park is located approximately 1,000 feet west/northwest of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there is one recorded occurrence of a "Rare" species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Far Rockaway substation. The species is a vascular plant known as velvety lespedeza (*Lespedeza Stuevei).* It should be noted that this occurrence was last recorded in 1902.

According to the Natural Heritage Report, there are no recorded occurrences of endangered, threatened, unprotected species, or designated significant fish and wildlife habitats in the vicinity of the Far Rockaway substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.4 Valley Stream - S04

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Lynbrook Quadrangle, (date unavailable) regulated wetlands are not located on the site or adjacent properties. However, one regulated wetland is located within a half-mile radius of the site. A wetland associated with the Valley Stream is located approximately 2,000 feet west of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.5 Rockville Centre - S07

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, two unnamed parks are located approximately 1,000 feet west and approximately 1,400 feet east of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there is one recorded occurrence of an "Endangered" species, and one recorded occurrence of a "Threatened" species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Rockville Centre substation. The endangered species is a vascular plant known as yellow milkwort (*Polygala Lutea)*; however, its occurrence was last recorded in 1916. The threatened species is a vascular plant known as swamp sunflower (*Helianthus Angustifolius*), its occurrence was last recorded in 1938.

According to the Natural Heritage Report, there are no recorded occurrences of rare, unprotected species, or designated significant fish and wildlife habitats in the vicinity of the Rockville Centre substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.6 Port Washington - N12

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there are two recorded occurrences of a "Rare" species, and two recorded occurrences of an "Unprotected" species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Port Washington substation. The first rare species is a vascular plant known as woodland agrimony (*Agrimonia Rostellata)*; however, its occurrence was last recorded in 1924. The second rare species is a vascular plant known as velvety lespedeza (*Lespedeza Stuevei*), its occurrence was last recorded in 1915. The first unprotected species is a vascular plant known as yellow giant-hyssop (*Agastache Nepetoides*), its occurrence was last recorded in 1902. The second unprotected species is a vascular plant known as false lettuce (*Lactuca Floridana*), and its last recorded occurrence was in 1924.

According to the Natural Heritage Report, there are no recorded occurrences of endangered, or threatened species, as well as no designated significant fish and wildlife habitats in the vicinity of the Port Washington substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.7 Island Park - L03

According to the NYSDEC Tidal Wetlands Map, (Map I.D. 612-494 and Index Map No. #2), dated 1974, regulated wetlands are not located on the site or adjacent properties. However, one regulated wetland is located within a half-mile radius of the site, approximately 400 feet to the southeast.

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Lawrence Quadrangle, (date unavailable) regulated wetlands are not located on the site or adjacent properties. However, five regulated wetlands are located within an approximate half mile radius of the site. A wetland in the vicinity of the Ocean Waterway is located approximately 400 feet to the southeast of the site. A wetland in the vicinity of Garrett Marsh is located approximately 2,700 feet east of the site. A wetland in the vicinity of Island Park Harbor is located approximately 2,700 feet northwest of the site. A wetland in the vicinity of Hog Island Channel is located approximately 2,700 feet north/northwest of the site, and a wetland in the vicinity of Simmons Hassock waters is located approximately 2,700 feet southwest of the site.

Based upon review of the New York State Coastal Zone Management Program maps, the Island Park substation is located within a coastal zone boundary.

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, Shell Creek Park is located approximately 1,900 feet east of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.8 Floral Park - G13

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Lynbrook Quadrangle, (date unavailable) regulated wetlands are not located on the site or adjacent properties. However, two regulated wetlands are located within a half mile radius of the site. Wetlands in the vicinity of an unknown parcel of land are located approximately 2,000 feet west/northwest and approximately 1,500 feet east of the site.

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, an unnamed park is located approximately 2,000 feet east of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.9 Mineola - G16

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, an unnamed park is located approximately 2,000 feet northwest of the site.

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Lynbrook Quadrangle, (date unavailable) regulated wetlands are not located on the site or adjacent properties. However, one regulated wetland is located within a half mile radius of the site. A wetland in the vicinity of an unknown parcel of land is located approximately 2,000 feet northwest of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.10 Hempstead - H03

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, an unnamed park is located approximately 1,000 feet north/northwest of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there are two recorded occurrences of a "Rare" species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Hempstead substation. The first species is a vascular plant known as slendar crabgrass (*Digitaria Filiformis)*; however, its occurrence was last recorded in 1922. The second species is a vascular plant known as soapwort gentian (*Gentiana Saponaria*), its occurrence was last recorded in 1925.

According to the Natural Heritage Report, there are no recorded occurrences of endangered, threatened, unprotected species, or designated significant fish and wildlife habitats in the vicinity of the Hempstead substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.11 Nassau Boulevard - H01

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Lynbrook Quadrangle, (date unavailable) regulated wetlands associated with the Garden City Country Club are located adjacent, and southeast of the site.

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, an unnamed park is located adjacent and east of the site, beyond which is the Garden City Country Club. Another unnamed park associated with an elementary school is located approximately 1,900 feet to the north of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.12 Massapequa - S15

According to the New York State Freshwater Wetlands map prepared by the NYSDEC, Amityville Quadrangle, dated 1975, two regulated wetlands are located on adjacent properties. A wetland associated with Massapequa Lake is located adjacent and south of the site, and a wetland associated with Massapequa Creek is located adjacent and east of the site.

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Amityville Quadrangle, (date unavailable) one regulated wetland associated with Massapequa Lake is located adjacent, and east/southeast of the site. Three regulated wetlands associated with Massapequa Lake are located within half mile radius of the site. Wetlands are located approximately 1,000 feet east/southeast, approximately 1,500 feet southeast, and approximately 2,000 feet north of the site. Two wetlands associated with Massapequa Creek within Massapequa Preserve are located within a half mile radius of the site. Wetlands are located approximately 1,000 feet east/northeast, and approximately 900 feet east/northeast of the site. One regulated wetland is located within an approximately half mile radius of the site. A wetland associated with Massapequa Creek within Massapequa Preserve is located approximately 2,700 feet northeast of the site.

Based upon review of the New York State Coastal Zone Management Program maps, the Massapequa substation appears to be in the vicinity of the inland extent of a coastal zone boundary.

According to the Topographic Map of Amityville, New York Quadrangle, USGS, dated 1969, photorevised 1979, Massapequa Park is located adjacent, and north/northeast of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there are three recorded occurrences of a “Rare” species, five recorded occurrences of an “Unprotected” species, one recorded occurrence of a “Endangered” species, and one recorded occurrence of a “Threatened” species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Massapequa substation. The three rare species are all vascular plants known as collin’s sedge (*Carex Collinsii*), marsh straw sedge (*Carex Hormathodes*), and velvety lespedeza (*Lespedeza Stuevei*). However, their occurrences were last recorded in between 1902 and 1922. The five unprotected species are vascular plants known as stiff cowbane (*Oxypolis Rigidior*), *h*yssop-skullcap (*Scutellaria Integrifolia*), coastal goldenrod (*Solidago Elliottii*), prairie wedgegrass (*Sphenopholis Obtusata Var Obtusata)*, and swamp smartweed (*Polygonum Setaceum Var Interjectum)*. Their occurrences were last recorded between 1923 and 1938. The endangered species is a vascular plant known as false china-root (*Smilax Pseudochina*), its occurrence was last recorded in 1992, and the threatened species is also a vascular known as bead pinweed (*Lechea Pulchella Var Moniliformis*), and its occurrence was last recorded in 1987.

According to the Natural Heritage Report, there are no designated significant fish and wildlife habitats in the vicinity of the Massapequa substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.13 Bayside - N06

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory (NWI) map for New York-Northwest/Long Island West, Flushing Quadrangle, (date unavailable) regulated wetlands are not located on the site or adjacent properties. However, two regulated wetlands are located within a half mile radius of the site. A wetland in the vicinity of Oakland Lake is located approximately 2,200 feet southeast of the site, and a wetland in the vicinity of Alley Creek is located approximately 2,300 feet east/northeast of the site.

According to the Hagstrom Atlas for New York City Five Borough, Fourth Large Scale Edition, dated 1996, Alley Pond Park is located approximately 1,900 feet east of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half-mile radius of the site.

3.14 Little Neck - N08

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Sea Cliff Quadrangle, dated 1994, regulated wetlands are not located on the site or adjacent properties. However, three regulated wetlands in the vicinity of a sewage disposal area are located within a half mile radius of the site. Wetlands are located approximately 1,000 feet southwest, approximately 2,000 feet west, and approximately 1,400 feet west/southwest of the site.

Based upon a review of the New York State Coastal Zone Management Program maps, the Little Neck substation appears to be in the vicinity of the inland extent of a coastal zone boundary.

According to the Hagstrom Atlas for Nassau County, New York, Fifth Large Scale Edition, dated 1997, two unnamed parks are located approximately 600 feet north/northeast, and approximately 2,000 feet west/northwest of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.15 Bellaire -G11

According to the Hagstrom Atlas for New York City Five Borough, Fourth Large Scale Edition, dated 1996, an unnamed park is located adjacent and north/northeast of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, New York State Department of

Environmental Conservation (NYSDEC), Latham, New York; there is one recorded occurrence of a "Rare" species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Bellaire substation. The species is a vascular plant known as cat-tail sedge (*Carex Typhina).* It should be noted that this occurrence was last recorded in 1921.

According to the Natural Heritage Report, there are no recorded occurrences of endangered, threatened , unprotected species, or designated significant fish and wildlife habitats in the vicinity of the Bellaire substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.16 Cedar Manor - A08

According to the Hagstrom Atlas for New York City Five Borough, Fourth Large Scale Edition, dated 1996, an unnamed park is located adjacent and north/northeast of the site.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.17 Kew Gardens - G07

According to the Hagstrom Atlas for New York City Five Borough, Fourth Large Scale Edition, dated 1996, Forest Park is located approximately 1,900 feet northwest of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there is one recorded occurrence of a “Rare” species, and one recorded occurrence of an “Unprotected” species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Kew Gardens substation. The rare species is a vascular plant known as cat-tail sedge (*Carex Typhina).* It should be noted that this occurrence was last recorded in 1921. The unprotected species is a vascular plant known as swamp aster (*Aster Radula).* The last recorded occurrence of this species was 1902.

According to the Natural Heritage Report, there are no recorded occurrences of endangered, threatened species, or designated significant fish and wildlife habitats in the vicinity of the Kew Gardens substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.18 St. Albans - S01

According to the Hagstrom Atlas for New York City Five Borough, Fourth Large Scale Edition, dated 1996, an unnamed park is located approximately 1,800 feet southwest of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there is one recorded occurrence of a "Rare" species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the St. Albans substation. The species is a vascular plant known as cat-tail sedge (*Carex Typhina).* It should be noted that this occurrence was last recorded in 1921.

According to the Natural Heritage Report, there are no recorded occurrences of endangered, threatened, unprotected, or designated significant fish and wildlife habitats in the vicinity of the St. Albans substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.19 Lindenhurst - S19

According to the New York State Freshwater Wetlands map prepared by the NYSDEC, Bay Shore West Quadrangle, dated 1991, regulated wetlands are not located on the site or adjacent properties. However, two regulated wetlands are within an approximate half mile radius of the site. A wetland associated with Neguntatogue Creek is located approximately 800 feet west of the site, and a wetland associated with Santopogue Creek is located approximately 2,700 feet east of the site.

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Bay Shore West Quadrangle, dated 1994, regulated wetlands are not located on the site or adjacent properties. However, two regulated wetlands are located within an approximately half mile radius of the site. A wetland associated with Santopogue Creek is located approximately 2,700 feet to the east/southeast of the site, and a wetland associated with Neguntatogue Creek is located approximately 2,700 feet mile to the south/southeast of the site.

According to the Hagstrom Atlas for Suffolk County, New York, Fourth Large Scale Edition, dated 1995, two unnamed parks are located approximately 1,000 feet west/northwest, and approximately 1,500 feet east/southeast of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York; there are two recorded occurrences of a “Rare” species, and one recorded occurrence of an “Endangered” species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Lindenhurst substation. The first rare species is a vascular plant known as velvety lespedeza (*Lespedeza Stuevei*); however, its occurrence was last recorded in 1926. The second rare species is also a vascular plant known as collins’ sedge (*Carex Collinsii*), its occurrence was last recorded in 1927. The endangered species is a vascular plant known as barratt’s sedge (*Carex Barrattii*), its occurrence was last recorded in 1926.

According to the Natural Heritage Report, there are no recorded occurrences of threatened, unprotected species, or designated significant fish and wildlife habitats in the vicinity of the Lindenhurst substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

3.20 Babylon Yard - S22

According to the New York State Freshwater Wetlands map prepared by the NYSDEC, Bay Shore West Quadrangle, dated 1991, regulated wetlands are not located on the site. However, three regulated wetlands are located within an approximate half mile radius of the site. A wetland associated with Sampawams Creek is located approximately 1,000 feet west of the site. A wetland associated with Hawleys Creek is located approximately 2,500 southwest of the site, and a wetland associated with Willetts Creek is located approximately 2,700 feet east of the site.

According to the U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory map for New York-Northwest/Long Island West, Bay Shore West Quadrangle, dated 1994, regulated wetlands are not located on the site or adjacent properties. However, five regulated wetlands are located within an approximate half mile radius of the site. Wetlands are located approximately 1,200 feet to the east, northeast, and southeast of the site, a wetland is located approximately 2,000 feet east of the site, and a wetland is located approximately 2,200 feet to the southwest of the site. These wetlands are associated with Sampawams Creek. A wetland associated with Willetts Creek is located approximately 2,200 feet east of the site.

Based on the March 31, 1999 Natural Heritage Report on Rare Species and Ecological Communities, prepared by the Natural Heritage Program, NYSDEC, Latham, New York, there is one recorded occurrence of a “Rare” species, three recorded occurrences of an “Unprotected” species, and one recorded occurrence of a “Endangered” species within 1.5 miles of map coordinates (identified in the Natural Heritage Report) that is in the vicinity of the Babylon Yard substation. The rare species is a vascular plant known as velvety lespedeza (*Lespedeza Stuevei*); however, its occurrence was last recorded in 1926. The first unprotected species is a vascular plant known as flax-leaf whitetop (*Aster Solidagineus*), its occurrence was last recorded in 1926. The second unprotected species is a vascular plant known as velvet panic grass (*Panicum Scoparium*), its occurrence was last recorded in 1915. The third unprotected species is also a vascular plant known as hyssop-skullcap (*Scutellaria Integrifolia*), its occurrence was last recorded in 1915 as well. The endangered species is a vascular plant known as barratt's sedge (*Carex Barrattii*), its occurrence was last recorded in 1927.

According to the Natural Heritage Report, there are no recorded occurrences of threatened species, or designated significant fish and wildlife habitats in the vicinity of the Babylon Yard substation.

Of the remaining targeted environmentally sensitive areas, none were located within a half mile radius of the site.

4.0 STORM/SANITARY SEWER STUDY

In order to better understand historic operations regarding potential on-site and off-site effluent discharge points, D&B has reviewed available construction drawings provided by the LIRR. The following subsections provide a site by site description of identified and/or potential effluent discharge points of each LIRR substation site.

4.1 Manhasset-N10

Based upon the review of the *LIRR Conduit Layout,* dated November 12, 1930, the presence of a rectifier pit appears to be located in the northeast corner of the substation. A trough appears to be located approximately 1.5 feet to the southeast of the rectifier, and a potential dry well appears to be located outside the substation approximately 3 feet off the southeast exterior corner of the substation. However, this drawing did not indicate the configuration of any interior floor drains with respect to the dry well.

4.2 Shea-N02

Based upon the review of the *LIRR Floor Plan,* dated August 19, 1938, the presence, of what appears to be a rectifier and a water trough is located within the central-east portion of the substation.

Based upon the review of the *LIRR Location Plan,* dated August 19, 1938, a sanitary sewer, with no apparent line connections, appears to be located approximately 20 feet off the northeast exterior corner of the substation. According to the drawing, two 2-inch drain lines appear to be extending east from within the rectifier trench and the water trough. The drain lines then appear to connect to a 4-inch drain line, which extends north. The drawing does not identify where the drain line terminates. The drawing also indicates a water supply line leading to the rectifier pit. The water supply line appears to be extending east from within the rectifier/trench, and then extends north. The drawing does not identify where the water supply line terminates.

According the drawing, a manhole appears to be located adjacent to, and along the exterior south wall of the facility.

4.3 Far Rockaway-F03

Based upon the review of the *LIRR Plans and Section-Floor Plan* subsection, dated circa 1931, the presence of what appears to be a pipe trench is located in the southeast portion of the substation. The drawing also indicates two drainpipes exiting the west exterior substation wall and subsequently leading to a dry well and cesspool. The drawing does not indicate the location of the dry well or cesspool, or the points of origin for either drainpipe.

Based upon the review of the *LIRR Foundation Plan,* dated circa 1931, the presence of what appears to be an outside transformer staging area is located adjacent and west of the substation. According to the drawing, two drain pipes exiting the west exterior substation wall, appears to lead and discharge to two dry wells. One dry well is located approximately 20 feet west of the substation, centrally located within the transformer staging area. The other dry well is located approximately 5 feet west of the substation, within the northeast portion of the transformer staging area. The drawing does not indicate the points of origin for either drainpipe.

4.4 Valley Stream-S04

Based upon the review of the *LIRR Plans and Section* construction drawing *Floor Plan* subsection, dated circa 1931, the presence of a rectifier pit appears to be located in the southwest portion of the substation. The drawing also indicates a water pit centrally located in the west portion of the substation. According to the drawing, a meter pit is located adjacent along the southeast exterior wall of the substation. The drawing does not indicate any floor drains, dry wells or other drainage discharge points.

4.5 Rockville Centre-S07

Based upon the review of the *LIRR Plans, Elevations & Details-Ground Floor Plan* subsection, dated circa 1948, the presence of what appears to be three 4-inch floor drains and associated cleanouts are located within the substation basement. One floor drain is located along the west/northwest portion of the substation. The other two floor drains are located in the south section of the substation. The drawing also indicates a 3-inch "L. Riser" for a roof drain located in the east/northeast section of the substation, and another 3-inch "L. Riser" for a roof drain connected to 2-inch hubs located in the east/southeast portion of the substation. It appears from the drawing that the floor drains, roof drains and hubs are all connected to a dry well located approximately 15 feet off the northwest corner of the substation. The drawing also depicts a lavatory located in the northwest corner of the substation, which leads to a sanitary sewer in Maple Avenue. In addition, a water meter pit is located adjacent to the north/northwest exterior substation wall.

4.6 Port Washington-N12

Based upon the review of the *LIRR Architectural Plans, Elevations and Details,* dated circa 1948, the presence of three 4-inch floor drains and associated cleanouts are located within the substation basement. One floor drain is located below the basement floor in the northwest portion of the facility, one floor drain is located below the basement floor in the southwest portion of the facility, and one floor drain is located in the south-central/southeast portion of the facility. The drawing also indicates the presence of a 5-foot diameter dry well located approximately 15 feet off the northwest corner of the substation building. According to the drawing, three roof drains located in the north/north-central portion of the facility appear to be connected to the dry well. Also connected to the dry well, are the three 4-inch floor drains mentioned above. In addition, a lavatory appears to be located in the southeast corner of the facility. According to the drawing, the lavatory is connected to a 4-inch drain line that is connected to a sanitary sewer line.

4.7 Island Park-L03

Based upon the review of the *LIRR Plumbing Layout*, dated October 24, 1950*,* a rectifier trench, supporting two rectifiers, appears to be located within the east/northeast portion of the substation. According to the drawing, a sump pump is located within the rectifier trench, between the two rectifiers. The drawing also indicates the presence of two 2-inch hubs above the pit floor centrally located along and within the southeast side of the easterly rectifier/trench location. These two hubs appear to be floor drains, which lead to an 8-foot diameter dry well located approximately 25 feet southeast of the substation. In addition, a 3-foot diameter, 5-foot deep concrete block dry well appears to be located off the east and south corners of the facility.

According to the *LIRR Roof Plan,* dated October 24, 1950, two roof drains appear to be connected to the two 3-foot diameter dry wells mentioned above. The *LIRR Plumbing Layout* construction drawing indicates the presence of a lavatory and wash closet located in the west corner of the substation, which is connected via a 4-inch pipe to a trap pit. This trap pit is located west and adjacent outside the facility and is connected to a septic tank system (discussed in the Location Plan and Duct Line Layout construction drawing).

Based upon the review of the *LIRR Location Plan and Duct Line Layout,* dated October 24, 1950, construction drawing, the previously discussed an 8-foot diameter, 5-foot deep dry well located southeast of the facility appears to be connected to three 4-inch tile drain lines. According to the drawing, one drain line extends approximately 80 linear feet southeast toward a vacant parcel of land. The other drain line appears to extend approximately 80 linear feet southwest. The last drain line extends approximately 65 linear feet east/southeast. According to the drawing, the septic tank system previously discussed above is connected to a distribution box located immediately adjacent and northwest of the septic tank. The distribution box appears to be connected to two 4-inch farm tile drains. One drain line extends approximately 26 linear feet east/southeast and the other drain line extends approximately 75 linear feet east/southeast both drain lines are approximately 7.5 feet apart, and run parallel to one another. This construction drawing also indicates the presence of another substation that was to be abandoned, which is located approximately 65 feet southwest of the current substation. The presence of this other substation corresponds to the electrical transformer station identified in Subsection 2.1.7 of the Sanborn map review of Island Park.

4.8 Floral Park-G13

Based upon the review of the *LIRR Foundation and Floor Plan,* dated September 22, 1930, the presence of what appears to be two rectifier and water trough pits is located within the south portion of the substation facility. According to the drawing, a slop sink appears to be located along the southwest wall of the facility. The drawing also indicates the presence of two manholes located 71 feet apart adjacent to the substation along the exterior south wall. As indicated on the drawing, a toilet, partition, and what appears to be a slop sink was to be removed along the central/west wall of the facility. A manhole is located adjacent to the exterior west wall of the facility.

Based upon the review of the *LIRR Location Plan,* dated September 15, 1930, the slop sink located along the southwest wall previously discussed above, appears to be connected to a 4-inch T.C. drain line extending west/southwest. According to the drawing, this drain line appears to be connected to a cesspool. The sanitary waste from the existing toilet and slop sink cannot be determined where it discharges from these drawings. Two 3-inch drain lines extending approximately 15 linear feet south appear to extend and connect to a dry well located approximately 30 feet east/northeast of the substation. However, from the available drawings, it cannot be determined where the two 3-inch drain lines originate. A proposed dry well with no connections is also shown to be located approximately 45 feet east of the substation. The drawing also depicts, what appears to be a drain and/or cleanout located approximately 15 feet south of the facility and situated between a 2-inch water line and the 3-inch drain line. According to the drawing, this drain and/or cleanout was to be removed.

4.9 Mineola-G16

Based upon the review of the *LIRR Foundation & Details*, dated February 2, 1910, the presence of five 4-inch floor drains and two 6-inch floor drains are located within the substation basement. According to the drawing, four 4-inch floor drains and two 6-inch floor drains are located in the west portion of the facility. The drawing also depicts four pits. One pit is located along the south interior wall of the substation, and one pit is located in the south/southeast section of the substation, there are two other pits which are located in the center of the substation. There are no discharge pipes for any of these drains identified in the available drawings.

4.10 Hempstead-H03

Based upon the review of the *LIRR Plans and Section-Floor Plan* subsection, dated December 1, 1930, the presence of what appears to be a pipe trench is located in the southwest portion of the substation. The drawing also indicates a meter pit located adjacent to the southwest exterior wall of the substation. In addition, the drawing indicates what appears to be a rectifier and water trough pit located in the central portion of the substation. According to the drawing, one 2-inch drain pipe exiting the northwest exterior substation wall subsequently leads to a dry well. The drawing does not indicate the location of the dry well. However, the point of origin of the drain pipe originates in the rectifier pit.

Based upon the review of the *LIRR Foundation Plan,* dated December 1, 1930, the presence of what appears to be an outside transformer staging area is located adjacent and north of the substation. According to the drawing, a 2-inch drain pipe exiting the northwest exterior substation wall, which is also shown in the Section-Floor Plan drawing, leads and discharges to a dry well located within the northeast portion of the transformer staging area. The drawing also indicates a 3-inch drain line exiting the southeast exterior substation wall and leading to a cesspool located approximately 4 feet off the southeast exterior substation wall. The drawing does not indicate the point of origin for this drainpipe.

4.11 Nassau Boulevard-H01

Based upon the review of the *LIRR Plans, Elevations & Details-Ground Floor Plan* subsection, dated circa 1948, there are three 4-inch floor drains within the substation basement.

One floor drain is located along the north/northwest substation wall. The other two floor drains are located in the east portion of the substation. The drawing also indicates a 3-inch “L. Riser” for a roof drain located in the south/southwest section of the substation, and another 3-inch “L. Riser” for a roof drain connected to two 2-inch hubs located in the south/southeast portion of the substation. From the drawing it is shown that the floor drains, roof drains and hubs discharge to a storm sewer located off the southeast corner of the substation on the west side of Tanners Pond Road. The drawing also depicts a lavatory located in the northwest corner of the substation, which leads to a septic tank located approximately 23 feet off the northwest exterior wall of the substation. In addition, the septic tank is connected to a 4-inch drain tile, which leads to a disposal field located approximately 10 feet off the north/northwest exterior corner wall of the substation.

4.12 Massapequa-S15

Based upon the review of the *LIRR Plans and Section-Floor Plan* subsection, dated August 11, 1931, the presence of what appears to be a pipe trench is located in the southeast portion of the substation. The drawing also indicates two drainpipes exiting the west exterior substation wall and subsequently leading to a dry well and cesspool. The drawing does not indicate the location of the dry well or cesspool, or the points of origin for either drainpipe. In addition, the drawing indicates the presence of a rectifier and water trough pit located in the central portion of the substation.

Based upon the review of the *LIRR Foundation Plan,* dated circa August 11, 1931, the presence of what appears to be an outside transformer staging area is located adjacent to and west of the substation. According to the drawing, two drain pipes exiting the west exterior substation wall, appears to lead and discharge to two dry wells. One dry well is located approximately 10 feet off the northwest exterior substation wall. The other dry well is located approximately 5 feet west of the substation, within the northeast portion of the transformer staging area. The drawing does not indicate the points of origin for either drainpipe.

4.13 Bayside-N06

Based upon the review of the *LIRR Plans, Elevations & Details* Ground Floor Plan, dated circa 1948, the presence of what appears to be three 4-inch floor drains and associated cleanouts are located within the substation basement. One floor drain is located along the south/southwest substation wall. The other two floor drains are located in the eastern portion of the substation. The drawing also indicates a 3-inch roof drain located in the south/southwest section of the substation, and another 3-inch roof drain connected to two 2-inch hubs located in the south/southeast portion of the substation. From the drawing it shows that the floor drains, roof drains and hubs are all connected to a storm sewer located off the southwest corner of the substation on 216th Street. The drawing also depicts a lavatory located along in the southwest corner of the substation, which leads to a sanitary sewer also located off the southwest corner of the substation on 216th Street.

4.14 Little Neck-N08

Based upon the review of the *LIRR Plan of Foundation*, dated October 2, 1912, the rectifier pits show pipe drains. However, the drawing does not show where these pipes discharge to. According to the *Location Plan* subsection of the same drawing, a pipe drain located on the east and west portions of the substation appear to lead south to an unnamed creek. However, the drawing does not show where these drains are connected to within the substation.

4.15 Bellaire-G11

Based upon the review of the *LIRR Plans, Elevations & Details* Ground Floor Plan, dated circa 1947, the presence of what appears to be two rectifiers are located within the eastern portion of the substation basement. According to the drawing, pipe trenches are seen throughout the central, west and south portions of the substation. According to the drawing, three 4-inch floor drains and associated cleanouts are located within the substation. One floor drain is centrally located along the north substation wall. The other two floor drains are located in the vicinity of the two rectifiers mentioned above. The drawing also indicates a 3-inch roof drain located in the southwest corner of the substation, and another 3-inch roof drain connected to two 2-inch hubs located in the southeast portion of the substation. It appears from the drawing that the floor drains, roof drains and hubs are all connected to a 10-foot deep dry well located approximately 20 feet off the southeast exterior corner of the substation. A lavatory centrally located along the west wall leads to a cesspool located on the north side of the substation; however, the location of the cesspool is not shown on the drawing.

4.16 Cedar Manor-A08

Based upon the review of the *LIRR Plans and Sections-Floor Plan* subsection, dated August 4, 1931 the presence of what appears to be a pipe trench is located in the southwest portion of the substation. The drawing also indicates a meter pit located adjacent to and off the southwest exterior wall of the substation. According to the drawing, two drain pipes exit the northwest exterior substation wall, one pipe appears to lead to a dry well located to the east, and the second pipe to a cesspool located to the north. The drawing does not indicate the location of the dry well, cesspool or point of origin of the two drainpipes. In addition, the drawing indicates the presence of a rectifier and water trough pit centrally located within the substation. It should be noted that this drawing corresponds to the original portion of the substation before it was expanded.

Based upon the review of the *LIRR Plans, Elevations & Details-Ground Floor Plan*, dated circa 1947, the presence of what appears to be two 4-inch floor drains and associated cleanouts are located within the north/northwest portion of the substation. The drawing also indicates what appears to be a 3-inch L. Riser for a roof drain connected to two 2-inch hubs located in the north/northeast of the substation. From the drawing, the floor drains, roof drain and hubs all lead and discharge to a storm sewer located approximately off the north exterior substation corner in Brinkehoff Avenue. The drawing also indicates a lavatory located in the south/southeast corner of the substation, which leads to a sanitary sewer located (drawing does not indicate distance) south/southeast in 158th Street.

4.17 Kew Gardens-G07

Based upon the review of the *LIRR Plans, Elevations & Details* Ground Floor Plan, dated circa 1947, the presence of what appears to be two rectifiers are located within the south/southwest portion of the substation. According to the drawing, pipe trenches are seen throughout the central, northwest and northeast portions of the substation. According to the drawing, three 4-inch floor drains and associated cleanouts are located within the substation. One floor drain is located in the west portion of the substation. The other two floor drains are located in the vicinity of the two rectifiers mentioned above. The drawing also indicates a 3-inch roof drain located in the north corner of the substation, and another 3-inch roof drain connected to two 2-inch hubs located in the east portion of the substation. It appears from the drawing that the floor drains, roof drains and hubs are all connected to a 10-foot deep dry well located approximately 20 feet off the north exterior corner of the substation. The drawing also indicates a lavatory located along the north wall, which leads to a cesspool located (drawing does not indicate distance) off the west-end corner of the substation.

4.18 St. Albans-S01

Based upon the review of the *LIRR Operating Floor-Details & Roof Steel* construction drawing, dated circa 1947, the presence of what appears to be two rectifiers are located within the western portion of the substation. According to the drawing, a manhole appears to be located within the southeastern portion of the substation. The drawing also indicates the presence of a sump with crushed stone located off the western corner of the substation. It should be noted that this drawing does not indicate the presence of floor drains, slop sinks, or dry wells.

4.19 Lindenhurst-S19

Based upon the review of the *LIRR Plans, Elevations & Details-Ground Floor Plan*, dated circa 1948, the presence of what appears to be three 4-inch floor drains and associated cleanouts are located within the substation basement. One floor drain is located in the north/northwest portion of the substation. The other two floor drains are located in the north/northeast portion of the substation. The drawing also indicates a 3-inch roof drain located in the east/southeast section of the substation, and another 3-inch roof drain connected to two 3-inch hubs located in the north/northeast portion of the substation. From the drawing it shows that the floor drains lead to a sump pump/sump pit located along the north/northeast interior substation wall. The drawing indicates that the sump pump/sump pit discharges to a drywell, as does the roof drains, which is located approximately 15 feet off the north/northeast exterior corner wall of the substation. The drawing also indicates a lavatory located in the south/southeast corner of the substation, which leads to a septic tank located approximately 15 feet off the southwest exterior wall of the substation. In addition, the septic tank is connected to a 4-inch drain tile, which leads to a disposal field, located approximately 15 feet off the central east exterior wall of the substation.

4.20 Babylon Yard-S22

Based upon the review of the *LIRR Plans, Elevations & Details-Ground Floor Plan*, dated circa 1948, the presence of what appears to be three 4-inch floor drains and associated cleanouts are located within the substation basement. Two floor drains are located in the western portion of the substation, and the other floor drain is located along the south/southeast substation interior wall. The drawing also indicates that two 3-inch roof drains are located within the substation. One roof drain is located in the north/northeast portion of the substation, and the other roof drain is located in the north/northwest section of the substation, which also is connected to two 2-inch hubs. From the drawing it shows that the floor drains lead to a sump pump/ sump pit located in the north/northwest portion of the substation. The drawing indicates that the sump pump/sump pit leads to a dry well, as does the north/northwest roof drain, which is located approximately 15 feet off the north/northwest exterior corner wall of the substation. The drawing also indicates a lavatory located in the north/northeast corner of the substation, which leads to a septic tank located approximately 15 feet off the exterior corner wall of the substation. In addition, the septic tank is connected to a 4-inch drain tile, which leads to a disposal field, located approximately 15 feet off the central north exterior wall of the substation.

5.0 SITE ASSESSMENT SCOPE OF WORK

5.1 Site Inspection

Site inspections were conducted at each of the 20 LIRR electric substation sites. The initial site reconnaissance began by visually inspecting the substation interior and exterior to identify potential Areas of Concern (AOCs). On-site LIRR representatives were interviewed regarding the operating history of each substation to determine how mercury from the rectifiers could have impacted the environment. On-site structures (i.e., substation, transformer yard, concrete platforms, etc.) were then measured to verify the dimensions provided on available LIRR constructions drawings. The AOCs identified during the site inspections, along with the mercury vapor measurements discussed in Section 5.2, formed the basis for determining the placement of soil borings and concrete corings during the field investigation.

5.2 Mercury Vapor Measurements

Direct-read mercury vapor measurements were taken at each of the 20 substations. Mercury vapor measurements were taken within the substation interior as well as the exterior adjacent surroundings. Selected vapor survey points were generally AOCs including, but not limited to, rectifier pits, floor drains, utility trench systems, troughs, water meter pits, cracked concrete areas, dry wells, manholes, pits and septic tanks. Additional survey areas were investigated based on available LIRR construction drawings, D&B's field observations and available historical information provided by LIRR personnel. A portable hand-held Jerome Gold Film Mercury Vapor Analyzer (MVA) model 411 was utilized to obtain the mercury vapor measurements.

5.3 Drainage Determination

Drainage determination was conducted at selected substations to confirm substation drainage discharge points. Selected drainage features included, but were not limited to, rectifier pit drains, slop sinks, water "trough" pit drains and substation floor drains. These drainage features were identified by reviewing available LIRR construction drawings, D&B's field observations and available historical substation information provided by LIRR personnel. The three methodologies utilized to implement drainage determination activities were as follows:

Flush Test Procedure

- Verify that no other source(s) of water are in use during flush testing activities which could also discharge water into potential outfall location(s).
- Flush water through pipe and/or drain being tested.
- Inspect potential outfall locations (i.e., drainage pipes, dry wells, catch basins, leaching pools, etc.) for water discharge.

Dye Test Procedure

- Follow the same procedure for flush testing except add dye to water entering pipe or drain.
- Inspect potential outfall locations for evidence of dye.

Mechanical Snaking

Flush and dye tests were not conclusive at certain substations. In these instances, D&B subcontracted with Conrad Geoscience Corporation (Conrad) of Poughkeepsie, New York to perform mechanical snaking of the drainage feature to determine its discharge point. Conrad inserted a flexible metal rod into the drainage feature and traced its discharge direction using electromagnetic tracing techniques. Conrad's pipe tracing reports are provided in Appendix B.

5.4 Geophysical Surveys

Geophysical surveys were conducted at selected substations where AOCs including, but not limited to, dry wells, manholes, and/or septic tanks which, while not visible from grade, were suspected to be present based on available LIRR construction drawings reviewed by D&B.

Conrad Geosciences Corp. of Poughkeepsie, New York was subcontracted to perform geophysical surveys at these AOCs. Ground penetrating radar (GPR) and magnetometry/ gradiometry (M/G) were used to perform the geophysical surveys. For both geophysical methods, a survey grid was initially laid out within the potential AOC. Readings were recorded from the instrument(s) at intervals of 0.25 to 2 meters along the grid lines. The measured data were then downloaded and plotted, to create anomaly maps for each area investigated. The anomaly maps were used by D&B to locate soil borings or direct excavation activities. A more detailed description of the methods and instruments used during the geophysical survey is included in the reports from Conrad Geosciences, in Appendix C.

5.5 Sampling and Analysis

This section provides a description of the procedures used to collect soil, concrete core and water samples the as part of the Phase II program. Dedicated field log books, which are available in the project file, provide documentation of the daily field activities conducted at each substation site during the field program. It should be noted that a representative from Field Safety Corporation (FSC) was on-site during all sampling activities that were conducted under rectifiers or within substation basement areas. While on-site, FSC ensured that all work was conducted according to the LIRR approved HASP. The D&B field operations manager (FOM) was responsible for ensuring site safety during all other sampling activities.

5.5.1 Concrete Core Sampling

In order to evaluate whether historic activities in specific areas had impacted the concrete floors, pits and trenches, concrete core samples were collected at selected substations during the interior portion of the assessment program. Concrete cores were collected utilizing an electric coring machine equipped with a water cooled 4-inch diameter diamond concrete coring bit 16 inches long. The depths of the concrete cores varied from substation to substation. In areas where the depth of concrete exceeded 16 inches, a 22-inch long concrete core bit was utilized. In areas where the electric core-drill could not be properly utilized due to space limitations, concrete coring was conducted utilizing a Hilti portable, electric hammer-drill. This technique produced concrete chips, instead of a concrete core, that were sent to the laboratory for analysis.

Upon receipt of an intact concrete core, the laboratory cut the top 1-inch of the core for sample preparation. In the case where representative concrete chips were collected in the field, the laboratory utilized the concrete chips for analysis.

During concrete coring activities, a Jerome 411 Gold Film Mercury Vapor Analyzer was used to monitor mercury vapor in the workers' breathing zone and at the boreholes. A photoionization detector (PID) was utilized to monitor VOCs in the workers' breathing zone and at the boreholes as well. Air monitoring results are documented in the project field books. The PID was calibrated on at least a daily basis, using isobutylene gas at a concentration of 100 parts per million in air. The Jerome 411 Gold Film Mercury Vapor Analyzer is factory calibrated by the manufacturer, Arizona Instrument Corp. Tempe, Arizona, and therefore does not require daily calibration. PID calibration was documented in the project field books.

5.5.2 Surface Soil Sampling

Surface soil samples were collected at locations of known or suspected spill or disposal areas and areas that exhibited elevated MVA readings to determine the nature and extent of surficial soil contamination on-site. Soil samples were collected at a depth of 0 to 6 inches below grade using a disposable polyethylene scoop.

5.5.3 Subsurface Soil Sampling

Subsurface soil samples were collected, in most cases, using the direct push technique commonly referred to as the Geoprobe™ method. Prior to drilling, all necessary utility mark-outs were performed by the LIRR for probes located within the substation boundaries. The probes were installed utilizing a decontaminated sampler fitted with a disposable acetate liner. Subsurface soil samples were collected utilizing a decontaminated stainless steel hand auger for sample locations that had limited access (i.e., under active rectifiers and in transformer yards, etc.). Soil samples were collected continuously from a depth of 0 to 6 feet below grade. Each soil sample was examined for signs of contamination (staining, odors) with a PID and a Jerome mercury analyzer which was run over the top of the sample as soon as it opened. Based on the results of the organic vapor and mercury screening, two samples from each boring were sent to the laboratory for analysis. All residual soil was backfilled into the probe hole after all soil samples were collected. Soil boring logs are provided in Appendix E.

5.5.4 Groundwater Sampling

The monitoring wells at the Manhasset and Shea substations were installed using a hollow-stem auger and were constructed of four-inch I.D. PVC casing. A 10-foot PVC screen was installed approximately eight feet below and two feet above the water table. A filter pack of sand was placed in the annular space around the screen and was extended two feet above the screen. Well screen slot size and sand pack size for each well is identified on the well construction logs provided in Appendix E.

Following installation, each groundwater monitoring well was developed by pumping to obtain a reading of fifty (50) Nephelometric Turbidity Units (NTUs). One week subsequent to well development, groundwater samples were collected utilizing dedicated plastic bailers. Samples were not taken until pH, temperature and conductivity measurements were stabilized, and not before at least three well volumes were purged and well recovery was completed. Well development water was containerized in 55-gallon DOT drums for proper off-site disposal.

5.5.5 Decontamination Procedures

All non-dedicated sampling equipment was decontaminated between sample locations. Decontamination procedures consisted of:

- external wash with a solution of non-phosphate detergent and potable water;
- potable water rinse; and

- distilled/deionized water rinse.

Decontamination water was contained in 55-gallon DOT drums for proper disposal.

5.5.6 Laboratory Analysis

In accordance with the approved scope of work, each collected soil, concrete core and groundwater sample was submitted under a chain of custody to Mitkem Corporation, and analyzed on a 28-day laboratory turnaround basis for mercury by EPA method 7471. In addition, corresponding Quality Assurance/Quality Control (QA/QC) samples comprising of a matrix spike, matrix spike duplicate, and a field blank were collected and analyzed at the rate of 1 QA/QC set for every 20 environmental samples collected in the field. Soil results were subsequently compared to the NYSDEC Eastern USA Background Levels as outlined in the TAGM No. 4046 Appendix A criteria. Since there is no NYSDEC guidance value for contaminants in concrete, concrete results were not evaluated with respect to published comparison criteria. Groundwater results (applicable to Manhasset and Shea only) were subsequently compared to the NYSDEC Division of Water Groundwater Guidance Value for GA Class Water as outlined in the TOGS 1.1.1.

6.0 FINDINGS

This section presents a summary of the findings of the field investigation associated with each LIRR substation. Figures referenced in the text are presented at the end of each subsection and all data tables are provided in Appendices A and D.

6.1 Manhasset-N10

6.1.1 Site Inspection

The Manhasset substation site is located in Manhasset, Nassau County, New York. The substation consists of a 25-foot by 30-foot one-story brick building located within the LIRR right-of-way, 12 feet north of the existing train tracks as shown on Figure 6.1-1. A 30-foot by 30-foot transformer yard is located immediately adjacent to the substation to the east and is enclosed by a chain-linked fence. The remaining portion of the site is a rectangular-shaped, partially developed, parcel of land. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Port Washington branch. The areas surrounding the substation and the transformer yard are used as storage by the LIRR.

The Manhasset substation is not equipped with an office, nor is it provided with any sanitary facilities, however, it does have water service which enters the structure immediately adjacent to the slop sink. The interior of the substation consists of an active solid-state rectifier located over a concrete pit that serviced a mercury-containing rectifier. The substation contains a second pit, referred to as a “water trough” on LIRR construction drawings, which is covered over by a metal utility plate. During the initial site inspection, the field team observed that the rectifier pit contained one floor drain and the water trough contained two floor drains. In addition, the Manhasset substation is equipped with a slop sink which is located along the eastern wall of the substation that discharges to the surface soil of the transformer yard located to the east of the substation. The Manhasset substation is not equipped with either a basement or a utility trench system. It should also be noted that the Manhasset substation contains a “bank” of active lead-acid batteries located in the northwest corner of the substation designed to provide back-up electricity.

The initial site inspection revealed a conduit pit covered with a metal plate located along the southern wall of the substation. This pit was observed to have an earthen bottom.

During the inspection, it was observed that the exterior storm water drainage system associated with the substation is connected to an existing storm water drainage system. This storm water flow originates from an elevated area to the south of the substation and the LIRR right-of-way and is conveyed via a concrete pipe which extends to the north running under the track. The concrete pipe discharges to a corrugated pipe, approximately 80 feet to the east of the substation. The corrugated pipe discharges to a drainage swale located immediately to the west of the substation and then flows west along the northern boundary of the substation approximately 800 feet, down an embankment to the headwaters of Manhasset Bay.

6.1.2 MVA Survey

A total of 21 mercury vapor measurements were taken in and around the substation building as well as, along the drainage swale. As indicated in Table A-1, 19 of the 21 measurements indicated the presence of mercury vapor ranging from a maximum concentration of 0.032 mg/m^3 to a minimum concentration of 0.001 mg/m^3 at locations MHMV-03 and MHMV-05, respectively. These locations are presented on the sampling and mercury vapor measurement location plan (see Figure 6.1-2).

6.1.3 Drainage Determination

As part of the site investigation at the substation, a total of three floor drains associated with pits were flush tested utilizing potable water. One drain is located within the north rectifier pit and two drains are located within the water trough pit (see Figure 6.1-1). Based on the results of the testing, D&B determined that the rectifier pit drain discharges directly to the subsurface. The west drain in the water trough pit discharges directly to the subsurface, while the east drain discharges to a dry well located approximately 7.5 feet southeast corner of the substation. D&B also determined that the interior slop sink discharges to the surface soil located within the transformer yard located to the east of the substation.

6.1.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and groundwater sampling activities.

6.1.4.1 - Subsurface Soil

Analytical results for subsurface soil samples are presented in Table D-1A. The subsurface sample locations are shown on Figure 6.1-2. All soil boring logs are provided in Appendix E. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

Rectifier Pit (Sample MHSBB-01). Mercury was detected at 0-2 feet below ground surface (bgs) at a concentration of 171 mg/kg and 2-3 feet bgs at a concentration of 392 mg/kg.

Water Trough Pit (Sample MHSBB-02). Mercury was detected at 2-4 feet bgs at a concentration of 514 mg/kg and 4-6 feet bgs at a concentration of 247 mg/kg.

Dry Well (Sample MHSBB-04). Mercury was detected at 12.5-14.5 feet bgs at a concentration of 1.7 mg/kg and 14.5-16.5 feet bgs at a concentration of 0.87 mg/kg.

South of West-End Railroad Ties (Sample MHSBB-06). Mercury was detected at 0-2 feet bgs at a concentration of 0.272 mg/kg and 4-6 feet bgs at a concentration of 1.1 mg/kg.

North of West-End Railroad Ties (Sample MHSBB-07). Mercury was detected at 2-4 feet bgs at a concentration of 38.2 mg/kg.

Drainage Swale (Sample MHSBB-09). Mercury was detected at 0-2 feet bgs at a concentration of 1.3 mg/kg.

6.1.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-1B. The surface soil sample locations are shown on Figure 6.1-2. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

Slop Sink Discharge Point (Sample MHSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 25.1 mg/kg.

Drainage Swale (Samples MHSS-02, MHSS-03, MHSS-04, MHSS-05, MHSS-09, MHSS-10, MHSS-11, MHSS-12, MHSS-13). Mercury was detected in all nine surface soil samples at 0-6 inches bgs at concentrations ranging from 0.75 mg/kg to 9,880 mg/kg.

North of West-End Railroad Ties (Sample MHSS-06). Mercury was detected at 0-6 inches bgs at a concentration of 143 mg/kg.

South of West-End Railroad Ties (Sample MHSS-07). Mercury was detected at 0-6 inches bgs at a concentration of 166 mg/kg.

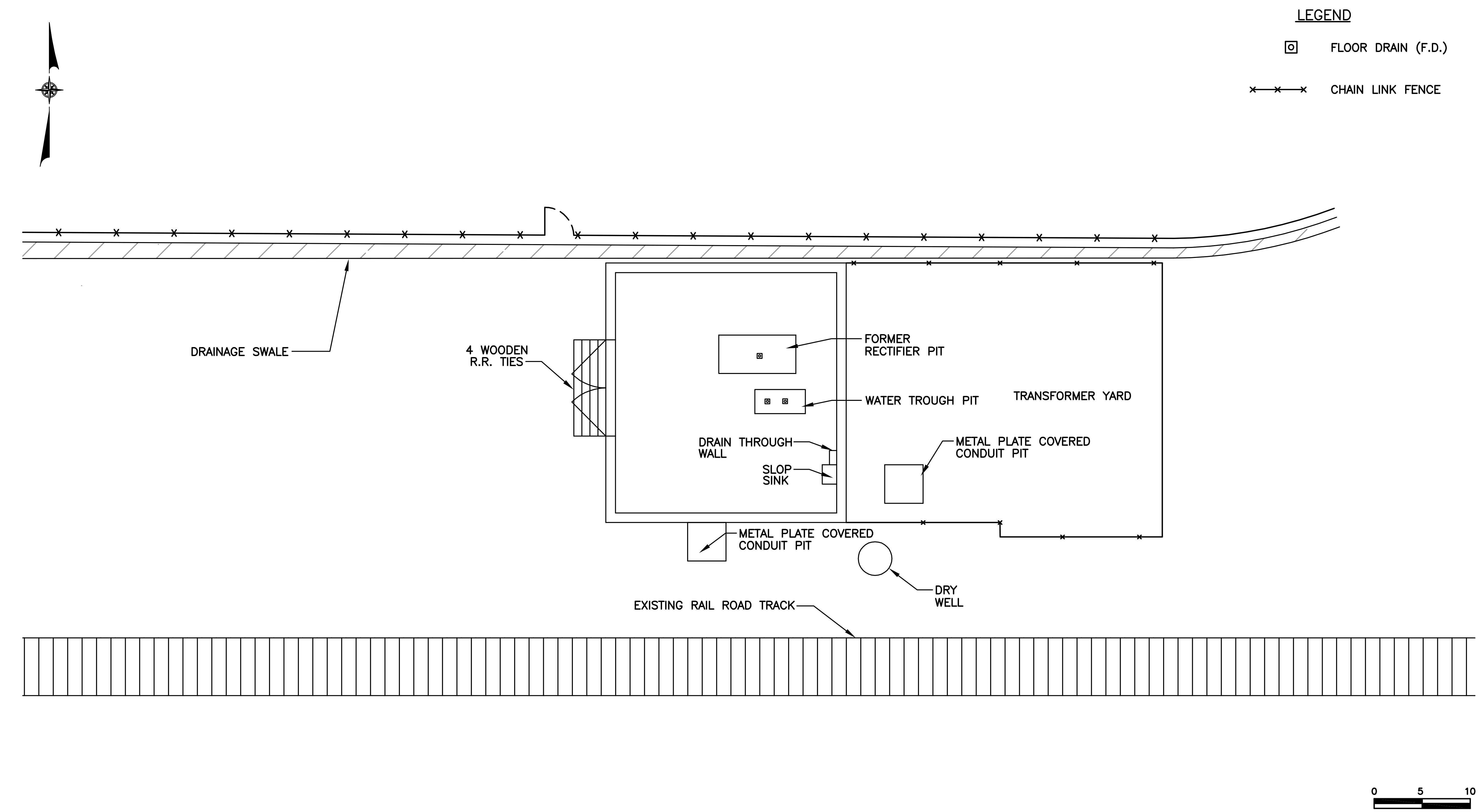
Out-Fall to Manhasset Bay (Sample MHSS-08). Mercury was detected t 0-6 inches bgs at a concentration of 1.3 mg/kg.

6.1.4.3 - Groundwater

In order to assess the impact of substation operations to groundwater quality in the area, two monitoring wells were installed as shown on Figure 6.1-2. The upgradient well (MHMW-02) was installed approximately 85 feet southeast of the substation. The downgradient well (MHMW-01) was installed about 19 feet west of the substation. The depth to groundwater was determined to be approximately 74.6 and 67 feet below grade for monitoring wells MHMW-01 and MHMW-02, respectively. The well construction logs for these groundwater monitoring wells are provided in Appendix E. Analytical results are summarized below:

Downgradient Monitoring Well (Sample MHMW-01). Mercury was detected in an unfiltered groundwater sample from this well at a concentration of 1.5 ug/l, which exceeds the NYSDEC groundwater guidance value for mercury of 0.7 ug/l. However, mercury was not detected in the filtered sample at a concentration above the method detection limit.

Upgradient Monitoring Well (Sample MHMW-02). Mercury was detected at an unfiltered groundwater sample from this well at a concentration of 0.26 ug/l which was less than the contract required detection level but greater than the instrument detection limit. Mercury was not detected in the filtered sample at a concentration above the method detection limit.



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

MANHASSET SUBSTATION – N10

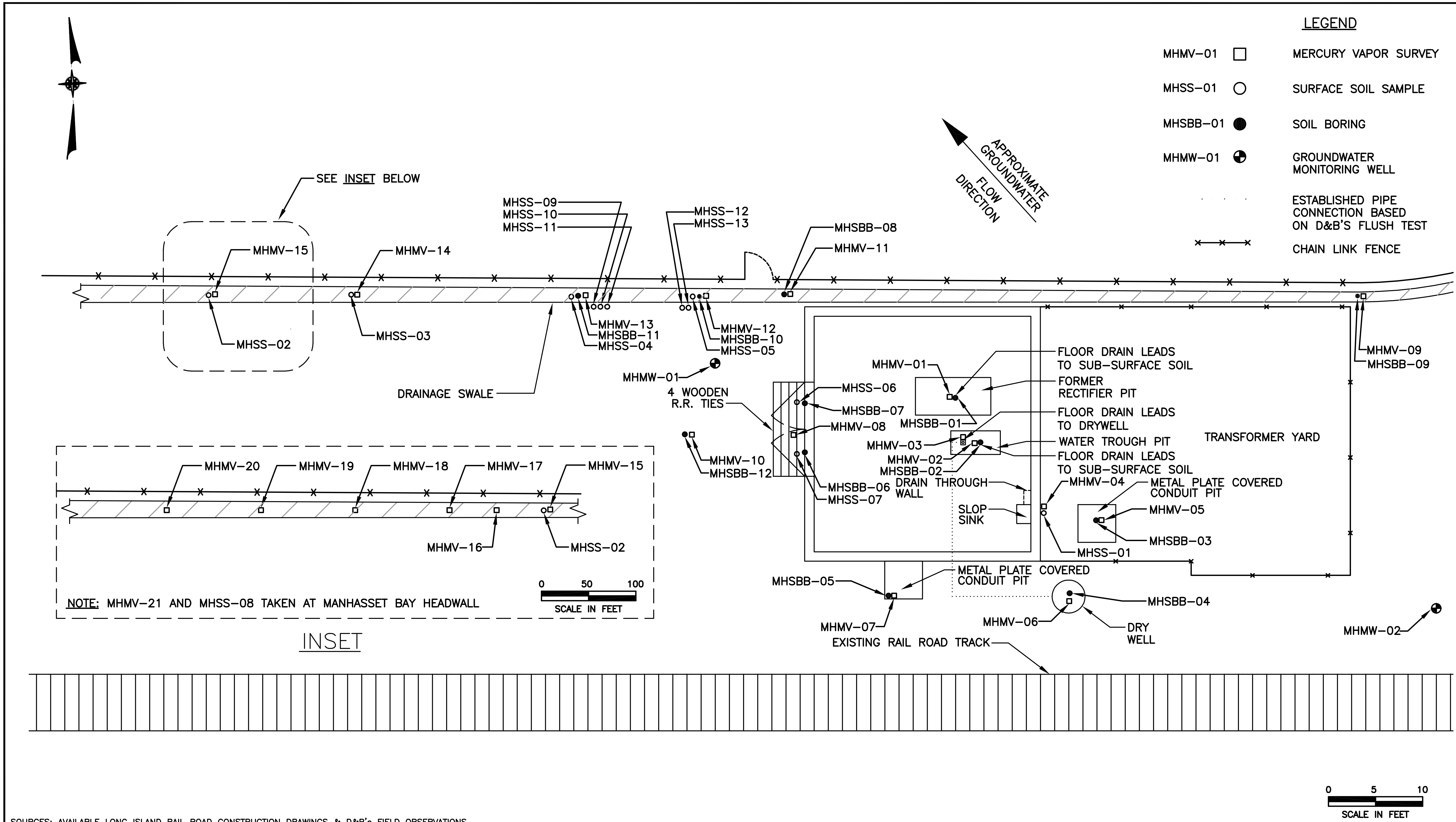
Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 6.1–1

Figure 6.1-2

Sampling and Mercury Vapor Measurement Location Plan -

Manhasset Substation – N10



LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

MANHASSET SUBSTATION – N10

Dvirka and Bartilucci
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FIGURE 6.1-2

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6.2 Shea-N02

6.2.1 Site Inspection

The Shea substation site is located in Flushing, Queens County, New York. The substation consists of a 25-foot by 40-foot one-story brick building and is located within the LIRR right-of-way, 14 feet north of the existing train tracks as shown on Figure 6.2-1. A 40-foot by 40-foot transformer yard is located immediately adjacent to the substation to the west and is enclosed by a chain-linked fence. The remaining portion of the site is a rectangular-shaped, partially developed, parcel of land. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Port Washington branch. The areas surrounding the substation and the transformer yard are owned and operated by the New York City Parks Department.

The Shea substation is not equipped with a basement, nor any sanitary or office facilities. The interior of the substation consists of an active solid-state rectifier located over a concrete pit that once serviced a mercury-containing rectifier. In addition, the substation contained two other pits, referred to as a “water trough” by LIRR construction drawings, which was covered by a metal utility plate, and an active utility trench. The initial site inspection revealed a metal plate covered pull box located along the southern wall of the substation. This pull box was observed to have an earthen bottom.

It should be noted that several concrete floor cracks were observed during the site inspection as well as locations where the floor was separating from the concrete floor.

6.2.2 MVA Survey

A total of nine mercury vapor measurements were taken in and around the substation building. As indicated in Table A-2, 3 of the nine measurements indicated the presence of mercury vapor ranging from a maximum concentration of 0.196 mg/m^3 to a minimum concentration of 0.009 mg/m^3 at locations SSMV-04 and SSMV-08, respectively. These locations are presented on the sample and mercury vapor measurement location plan (see Figure 6.2-2). It should be noted that visible mercury beads were also observed during the MVA survey conducted adjacent to the concrete platform located along the east side of the substation.

6.2.3 Drainage Determination

During the site inspection, D&B observed that floor drains were not present in any of the pits or utility trenches at the Shea substation. In addition, D&B did not observe the presence of a slop sink within the substation building or evidence of any dry wells located around the exterior of the substation. There were, however, several horizontally positioned pipes located in the side walls of the pits that were permanently capped shut. Therefore, D&B was not able to conduct any discharge testing at the Shea substation.

6.2.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil, groundwater sampling and concrete coring activities.

6.2.4.1 - Subsurface Soil

Analytical results for subsurface soil samples are presented in Table D-2A. The subsurface sample locations are shown on Figure 6.2-2. All soil boring logs are provided in Appendix E. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

East of Concrete Loading Dock (Samples SSSBB-01, SSSBB-02). Mercury was detected at concentrations ranging from 11.1 mg/kg to 292 mg/kg.

East of Substation Centrally Located in Front of South Sliding Door (Sample SSSBB-03). Mercury was detected at 2-4 feet bgs at a concentration of 132 mg/kg and at 4-6 feet bgs at a concentration of 7.5 mg/kg.

East Side of Substation, North of Concrete Stairs (Sample SSSBB-04). Mercury was detected at 0-2 feet bgs at a concentration of 8.7 mg/kg and at 4-6 feet bgs at a concentration of 11.8 mg/kg.

Southeast Interior Section of Substation (Sample SSSBB-05). Mercury was detected at 0-2 feet bgs at a concentration of 93.1 mg/kg and at 4-6 feet bgs at a concentration of 7.1 mg/kg.

West Section of Water Trough Pit (Sample SSSBB-07). Mercury was detected at 2-4 feet bgs at a concentration of 16.4 mg/kg and at 4-6 feet bgs at a concentration of 8.7 mg/kg.

East Section of Utility Trench (Sample SSSBB-08). Mercury was detected at 2-4 feet bgs at a concentration of 40.8 mg/kg and at 4-6 feet bgs at a concentration of 11.7 mg/kg.

6.2.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-2B. The surface sample locations are shown on Figure 6.2-2. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg in all surface soil samples collected as summarized below:

Southeast Corner of Former Concrete Loading Dock (Sample SSSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 45.9 mg/kg.

Northeast Corner of Substation (Sample SSSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 575 mg/kg.

Central North Side of Substation (Sample SSSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 13.1 mg/kg.

Northwest Side of Substation (Sample SSSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 6.8 mg/kg.

Northeast Corner of Former Concrete Loading Dock (Sample SSSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 160,000 mg/kg.

6.2.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-2C and summarized below. The concrete core sample locations are shown on Figure 6.2-2. Mercury was detected in the following samples:

Southeast Interior Section of Substation (Sample SSCS-01) Mercury was detected at a concentration of 0.38 mg/kg.

West Section of Water Trough Pit (Sample SSCS-02) Mercury was detected at a concentration of 1,760 mg/kg.

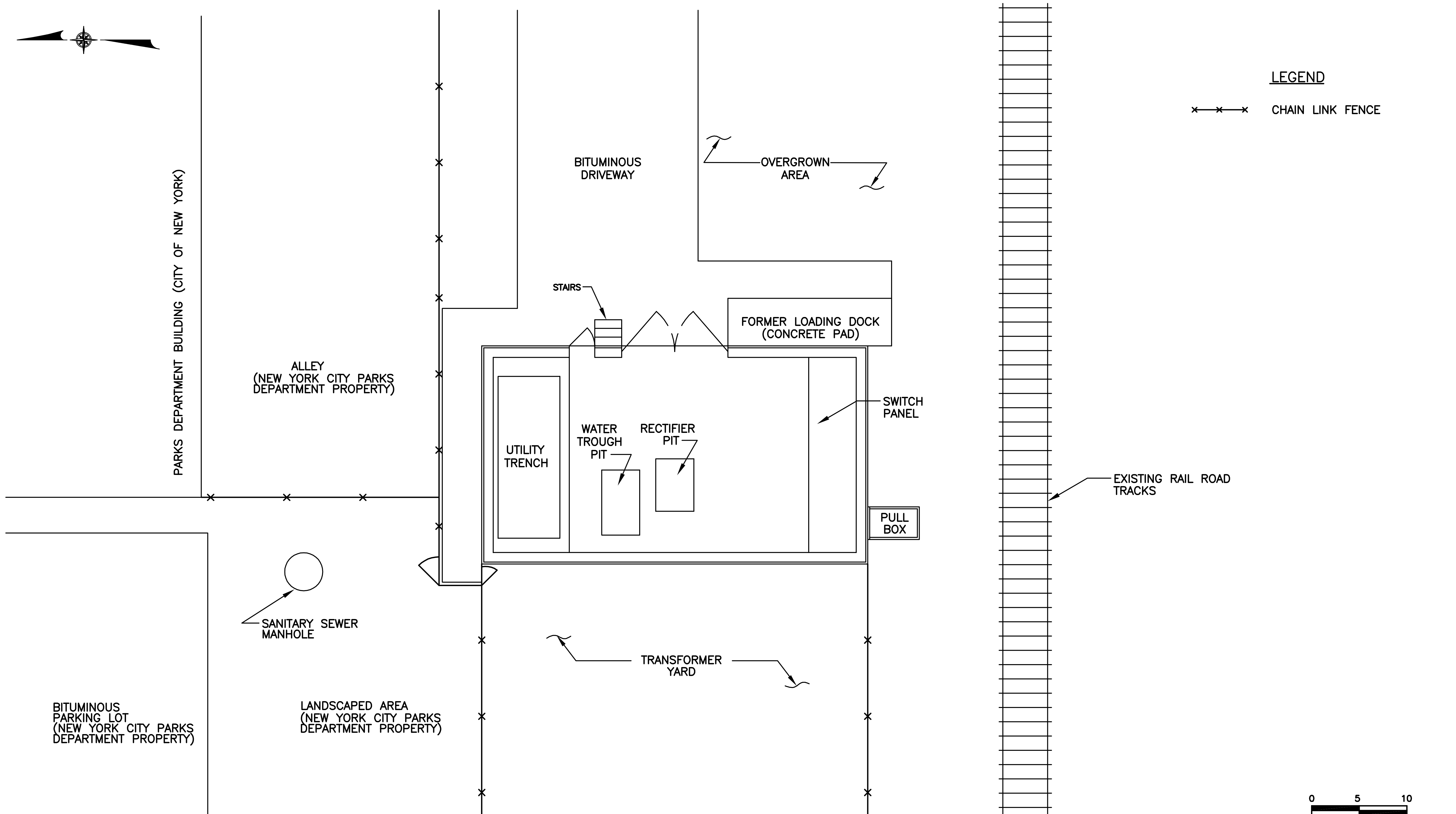
East Interior Section of Substation (Sample SSCS-04) Mercury was detected at a concentration of 10,300 mg/kg.

6.2.4.4 - Groundwater

In order to assess the impact of substation operations to groundwater quality in the area, two monitoring wells were installed as shown on Figure 6.2-2. The upgradient well (SSMW-02) was installed approximately 45 feet south of the substation. The downgradient well (SSMW-01) was installed approximately 28 feet north of the substation. The depth to groundwater was determined to be approximately 5.2 and 5.6 feet below grade for monitoring wells SSMW-01 and SSMW-02, respectively. The well construction logs for these groundwater monitoring wells are provided in Appendix E. Analytical results are summarized below:

Downgradient Monitoring Well (Sample SSMW-01). Mercury was detected in an unfiltered groundwater sample from this well at a concentration of 18.4 ug/l, which exceeds the NYSDEC groundwater guidance value for mercury of 0.7 ug/l. However, mercury was not detected in the filtered sample at a concentration above the method detection limit.

Upgradient Monitoring Well (Sample SSMW-02). Mercury was detected in an unfiltered groundwater sample from this well at a concentration of 11.7 ug/l which exceeds the NYSDEC groundwater guidance value for mercury of 0.7 ug/l. However, mercury was not detected in the filtered sample above the method detection limit.



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

SHEA SUBSTATION – N02

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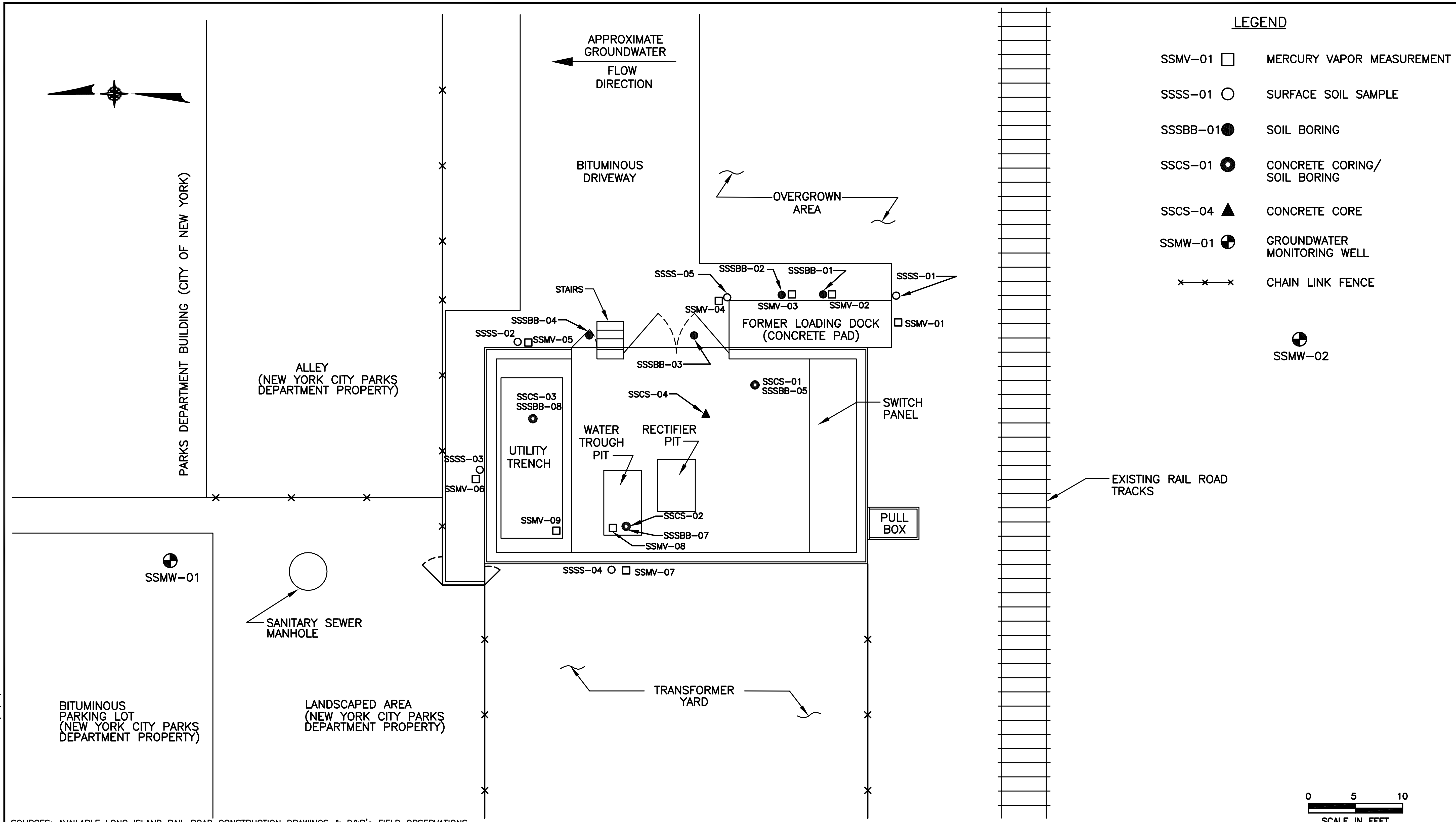
FIGURE 6.2–1



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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

SHEA SUBSTATION – N02

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FIGURE 6.2-2

6.3 Far Rockaway-F03

6.3.1 Site Inspection

The Far Rockaway substation site is located in Far Rockaway, Nassau County, New York. The substation consists of a 25-foot by 25-foot one-story brick building, approximately 75 feet north of the existing tracks as shown on Figure 6.3-1. A 70-foot by 30-foot transformer yard is located adjacent to the substation to the south and is enclosed by a chain-linked fence. The remaining portion of the site is an elongated shaped, parcel of land used by the LIRR as an easement. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Far Rockaway branch. The areas surrounding the substation and the transformer yard are developed or in the process of being developed as commercial buildings. It is important to note that the “front” of the Far Rockaway substation is located on Redfern Avenue which immediately fronts a pedestrian sidewalk.

The Far Rockaway substation is not equipped with a basement, nor any sanitary or office facilities. The interior of the substation consists of an active solid-state rectifier located over a pit that once serviced a mercury-containing rectifier. The substation was equipped with a second pit, referred to as a “water trough” on LIRR construction drawings, which was covered by a metal utility plate. In addition, there is a pipe trench with a concrete solid bottom located in the northeast corner of the substation that is covered with a steel plate. It should be noted that there is also an exterior water meter pit with an earthen bottom located off the northeast corner of the substation, a conduit pit with an earthen bottom located along the west side of the substation and a control cable manhole with an earthen bottom.

6.3.2 MVA Survey

A total of 21 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-3, 7 of the 21 measurements indicated the presence of mercury vapor ranging from a maximum concentration of 0.090 mg/m^3 to a minimum concentration of

0.010 mg/m^3 at locations FRMV-04 and FRMV-02, respectively. These locations are presented on the sample and mercury vapor measurement location plan (see Figure 6.3-2).

6.3.3 Drainage Determination

During the site inspection, D&B observed that floor drains were not present in any of the pits at the Far Rockaway substation. As a result, discharge testing at the Far Rockaway substation was not warranted. However, D&B did observe evidence of the presence of two dry wells located in the transformer yard to the south of the substation. According to available LIRR construction drawings, these dry wells were once connected to the rectifier and water trough pits located within the substation. It should be noted that the one dry well located off the southwest corner of the substation was observed to be backfilled with sand to within 2 to 3 feet from grade. The second dry well located roughly in the center of the transformer yard was void to a depth of approximately 4 feet below grade.

6.3.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.3.4.1 - Subsurface Soil

Analytical results for subsurface soil samples are presented in Table D-3A. The subsurface sample locations are shown on Figure 6.3-2. All soil boring logs are provided in Appendix E. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg as summarized below:

Southwest Corner of North End Concrete Steps (Sample FRSB-01). Mercury was detected at 0-2 feet bgs at a concentration of 2,860 mg/kg and 4-6 feet bgs at a concentration of 3 mg/kg.

Exterior Conduit Pit Floor Drain (Sample FRSB-02). Mercury was detected at 4.5-6.5 feet bgs at a concentration of 91.3 mg/kg.

West Dry Well (Sample FRSB-03). Mercury was detected at 4-6 feet bgs at a concentration of 2.9 mg/kg.

Northeast Interior Corner Pipe Trench (Sample FRSB-04). Mercury was detected at 0-2 feet bgs at a concentration of 2.3 mg/kg.

South Dry Well (Sample FRSB-05). Mercury was detected at 4-6 feet bgs at a concentration of 3.1 mg/kg and 6-8 feet bgs at a concentration of 0.28 mg/kg.

Rectifier Pit (Sample FRSB-06). Mercury was detected at 0-2 feet bgs at a concentration of 0.82 mg/kg and 4-6 feet bgs at a concentration of 0.87 mg/kg.

Interior Water Trough Pit (Sample FRSB-07). Mercury was detected at 0-2 feet bgs at a concentration of 1.4 mg/kg and 4-6 feet bgs at a concentration of 0.83 mg/kg.

6.3.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-3B. The surface sample locations are shown on Figure 6.3-2. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg in all samples collected as summarized below:

Northwest Exterior Corner of Substation (Sample FRSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 132 mg/kg.

Southeast Corner of North End Concrete Steps (Sample FRSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 1,020 mg/kg.

Northeast of Exterior of Substation (Sample FRSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 322 mg/kg.

Southwest Exterior of Substation (Sample FRSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 6.6 mg/kg.

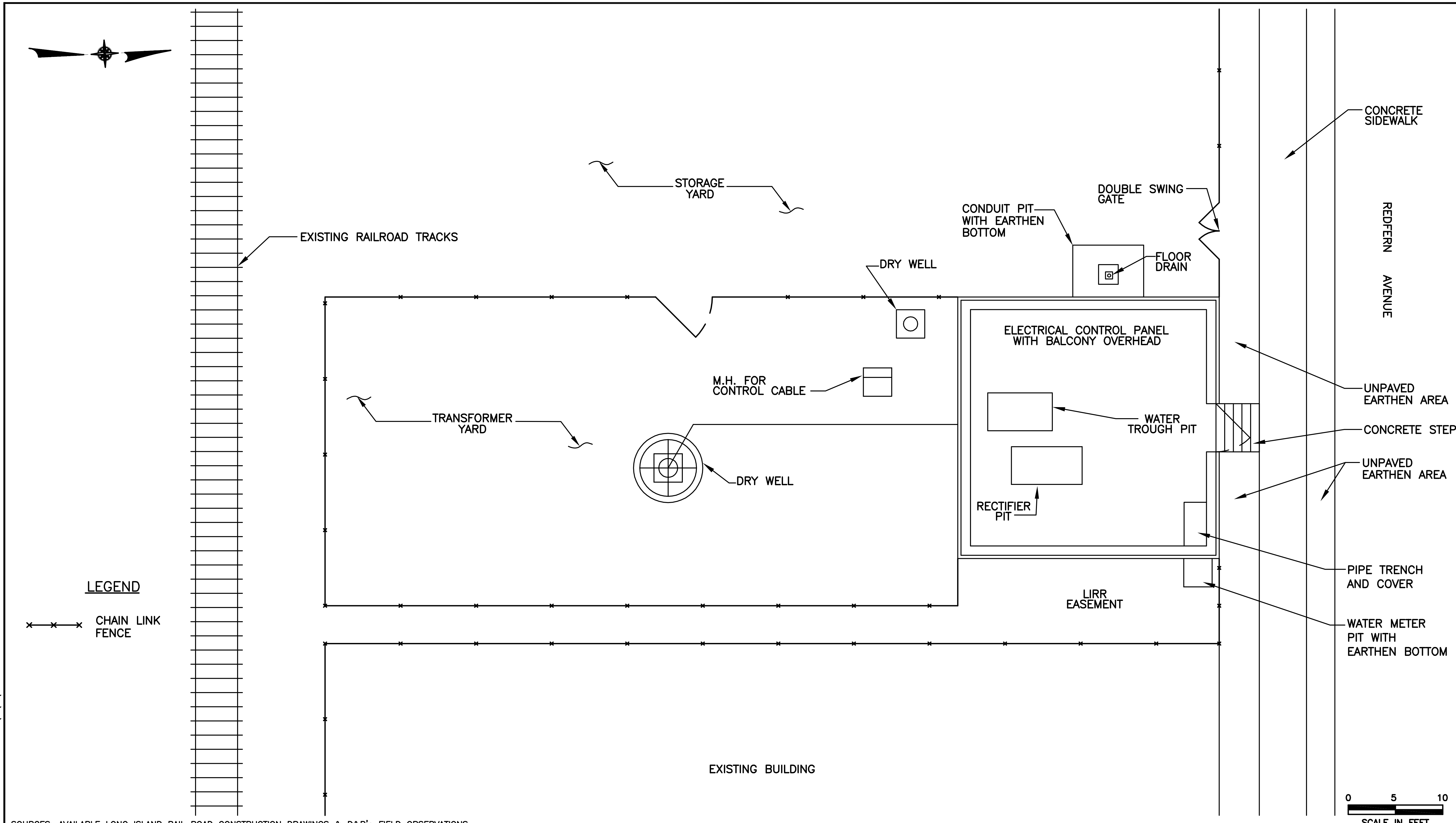
6.3.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-3C and summarized below. The concrete core sample locations are shown on Figure 6.3-2. Mercury was detected in the following samples:

Northeast Interior Corner Pipe Trench (Sample FRCC-01). Mercury was detected at a concentration of 6.5 mg/kg.

Rectifier Pit (Sample FRCC-02). Mercury was detected at a concentration of 186 mg/kg.

Water Trough Pit (Sample FRCC-03). Mercury was detected at a concentration of 26 mg/kg.



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

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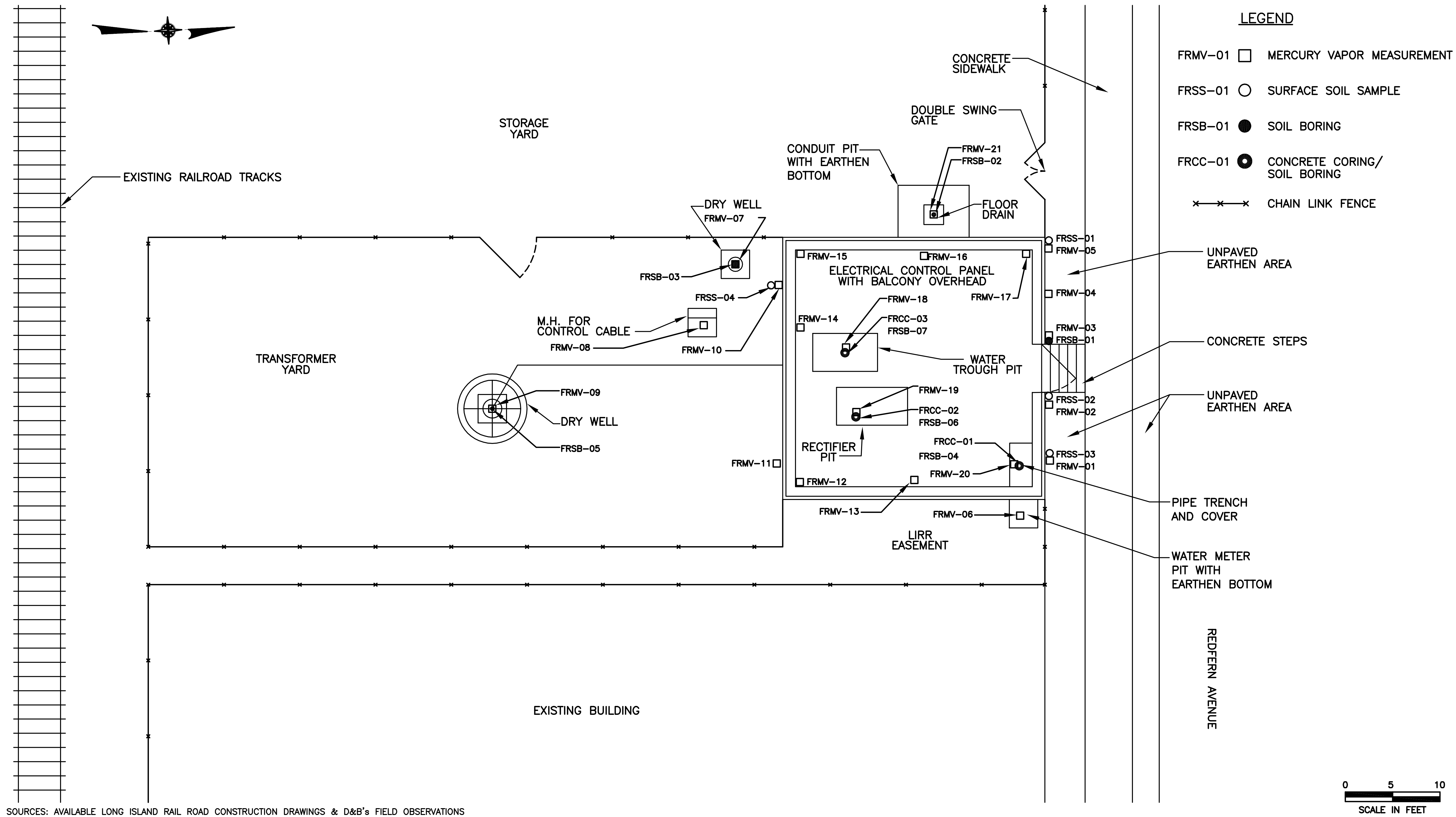
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

FAR ROCKAWAY SUBSTATION – F03

FIGURE 6.3–1



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

FAR ROCKAWAY SUBSTATION – F03

FIGURE 6.3–2

6.4 Valley Stream-S04

6.4.1 Site Inspection

The Valley Stream substation site is located in Valley Stream, Nassau County, New York. The substation consists of a 25-foot by 25-foot one-story brick building, approximately 80 feet northeast of the existing tracks as shown on Figure 6.4-1. A 75-foot by 30-foot transformer yard is located adjacent to the substation to the south and is enclosed by a chain-linked fence. The remaining portion of the site is an elongated shaped, parcel of land used by the LIRR as an easement. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR - Far Rockaway branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking areas. It is important to note that the "front" of the Valley Stream substation is located on Sunrise Boulevard which immediately fronts a pedestrian sidewalk.

The Valley Stream substation is not equipped with a basement, nor any sanitary or office facilities. The interior of the substation consists of an active solid-state rectifier located over a pit that once serviced a mercury-containing rectifier. The substation was equipped with a second pit, referred to as a "water trough" on LIRR construction drawings, which was covered by a metal utility plate. In addition, there is a water meter pit with a concrete solid bottom located in the northeast corner of the substation that is covered with a steel plate. It should be noted that there is also a conduit pit with a solid bottom located off the southwest corner of the substation in the transformer yard which is covered with a metal plate. A negative feed manhole located along the west side of the substation was found to contain an earthen bottom and a positive feed manhole along the west side of the substation was found to contain a solid bottom. The site inspection also revealed a discharge pipe that ran through the south side of the substation that appeared to discharge onto a concrete pad located in the transformer yard. This discharge pipe did not appear to be connected to a drainage feature within the substation.

6.4.2 MVA Survey

A total of 29 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-4, 6 of the 29 measurements indicated the presence of mercury vapor ranging from a maximum concentration of 0.660 mg/m^3 (measurement VSMV-05) to a minimum concentration of 0.010 mg/m^3 (measurements VSMV-04 and VSMV-11). These locations are presented on the sample and mercury vapor measurement location plan (see Figure 6.4-2). It should be noted that visible mercury beads were observed during the MVA survey in an area approximately 5 feet off the northeast corner of the substation.

6.4.3 Drainage Determination

During the site investigation, D&B observed that floor drains were not present in any of the pits at the Valley Stream substation. As a result, discharge testing at the Valley Stream substation was not warranted. However, D&B did observe evidence the presence of a dry well located in the transformer yard to the south of the substation. According to available LIRR construction drawings, this dry well was once connected to the rectifier and water trough pits located within the substation.

6.4.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.4.4.1 - Subsurface Soil

As indicated in Table D-4A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.4-2).

Dry Well (Sample VSSB-01). Mercury was detected at 6-8 feet bgs at a concentration of 1.8 mg/kg and at 10-12 feet bgs at a concentration of 1.6 mg/kg.

Water Trough Pit West of Rectifier Pit (Sample VSSB-02). Mercury was detected at 2-4 feet bgs at a concentration of 22.7 mg/kg and at 4-6 feet bgs at a concentration of 4.1 mg/kg.

Rectifier Pit (Sample VSSB-03). Mercury was detected at 2-4 feet bgs at a concentration of 103 mg/kg and at 4-6 feet bgs at a concentration of 2 mg/kg.

Northeast Exterior Corner of Substation (Sample VSSB-04, VSSBB-05, VSSBB-06). Mercury was detected at concentrations ranging from 10.6 mg/kg to 5,910 mg/kg.

6.4.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-4B. The surface soil sample locations are shown on Figure 6.4-2. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg in all samples collected as summarized below:

East of North Concrete Steps (Sample VSSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 249,000 mg/kg.

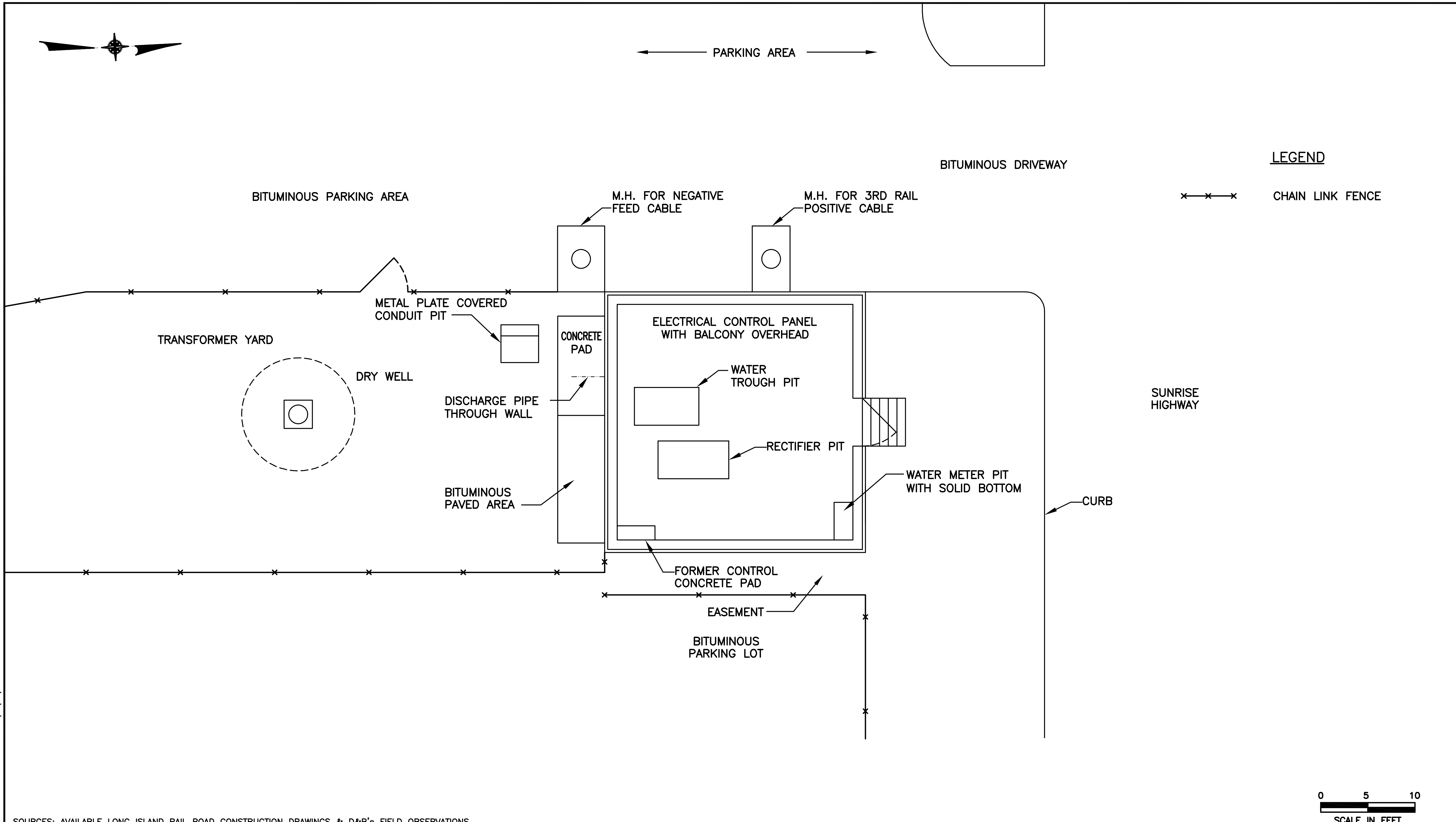
Southwest Exterior of Substation (Sample VSSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 22.6 mg/kg.

6.4.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-4C and summarized below. The concrete core sample locations are shown on Figure 6.4-2. Mercury was detected in the following samples:

Water Trough Pit (Sample VSCC-01). Mercury was detected at a concentration of 181 mg/kg.

Rectifier Pit (Sample VSCC-02). Mercury was detected at a concentration of 580 mg/kg.



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

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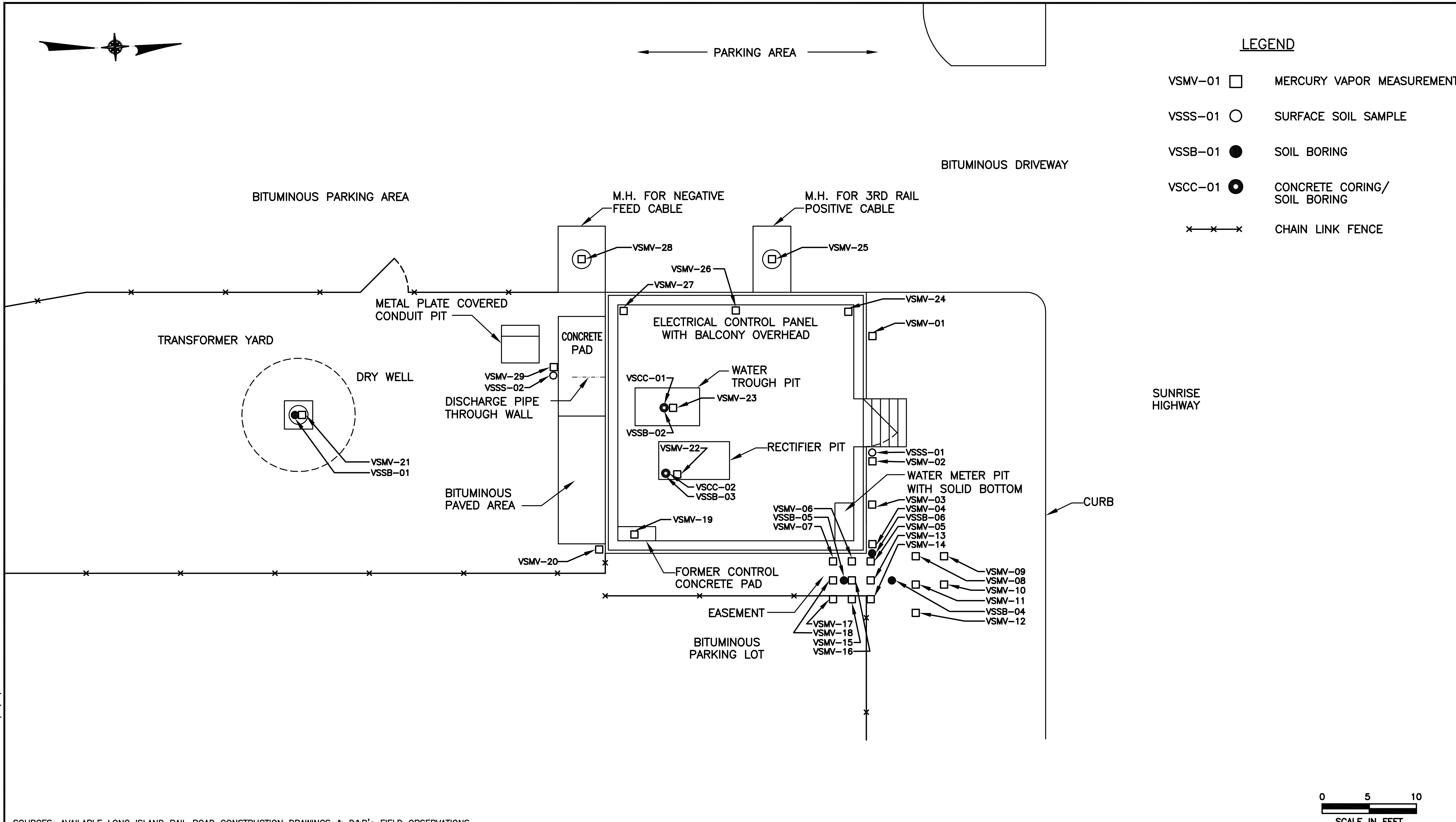
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

VALLEY STREAM SUBSTATION – S04

FIGURE 6.4–1



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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

VALLEY STREAM SUBSTATION – S04

FIGURE 6.4–2

6.5 Rockville Centre-S07

6.5.1 Site Inspection

The Rockville Centre substation site is located in Rockville Centre, Nassau County, New York. The substation consists of a 58-foot by 30-foot one-story brick building as shown on Figure 6.5-1. A 54-foot by 40-foot transformer yard is located adjacent to the substation to the south and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Babylon branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking areas.

The Rockville Centre substation is equipped with a basement, sanitary facilities, water service and a utility trench system. The interior of the substation consists of an active solid-state rectifier located over a pit leading to the basement that once serviced a mercury-containing rectifier enclosed by a chain-linked fence. In addition, the substation is equipped with a second pit leading to the basement that is covered with a steel plate which was utilized in conjunction with a second mercury-containing rectifier that has since been removed from the substation. Located in the southeast portion of the basement is a sump pump, which is utilized for flood prevention and discharges outside the east wall of the building to a 4-foot by 10-foot parcel of land in the southeast exterior corner of the substation building. In addition, there is a water meter pit with an earthen bottom that is located off the northwest corner of the substation and is covered with a steel plate.

6.5.2 MVA Survey

A total of 26 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-5, 1 of the 26 measurements indicated the presence of mercury vapor at a concentration of 0.030 mg/m^3 at location RCMV-19. These locations are presented on the mercury vapor measurement location plan (see Figure 6.5-2).

6.5.3 Drainage Determination

D&B identified the presence and location of three floor drains located in the substation basement. Based on the available LIRR construction drawings, the three floor drains are connected to a dry well located to the west of the substation. Excavation activities were conducted by D&B to locate the dry well and confirm the connection with the interior floor drains. The excavation showed no evidence of a dry well or a discharge pipe exiting from the west wall of the substation building. D&B also excavated a small depression located approximately 10 feet north of the former dry well location in an attempt to locate the dry well. This excavation did not indicate the presence of a dry well or discharge pipe.

6.5.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.5.4.1 - Subsurface Soil

As indicated in Table D-5A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.5-2).

North of North Concrete Platform (Sample RCSB-01). Mercury was detected at 0-2 feet bgs at a concentration of 1.4 mg/kg.

West Rectifier Pit (Sample RCSB-04). Mercury was detected at 0-2 feet bgs at a concentration of 15.9 mg/kg and at 4-6 feet bgs at a concentration of 10.7 mg/kg.

Northwest Water Meter Pit (Sample RCSB-05). Mercury was detected at 8-10 feet bgs at a concentration of 1.2 mg/kg.

South of Southwest Concrete Steps (Sample RCSB-06). Mercury was detected at 0-2 feet bgs at a concentration of 1.4 mg/kg.

6.5.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-5B. The surface sample locations are shown on Figure 6.5-2. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg in all samples collected as summarized below:

East of Northeast Concrete Steps (Sample RCSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 22.8 mg/kg.

East of North Concrete Platform (Sample RCSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 50.8 mg/kg.

South of Southwest Concrete Steps (Sample RCSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 4.3 mg/kg.

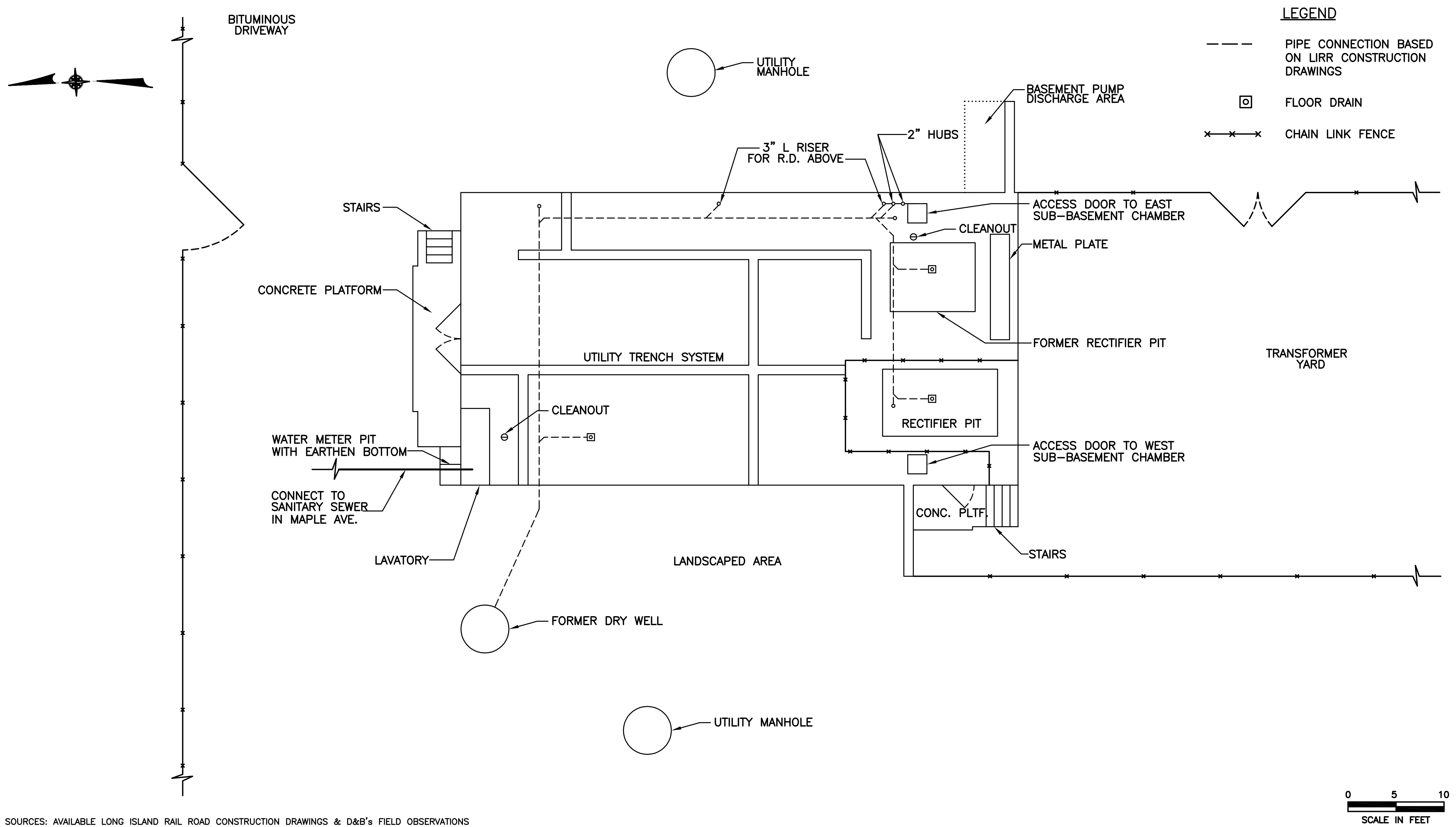
West of Southwest Concrete Steps (Sample RCSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 16.3 mg/kg.

West of North Concrete Platform (Sample RCSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 21.5 mg/kg.

6.5.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-5C and summarized below. The concrete core sample location is shown on Figure 6.5-2. Mercury was detected in the following sample:

East Rectifier Pit (Sample RCCC-01). Mercury was detected at a concentration of 3.5 mg/kg.



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

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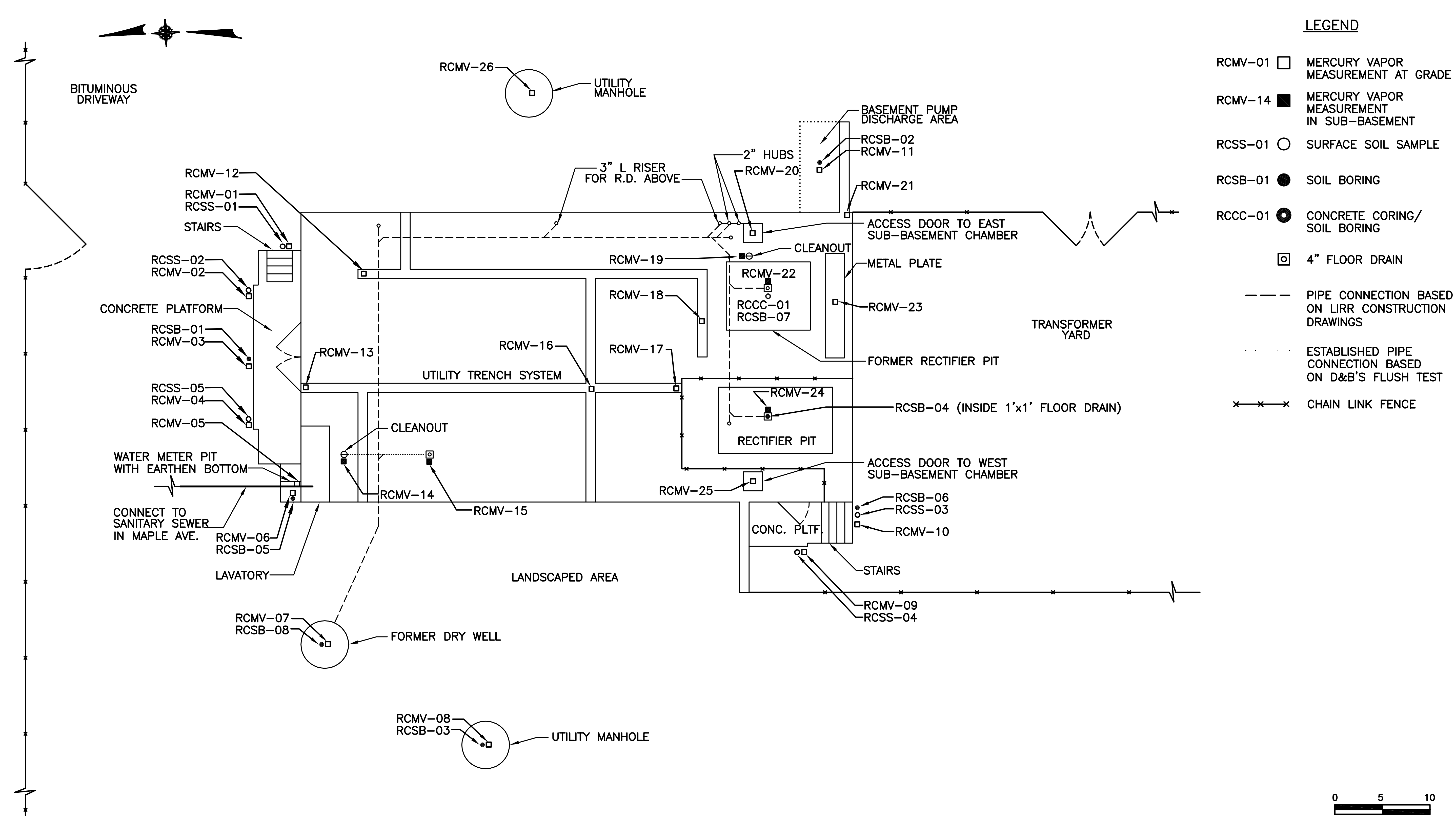
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

ROCKVILLE CENTRE SUBSTATION – S07

FIGURE 6.5-1



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

ROCKVILLE CENTRE SUBSTATION – S07

FIGURE 6.5–2

6.6 Port Washington-N12

6.6.1 Site Inspection

The Port Washington substation site is located in Port Washington, Nassau County, New York. The substation consists of an approximately 2,400 square foot one-story brick building as shown on Figure 6.6-1. An approximately 5,800 square foot transformer yard is located adjacent to the substation to the west and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Port Washington branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking areas.

The Port Washington substation is equipped with a basement, sanitary facilities, water service and a utility trench system. The interior of the substation consists of two active solid-state rectifiers located over two separate pits leading to the basement that once serviced mercury-containing rectifiers. In addition, there is a water meter pit with an earthen bottom located off the south side of the substation that is covered with a steel plate.

6.6.2 MVA Survey

A total of 58 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-6, none of the 58 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.6-2).

6.6.3 Drainage Determination

D&B identified the presence and location of three floor drains within the basement of the substation building. It was confirmed, through flush tests, that the three drains are connected to a central discharge pipe that leads to a dry well located off the northwest corner of the substation.

6.6.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.6.4.1 - Subsurface Soil

As indicated in Table D-6A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.6-3).

Dry Well (Sample PWSB-03). Mercury was detected at 9-11 feet bgs at a concentration of 0.33 mg/kg.

East of Concrete Platform on East Side of Substation (Sample PWSB-04). Mercury was detected at 0-2 feet bgs at a concentration of 2.7 mg/kg and at 4-6 feet bgs at a concentration of 1.7 mg/kg.

East of Concrete Platform on Northeast Side of Substation (Sample PWSB-05). Mercury was detected at 0-2 feet bgs and at 4-6 feet bgs at concentrations of 0.33 mg/kg and 4.1 mg/kg, respectively.

6.6.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-6B. The surface sample locations are shown on Figure 6.6-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg for all 5 samples collected as summarized below:

South of Concrete Steps on East Side of Substation (Sample PWSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 4.5 mg/kg.

Southeast of Concrete Platform on East Side of Substation (Sample PWSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 5.1 mg/kg.

Northeast of Concrete Platform on East Side of Substation (Sample PWSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 37 mg/kg.

North of Concrete Steps on Northeast Side of Substation (Sample PWSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 4 mg/kg.

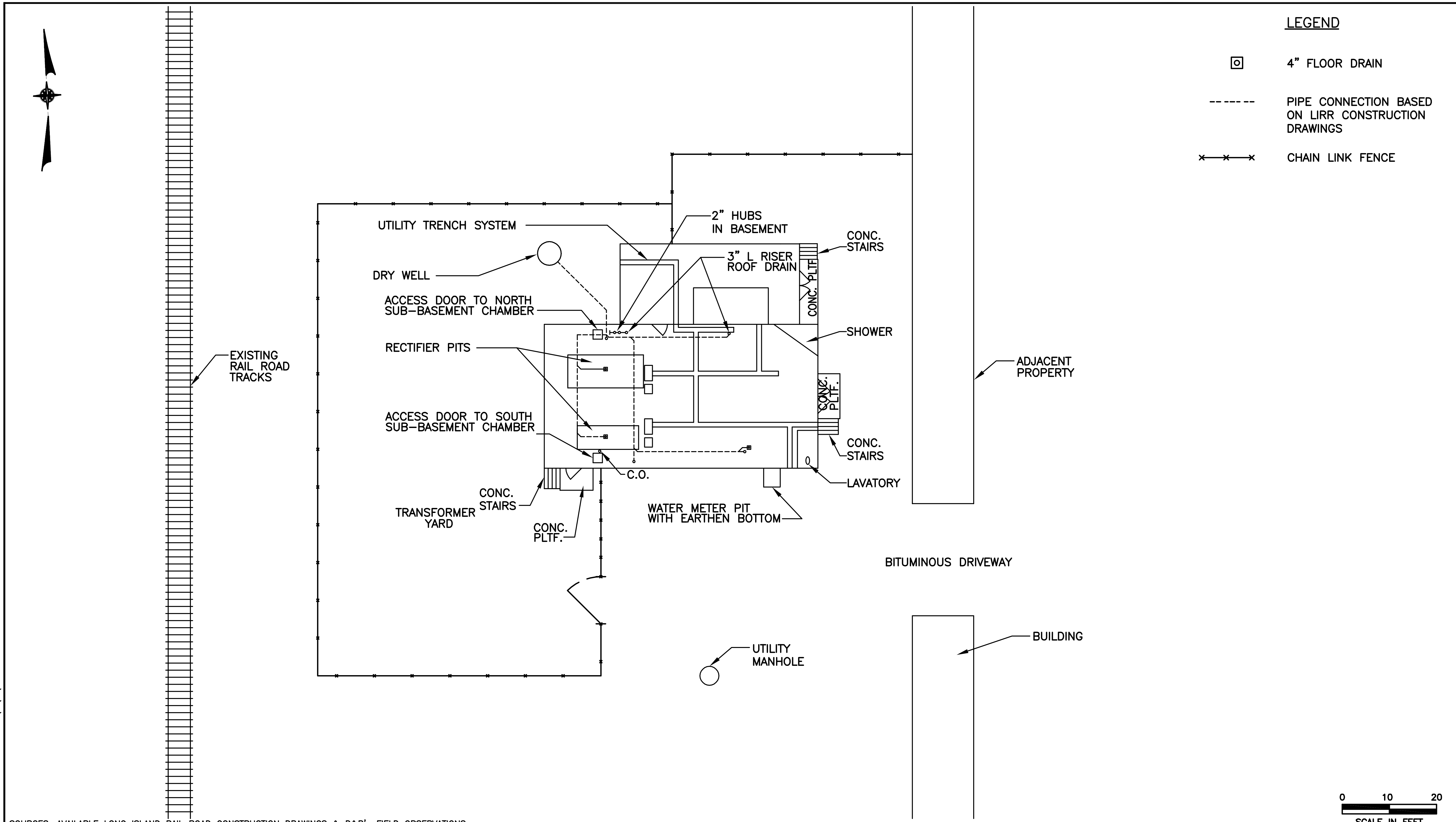
West of Concrete Steps on Southwest Side of Substation (Sample PWSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 1.5 mg/kg.

6.6.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-6C and summarized below. The concrete core sample locations are shown on Figure 6.6-3. Mercury was detected in the following samples:

South Rectifier Pit (Sample PWCC-01). Mercury was detected at a concentration of 16.9 mg/kg.

North Rectifier Pit (Sample PWCC-02). Mercury was detected at a concentration of 1,600 mg/kg.



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

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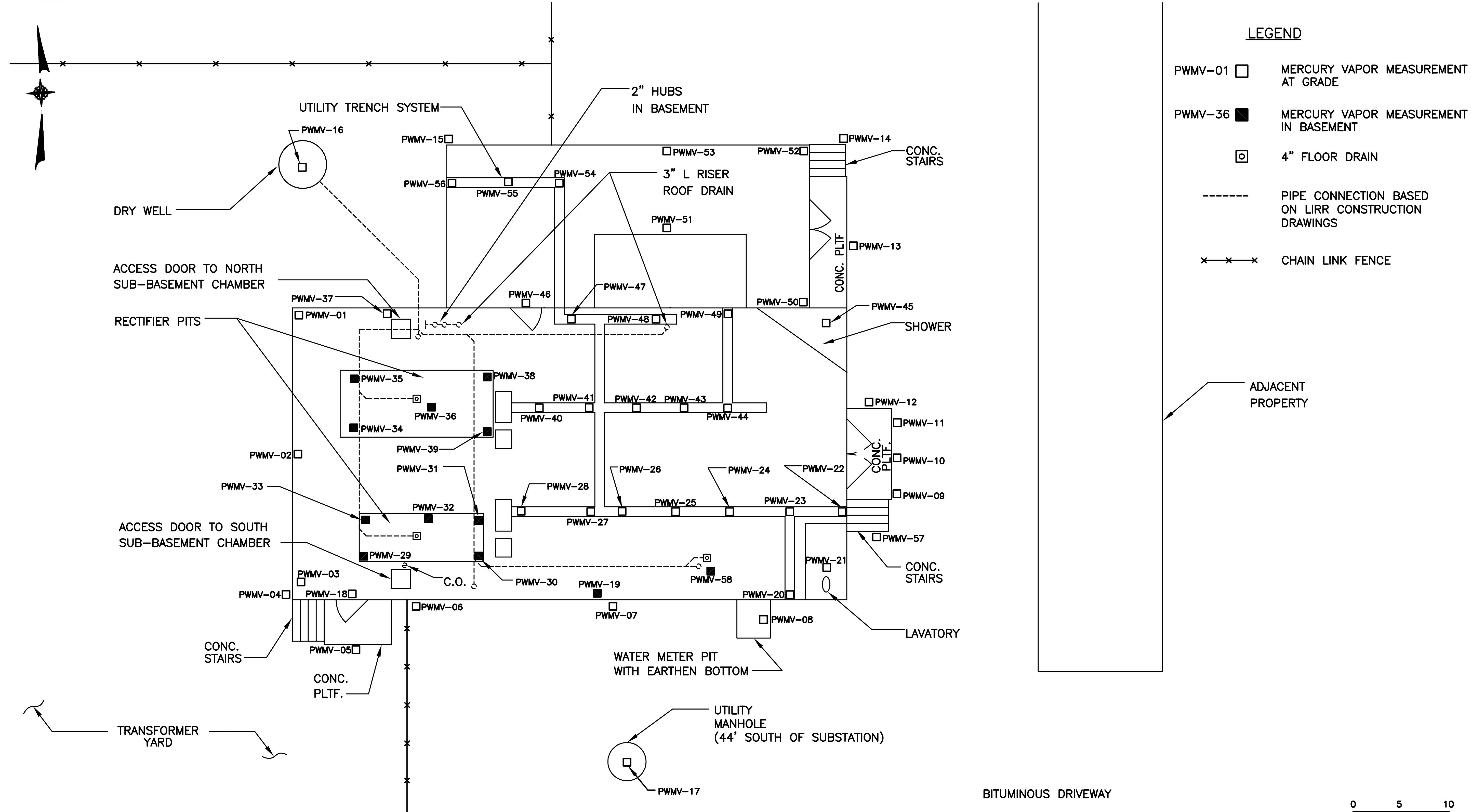
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN
PORT WASHINGTON SUBSTATION – N12

FIGURE 6.6–1



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

DIR: 1648 FILE: 1648-18B LVG\8\4\00

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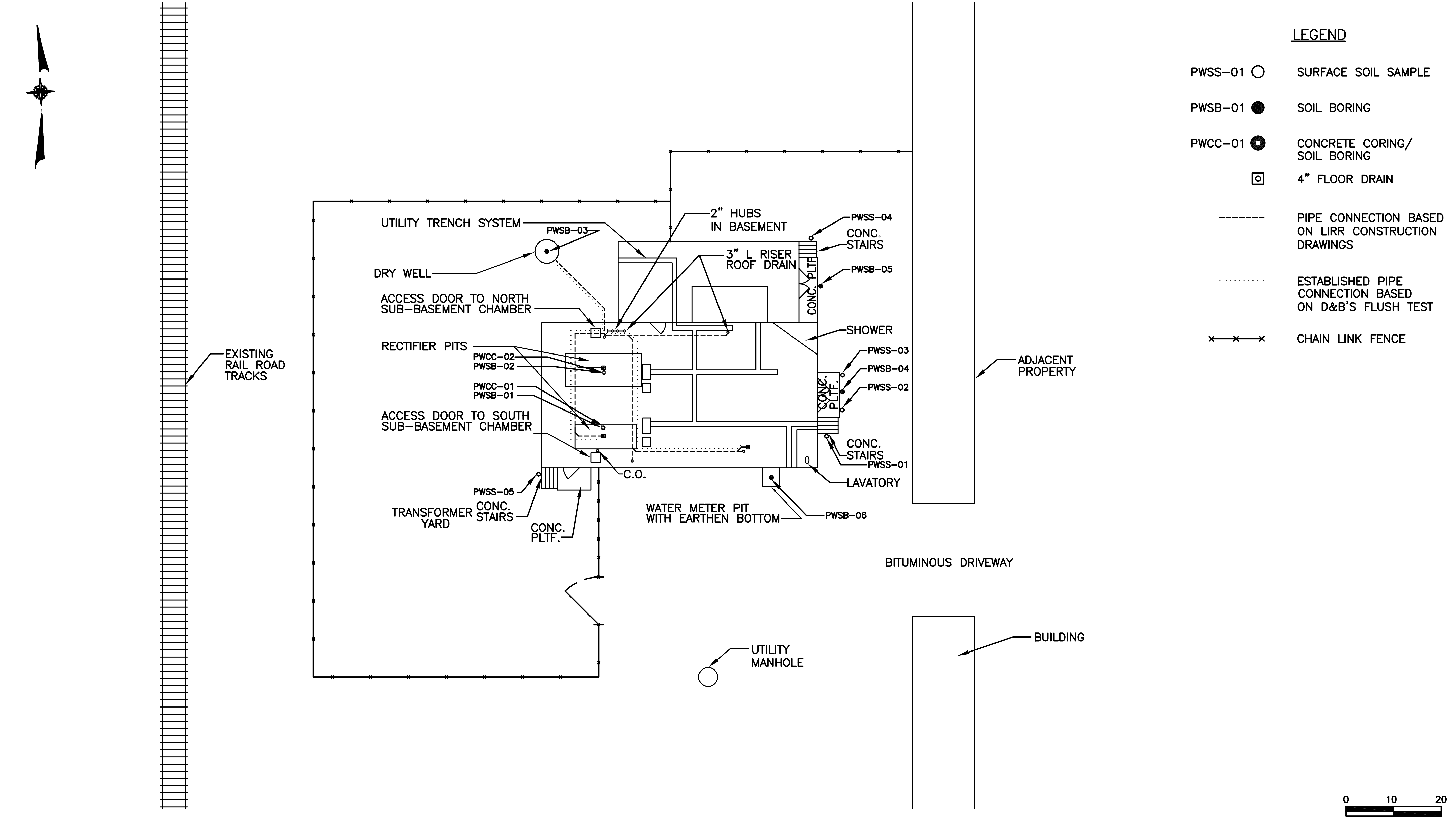
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

PORT WASHINGTON SUBSTATION – N12

FIGURE 6.6–2



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

DIR: 1648 FILE:1648-18C LVG\8\4\00

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

PORT WASHINGTON SUBSTATION – N12

FIGURE 6.6–3

6.7 Island Park-L03

6.7.1 Site Inspection

The Island Park substation site is located in Island Park, Nassau County, New York. The substation consists of an approximately 1,800 square foot one-story brick building. An approximately 3,000 square foot transformer yard is located adjacent to the substation to the northeast and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Long Beach branch. The areas surrounding the substation and the transformer yard are currently utilized for vehicular parking.

During the site inspection, D&B observed that the septic tank located to the south of the substation was full of sanitary waste. In addition, LIRR on-site representatives indicated to D&B that there has been problems with the sanitary system overflowing onto the parking lot in the past.

The Island Park substation is equipped with a basement, sanitary facilities, water service and a utility trench system. The interior of the substation consists of two active solid-state rectifiers located over two separate pits leading to the basement that once serviced mercury-containing rectifiers. In addition, as shown on Figure 6.7-1, there is a water meter pit with an earthen bottom located off the southwest corner of the substation that is covered with a steel plate.

6.7.2 MVA Survey

A total of 48 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-7, none of the 48 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.7-2).

6.7.3 Drainage Determination

Two drain pipes which exit sub-grade pits beneath rectifiers inside the substation building were traced utilizing conventional geophysical techniques. One pipe exited the north side of the pit and appeared to terminate beneath the unpaved area between the substation and the train tracks (approximately 21 feet from the north wall of the building). D&B was prohibited by LIRR personnel from excavating this area to determine if a discharge feature exists due to the presence of electric utilities. The second pipe exited from beneath the eastern wall of the building and appeared to terminate under the parking lot approximately 30 feet east of the eastern wall of the building. It should be noted that this location roughly corresponds to the “dry well for rectifiers” identified on LIRR construction drawings. The report and maps associated with the pipe tracing activities are presented in Appendix B.

6.7.4 Geophysical Survey

D&B conducted a geophysical survey to locate three dry wells presumed to be located east of the substation. The geophysical survey was completed over a grid that measures 24 meters (m) by 10 m. The geophysical survey, which included a total magnetic gradiometer survey and a GPR survey, suggests that the suspected locations of the three dry wells coincide with the locations provided on the available LIRR construction drawings. D&B utilized these geophysical results to position soil borings to target the locations of the suspected drainage features. The report and maps associated with the geophysical survey are provided in Appendix C.

6.7.5 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.7.5.1 - Subsurface Soil

As indicated in Table D-7A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.7-3).

Sump Pump Pit (Sample IPSB-01). Mercury was detected at 2-4 feet bgs at a concentration of 0.24 mg/kg.

Exterior Water Meter Pit (Sample IPSB-03). Mercury was detected at 2.5-4.5 feet bgs at a concentration of 0.44 mg/kg.

South Front-Entrance Concrete Platform (Sample IPSB-04). Mercury was detected at 0-2 feet bgs at a concentration of 2 mg/kg and at 4-6 feet bgs at a concentration of 0.23 mg/kg.

South Front-Entrance Concrete Platform (Sample IPSB-05). Mercury was detected at 0-2 feet bgs at a concentration of 1.9 mg/kg.

6.7.5.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-7B. The surface sample locations are shown on Figure 6.7-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg for all samples collected as summarized below:

South of Rear Concrete Platform (Sample IPSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 12.2 mg/kg.

West of Concrete Steps/Pad (Sample IPSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 35.4 mg/kg.

North of Concrete Steps/Pad (Sample IPSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 10.8 mg/kg.

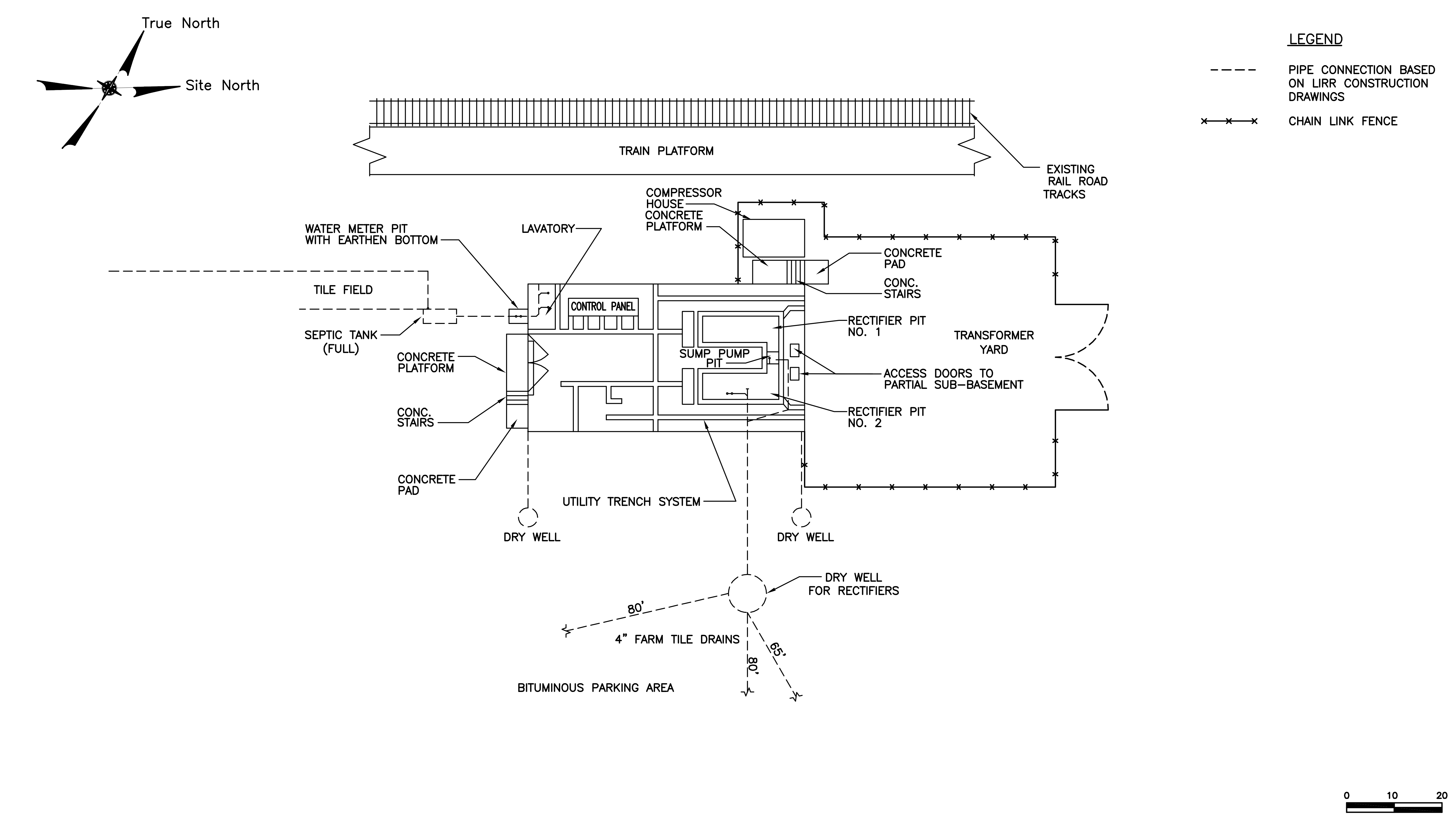
East of Rear Concrete Steps/Pad (Sample IPSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 27 mg/kg.

6.7.5.3 - Concrete

Analytical results for concrete core samples are presented in Table D-7C and summarized below. The concrete core sample locations are shown on Figure 6.7-3. Mercury was detected in the following samples:

Sump Pump Pit (Sample IPCC-01). Mercury was detected at a concentration of 4.7 mg/kg.

West Corner of Utility Trench (Sample IPCC-02). Mercury was detected at a concentration of 0.93 mg/kg.



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

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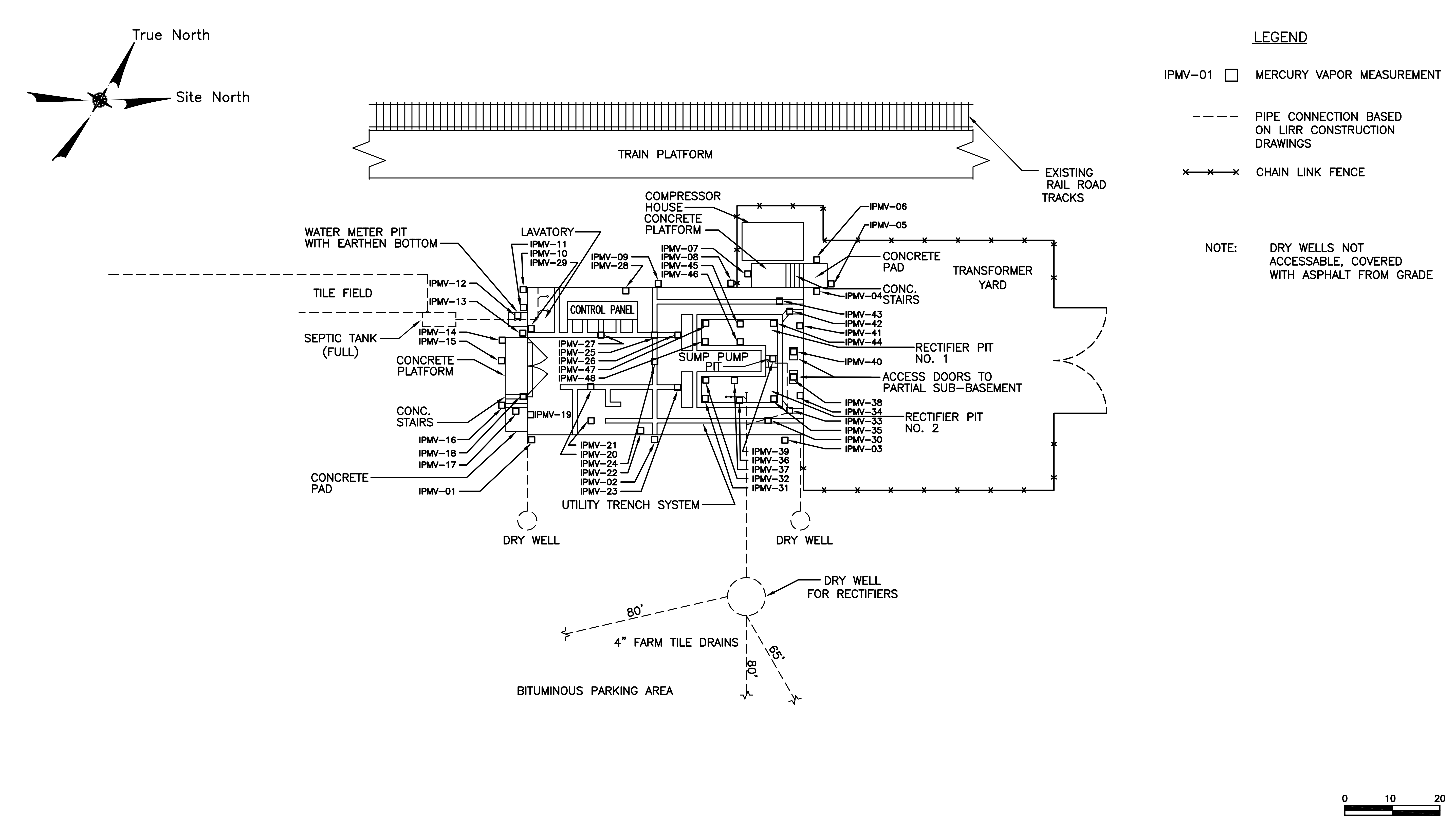
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

ISLAND PARK SUBSTATION –L03

FIGURE 6.7–1

FRI, MAR 23, 2001 11:02 A KC G:\1648\1648-20A.DWG



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

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

ISLAND PARK SUBSTATION –L03

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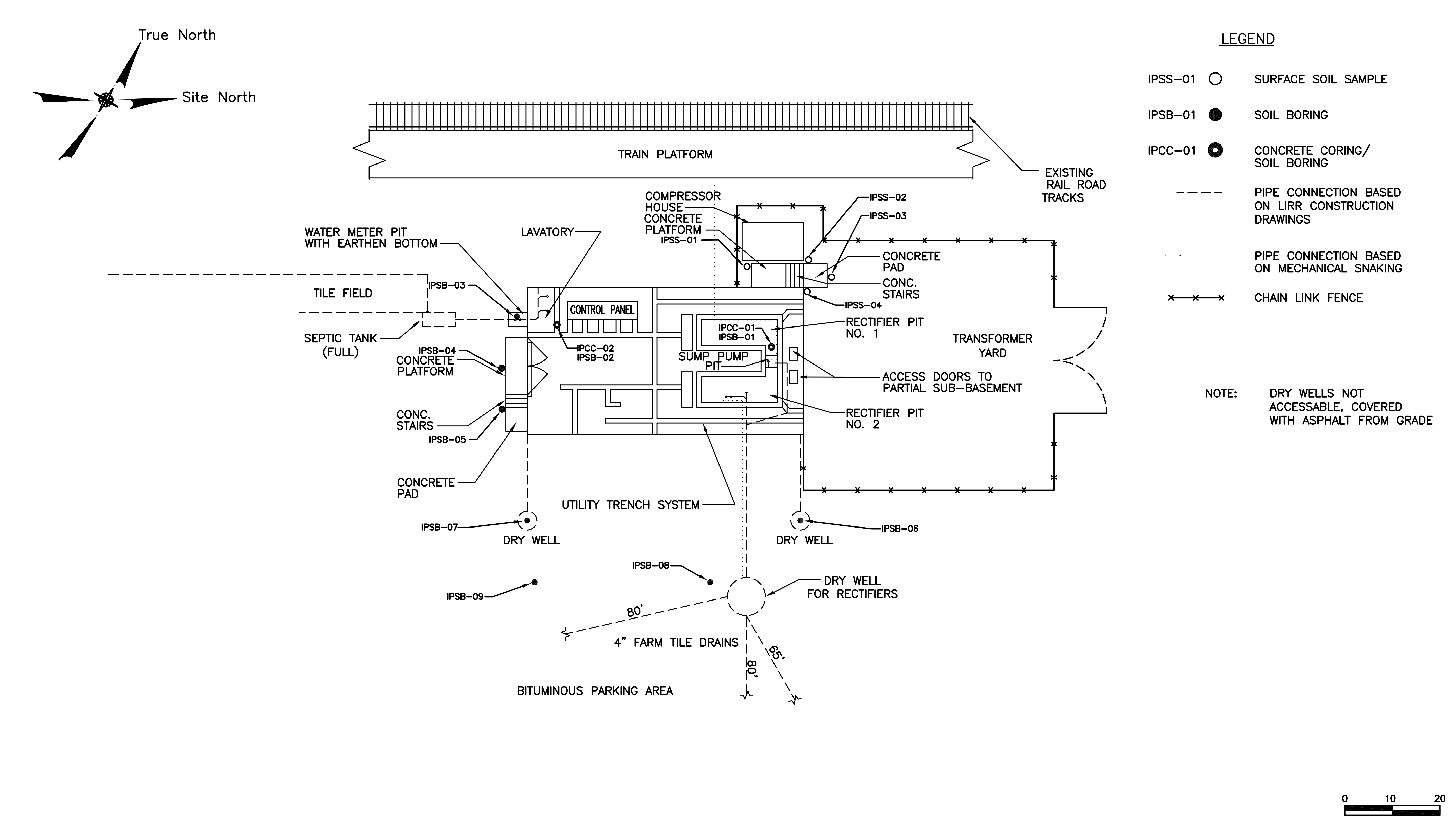
FIGURE 6.7–2

MON, DEC 11, 2000 10:27 A LVG F:\1648\1648-20B.DWG



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

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

ISLAND PARK SUBSTATION –L03

Dvirka and Bartilucci
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FIGURE 6.7–3

MON, DEC 11, 2000 10:29 A LVG F:\1648\1648–20C.DWG

6.8 Floral Park-G13

6.8.1 Site Inspection

The Floral Park substation site is located in Floral Park, Nassau County, New York. The substation consists of an approximately 1,700 square foot one-story brick building as shown on Figure 6.8-1. An approximately 5,400 square foot transformer yard is located adjacent to the substation to the northeast and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Hempstead and Port Jefferson branches. The areas surrounding the substation and the transformer yard are currently utilized for vehicular parking by the LIRR.

The Floral Park substation is equipped with sanitary facilities, water service and a slop sink. The interior of the substation consists of two active solid-state rectifiers located over two separate pits that once serviced mercury-containing rectifiers. There is also one water trough pit located adjacent to each rectifier pit. During the initial site inspection, it was observed that the eastern most water trough pit contained one floor drain and the western most water trough pit contained two floor drains. The Floral Park substation was not equipped with a basement or a utility trench system. However, the substation did house a small office area and a room located in the southwest corner of the substation containing active lead-acid batteries designed to provide back-up electricity. It should be noted that there were two control conduit pits with earthen bottoms observed along the south side of the substation. There were two other conduit pits with earthen bottoms located within the transformer yard area. In addition, there was a vent pit with an earthen bottom located off the southwest corner of the substation. There were five other electrical manhole vaults located along the substation perimeter that contained floor drains.

6.8.2 MVA Survey

A total of 42 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-8, 8 of the 42 measurements indicated the presence of mercury vapor with a maximum concentration of 0.020 mg/m^3 at location FPMV-34 and a minimum concentration of 0.010 mg/m^3 at locations FPMV-32, FPMV-33, FPMV-35, FPMV-36, FPMV-38, FPMV-39 and FPMV-42. These locations are presented on the mercury vapor measurement location plan (see Figure 6.8-2). Although these values are not significantly elevated, it should be noted that visible mercury beads were observed during the MVA survey adjacent to the double swing doors located on the eastern side of the facility and in the vicinity of two railroad ties located to the south of the substation. These "low" mercury vapor readings are thought to be attributed to the fact that the mercury vapor analyzer may not have been functioning properly due to the fact that the sensor could have been saturated.

6.8.3 Drainage Determination

A total of three interior pit floor drains were flush tested utilizing potable water. One drain is located within the east water trough pit and two drains are located within the west water trough pit (see Figure 6.8-1). D&B determined that the southern most floor drain in the western water trough pit discharges directly to a dry well located approximately 35 feet east of the substation. The other three floor drains discharge directly to the ground. It should be noted that D&B confirmed the presence of the dry well by excavating at the location indicated by available LIRR construction drawings. In addition, the interior toilet and slop sink were observed to discharge to an on-site cesspool located approximately 30 feet off the southwest corner of the substation.

6.8.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.8.4.1 - Subsurface Soil

As indicated in Table D-8A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.8-3).

East Rectifier Pit (Sample FPSB-01). Mercury was detected at 0-2 feet bgs at a concentration of 3 mg/kg and at 4-6 feet bgs at a concentration of 1.8 mg/kg.

West Rectifier Pit (Sample FPSB-02). Mercury was detected at 0-2 feet bgs at a concentration of 4.8 mg/kg and at 4-6 feet bgs at a concentration of 1 mg/kg.

Dry Well on East Side of Substation (Sample FPSB-03). Mercury was detected at 5.5-7.5 feet bgs at a concentration of 76.4 mg/kg and at 11.5-13.5 feet bgs at a concentration of 4.4 mg/kg.

East Water Trough Pit (Sample FPSB-04). Mercury was detected at 0-2 feet bgs at a concentration of 19,500 mg/kg and at 4-6 feet bgs at a concentration of 130 mg/kg.

Conduit Pit in South/Southeast Section of Transformer Yard (Sample FPSB-05). Mercury was detected at 4-6 feet at a concentration of 0.47 mg/kg.

Center of Wood-Plank Double Swing Doors on East Side of Substation (Sample FPSB-06). Mercury was detected at 0-2 feet bgs at a concentration of 27.8 mg/kg and at 4-6 feet bgs at a concentration of 1.3 mg/kg.

West Water Trough Pit (Sample FPSB-07). Mercury was detected at 0-2 feet bgs at a concentration of 50,400 mg/kg and at 4-6 feet bgs at a concentration of 136 mg/kg.

East Front Door Entrance to Substation (Sample FPSB-08). Mercury was detected at 0-2 feet bgs at a concentration of 99.3 mg/kg.

North of North-End Concrete Retaining Wall on East Side of Substation (Sample FPSB-09). Mercury was detected at 2-4 feet bgs at a concentration of 1.6 mg/kg and at 4-6 feet bgs at a concentration of 0.37 mg/kg.

East Control Conduit Pit on South Side of Substation (Sample FPSB-10). Mercury was detected at 7-9 feet bgs at a concentration of 20.7 mg/kg.

West Control Conduit Pit on South Side of Substation (Sample FPSB-11). Mercury was detected at 7-9 feet bgs at a concentration of 3.9 mg/kg.

Positive Cable Manhole on North Side of Substation (Sample FPSB-12). Mercury was detected at 14-16 feet bgs at a concentration of 20.5 mg/kg.

Positive Cable Manhole on West Side of Substation (Sample FPSB-13). Mercury was detected at 8-10 feet bgs at a concentration of 2.3 mg/kg.

Negative Feed Manhole off Northwest Corner of Substation (Sample FPSB-14). Mercury was detected at 6-8 feet bgs at a concentration of 2 mg/kg.

Cesspool off Southwest Corner of Substation (Sample FPSB-15). Mercury was detected at 9.5-11.5 feet bgs at a concentration of 3.2 mg/kg and at 13.5-15.5 feet bgs at a concentration of 2.7 mg/kg.

6.8.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-8B. The surface sample locations are shown on Figure 6.8-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg in all surface soil samples collected as summarized below:

North-End Corner of Wood-Plank Double Swing Doors (Sample FPSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 793 mg/kg.

South-End Corner of Wood-Plank Double Swing Doors (Sample FPSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 147 mg/kg.

North of Front Door Entrance to Substation (Sample FPSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 14.7 mg/kg.

South of Front Door Entrance to Substation (Sample FPSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 200 mg/kg.

North of Exterior Concrete Steps On East Side of Substation (Sample FPSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 1,650 mg/kg.

Center-North of North Concrete Retaining Wall (Sample FPSS-06). Mercury was detected at 0-6 inches bgs at a concentration of 364 mg/kg.

Southeast Corner of Exterior Concrete Steps (Sample FPSS-07). Mercury was detected at 0-6 inches bgs at a concentration of 1,700 mg/kg.

South of Railroad Tie Lying East on South Side of Substation (Sample FPSS-08). Mercury was detected at 0-6 inches bgs at a concentration of 6,150 mg/kg.

North of Railroad Tie Lying East on South Side of Substation (Sample FPSS-09). Mercury was detected at 0-6 inches bgs at a concentration of 41.9 mg/kg.

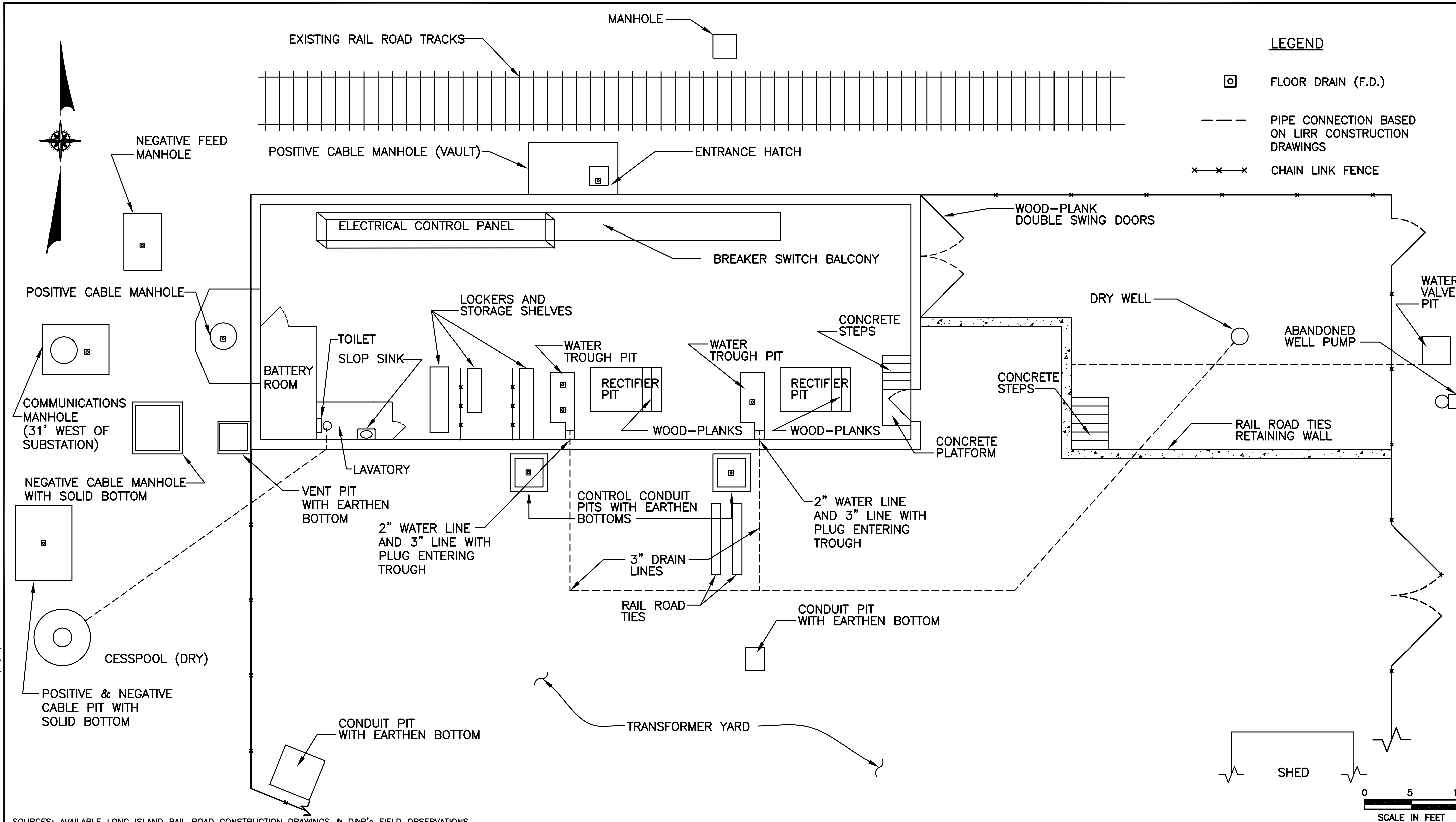
Center of Vent Pit off Southwest Corner of Substation (Sample FPSS-10). Mercury was detected at 0-6 inches bgs at a concentration of 44.7 mg/kg.

6.8.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-8C and summarized below. The concrete core sample locations are shown on Figure 6.8-3. Mercury was detected in the following samples:

East Rectifier Pit (Sample FPCC-01). Mercury was detected at a concentration of 2.6 mg/kg.

West Rectifier Pit (Sample FPCC-02). Mercury was detected at a concentration of 8 mg/kg.



LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

FLORAL PARK SUBSTATION – G13

Dvirka and Bartilucci
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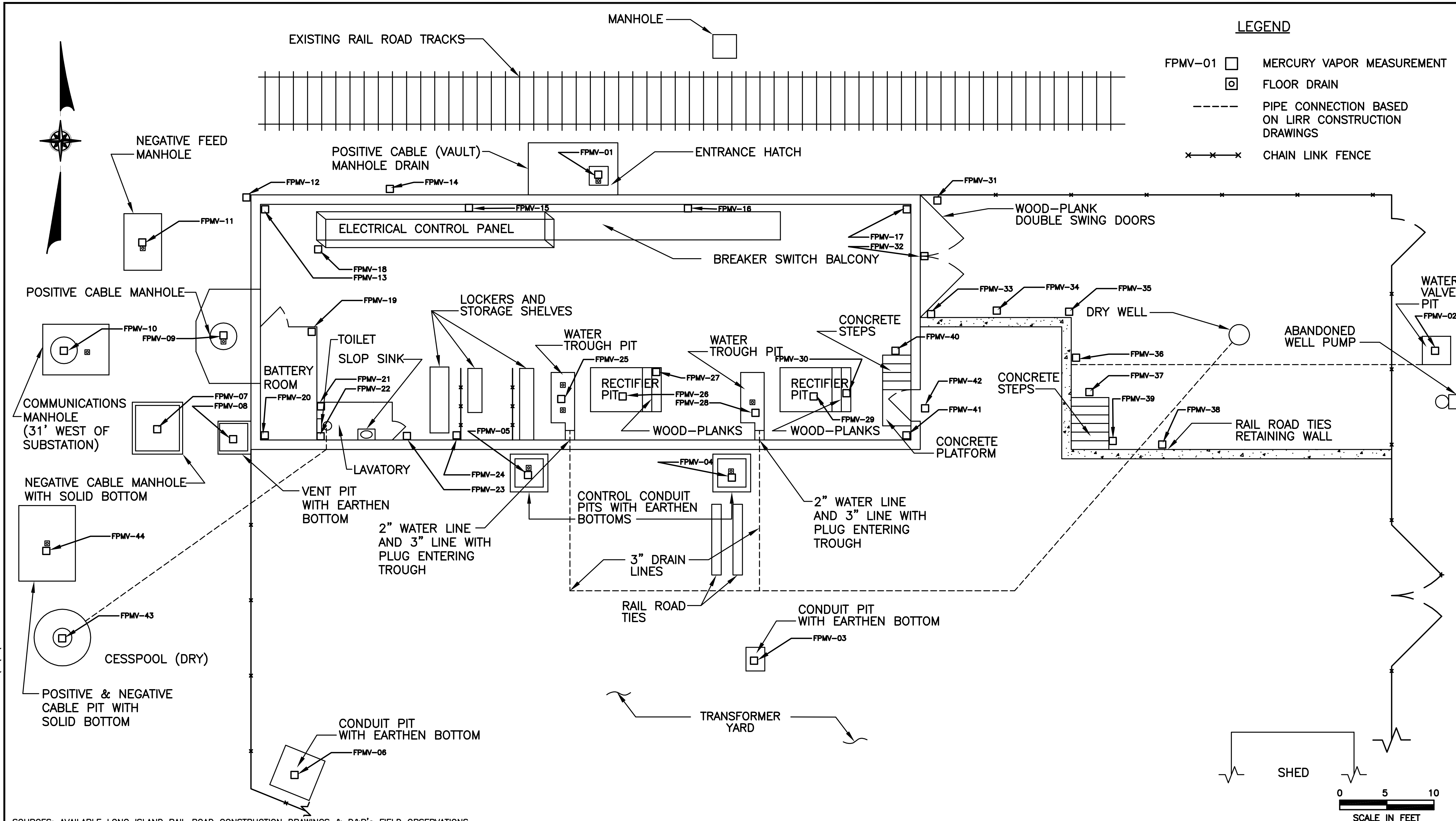
FIGURE 6.8-1



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

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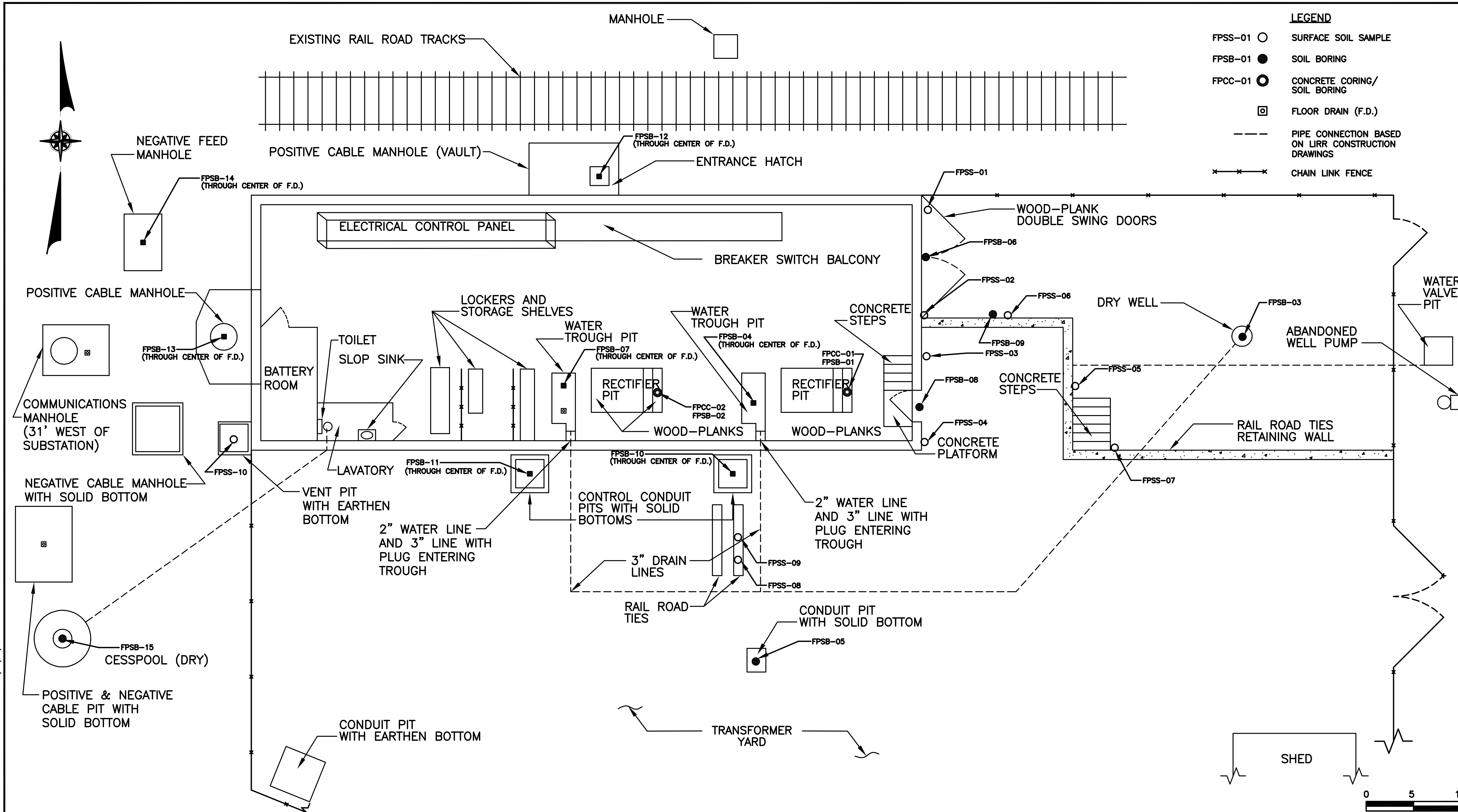
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

FLORAL PARK SUBSTATION – G13

FIGURE 6.8–2



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

FLORAL PARK SUBSTATION – G13

FIGURE 6.8–3

6.9 Mineola-G16

6.9.1 Site Inspection

The Mineola substation site is located in Mineola, Nassau County, New York. The substation consists of an approximately 2,400 square foot two-story brick building. An approximately 800 square foot transformer yard is located adjacent to the substation to the west and is enclosed by a chain-linked fence. There is also a garage located adjacent to the substation and transformer yard as shown on Figure 6.9-1 that contains a motor generator. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Port Jefferson branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking areas.

The Mineola substation is equipped with a basement, sanitary facilities and water services. In addition, there were two offices and a second floor mezzanine utilized for storage located inside the Mineola substation. The interior of the substation consists of two separate pits that are capped with concrete that, according to LIRR representatives, once serviced mercury-containing rectifiers. During the initial site inspection, D&B observed that the basement contained three floor drains. The substation contained a utility trench system along the southwest side of the substation that was covered with wood planks. Four open grate dry wells were observed during the site inspection along the east side of the substation. There was also a vent pit with an earthen bottom located off the northwest corner of the substation. The initial site inspection also revealed a cesspool located approximately 25 feet north of the substation. It should be noted that the cesspool was filled with sanitary waste.

6.9.2 MVA Survey

A total of 90 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-9, 2 of the 90 measurements indicated the slight presence of mercury vapor at a concentration of 0.002 mg/m^3 at location MIMV-13 and 0.001 mg/m^3 at location MIMV-11. These locations are presented on the mercury vapor measurement location plan (see Figure 6.9-2).

6.9.3 Drainage Determination

Three of the four drain pipes located in the basement of the substation building were traced utilizing conventional geophysical techniques. One drain pipe, located in the corridor adjacent to the former boiler room, was dry and appeared to terminate approximately 6 inches below grade discharging to the subsurface. The second drain pipe, centrally located in the staircase room, was submerged under approximately 4 inches of water and seemed to terminate approximately 6 inches below grade discharging to the subsurface. The third drain pipe, which was identified on LIRR construction drawings in the closet located adjacent to the staircase room, could not be located during the inspection. The fourth drain pipe, centrally located in the battery room adjacent to the former boiler, terminated approximately 6 inches below grade and appeared to be filled with concrete. The report and maps associated with the pipe tracing activities, are provided in Appendix B.

It should be noted that the lavatory could not be flush tested due to the fact that the cesspool, the presumed discharge point, was full of sanitary waste.

6.9.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.9.4.1 - Subsurface Soil

As indicated in Table D-9A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.9-3).

South Exterior Corner of Substation (Sample MISB-02). Mercury was detected at 0-2 feet bgs at a concentration of 0.22 mg/kg.

Center Sub-Basement Floor Drain (Sample MISB-03). Mercury was detected at 0-2 feet bgs at a concentration of 1,550 mg/kg.

6.9.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-9B. The surface sample locations are shown on Figure 6.9-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg for all four samples collected as summarized below:

South Side of Substation (Sample MISS-01). Mercury was detected at 0-6 inches bgs at a concentration of 2 mg/kg.

South Corner of Substation (Sample MISS-02). Elevated mercury was detected at 0-6 inches bgs at a concentration of 6.4 mg/kg.

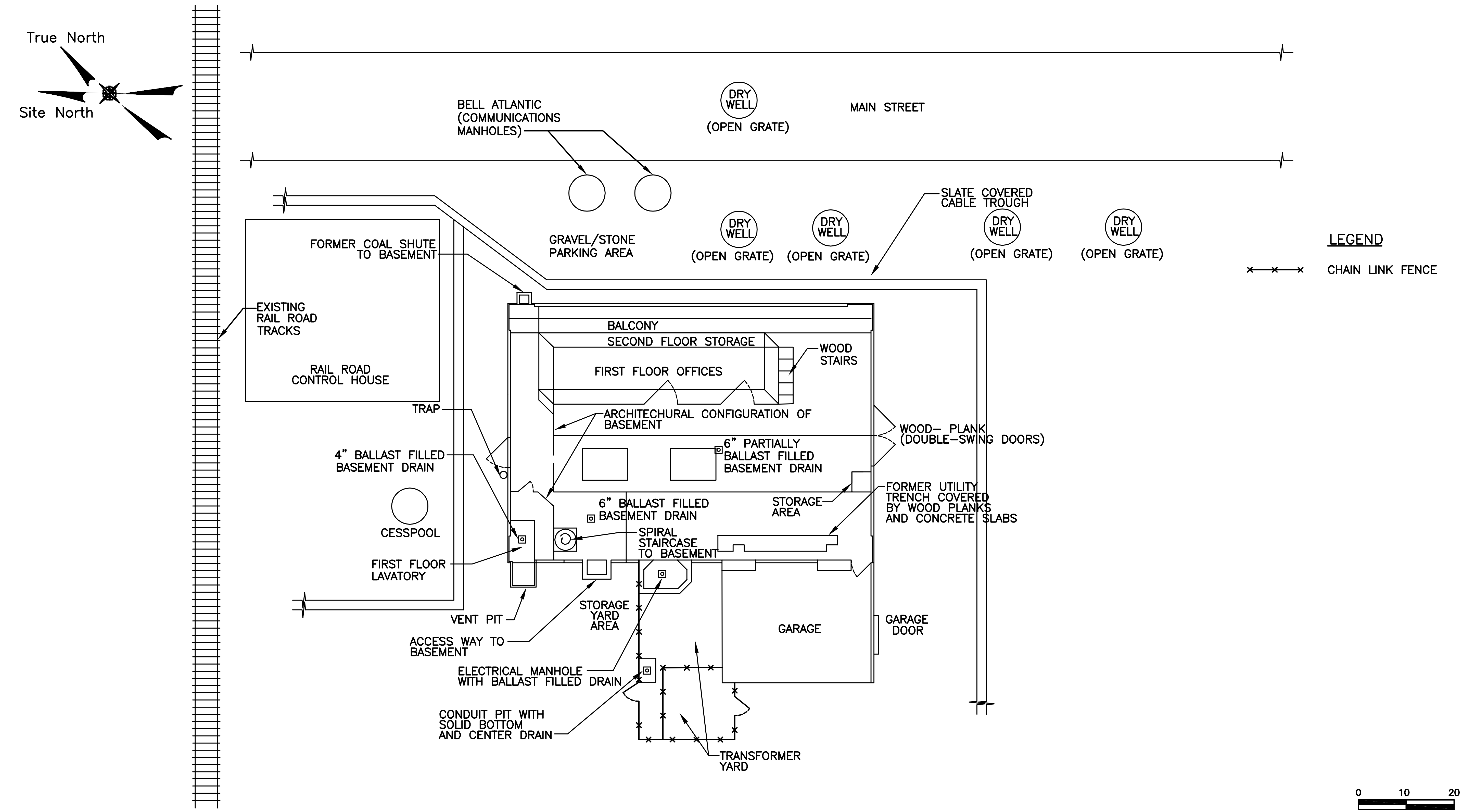
North Side of Substation (Sample MISS-03). Mercury was detected at 0-6 inches bgs at a concentration of 50.7 mg/kg.

West Side of Substation in Storage Yard Area (Sample MISS-04). Mercury was detected at 0-6 inches bgs at a concentration of 0.59 mg/kg.

6.9.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-9C and summarized below. The concrete core sample locations are shown on Figure 6.9-3. Mercury was detected in the following sample:

South Interior Corner of Substation (Sample MICC-01). Mercury was detected at a concentration of 0.64 mg/kg.



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

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Consulting Engineers
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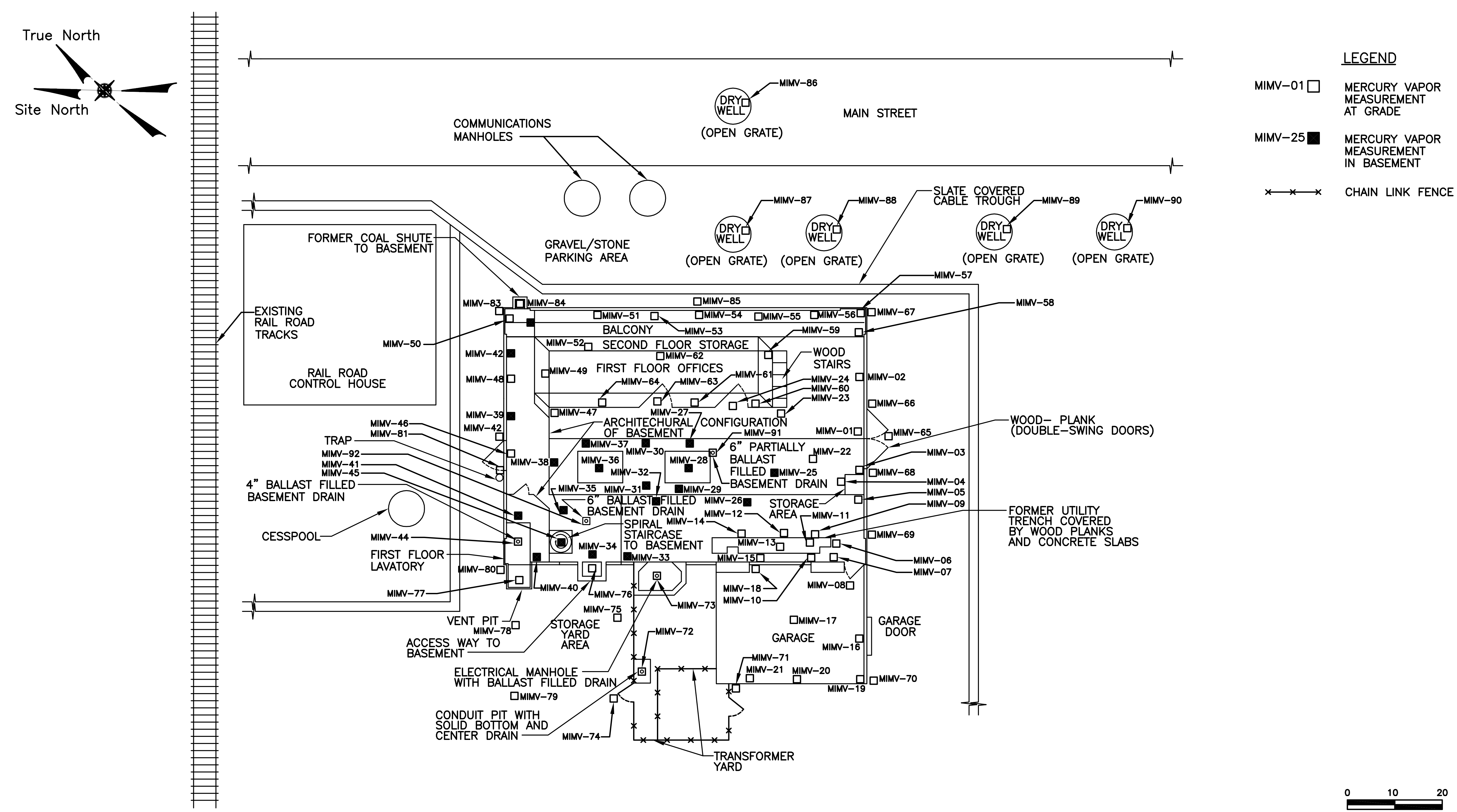
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

MINEOLA SUBSTATION – G16

FIGURE 6.9–1



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

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEAUREMENT PLAN

MINEOLA SUBSTATION – G16

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FIGURE 6.9–2

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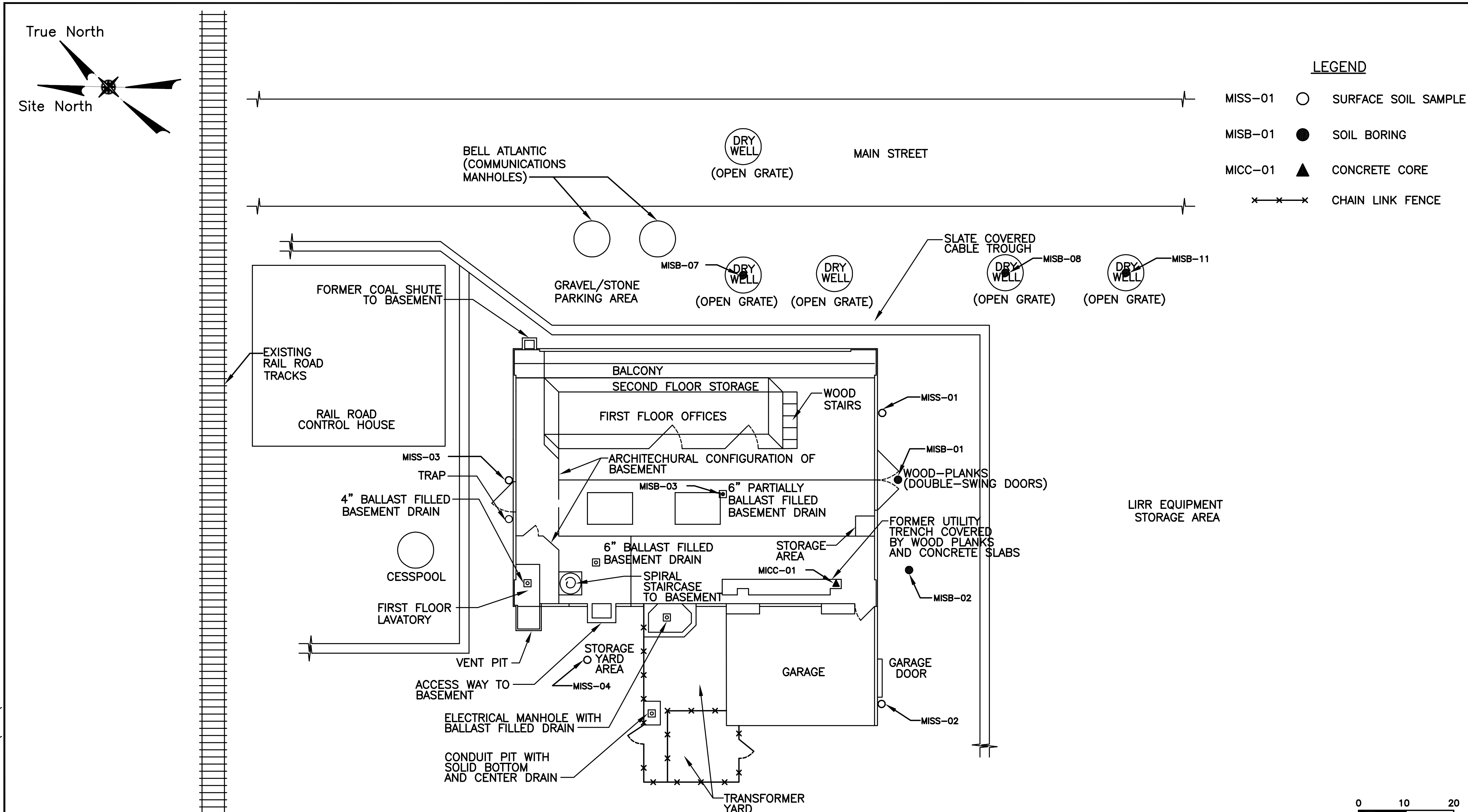

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

MON, DEC 11, 2000 10:43 A LVG F:\1648\1648-8B.DWG

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

MINEOLA SUBSTATION – G16

FIGURE 6.9–3

6.10 Hempstead-H03

6.10.1 Site Inspection

The Hempstead substation site is located in Hempstead, Nassau County, New York. The substation consists of an approximately 625 square foot one-story brick building as shown on Figure 6.10-1. An approximately 2,100 square foot transformer yard is located adjacent to the substation to the north and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Hempstead branch. The areas surrounding the substation and the transformer yard consist of residential areas.

The Hempstead substation is equipped with water service and a slop sink. The interior of the substation consists of one active solid-state rectifier located over a separate pit that once serviced a mercury-containing rectifier. The substation is equipped with a second pit, which was covered by a metal utility plate, referred to as a “water trough” on LIRR construction drawings. During the initial site investigation, it was observed that the rectifier pit contained one drain pipe and the water trough contained another drain pipe. The Hempstead substation was not equipped with a basement or a utility trench system but did have a slop sink which was located along the northern wall that discharged to surface soil within the transformer yard. It should also be noted that the Hempstead substation is equipped with a bank of active lead-acid batteries to provide back-up electricity located in the southwest corner of the substation. In addition, the site inspection revealed the presence of a pipe trench with a solid bottom located in the southwest corner of the substation.

The initial site inspection revealed a meter pit covered by a metal plate located along the southern wall of the substation. This pit was observed to be filled to grade with sand. There was also a conduit pit located approximately 40 feet south of the substation that contained a floor drain that discharges directly to the ground. In addition, there was a communications manhole with a floor drain that drained directly to the soil located approximately 10 feet north of the substation within the transformer yard. It should also be noted that an "earthen depression" was observed in the central portion of the transformer yard.

6.10.2 MVA Survey

A total of 27 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-10, none of the 27 measurements indicated the presence of mercury vapor. These sample locations are presented on the mercury vapor measurement location plan (see Figure 6.10-2). Mercury vapor readings were not observed above the instrument detection level at the location of the "earthen depression" observed in the transformer yard.

6.10.3 Drainage Determination

Three drain pipes which originated in the sub-grade pits within the substation building were traced utilizing conventional geophysical techniques. The first pipe exited the northern wall of the rectifier pit extending under the northern wall of the substation building. Refusal was met approximately 1.5 feet from the north outer building wall. The second and third pipe exited the northern wall of the water trough pit where refusal was met within the first few feet and could not be traced outside the pit.

The dry well located approximately 22 feet south of the substation building was inspected and revealed an inlet pipe entering from the north. The pipe appeared to extend northward from the dry well and beneath the right-hand substation door in the southern wall of the building. A connection between this pipe and the interior substation pits could not be established. The report and maps associated with the pipe tracing activities are provided in Appendix B.

6.10.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.10.4.1 - Subsurface Soil

As indicated in Table D-10A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.10-3).

South Dry Well (Sample HSSB-03). Mercury was detected at 17-19 feet bgs at a concentration of 2.1 mg/kg and at 21-23 feet bgs at a concentration of 45.6 mg/kg.

Southwest Exterior Water Meter Pit (Sample HSSB-04). Mercury was detected at 4-6 feet bgs at a concentration of 8.3 mg/kg and at 8-10 feet bgs at a concentration of 1.2 mg/kg.

Water Trough Pit (Sample HSSB-06). Mercury was detected at 0-2 feet bgs at a concentration of 1.7 mg/kg and at 4-6 feet bgs at a concentration of 0.39 mg/kg.

Rectifier Pit (Sample HSSB-07). Mercury was detected at 0-2 feet bgs at a concentration of 13.8 mg/kg and at 2-4 feet bgs at a concentration of 1.7 mg/kg.

6.10.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-10B. The surface sample locations are shown on Figure 6.10-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg for all samples collected as summarized below:

East of South Front Entrance Substation Doors (Sample HSSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 236 mg/kg.

West of South Front Entrance Substation Doors (Sample HSSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 198 mg/kg.

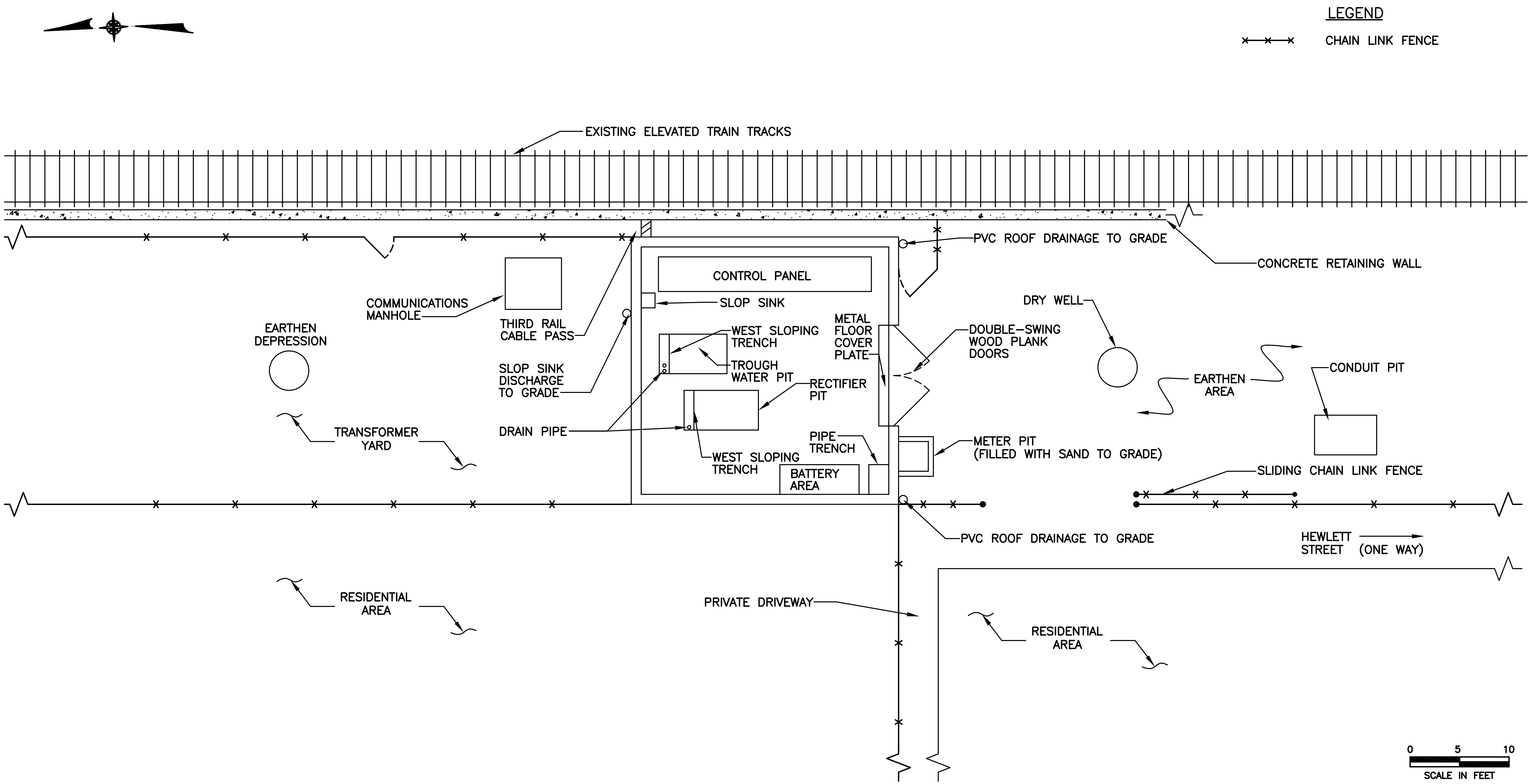
Northeast Communications Cable Pit (Sample HSSS-04). Mercury was detected at 5-6 feet bgs at a concentration of 3.1 mg/kg.

6.10.4.3 – Concrete

Analytical results for concrete core samples are presented in Table D-10C and summarized below. The concrete core sample locations are shown on Figure 6.10-3. Mercury was detected in the following samples:

Water Trough Pit (Sample HSCC-01). Mercury was detected at a concentration of 4.8 mg/kg.

Rectifier Pit (Sample HSCC-02). Mercury was detected at a concentration of 52.8 mg/kg.



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

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

HEMPSTEAD SUBSTATION – H03

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Consulting Engineers
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FIGURE 6.10–1

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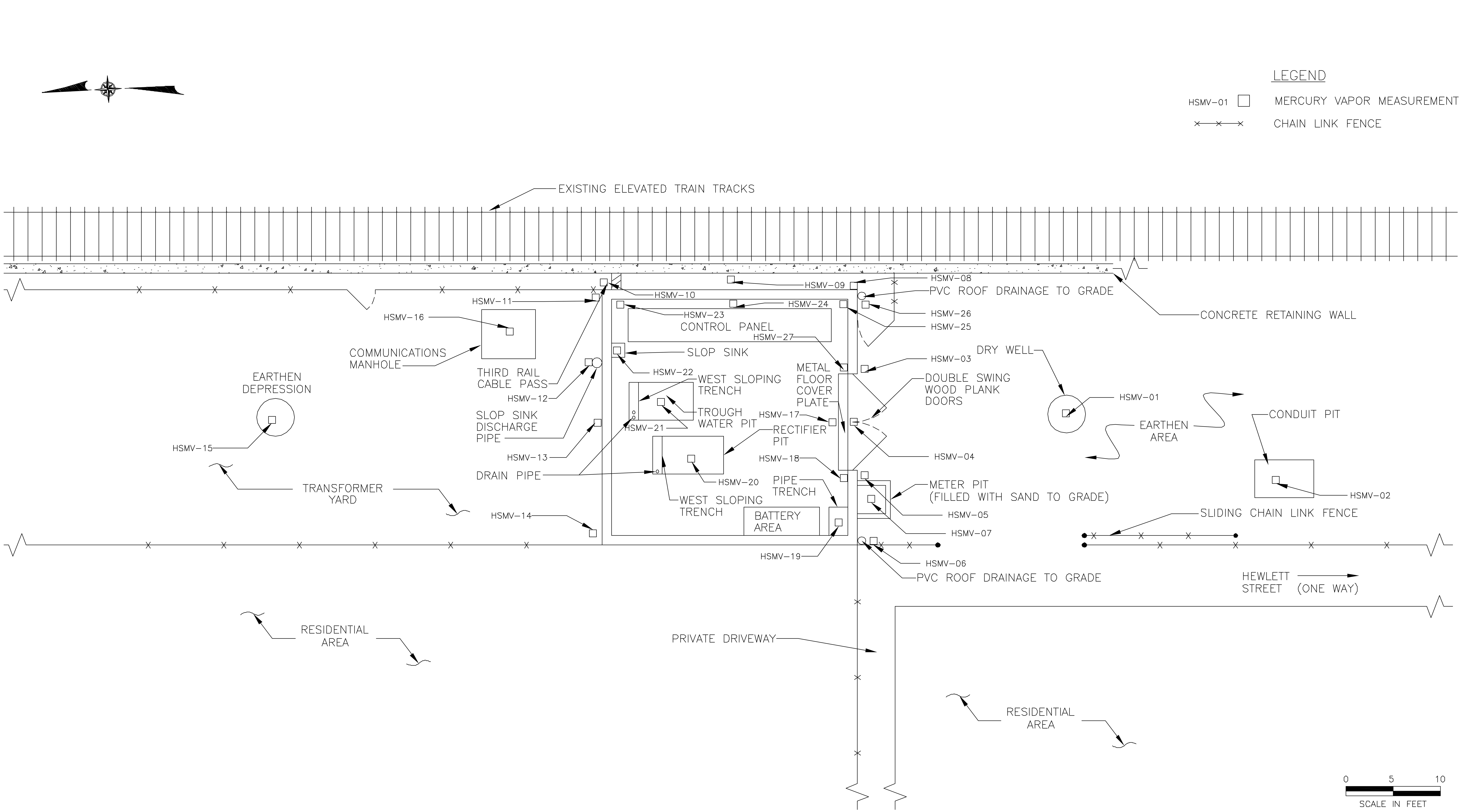

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

MON, DEC 11, 2000 10:47 A LVG F:\1648\1648-17B.DWG

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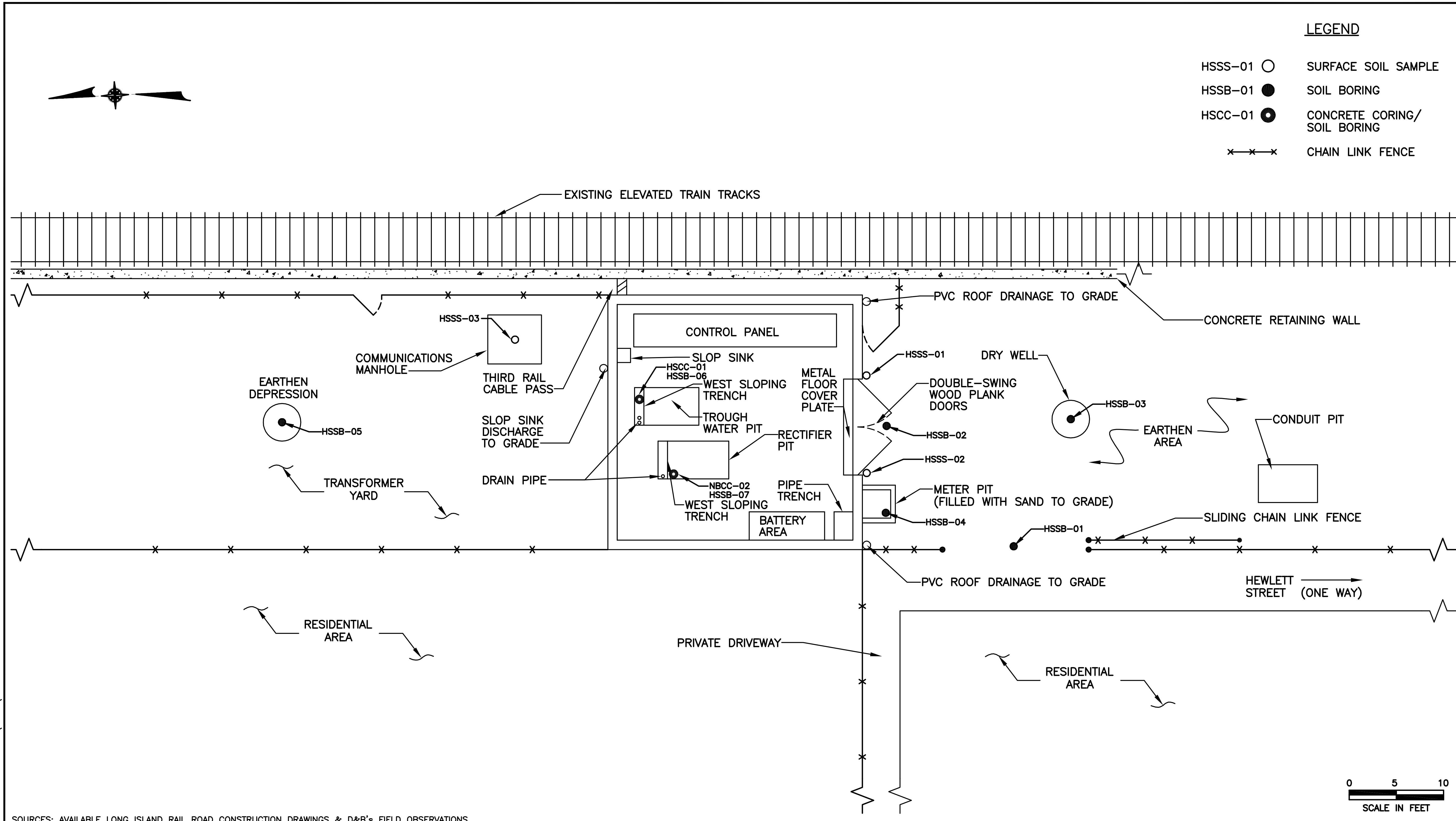
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

HEMPSTEAD SUBSTATION – H03

FIGURE 6.10–2



LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

HEMPSTEAD SUBSTATION – H03

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FIGURE 6.10-3

MON, DEC 11, 2000 10:48 A LVG F:\1648\1648-17C.DWG

6.11 Nassau Boulevard-H01

6.11.1 Site Inspection

The Nassau Boulevard substation site is located in Garden City, Nassau County, New York. The substation consists of an approximately 625 square foot one-story brick building as shown on Figure 6.11-1. An approximately 2,100 square foot transformer yard is located adjacent to the substation to the southwest and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Hempstead branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking and residential areas.

The Nassau Boulevard substation is equipped with sanitary and water services along with a utility trench system. The interior of the substation consists of one active solid-state rectifier located over a separate pit that once serviced a mercury-containing rectifier. The existing rectifier pit leads to a basement that extends throughout the majority of the substation.

The initial site inspection revealed a water meter pit located along the southern wall of the substation with an earthen bottom covered by a metal plate. Two PVC pipes were also observed to discharge from the roof along the southern exterior wall of the substation (see Figure 6.11-1). During the site investigation, a trap and clean-out were observed along the west side of the substation.

6.11.2 MVA Survey

A total of 56 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-11, none of the 56 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.11-2).

6.11.3 Drainage Determination

Three drain pipes which originated in the basement area within the substation building were traced utilizing conventional geophysical techniques. It was determined that the three drain pipes were interconnected and discharged to a single PVC pipe that runs west-to-east, parallel to a chain-link fence for approximately 70 feet. At the southeast corner of the transformer yard, the PVC pipe bends toward the northeast. Refusal was met at approximately 42 feet east of the chain-link fence in the vicinity of two large trees. Roots were extracted from the pipe suggesting that the tree roots might have grown into the drain pipe obstructing its flow. Soil boring NBSB-06 was advanced in the vicinity of the point of refusal to determine if the soil has been impacted by mercury. The results are summarized in Section 6.11.5.

It should be noted that LIRR representatives have stated that they believed the floor drains located in the substation basement to discharge to the sewer system and possibly to a pond located across the street at the Garden City Country Club. As such, the D&B investigation team mechanically snaked several sewer manholes located along Tanners Pond Road in an attempt to establish a connection with the substation floor drains. There was no evidence that the substation drains are connected to the sewer system or discharge to the pond located across the street at the Country Club. The report and maps associated with the pipe tracing activities are provided in Appendix B.

In addition, D&B conducted flush and dye tests to determine the discharge point of the substation lavatory. Several discharge points such as the sewer system located along Tanners Pond Road, the pond located across the street at the Country Club, and several clean-outs located on the substation property were observed while water and dye was flushed through the lavatory. The discharge point of the lavatory could not be established.

6.11.4 Geophysical Survey

D&B conducted a geophysical survey to locate a former septic tank and disposal tile field presumed to be located off the northwest corner of the substation. The survey grid measured 6 m east-west by 8 m north-south. The geophysical survey, which included a total magnetic gradiometer survey and a GPR survey, indicates two magnetic anomalies. The stronger of the two anomalies is centered approximately 1.5 m west of the northwest corner of the substation building. The second anomaly is centered over the 3 m grid line and 1 m south of the north edge of the survey grid. A strong GPR anomaly is associated with the stronger of the two magnetic anomalies described above. It is located approximately 0.5 m north of the magnetic anomaly, approximately 1.25 m from the northwest corner of the substation building. Two linear anomalies are also observed within the survey area extending parallel to the east-west approximately 2 m and 5.5 m south of the north edge of the survey area, respectively. The report and maps associated with the geophysical survey are provided in Appendix C.

The geophysical survey concluded that the anomalous features detected do not necessarily correspond to a buried septic system. D&B elected not to undertake any excavation activities in this area due to the risk of damaging what could be an active sanitary system. However, in an effort to investigate possible impacts resulting from the septic system depicted on available LIRR construction drawings, D&B advanced a soil boring (NBSB-05) in this vicinity. The results are summarized in Section 6.11.5. It should be noted that LIRR representatives indicated in the field that they thought a "new" sanitary system was installed off the southwest corner of the substation.

6.11.5 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.11.5.1 - Subsurface Soil

As indicated in Table D-11A, none of the subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.11-2).

6.11.5.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-11B. The surface sample locations are shown on Figure 6.11-2. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

South of Southeast Corner Concrete Stairs (Sample NBSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 224 mg/kg.

South of Southeast Corner of Concrete Platform (Sample NBSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 6.4 mg/kg.

West of Southeast Corner of Concrete Platform (Sample NBSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 4.3 mg/kg.

South of South-Side Roof Drain PVC Pipe (Sample NBSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 0.82 mg/kg.

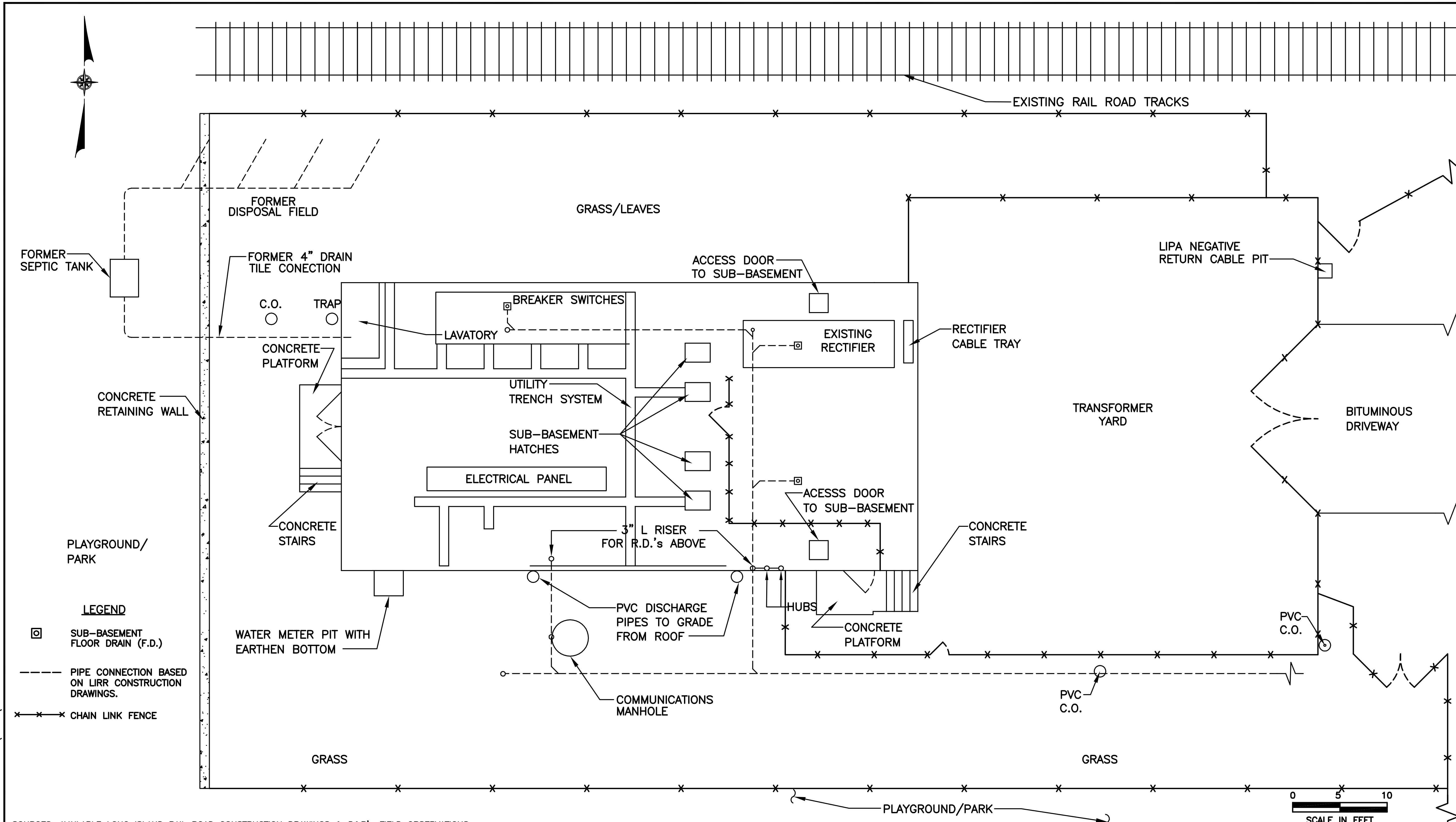
South of West-Side Concrete Stairs (Sample NBSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 0.44 mg/kg.

East of Southeast Corner Concrete Stairs (Sample NBSS-07). Mercury was detected at 0-6 inches bgs at a concentration of 5 mg/kg.

6.11.5.3 - Concrete

Analytical results for concrete core samples are presented in Table D-11C and summarized below. The concrete core sample locations are shown on Figure 6.11-2. Mercury was detected in the following sample:

North of Southeast Sub-Basement Floor Drain (Sample NBCC-02). Mercury was detected at a concentration of 0.90 mg/kg.



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

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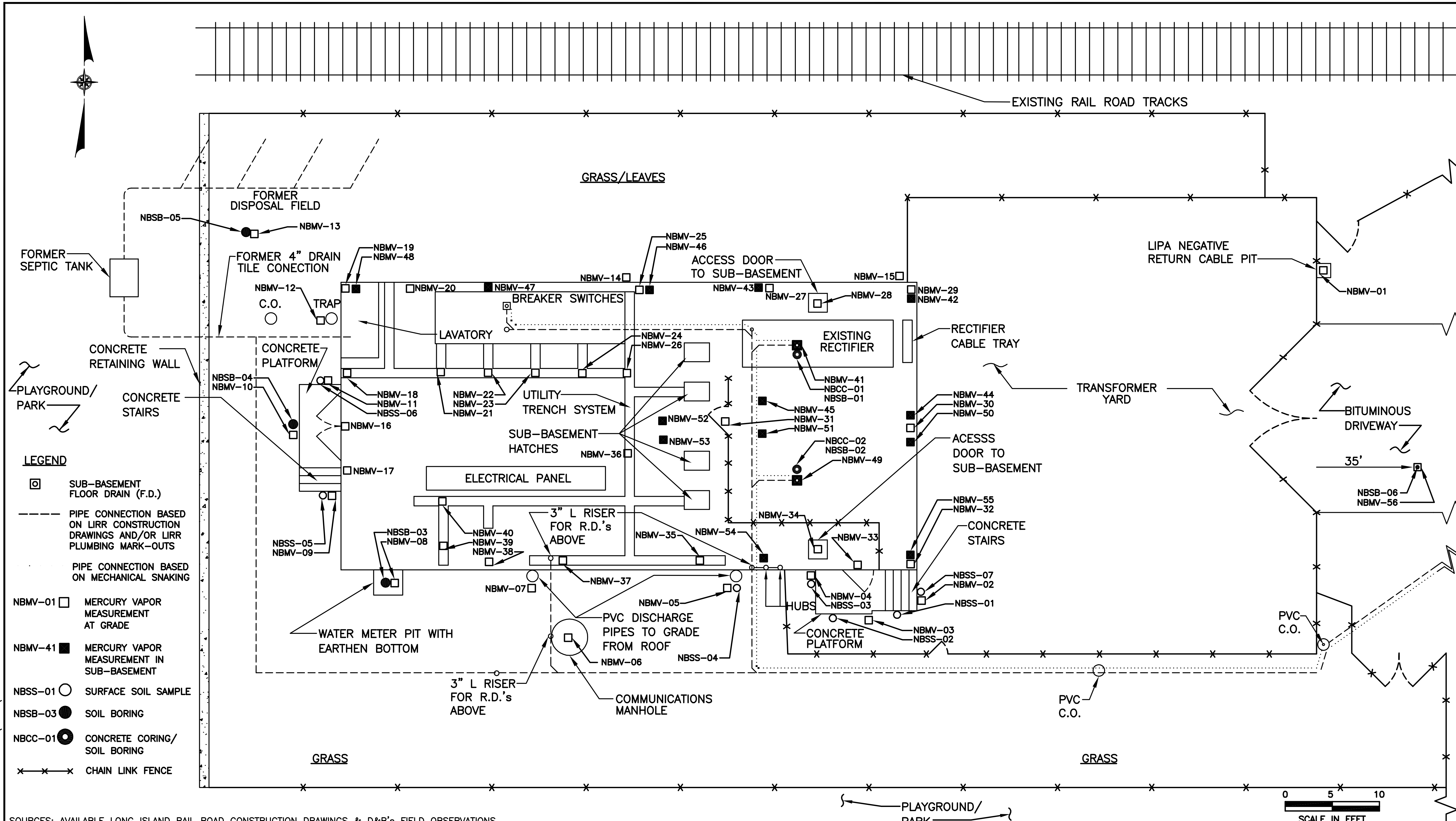
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

NASSAU BLVD. SUBSTATION – H01

FIGURE 6.11-1



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

MON, DEC 11, 2000 10:52 A LVG F:\1648\1648-14B.DWG

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

NASSAU BLVD. SUBSTATION – H01

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FIGURE 6.11–2

6.12 Massapequa-S15

6.12.1 Site Inspection

The Massapequa substation site is located in Massapequa, Nassau County, New York. The substation consists of an approximately 625 square foot one-story brick building as shown on Figure 6.12-1. An approximately 2,500 square foot transformer yard is located adjacent to the substation to the west and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Babylon branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking and pedestrian traffic areas.

The Massapequa substation is not equipped with a basement or any sanitary and office facilities. The interior of the substation consists of an active solid-state rectifier located over a pit that once serviced a mercury-containing rectifier. The substation is equipped with an additional pit, referred to as a “water trough” on LIRR construction drawings, as well as a water pipe trench with a concrete bottom located in the southeast corner.

The site inspection revealed the presence of a water service pit with an earthen bottom located off the southeast corner of the substation. A dry well was observed off the northwest corner of the substation located within the transformer yard. In addition, a control communications pit covered with a steel plate containing a floor drain was located within the transformer yard. It should be noted that there was a cable within the communications pit that was coated with a material that resembled asbestos. A steel plate covered positive cable pit containing a floor drain was also observed along the north side of the substation. It should be noted that available LIRR construction drawings indicate that a dry well is located approximately 10 feet north of the substation. However, this dry well appears to be located beneath the existing railroad tracks.

6.12.2 MVA Survey

A total of 36 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-12, 6 of the 36 measurements indicated the presence of mercury vapor ranging from a concentration of 0.480 mg/m^3 at location MSMV-32 to 0.020 mg/m^3 at location MSMV-36. These locations are presented on the mercury vapor measurement location plan (see Figure 6.12-2). It should be noted that elevated levels of mercury vapor were detected inside the conduit pipes located within the water trough pit. These conduit pipes were initially capped shut by Trade Winds Environmental Co. and were resealed by D&B after the completion of the MVA survey.

6.12.3 Drainage Determination

Three drain pipes, two of which originate in the former water trough and one in the rectifier pit, were traced utilizing conventional geophysical techniques within the substation building. D&B determined that the first drain pipe which is located beneath the existing rectifier is connected to the dry well located in the northeastern corner of the transformer area immediately west of the substation. When the drain was flushed with potable water, water was observed entering the dry well. The two drains in the former water trough were traced through the use of a transmitter conductively attached to the exposed pipe. These two water trough drains were traced to the same drainage pipe that exits the building under the western wall of the substation. The signal was received approximately 4 feet west of the building and faded beyond this location. The report and maps associated with the pipe tracing activities are provided in Appendix B.

6.12.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.12.4.1 - Subsurface Soil

As indicated in Table D-12A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.12-2).

Interior Water Trough Pit (Sample MSSB-01). Mercury was detected at 0-2 feet bgs at a concentration of 4.4 mg/kg.

Rectifier Pit (Sample MSSB-02). Mercury was detected at 0-2 feet bgs at a concentration of 10 mg/kg.

North-End Positive Breaker Cable Pit (Sample MSSB-03). Mercury was detected at 5-7 feet bgs at a concentration of 1.8 mg/kg.

Northwest Dry Well (Sample MSSB-04). Mercury was detected at 6-8 feet bgs at a concentration of 42.3 mg/kg and at 10-12 feet bgs at a concentration of 0.20 mg/kg.

Northwest Control Communications Pit (Sample MSSB-05). Mercury was detected at 5-7 feet at a concentration of 10 mg/kg and 9-11 feet bgs at a concentration of 0.37 mg/kg.

Far East of Exterior Water Service Pit (Sample MSSB-06). Mercury was detected at 0-2 feet bgs at a concentration of 0.37 mg/kg.

Exterior of Water Service Pit (Sample MSSB-07). Mercury was detected at 3.5-5.5 feet bgs at a concentration of 2.5 mg/kg and at 5.5-7.5 feet bgs at a concentration of 2.7 mg/kg.

East of East-Side Bituminous Entrance (Sample MSSB-08). Mercury was detected at 0-2 feet bgs at a concentration of 11.3 mg/kg.

6.12.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-12B. The surface sample locations are shown on Figure 6.12-2. Mercury was detected in all samples collected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg as summarized below:

Northeast of Exterior Water Service Pit (Sample MSSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 25.3 mg/kg.

Far East of Southeast Substation Corner (Sample MSSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 8 mg/kg.

Far East of East-Side Wood Plank Double Swing Doors (Sample MSSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 0.86 mg/kg.

East of Southeast Chain-link Double Swing Double Doors (Sample MSSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 1.1 mg/kg.

South off Southeast Exterior Substation Corner (Sample MSSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 169 mg/kg.

Northwest Exterior Corner of Substation (Sample MSSS-06). Mercury was detected at 0-6 inches bgs at a concentration of 13.5 mg/kg.

Southwest Exterior Corner of Substation (Sample MSSS-07). Mercury was detected at 0-6 inches bgs at a concentration of 4.9 mg/kg.

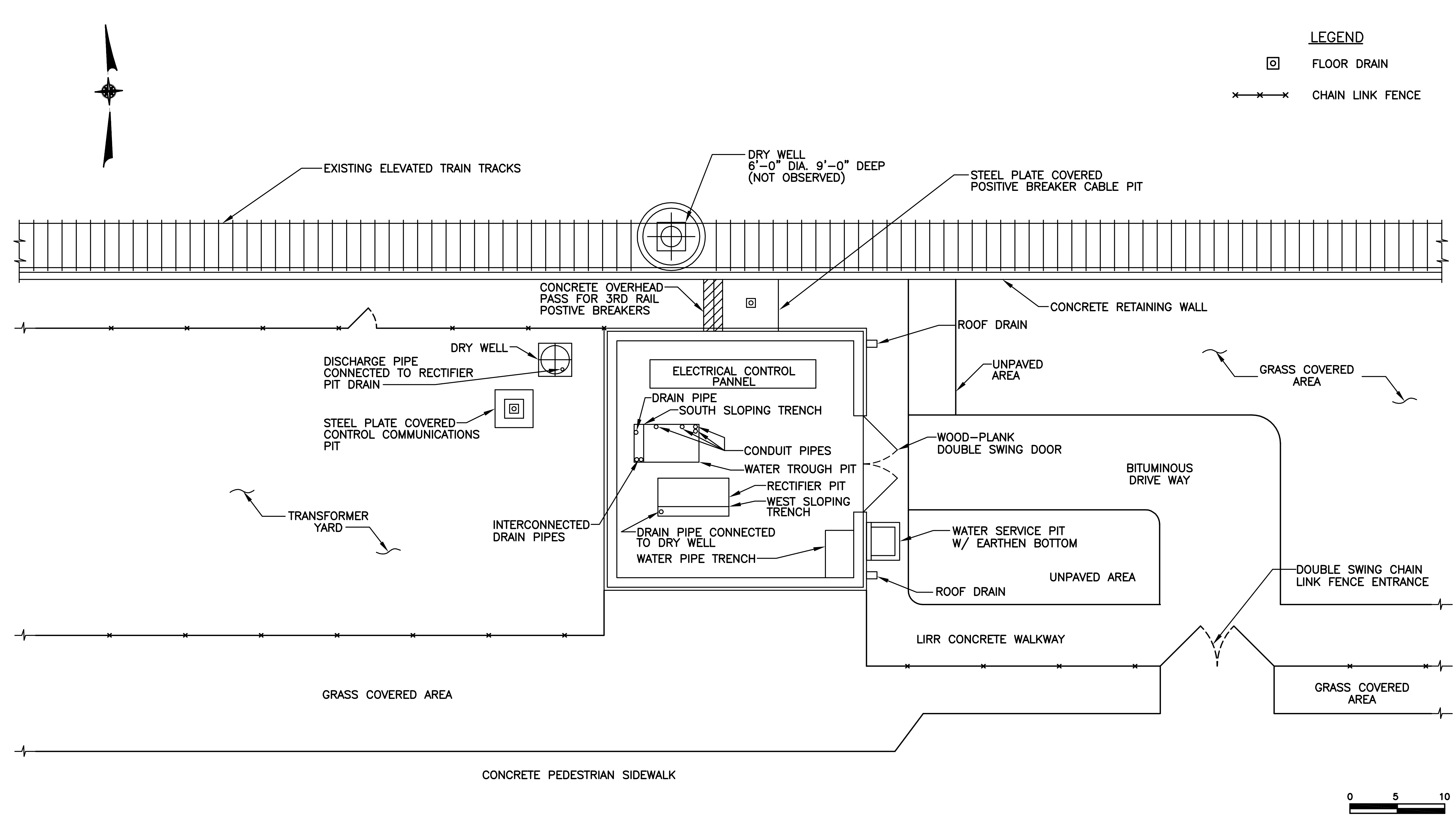
6.12.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-12C and summarized below. The concrete core sample locations are shown on Figure 6.12-2. Mercury was detected in the following samples:

Interior Water Trough Pit (Sample MSCC-01). Mercury was detected at a concentration of 68 mg/kg.

Rectifier Pit (Sample MSCC-02). Mercury was detected at a concentration of 682 mg/kg.

Interior Water Pipe Trench (Sample MSCC-03). Mercury was detected at a concentration of 12.5 mg/kg.



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

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

MASSAPEQUA SUBSTATION – S15

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Consulting Engineers
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FIGURE 6.12-1

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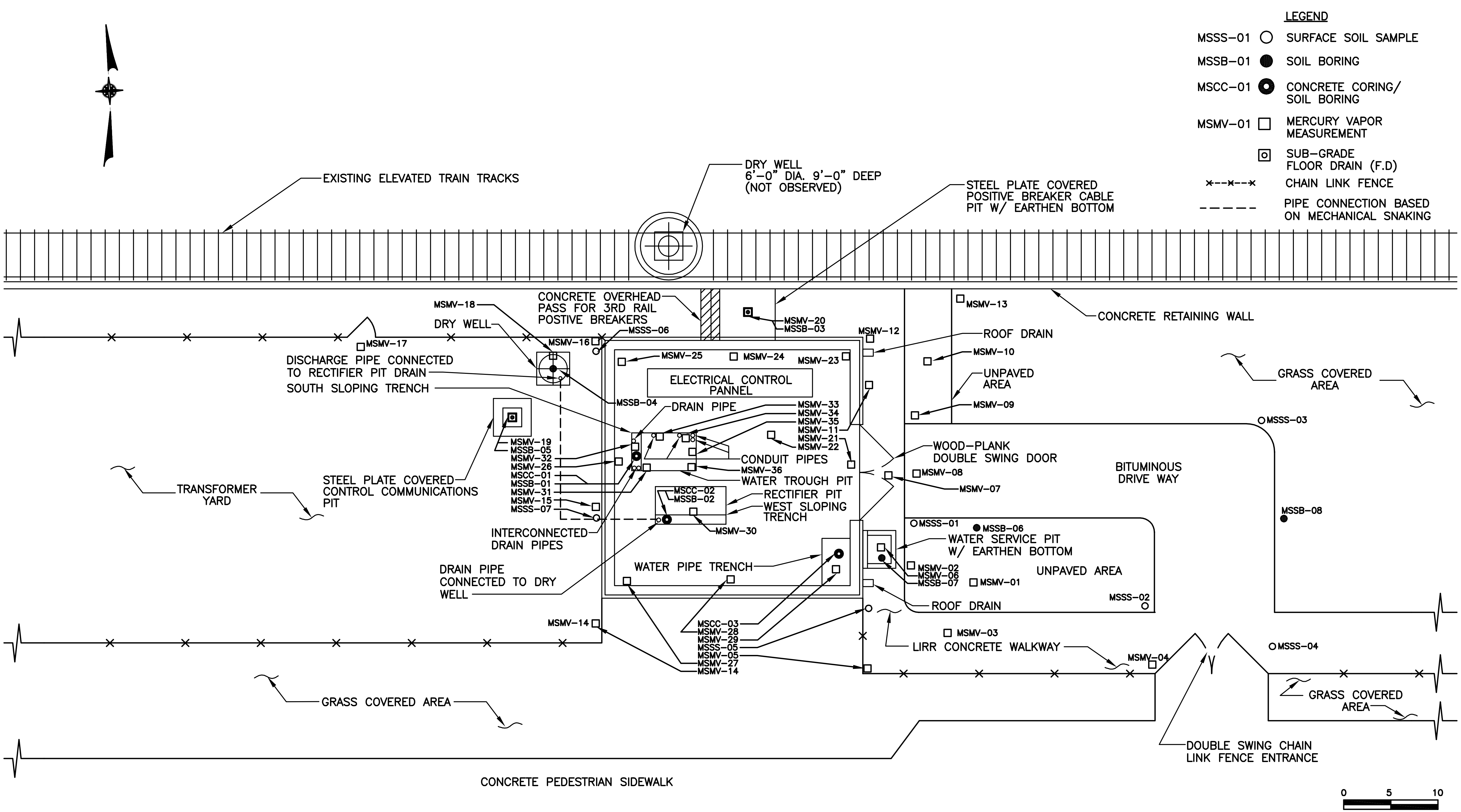

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

MASSAPEQUA SUBSTATION – S15

Dvirka and Bartilucci
Consulting Engineers
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FIGURE 6.12-2

MON, DEC 11, 2000 11:13 A LVG F:\1648\1648-6B.DWG

6.13 Bayside-N06

6.13.1 Site Inspection

The Bayside substation site is located in Bayside, Queens County, New York. The substation consists of an approximately 1,800 square foot one-story brick building as shown on Figure 6.13-1. An approximately 3,600 square foot transformer yard is located adjacent to the substation to the east and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Port Washington branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking and residential areas.

The Bayside substation is equipped with a basement, sanitary and water services and a utility trench system, as well as an office area utilized by LIRR personnel. The interior of the substation consists of an active solid-state rectifier located over a pit leading to the basement that once serviced a mercury-containing rectifier. In addition, the substation contained a second wooden covered rectifier pit not currently in use. It should also be noted that the Bayside substation contains a bank of active lead-acid batteries located in the northwest corner of the substation to provide back-up electricity.

The initial site inspection revealed a water meter pit with an earthen bottom located along the western wall of the substation, as well as a communications manhole filled with water and debris located off the northwest corner of the substation. In addition, a steel covered manhole conduit filled with water and debris was located approximately 5 feet north of the substation. There was also a steel covered conduit pit containing a floor drain filled with ballast located within the transformer yard.

6.13.2 MVA Survey

A total of 56 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-13, none of the 26 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.13-2).

6.13.3 Drainage Determination

Available LIRR construction drawings indicate that the substation lavatory and floor drains discharge to the New York City sanitary and storm sewer systems, respectively, located on 216th Street. Accordingly, D&B conducted flush and dye tests to confirm these discharge points. Several sewer manholes located along 216th Street were observed while water and dye was flushed trough the lavatory and floor drains. The suspected discharge point of the lavatory and floor drains could not be confirmed. Consequently, D&B undertook a program to mechanically snake these drainage points.

Four drain pipes located within the Bayside substation were traced utilizing conventional geophysical techniques. It was determined that the two drain pipes located in the northern rectifier pit are connected to a drain pipe in the southern rectifier pit, where it continues west and connects to the fourth drain also located in the southern rectifier pit. The pipe located in the southern pit then exits the west wall of the building where it was determined to end approximately 8-10 feet west of the west wall of the substation. The report and maps associated with the pipe tracing activities are provided in Appendix B.

In order to determine the discharge point of this pipe, D&B hand excavated this area (due to the presence of utilities) to a depth of approximately 5 feet bgs where a 6 inch diameter clay pipe was exposed. This pipe was noticed to head toward the southwest and continued to the fence line (see Figure 6.13-3). There were no discharge features visible at the surface (i.e., dry wells, manholes or trench covers) located in the area of the pipe off the southwest corner of the substation. In addition, available LIRR construction drawings did not indicate any drainage features in this vicinity. In an attempt to further trace this pipe, it was agreed to by the LIRR to conduct a geophysical survey in the area south of the fence line once the weather became more favorable. This geophysical survey is recommended to be conducted during future investigation programs.

6.13.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.13.4.1 - Subsurface Soil

As indicated in Table D-13A, the following subsurface soil sample collected in and around the substation exhibited a concentration of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The location of this sample is presented on the sampling location plan (see Figure 6.13-3).

East of Northeast Corner Concrete Stairs (Sample BSSB-03). Mercury was detected at 0-2 feet bgs at a concentration of 2.4 mg/kg.

6.13.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-13B. The surface sample locations are shown on Figure 6.13-3. Mercury was detected in all samples collected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg as summarized below:

North of Northeast Concrete Platform (Sample BSSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 5.5 mg/kg.

West of Northeast Concrete Platform (Sample BSSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 5.1 mg/kg.

North of West-Side Concrete Stairs (Sample BSSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 105 mg/kg.

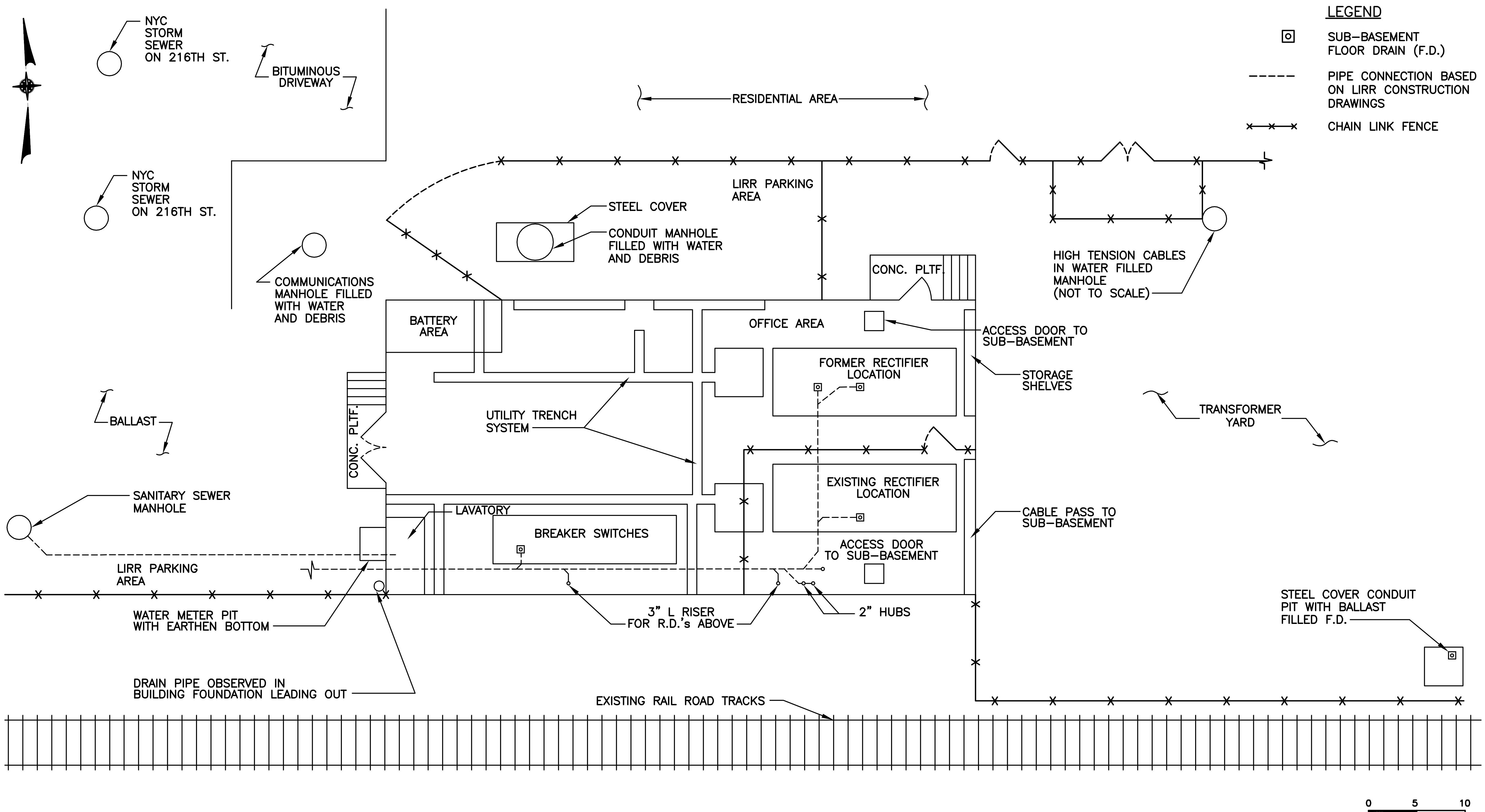
South of West-Side Concrete Stairs (Sample BSSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 384 mg/kg.

6.13.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-13C and summarized below. The concrete core sample locations are shown on Figure 6.13-3. Mercury was detected in the following samples:

North Rectifier Pit (Sample BSCC-01). Mercury was detected at a concentration of 6.9 mg/kg.

South Rectifier Pit (Sample BSCC-02). Mercury was detected at a concentration of 19.9 mg/kg.



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

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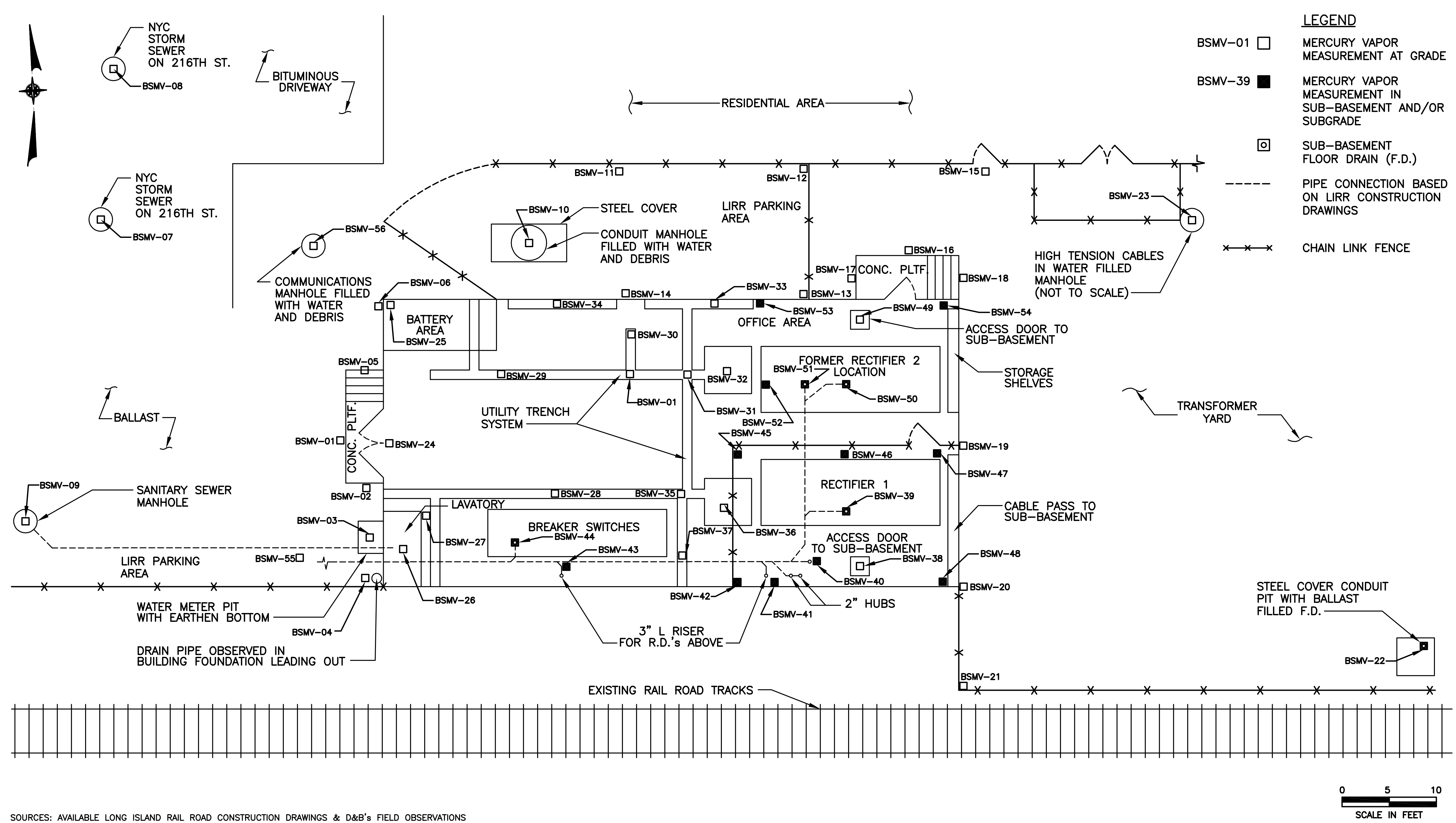
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

BAYSIDE SUBSTATION –N06

FIGURE 6.13–1



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

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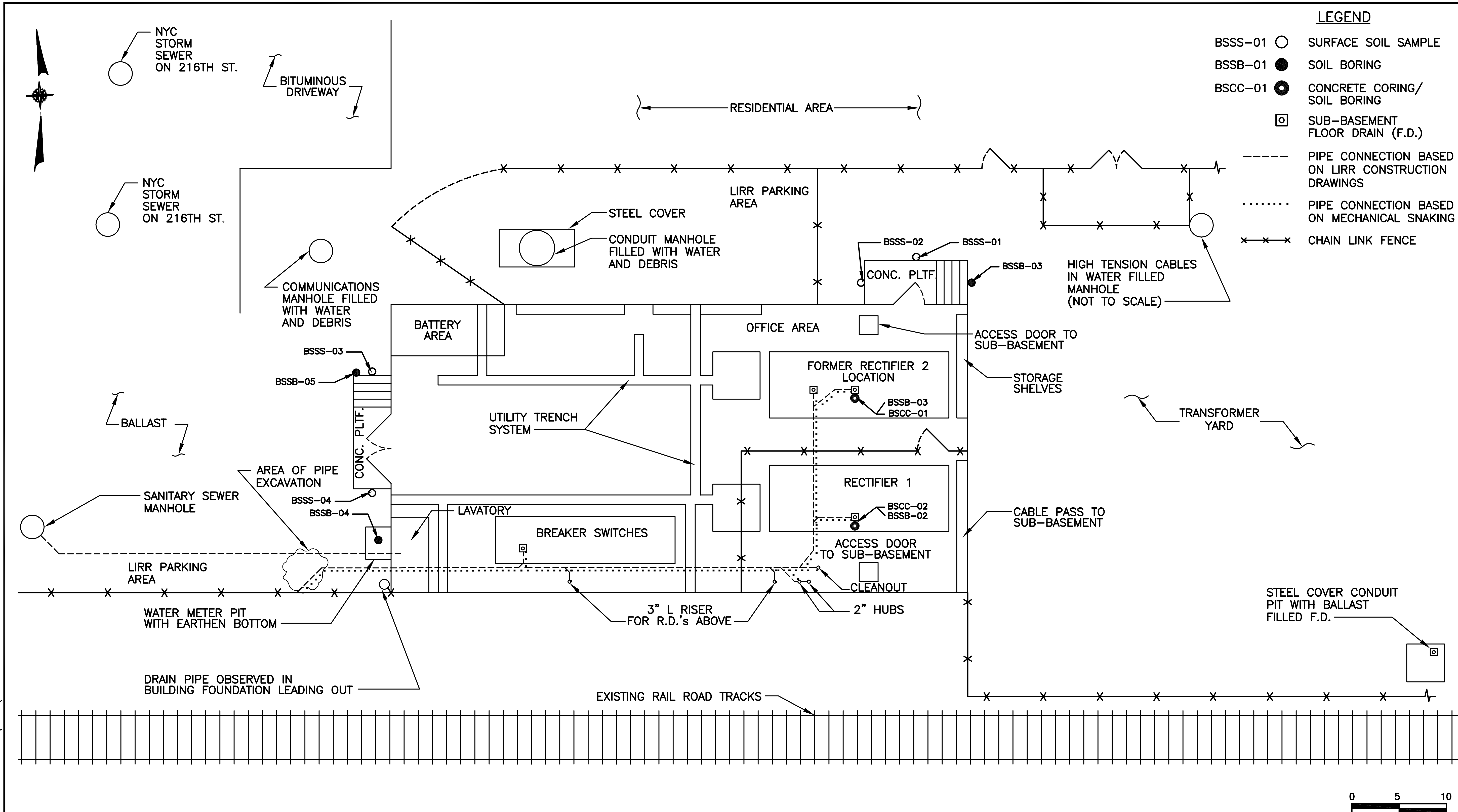
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

BAYSIDE SUBSTATION –N06

FIGURE 6.13–2



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

BAYSIDE SUBSTATION -N06

FIGURE 6.13-3

6.14 Little Neck-N08

6.14.1 Site Inspection

The Little Neck substation site is located in Great Neck, Nassau County, New York. The substation consists of an approximately 2,500 square foot two-story brick building as shown on Figure 6.14-1. An approximately 2,100 square foot transformer yard is located adjacent to the substation to the west and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Port Washington branch. The areas surrounding the substation and the transformer yards are located within the LIRR right-of-way.

The Little Neck substation is equipped with a basement, sanitary and water services and a utility trench system. The substation interior consists of two active solid-state rectifiers located over two separate pits leading to the basement that once serviced mercury-containing rectifiers. The substation was also equipped with a third rectifier pit which is not currently in use. It should also be noted that the Little Neck substation contains a bank of active lead-acid batteries located along the south interior side of the substation to provide back-up electricity. During the initial site inspection, D&B observed that the basement was flooded with approximately 2-3 inches of water.

The initial site inspection revealed a conduit pit located along the southern wall of the substation. This pit was observed to have an earthen bottom. In addition, a negative cable manhole containing a floor drain was observed within the transformer yard and a steel covered manhole, with what appeared to be asbestos covered positive cables, was located along the north side of the substation. A drainage pipe was also observed along the west side of the substation leading towards the transformer yard. This discharge pipe did not appear to be connected to a drainage feature within the substation. It should also be noted that a hopper drain connected to a pipe leading to the east was observed off the southeast corner of the substation.

During the inspection, D&B observed a drainage creek, flowing from east to west, located about 80 feet south of the substation. This drainage creek appears to discharge to the headwaters of Little Neck Bay.

6.14.2 MVA Survey

A total of 76 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-14, none of the 76 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.14-2).

6.14.3 Drainage Determination

Three drain pipes, two which are located near the southeast corner of the substation building and a third located on the east wall of the substation basement, approximately 3 feet below the ceiling were traced utilizing conventional geophysical techniques. D&B determined that the first drain pipe marked "hopper drain," is connected to a cesspool/dry well located approximately 20 feet east of the substation. D&B also determined that the first drain pipe is connected to the sanitary facilities in the building which discharges to the dry well located to the east of the substation. The second drain pipe marked "roof drain," was traced extending southward through a densely vegetated area which was not accessible. It should be noted that available LIRR construction drawings indicate that the roof drains discharge to a creek located to the south of the Little Neck substation. The third drain was traced approximately 10 feet east of the substation wall until the signal could no longer be followed. The discharge point of the third drain could not be established. The report and maps associated with the pipe tracing activities are provided in Appendix B.

The D&B investigation team completed flush and dye tests to confirm the discharge points of drain pipes two and three. The cesspool/dry well and the creek were observed while water and dye was flushed trough drain pipes two and three. The discharge point of these drainage points could not be established.

6.14.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.14.4.1 - Subsurface Soil

As indicated in Table D-14A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.14-3).

West Basement Under Existing Rectifier (Sample LNSB-02). Mercury was detected at 4-6 feet bgs at a concentration of 3.1 mg/kg.

East/Southeast Cesspool (Sample LNSB-04). Mercury was detected at 10-12 feet bgs at a concentration of 4 mg/kg.

West of Southwest Rear Concrete Slab Entrance (Sample LNSB-09). Mercury was detected at 0-2 feet bgs at a concentration of 1.4 mg/kg and at 4-6 feet bgs at a concentration of 0.30 mg/kg.

6.14.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-14B. The surface sample locations are shown on Figure 6.14-3. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

Southeast Creek (Sample LNSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 0.33 mg/kg.

North of East-Side Front Entrance Steps (Sample LNSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 2.5 mg/kg.

South of East-Side Front Entrance Steps (Sample LNSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 7.5 mg/kg.

Southeast-Corner of Substation (Sample LNSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 7.7 mg/kg.

North of Rear Southwest Entrance Door (Sample LNSS-07). Mercury was detected at 0-6 inches bgs at a concentration of 0.45 mg/kg.

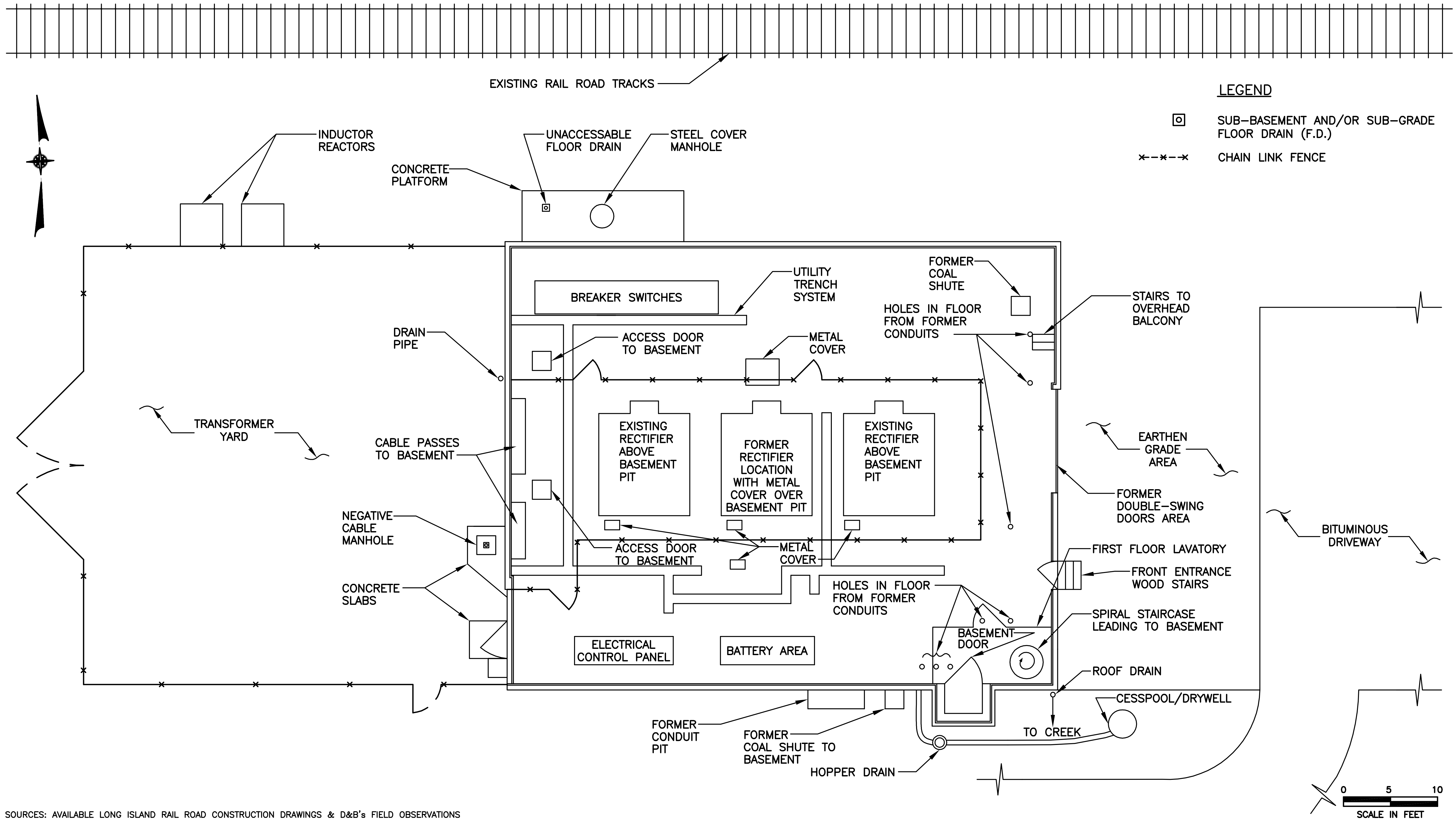
6.14.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-14C and summarized below. The concrete core sample locations are shown on Figure 6.14-3. Mercury was detected in the following samples:

West Basement (Sample LNCC-01). Mercury was detected at a concentration of 2,220 mg/kg.

East Basement (Sample LNCC-02). Mercury was detected at a concentration of 48.3 mg/kg.

Central Basement (Sample LNCC-03). Mercury was detected at a concentration of 12.6 mg/kg.



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

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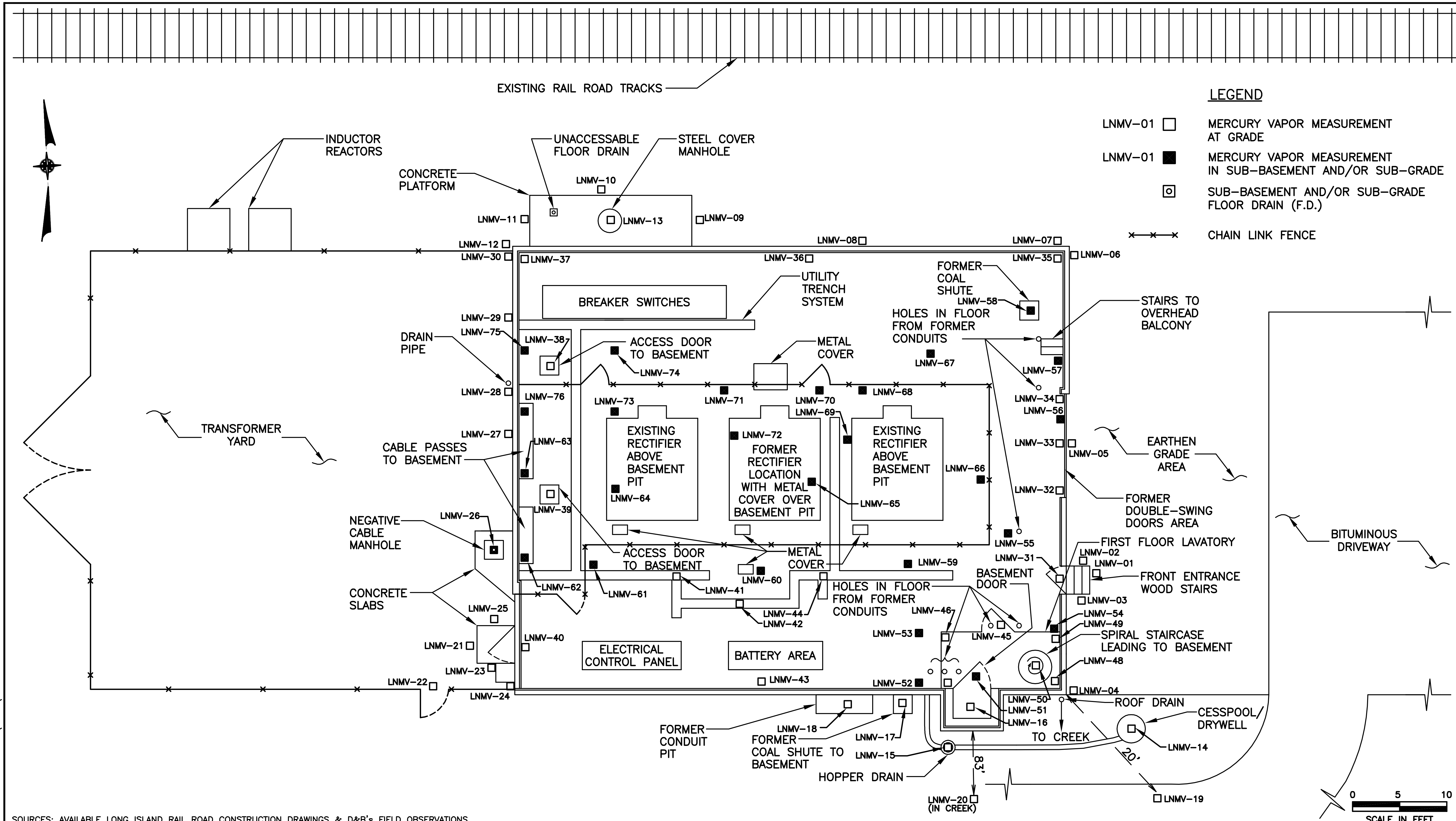
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

LITTLE NECK SUBSTATION – N08

FIGURE 6.14-1



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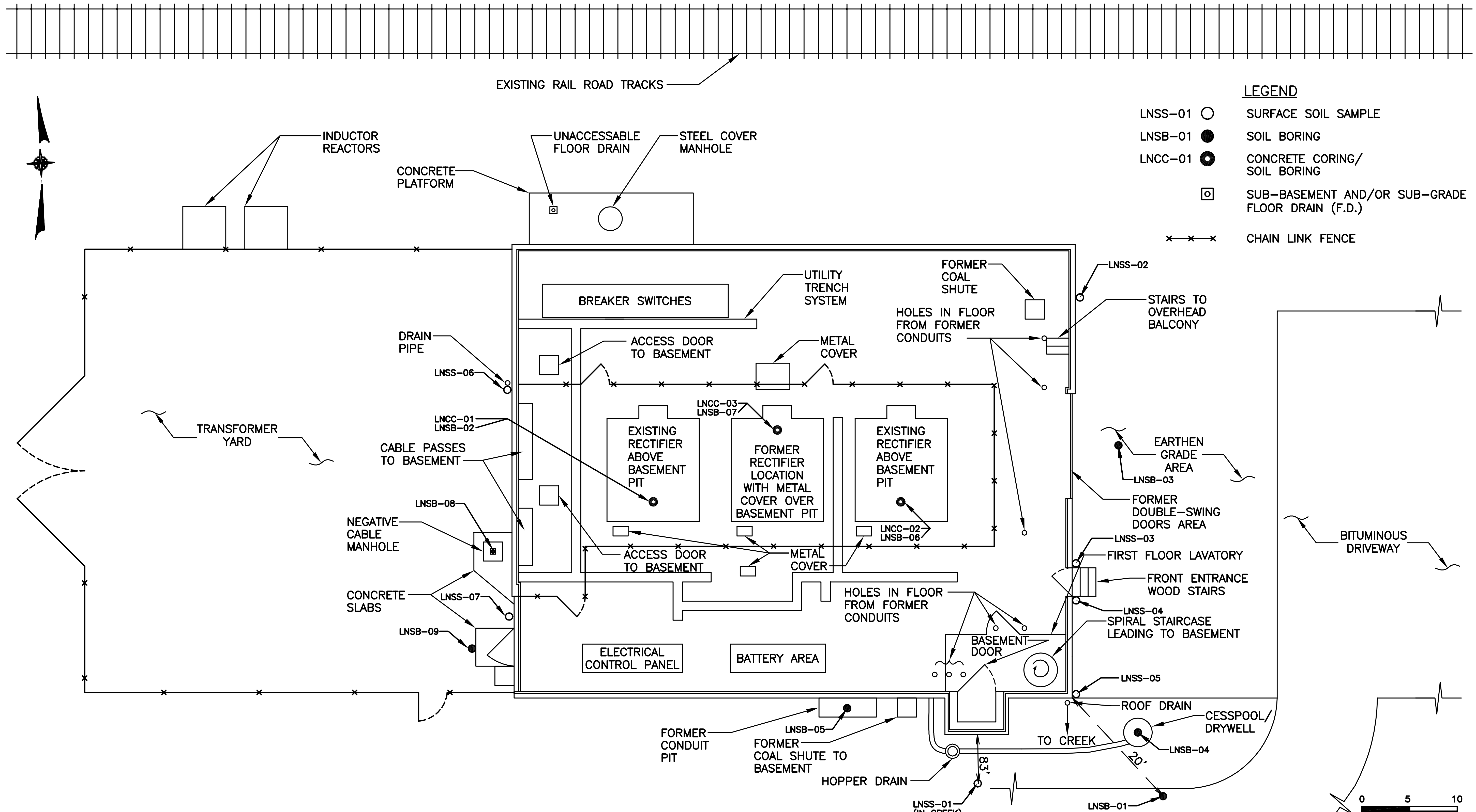
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

LITTLE NECK SUBSTATION – N08

FIGURE 6.14-2



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

LITTLE NECK SUBSTATION – N08

FIGURE 6.14–3

6.15 Bellaire-G11

6.15.1 Site Inspection

The Bellaire substation site is located in Bellaire, Queens County, New York. The substation consists of an approximately 1,800 square foot one-story brick building shown on Figure 6.15-1. Two transformer yards totaling approximately 2,200 square feet are located to the east and west of the substation and are enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Hempstead branch. The areas surrounding the substation and the transformer yards are located within the LIRR right-of-way.

The Bellaire substation is equipped with a basement, sanitary and water services (currently not functioning) and a utility trench system. The substation interior consists of two active solid-state rectifier located over two separate pits leading to the basement that once serviced mercury-containing rectifiers. It should also be noted that the Bellaire substation contains a bank of active lead-acid batteries located in a room in the southwest corner of the substation to provide back-up electricity.

The initial site inspection revealed two electric-power manholes filled with water and debris located along the southeast wall of the substation. Another electric-power manhole containing a ballast filled floor drain was located along the northern side of the substation. It should also be noted that a clean-out and vent was observed off the northwest corner of the substation.

6.15.2 MVA Survey

A total of 52 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-15, none of the 52 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.15-2).

6.15.3 Drainage Determination

Two drain pipes, one located in the western most portion of the northern rectifier pit and the second located in the southern rectifier pit were traced utilizing conventional geophysical techniques. The drain in the northern rectifier pit was not accessible due to the proximity of existing electric cables. The two drains appear to be connected to the same pipe running north-south beneath the former rectifier pits which exits the substation through the south wall. The pipe was traced to the east approximately 20 feet where the transmitter signal became too faint to be detected. The report and maps associated with the pipe tracing activities are provided in Appendix B.

Available LIRR construction drawings indicate that the substation floor drains discharge to a dry well located off the southeast corner of the building. Since the drain pipe was traced to this vicinity before the signal became too faint, D&B excavated this area in an attempt to located the dry well. The dry well was located during the excavation and a connection between the floor drains and dry well was confirmed by flush tests.

It should be noted that the discharge point of the lavatory could not be determined because the sanitary services were not in working order.

6.15.4 Geophysical Survey

D&B conducted a geophysical survey to locate a dry well presumed to be located off the southeast corner of the substation and a possible sanitary system located off the northwest corner of the substation. The survey grid representative for these surveys consisted of two areas marked “A” and “B,” which measures 7 m by 4.5 m southeast of the substation building and 6 m by 5 m northwest of the substation building, respectively. The geophysical survey included a total magnetic gradiometer survey and a GPR survey. The magnetic anomaly results were inconclusive, in both areas “A” and “B,” due to the interference observed by the magnetic characteristics of the existing track and substation. The GPR survey revealed two anomalies in area “A”; a circular anomaly present in the northwest quadrant of the survey area and a linear east-west feature which appears to intercept the circular anomaly. The GPR survey revealed two circular anomalies in the southwestern quadrant of area “B.” Three north-south linear features are observed, with two coinciding with the outer edges of the circular anomalies and the third approximately 1.5 m east of the eastern edge of the circular anomaly. The survey results concluded that the geophysical anomalies depicted in the surveys do not necessarily correspond to a buried septic system. The report and maps associated with the geophysical survey are located in Appendix C.

As discussed in Section 6.15.3, the dry well presumed to be located off the southeast corner of the building was confirmed upon excavation. In order to further investigate the possibility of a septic system being present off the northwest corner of the substation, D&B advanced a soil boring (BASB-02) in this vicinity. The results are summarized in Section 6.15.5.

6.15.5 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.15.5.1 - Subsurface Soil

As indicated in Table D-15A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.15-3).

West of West-Side Concrete Platform (Sample BASB-01). Mercury was detected at 4-6 feet bgs at a concentration of 0.50 mg/kg.

East of Southeast Concrete Steps (Sample BASB-04). Mercury was detected at 0-2 feet bgs at a concentration of 26.4 mg/kg and at 2-4 feet bgs at a concentration of 1.3 mg/kg.

Southeast Dry Well (Sample BASB-07). Mercury was detected at 7-9 feet bgs at a concentration of 4.4 mg/kg and at 11-13 feet bgs at a concentration of 9.3 mg/kg.

6.15.5.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-15B. The surface sample locations are shown on Figure 6.15-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg in all samples collected as summarized below:

South of West-Side Concrete Steps (Sample BASS-01). Mercury was detected at 0-6 inches bgs at a concentration of 40.3 mg/kg.

North of West-Side Concrete Platform (Sample BASS-02). Mercury was detected at 0-6 inches bgs at a concentration of 274 mg/kg.

Northwest of Substation (Sample BASS-03). Mercury was detected at 0-6 inches bgs at a concentration of 28.7 mg/kg.

West of Southeast Concrete Platform (Sample BASS-04). Mercury was detected at 0-6 inches bgs at a concentration of 20.3 mg/kg.

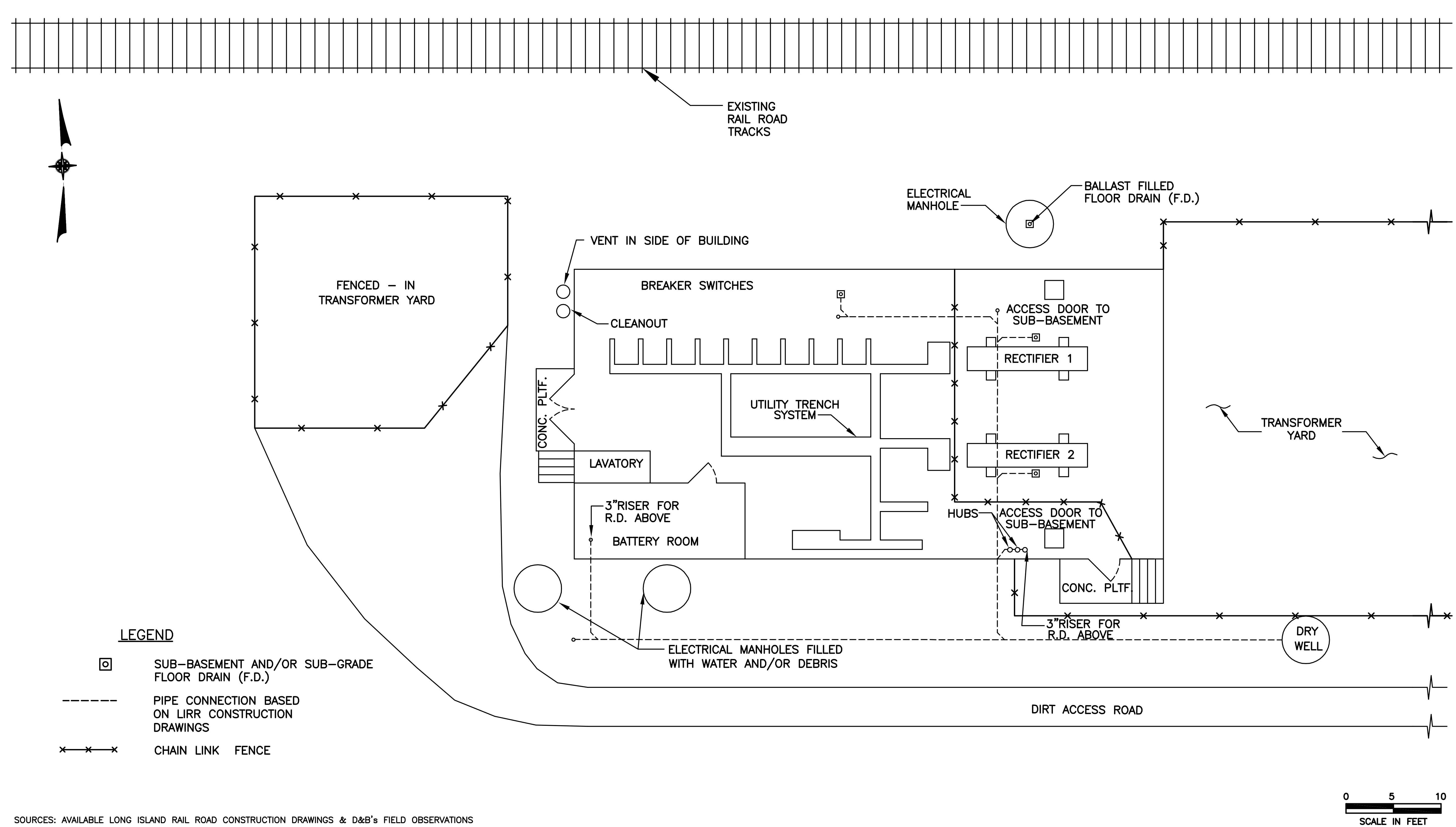
South of Southeast Concrete Platform (Sample BASS-05). Mercury was detected at in 0-6 inches bgs at a concentration of 51.2 mg/kg.

6.15.5.3 - Concrete

Analytical results for concrete core samples are presented in Table D-15C and summarized below. The concrete core sample locations are shown on Figure 6.15-3. Mercury was detected in the following samples:

South Sub-Basement-Rectifier 2 (Sample BACC-01). Mercury was detected at a concentration of 4.7 mg/kg.

North Sub-Basement-Rectifier 1 (Sample BACC-02). Mercury was detected at a concentration of 1.4 mg/kg.



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

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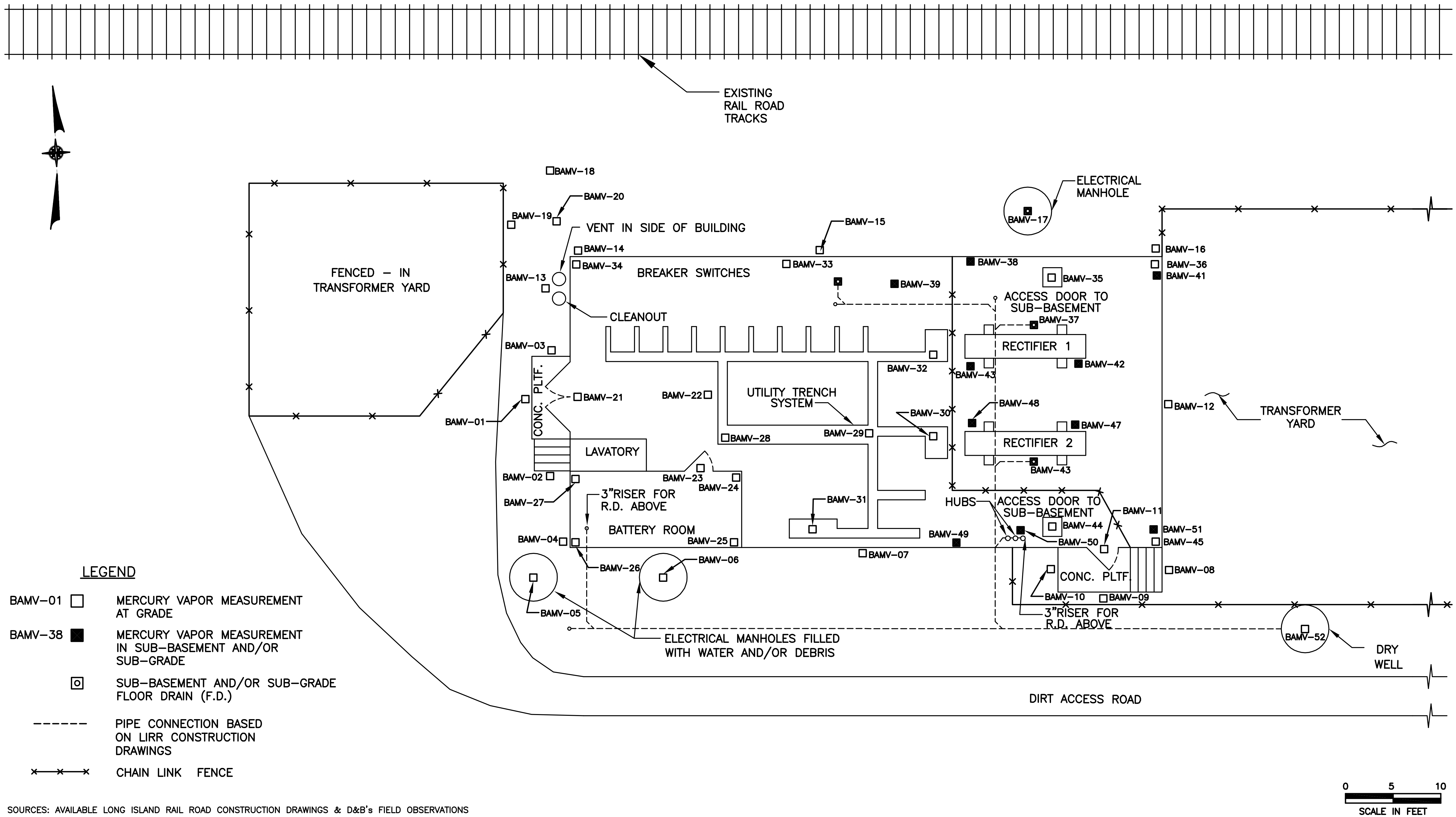
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

BELLAIRE SUBSTATION – G11

FIGURE 6.15–1



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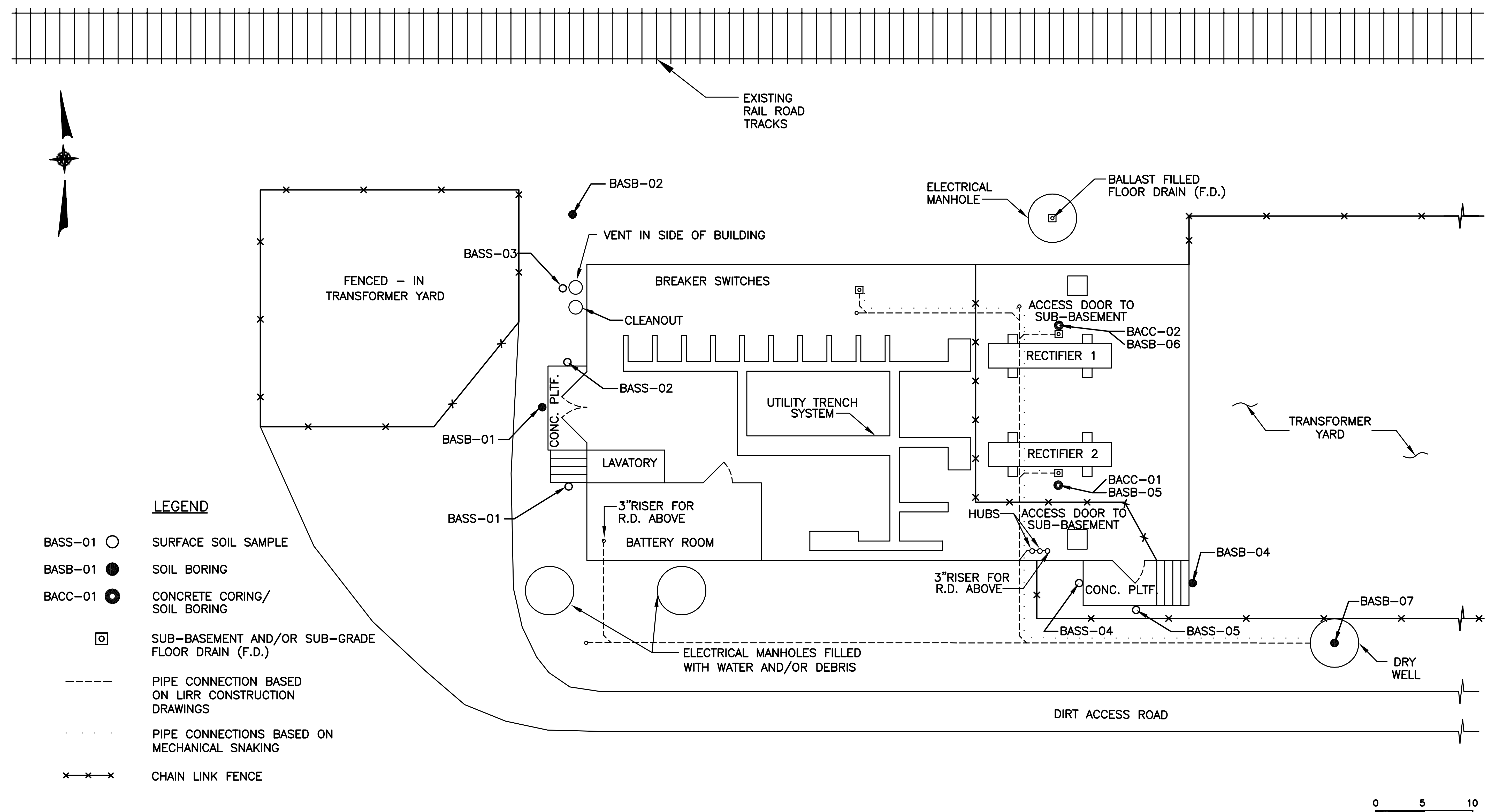
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

BELLAIRE SUBSTATION – G11

FIGURE 6.15–2



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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

BELLAIRE SUBSTATION - G11

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FIGURE 6.15-3

6.16 Cedar Manor-A08

6.16.1 Site Inspection

The Cedar Manor substation site is located in Cedar Manor, Queens County, New York. The substation consists of an approximately 1,800 square foot one-story brick building shown on Figure 6.16-1. An approximately 1,600 square foot transformer yard is located adjacent to the substation to the north and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Far Rockaway branch. There is also a 90 square foot Consolidated Edison transformer area located to the west of the substation. The land surrounding the substation and the transformer yard consist of residential areas.

The Cedar Manor substation is equipped with a basement, sanitary and water services and a utility trench system. The interior of the substation consists of two active solid-state rectifiers located over two pits that lead to the basement that once serviced mercury-containing rectifiers. The substation is also equipped with a water pipe trench with an earthen bottom located in the southwest corner of the substation. It should be noted that the Cedar Manor substation contains a bank of active lead-acid batteries located in a room along the west side of the substation to provide back-up electricity.

The initial site inspection revealed two newly installed open grate dry wells located to the south of the substation, as well as a meter pit with an earthen bottom located along the southwest corner of the substation. In addition, a roof drainage line was observed to discharge to surface soil along the east side of the substation. It should also be noted that a clean-out and vent was observed off the northwest corner of the substation.

According to LIRR representatives and available LIRR construction drawings, the Cedar Manor substation was expanded in approximately 1947. The original substation consisted of a rectifier pit and a water trough pit. At the time of the expansion, these pits are thought to have been backfilled and the two new rectifiers were relocated over pits that lead to the basement.

D&B targeted concrete corings and soil borings in the likely position of the original rectifier and water trough pits based on a review of the drawings (see Section 6.16.4).

It should be noted that, according to LIRR representatives, the Cedar Manor substation was recently renovated. Renovation activities included the installation of new storm water dry wells, the addition of ballast to the substation grounds and interior painting of the substation building.

6.16.2 MVA Survey

A total of 62 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-16, none of the 62 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.16-2).

6.16.3 Drainage Determination

According to available LIRR construction drawings, the existing configuration of the Cedar Manor substation contains two floor drains in the basement that discharge to the storm sewer in Brinkehoff Avenue. D&B attempted to conduct flush and dye tests, however, the floor drains located in the basement were permanently concrete capped. As a result, the discharge point of these floor drains could not be verified in the field.

6.16.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.16.4.1 - Subsurface Soil

As indicated in Table D-16A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.16-3).

Southwest Storm Water Dry Well (Sample CMSB-02). Mercury was detected at 8-10 feet bgs at a concentration of 2.7 mg/kg.

Dry Well South of Substation Front Doors (Sample CMSB-04). Mercury was detected at 8-10 feet bgs at a concentration of 1.7 mg/kg and 12-14 feet bgs at a concentration of 7.6 mg/kg.

Southwest Exterior Meter Pit (Sample CMSB-05). Mercury was detected at 3.5-5.5 feet bgs at a concentration of 13.8 mg/kg.

West Rectifier 2-Sub-Basement (Sample CMSB-06). Mercury was detected at 0-2 feet bgs at a concentration of 1.6 mg/kg and at 4-6 feet bgs at a concentration of 2.3 mg/kg.

Southeast Interior Sanitary Pipe Trench (Sample CMSB-09). Mercury was detected at 0-2 feet bgs at a concentration of 1.9 mg/kg and at 4-6 feet bgs at a concentration of 0.20 mg/kg.

Central/South-Central Utility Trench in Original Substation (Sample CMSB-10). Mercury was detected at 0-2 feet bgs at a concentration of 3 mg/kg.

6.16.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-16B. The surface sample locations are shown on Figure 6.16-3. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

East of Front Entrance Door (Sample CMSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 2 mg/kg.

South of Front Entrance Doors (Sample CMSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 2.2 mg/kg.

Northeast Corner of Substation (Sample CMSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 0.41 mg/kg.

6.16.4.3 - Concrete

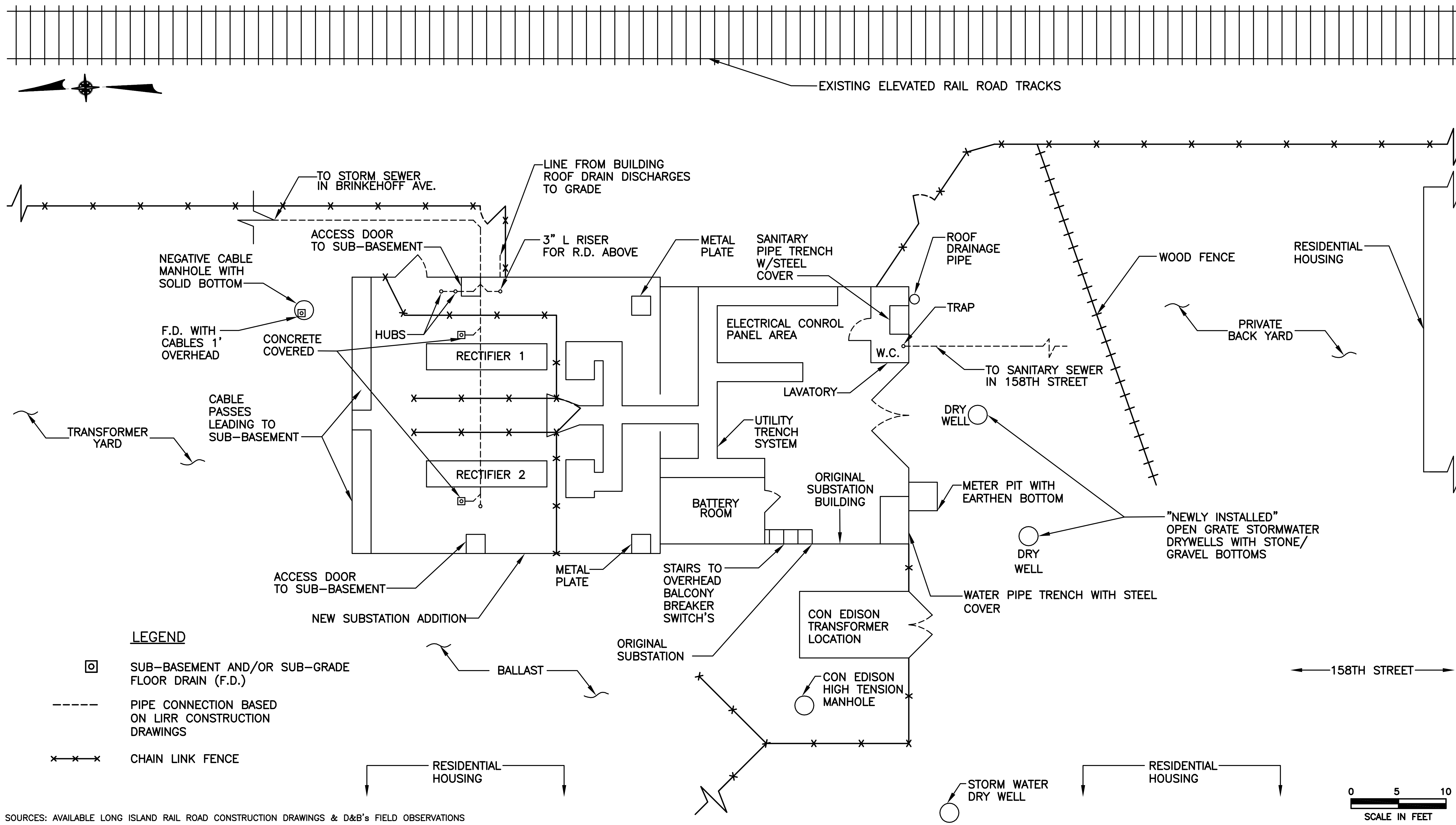
Analytical results for concrete core samples are presented in Table D-16C and summarized below. The concrete core sample locations are shown on Figure 6.16-3. Mercury was detected in the following samples:

East Sub-Basement (Sample CMCC-02). Mercury was detected at a concentration of 0.44 mg/kg.

Southeast Corner Sanitary Pipe Trench (Sample CMCC-03). Mercury was detected at a concentration of 1.2 mg/kg.

West/Southwest Utility Trench in Original Substation (Sample CMCC-04). Mercury was detected at a concentration of 4 mg/kg.

Central/South-Central Utility Trench in Original Substation (Sample CMCC-05). Mercury was detected at a concentration of 2.7 mg/kg.



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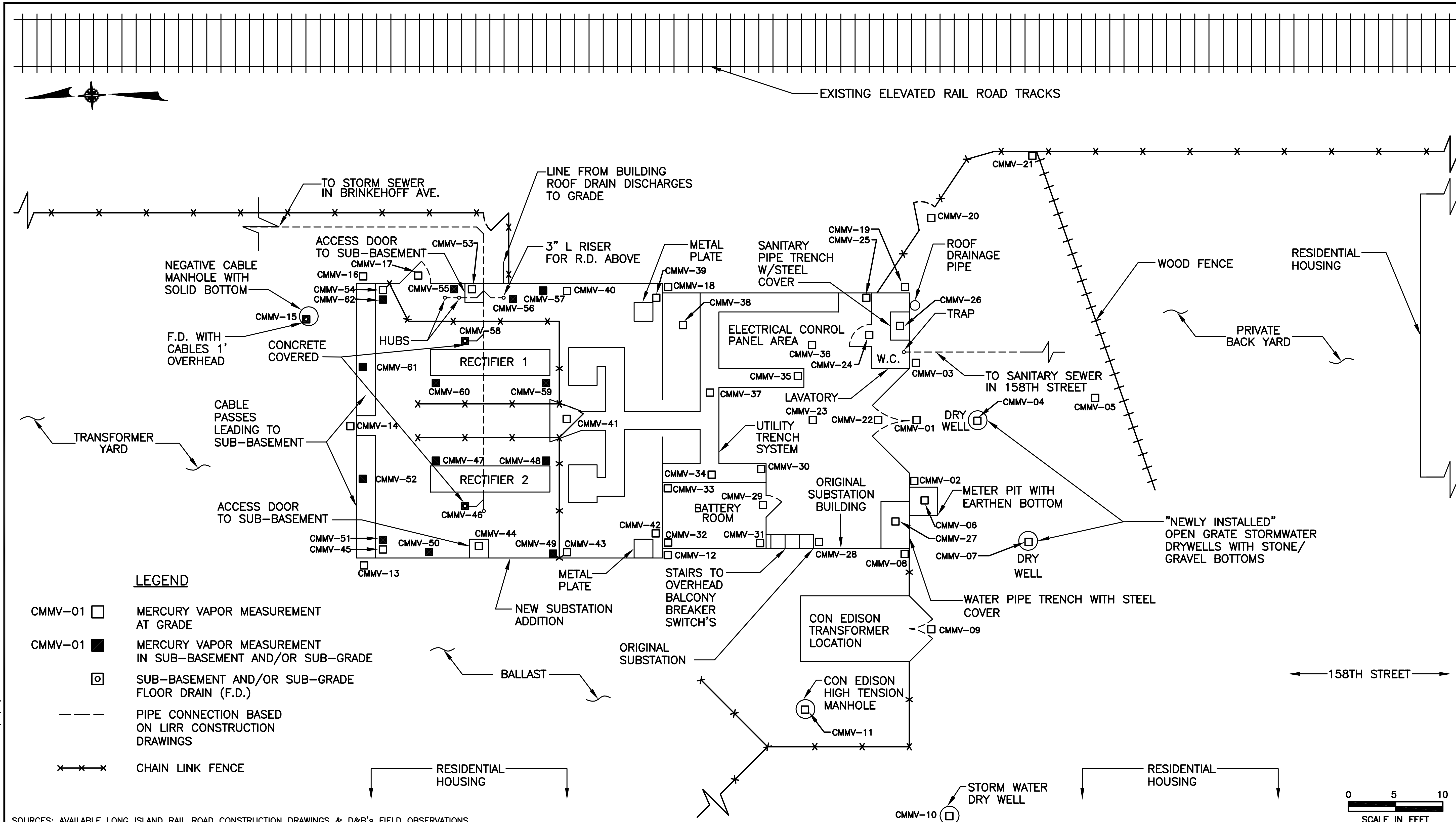
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

CEDAR MANOR SUBSTATION – A08

FIGURE 6.16–1



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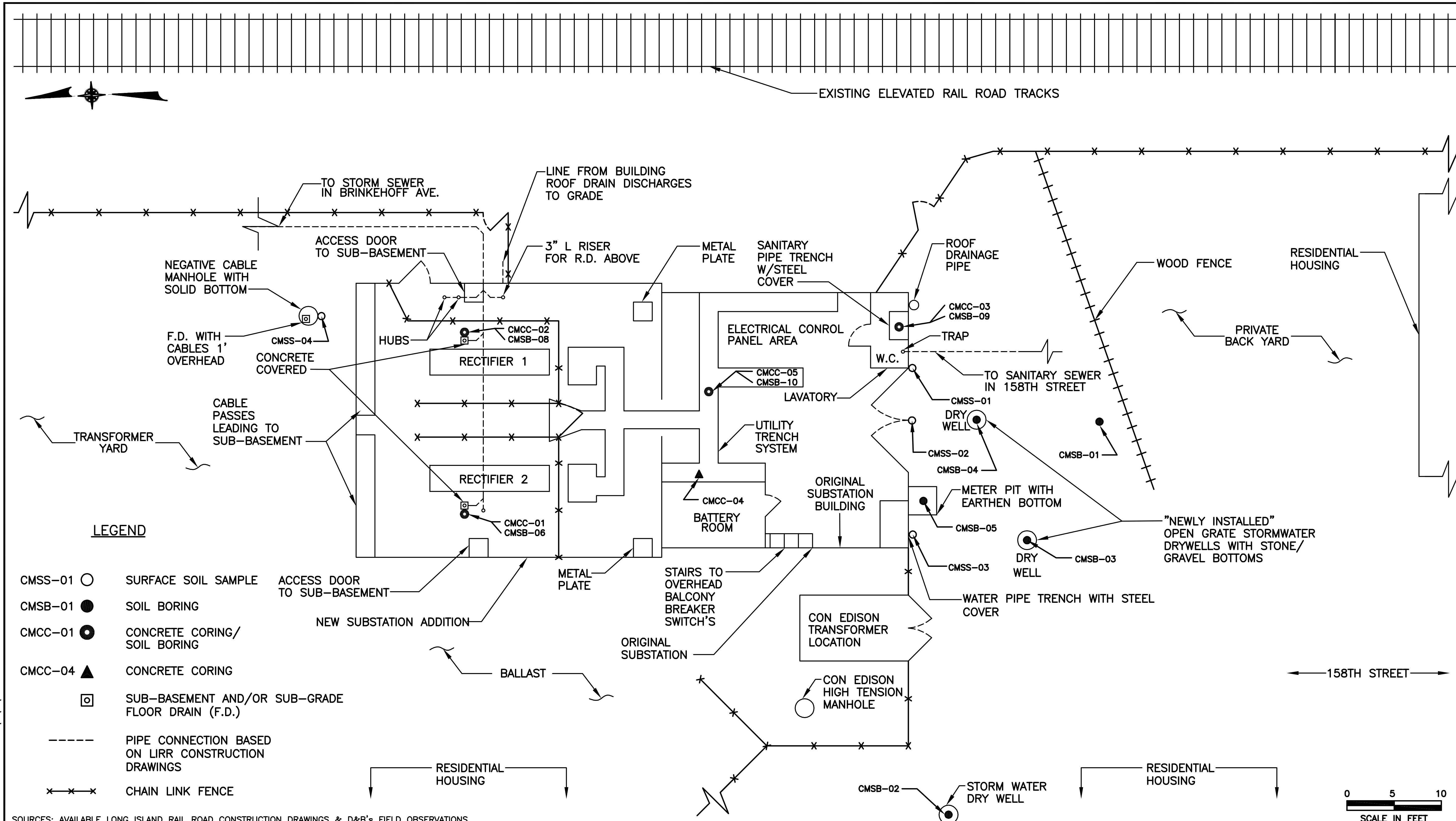
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

CEDAR MANOR SUBSTATION – A08

FIGURE 6.16-2



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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

CEDAR MANOR SUBSTATION – A08

FIGURE 6.16-3

6.17 Kew Gardens-G07

6.17.1 Site Inspection

The Kew Gardens substation site is located in Kew Gardens, Queens County, New York. The substation consists of an approximately 1,800 square foot one-story brick building shown on Figure 6.17-1. An approximately 3,100 square foot transformer yard is located adjacent to the substation to the south and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current. The areas surrounding the substation and the transformer yards are located within the LIRR right-of-way.

The Kew Gardens substation contains a basement, sanitary and water services and a utility trench system. The substation interior consists of two active solid-state rectifiers located over two pits that once serviced mercury-containing rectifiers and that lead to the basement. It should also be noted that the Kew Gardens substation contains a bank of active lead-acid batteries located in a room in the northeast corner of the substation to provide back-up electricity.

The initial site inspection revealed a newly installed electrical manhole located within the transformer yard. It should be noted that, according to LIRR representatives, the Kew Garden substation was recently renovated. Renovation activities included the installation of new transformers, the addition of ballast to the substation grounds and interior painting of the substation building.

6.17.2 MVA Survey

A total of 42 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-17, 5 of the 42 measurements indicated the presence of mercury vapor at a maximum concentration of 0.110 mg/m^3 at location KGMV-39 and a minimum concentration of 0.010 mg/kg^3 at locations KGMV-25, KGMV-32 and KGMV-34. These locations are presented on the mercury vapor measurement location plan (see Figure 6.17-2).

6.17.3 Drainage Determination

Four drain pipes located within the Kew Gardens substation were traced utilizing conventional geophysical techniques. The first and second drain pipes are located in the northern most portion of the western rectifier pit which was not accessible due to the proximity of electric cables. The third drain pipe, located in the western rectifier pit, was traced east where it connected to the fourth drain in the eastern rectifier pit. Approximately 60 feet of steel rod was advanced into the fourth drain until the rod met refusal. The pipe was conductively traced out the eastern wall of the substation and to the north where the signal was too weak to be detected. The report and maps associated with the pipe tracing activities are provided in Appendix B.

Available LIRR construction drawings indicate that the substation floor drains discharge to a dry well located off the northeast corner of the building. Since the drain pipe was traced to this vicinity before the signal became too faint for detection, D&B excavated this area in an attempt to located the dry well. However, the excavation activities did not reveal the presence of the dry well. To further investigate if this area has been impacted, D&B advanced a soil boring (KGSB-01) in the vicinity of the presumed location of the dry well as determined from LIRR construction drawings. The soil sampling results conducted in this area are summarized in Section 6.17.5.

D&B also investigated the discharge point of the substation lavatory by conducting flush and dye tests. Available LIRR construction drawings indicate that the lavatory discharges to a cesspool located to the west of the substation. However this cesspool was not located in the field. It should be noted that D&B was not permitted to excavate the suspected cesspool area to the south of the substation due to the proximity of the train tracks.

6.17.4 Geophysical Survey

D&B conducted a geophysical survey to locate a dry well presumed to be located off the northeast corner of the substation. The survey grid for this area measures 6 m perpendicular to the existing retaining wall by 10 m along the existing retaining wall east of the substation. The geophysical survey included a total magnetic gradiometer survey and a GPR survey. An anomalous magnetic feature was identified as being adjacent to the retaining wall and appears to be centered approximately 5 m west of the survey grid origin. The GPR survey reveals two anomalies, one linear and one circular, running east-west across the survey grid and centered approximately 1.5 m from the retaining wall, 3-4 m west of the grid origin, respectively. The geophysical results enabled D&B to focus the excavation activities described above to target the presumed dry well location. The report and maps associated with the geophysical survey are located in Appendix C.

6.17.5 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.17.5.1 - Subsurface Soil

As indicated in Table D-17A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.17-3).

Southeast Corner of Concrete Platform (Sample KGSB-03). Mercury was detected at 0-2 feet bgs at a concentration of 14.6 mg/kg and at 4-6 feet at a concentration of 3.6 mg/kg.

North of Northeast Corner of Concrete Platform (Sample KGSB-04). Mercury was detected at 0-2 feet bgs at a concentration of 67.4 mg/kg and at 4-6 feet bgs at a concentration of 5.8 mg/kg.

6.17.5.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-17B. The surface sample locations are shown on Figure 6.17-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg for all samples collected as summarized below:

West of North Concrete Platform (Sample KGSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 137 mg/kg.

East of North Concrete Steps (Sample KGSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 223 mg/kg.

Northwest Corner of Substation (Sample KGSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 5.2 mg/kg.

Southwest Corner of Substation (Sample KGSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 0.35 mg/kg.

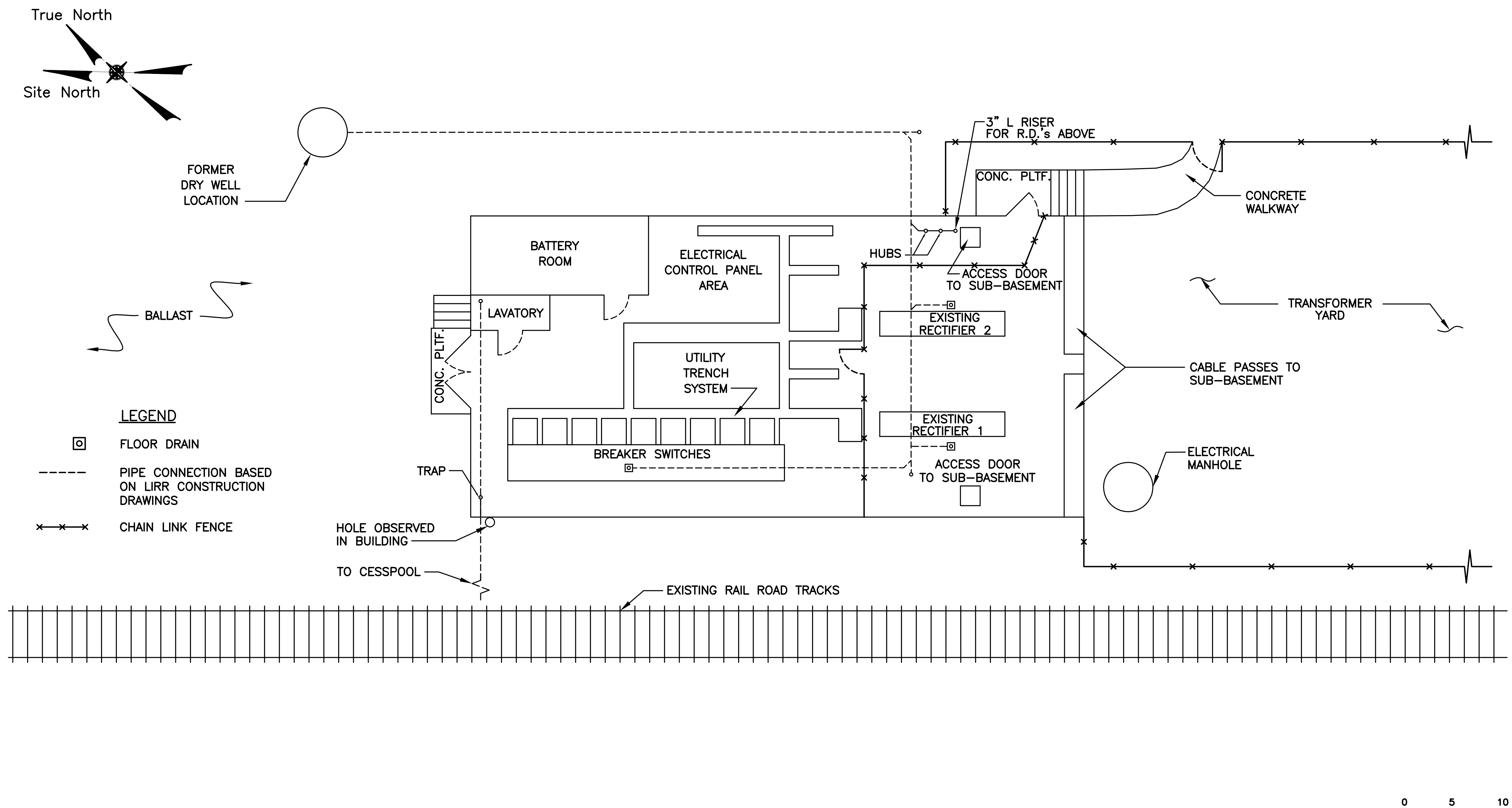
Southeast Corner of Substation (Sample KGSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 4 mg/kg.

6.17.5.3 - Concrete

Analytical results for concrete core samples are presented in Table D-17C and summarized below. The concrete core sample locations are shown on Figure 6.17-3. Mercury was detected in the following samples:

West Rectifier 2 Sub-Basement (Sample KGCC-02). Mercury was detected at a concentration of 70.3 mg/kg.

West Rectifier 1 Sub-Basement (Sample KGCC-02). Mercury was detected at a concentration of 430 mg/kg.



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

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

KEW GARDENS SUBSTATION – G07

FIGURE 6.17–1

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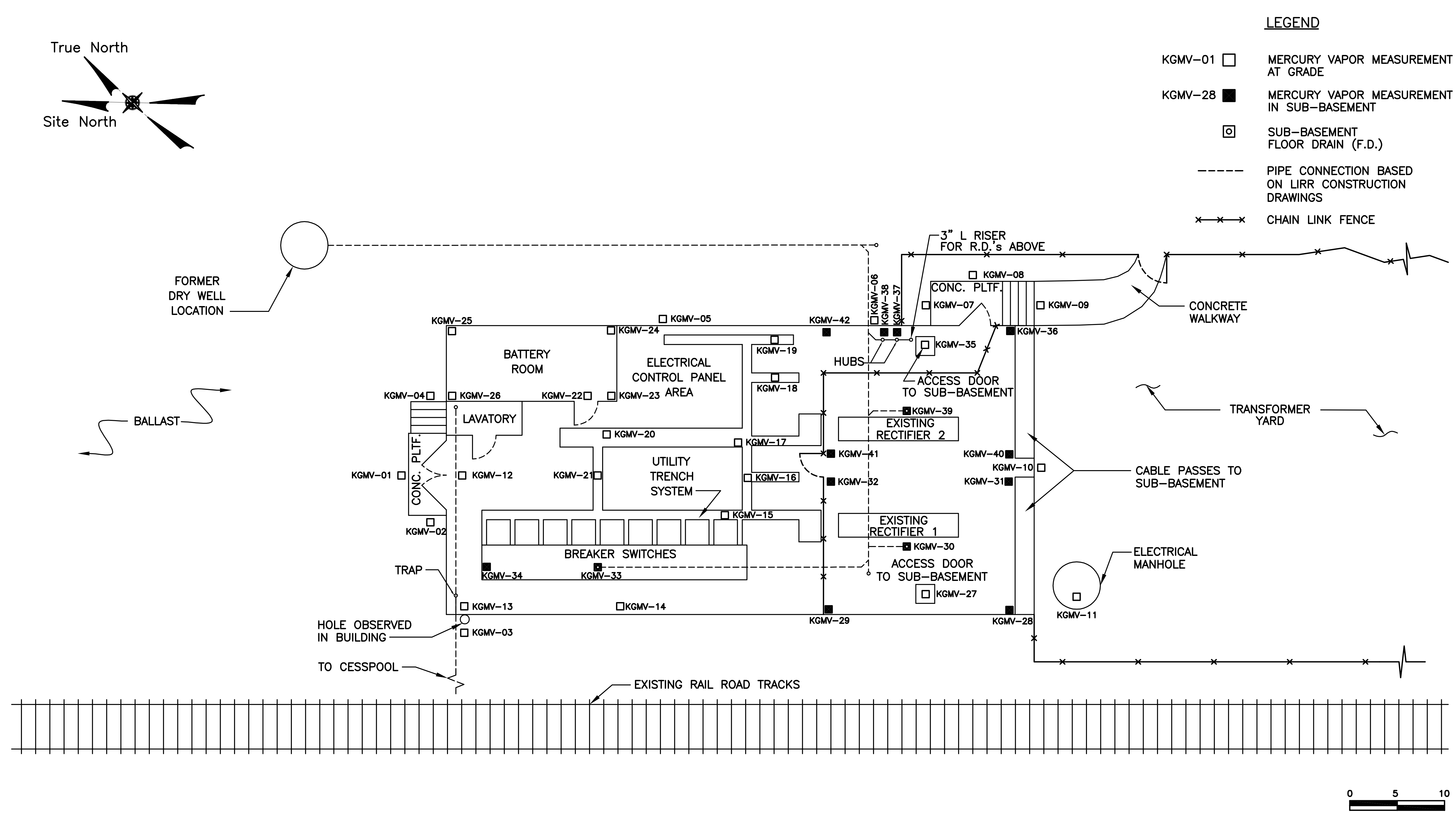

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

KEW GARDENS SUBSTATION – G07

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FIGURE 6.17-2

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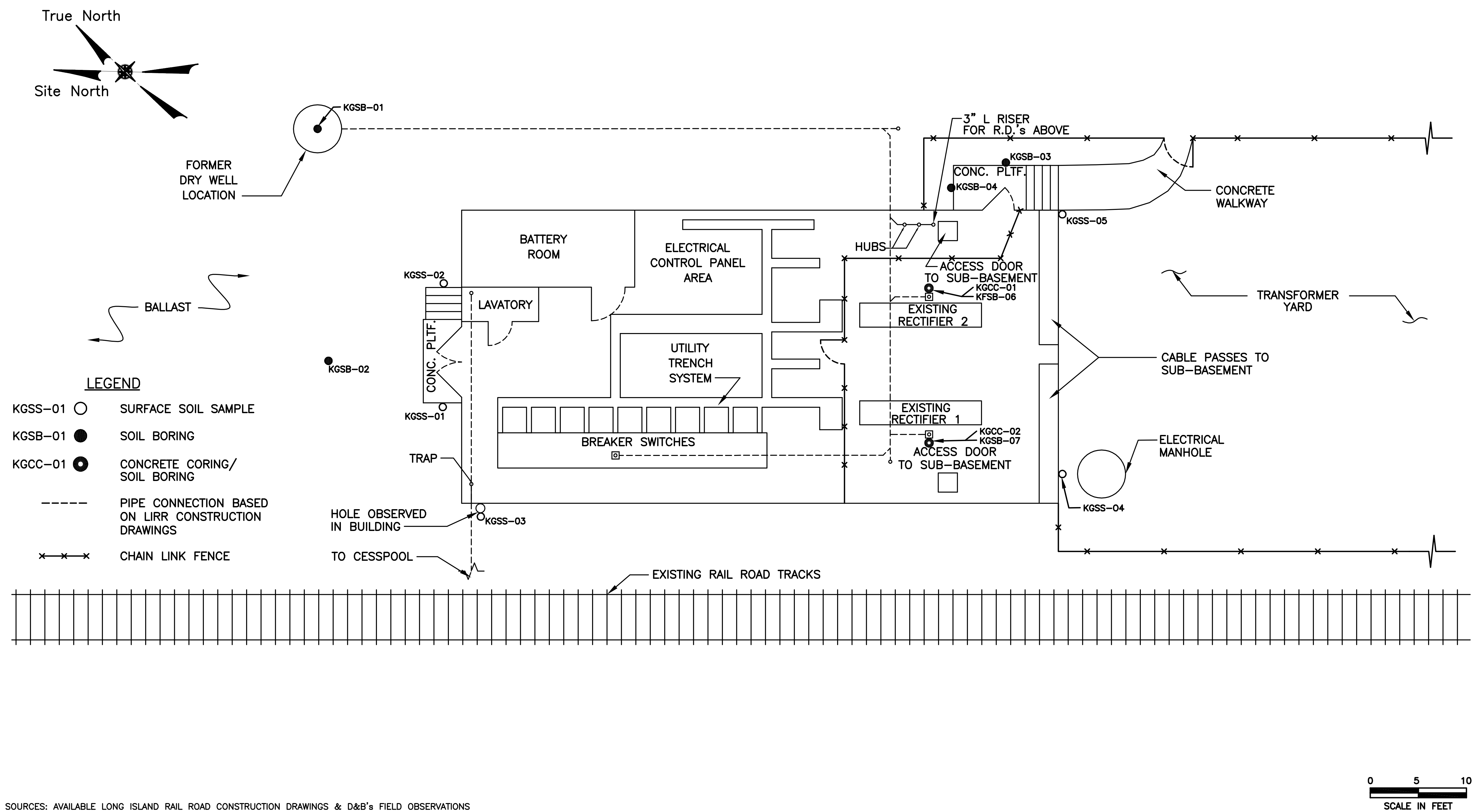

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

KEW GARDENS SUBSTATION – G07

FIGURE 6.17–3

MON, DEC 11, 2000 11:32 A LVG F:\1648\1648-15B.DWG

6.18 St. Albans-S01

6.18.1 Site Inspection

The St. Albans substation site is located in St. Albans, Queens County, New York. The substation consists of an approximately 1,800 square foot one-story brick building shown on Figure 6.18-1. An approximately 2,500 square foot transformer yard is located adjacent to the substation to the north and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-West Hempstead branch. The areas surrounding the substation and the transformer yard are located within the LIRR right-of-way.

The St. Albans substation is equipped with a basement, sanitary and water services and a utility trench system. The substation interior consists of two active solid-state rectifiers located over two pits that lead to the basement that once serviced mercury-containing rectifiers. It should also be noted that the St. Albans substation contains a bank of active lead-acid batteries located in a room in the southeast corner of the substation to provide back-up electricity.

The initial site inspection revealed a negative and a positive feed manhole located adjacent to the western substation wall that each contained a floor drain. The inspection also revealed two newly installed (according to LIRR representatives) communications manholes with solid bottoms located off the southeast corner of the substation. In addition, there was a water main access manhole with an earthen bottom (filled with water) located off the southeast corner of the substation.

It should be noted that, according to LIRR representatives, the St. Albans substation was recently renovated. Renovation activities included the installation of new transformers, the addition of ballast to the substation grounds and painting of the interior substation building.

6.18.2 MVA Survey

A total of 36 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-18, none of the 36 measurements indicated the presence of mercury vapor. These locations are presented on the mercury vapor measurement location plan (see Figure 6.18-2).

6.18.3 Drainage Determination

Unlike the other locations, LIRR construction drawings were not available for the St. Albans substation that indicate the configuration of the drainage system for the structure. As such, D&B undertook a program to trace three drain pipes located in the basement beneath the rectifiers in the substation building. The first drain, located beneath the western rectifier exited the southern side of the substation building and appeared to terminate beneath the unpaved area immediately south of the substation, approximately 17 feet from the building. The second drain, located beneath the eastern rectifier approximately 18 feet east of the first drain, is connected to the first drain. The third drain (drain hubs), located along the eastern basement wall, is connected to the second drain. The report and maps associated with the pipe tracing activities are provided in Appendix B.

D&B also conducted flush and dye tests to determine the discharge point of the drain pipes and lavatory. The sewer system located along Dunkirk Street as well as potential discharge points located on the substation property (i.e., dry wells, trenches, etc.) were observed while water and dye was flushed trough these drainage features. The flush and dye tests did not establish the discharge points of these features.

6.18.4 Geophysical Survey

D&B conducted a geophysical survey to investigate the area in which the drainage pipe was traced and met refusal approximately 17 feet south of the substation. The survey grid for this area measures 7.5 m by 9 m south of the substation. The geophysical survey included a total magnetic gradiometer survey and a GPR survey. Two possible magnetic anomalous features were detected. The stronger of the two anomalies is slightly east of the center of the survey area. The second magnetic anomaly is located closer to the west-central edge of the survey area. A strong GPR anomaly is associated with the above magnetic anomaly in the center of the survey area. Two linear anomalies were observed within the grid area and were orientated east-west. The report and maps associated with the geophysical survey are provided in Appendix C.

D&B excavated the areas associated with the geophysical anomalies described above to determine if these anomalies are related to potential discharge features. An excavation was conducted to a depth of approximately 6 feet below grade. The excavation activities did not reveal any drainage piping or discharge features.

6.18.5 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.18.5.1 - Subsurface Soil

As indicated in Table D-18A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.18-2).

Utility Trench (Sample SASB-02). Mercury was detected at 0-2 feet bgs at a concentration of 0.20 mg/kg.

Floor Drain Inside Positive Feed Manhole for Third Rail (Sample SASB-03). Mercury was detected at 6-8 feet bgs at a concentration of 0.33 mg/kg and at 10-12 feet at a concentration of 0.82 mg/kg.

Western Rectifier (Sample SASB-04). Mercury was detected at 0-2 feet bgs at a concentration of 0.95 mg/kg.

Eastern Rectifier (Sample SASB-05). Mercury was detected at 4-6 feet bgs at a concentration of 0.36 mg/kg.

6.18.5.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-18B. The surface sample locations are shown on Figure 6.18-2. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

West of South Concrete Stairs (Sample SASS-01). Mercury was detected at 0-6 inches bgs at a concentration of 0.54 mg/kg.

South of South Concrete Platform (Sample SASS-03). Mercury was detected at 0-6 inches bgs at a concentration of 12.4 mg/kg.

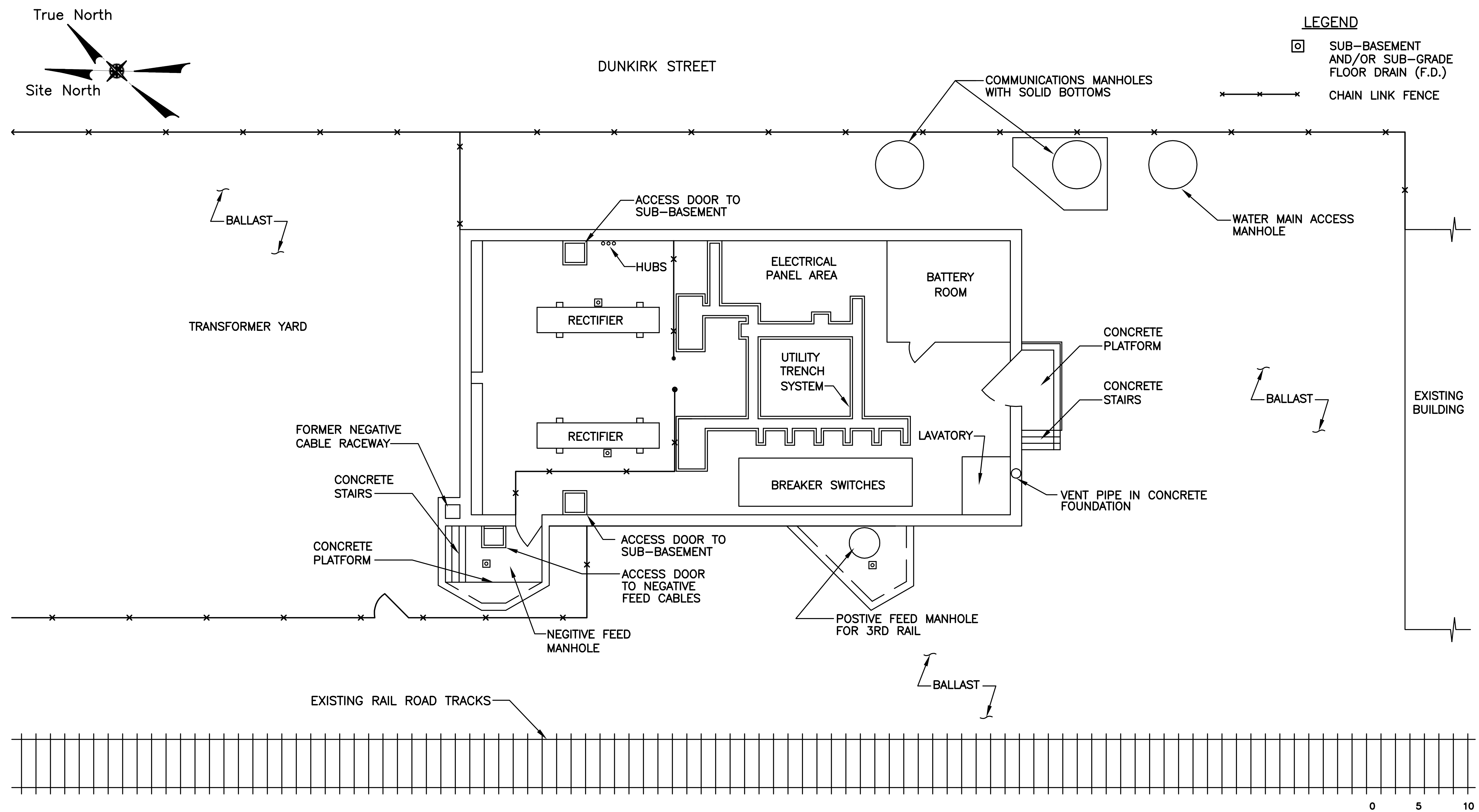
West Concrete Platform (Sample SASS-05). Mercury was detected at 0-6 inches bgs at a concentration of 1.9 mg/kg.

6.18.5.3 - Concrete

Analytical results for concrete core samples are presented in Table D-18C and summarized below. The concrete core sample locations are shown on Figure 6.18-2. Mercury was detected in the following samples:

West Rectifier (Sample SACC-02). Mercury was detected at a concentration of 79.3 mg/kg.

East Rectifier (Sample SACC-03). Mercury was detected at a concentration of 353 mg/kg.



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

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

ST. ALBANS SUBSTATION – S01

FIGURE 6.18–1

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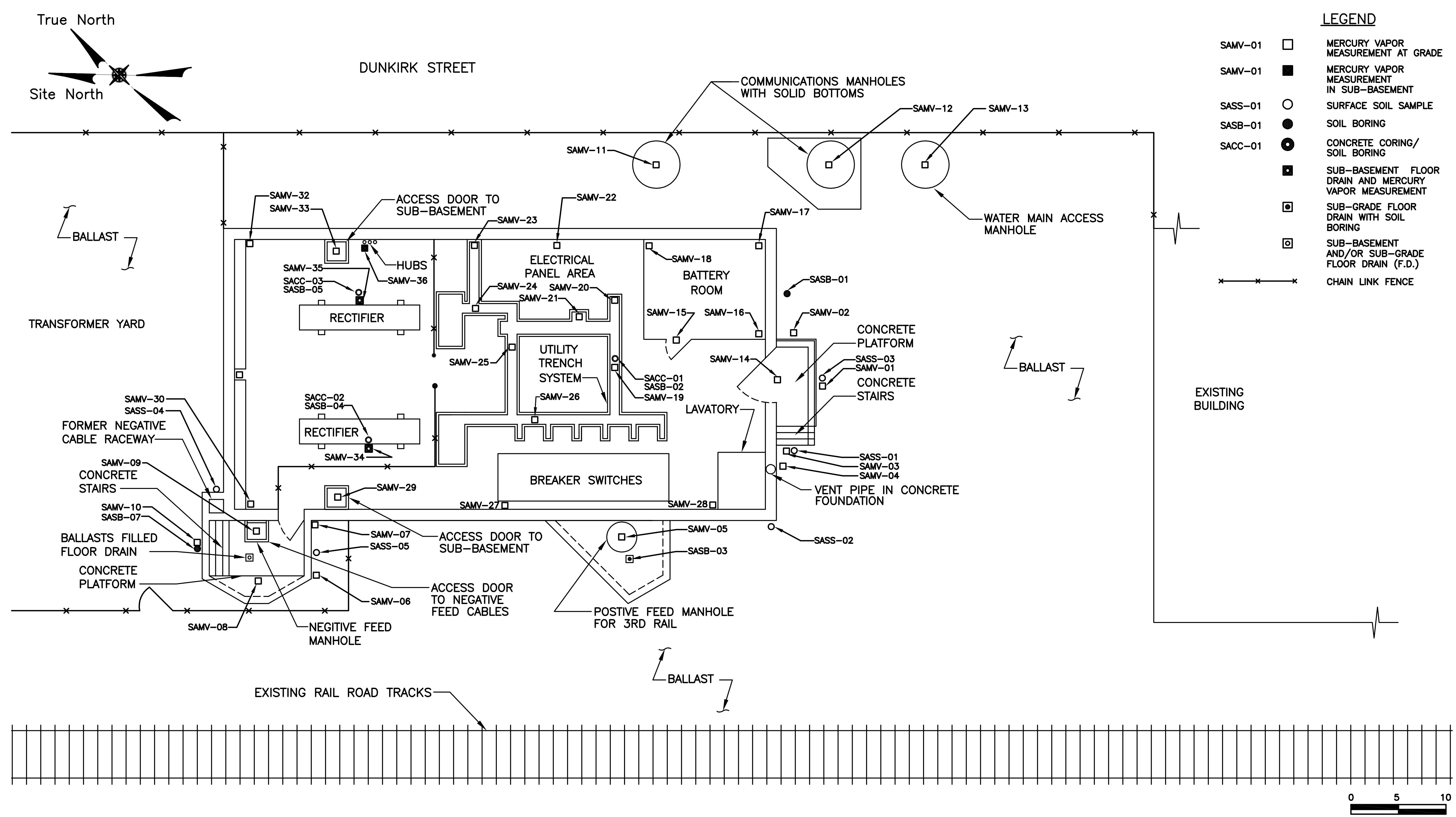

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING AND MERCURY VAPOR MEASUREMENT LOCATION PLAN

ST. ALBANS SUBSTATION – S01

FIGURE 6.18–2

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6.19 Lindenhurst-S19

6.19.1 Site Inspection

The Lindenhurst substation site is located in Babylon, Suffolk County, New York. The substation consists of an approximately 1,400 square foot one-story brick building shown on Figure 6.19-1. An approximately 1,800 square foot transformer yard is located adjacent to the substation to the north and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Babylon branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking and residential areas. It is important to note that the “front” of the Lindenhurst substation is adjacent to East Hoffman Avenue which fronts a pedestrian sidewalk.

The Lindenhurst substation is equipped with a basement, sanitary and water services and a utility trench system. The substation interior consists of two active solid-state rectifiers located over two pits that lead to the basement that once serviced mercury-containing rectifiers. It should also be noted that the Lindenhurst substation contains a bank of lead-acid batteries located in the southwest corner of the substation to provide back-up electricity.

The initial site inspection revealed two negative and one positive feed manholes located off the southeast corner of the substation that were filled with water. The investigation also revealed a positive cable manhole located off the southwest corner of the substation. In addition, there was a dry well covered by a metal plate located off the northeast corner of the substation.

6.19.2 MVA Survey

A total of 66 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-19, 6 of the 66 measurements indicated the presence of mercury vapor at a maximum concentration of 0.020 mg/m^3 at location LHMV-17 and at a minimum concentration of 0.010 mg/m^3 at locations LHMV-22, LHMV-51, LHMV-53, LHMV-

54 and LHMV-55. These locations are presented on the mercury vapor measurement location plan (see Figure 6.19-2).

6.19.3 Drainage Determination

Four drain pipes within the Lindenhurst substation were traced utilizing conventional geophysical techniques. Three drain pipes were located in the basement within the substation building and the fourth drain originated from the roof of the building. The first three drains described are connected to a common pipe running east-west into a sump pit located beneath the east rectifier pit. The sump inlet is approximately 0.9 feet below the basement floor. The bottom and sides of the sump pit are lined with sheet metal, and no outlet pipe was observed. The fourth drain exits beneath the east rectifier pit wall discharging to a dry well beneath the eastern substation yard. The report and maps associated with the pipe tracing activities are provided in Appendix B.

It should be noted that available LIRR construction drawings indicate that the sump pit located in the basement is connected to a dry well in the eastern substation yard. Given the fact that there was no exit pipe observed during the pipe tracing activities, it is likely that the sump pit was disconnected at some point in time.

According to available LIRR construction drawings, the lavatory is presumably connected to a septic tank and drain tile field located to the east of the substation. It should be noted that there were no visible signs of this septic system during the site inspection. Since the lavatory is still active and functioning, D&B did not conduct any excavation activities in this area to avoid the potential of damaging an active sanitary system. In order to investigate possible impacts resulting from the septic system depicted on the LIRR construction drawings, D&B advanced two soil borings (LHSB-05 and LHSB-06) in this vicinity. The results are summarized in Section 6.19.5

6.19.4 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.19.4.1 - Subsurface Soil

As indicated in Table D-19A, none of the subsurface soil samples collected at the substation exhibited a concentration of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of the collected samples are presented on the sampling location plan (see Figure 6.19-3).

6.19.4.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-19B. The surface sample locations are shown on Figure 6.19-3. Mercury was detected at concentrations above the NYSDEC TAGM criterion of 0.2 mg/kg at all collected samples as summarized above:

West of South Concrete Steps (Sample LHSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 0.37 mg/kg.

East of South Concrete Platform (Sample LHSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 6 mg/kg.

East of East/Northeast Discharge Pipe (Sample LHSS-03). Mercury was detected at 0-6 inches bgs at a concentration of 5 mg/kg.

South of Northeast Concrete Platform (Sample LHSS-04). Mercury was detected at 0-6 inches bgs at a concentration of 2.6 mg/kg.

East of Northeast Concrete Steps (Sample LHSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 121 mg/kg.

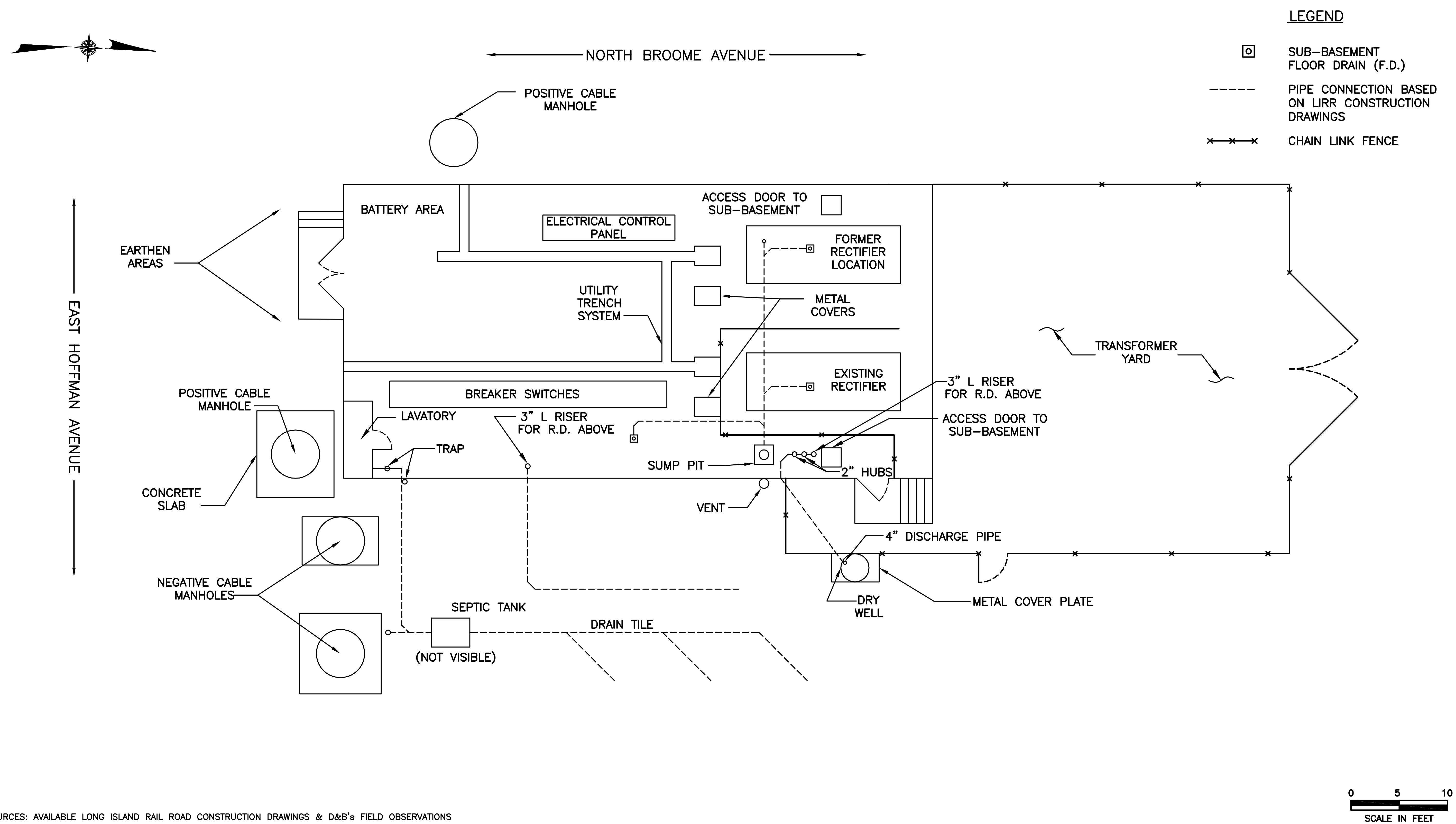
North of Northeast Concrete Steps (Sample LHSS-06). Mercury was detected at 0-6 inches bgs at a concentration of 2.1 mg/kg.

6.19.4.3 - Concrete

Analytical results for concrete core samples are presented in Table D-19C and summarized below. The concrete core sample locations are shown on Figure 6.19-3. Mercury was detected in the following samples:

West Sub-Basement Under Former Rectifier (Sample LHCC-01). Mercury was detected at a concentration of 2.8 mg/kg.

East Sub-Basement Under Existing Solid State Rectifier (Sample LHCC-02). Mercury was detected at a concentration of 0.62 mg/kg.



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

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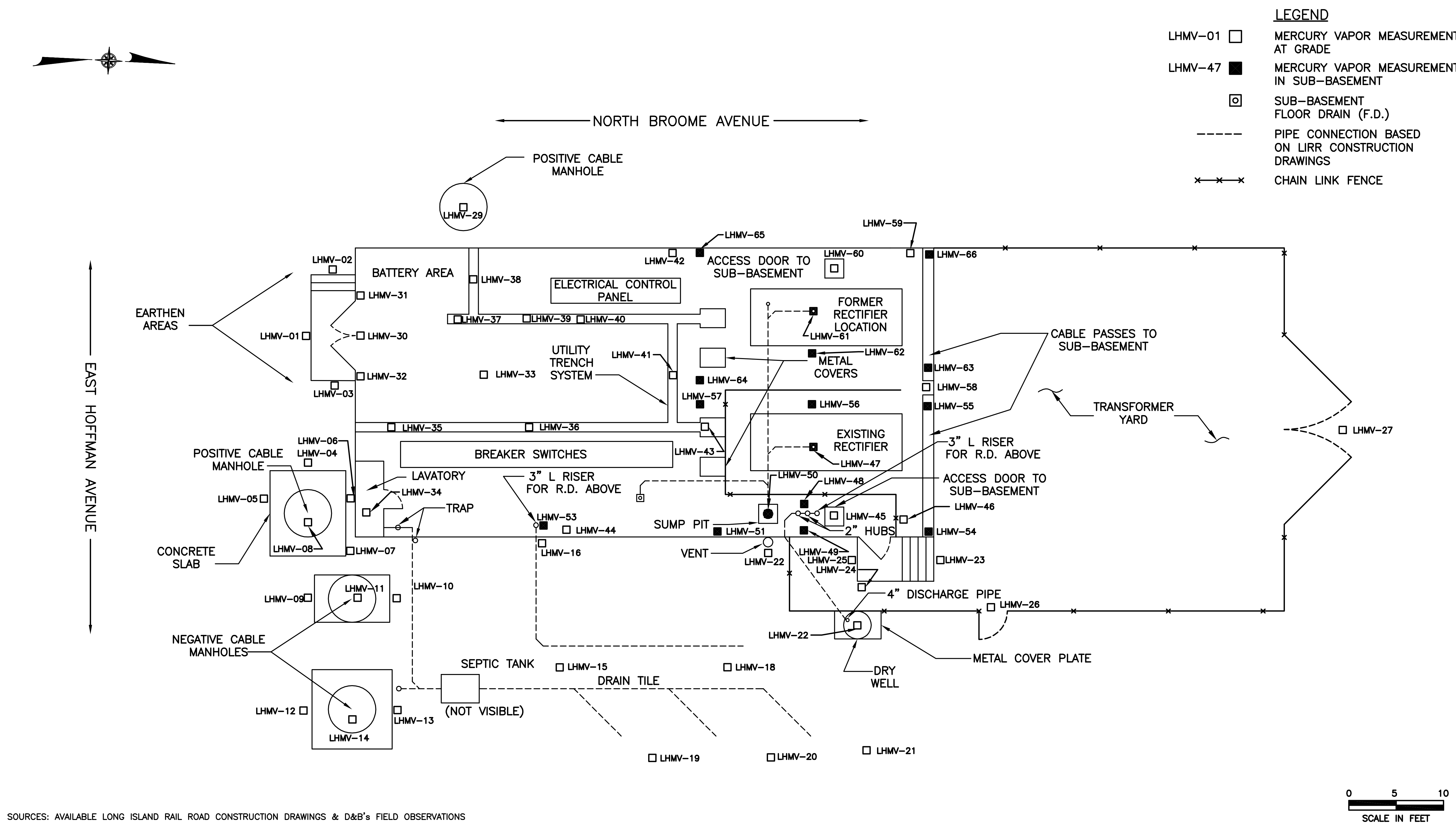
LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

LINDENHURST SUBSTATION – S19

FIGURE 6.19–1



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

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

LINDENHURST SUBSTATION – S19

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FIGURE 6.19–2

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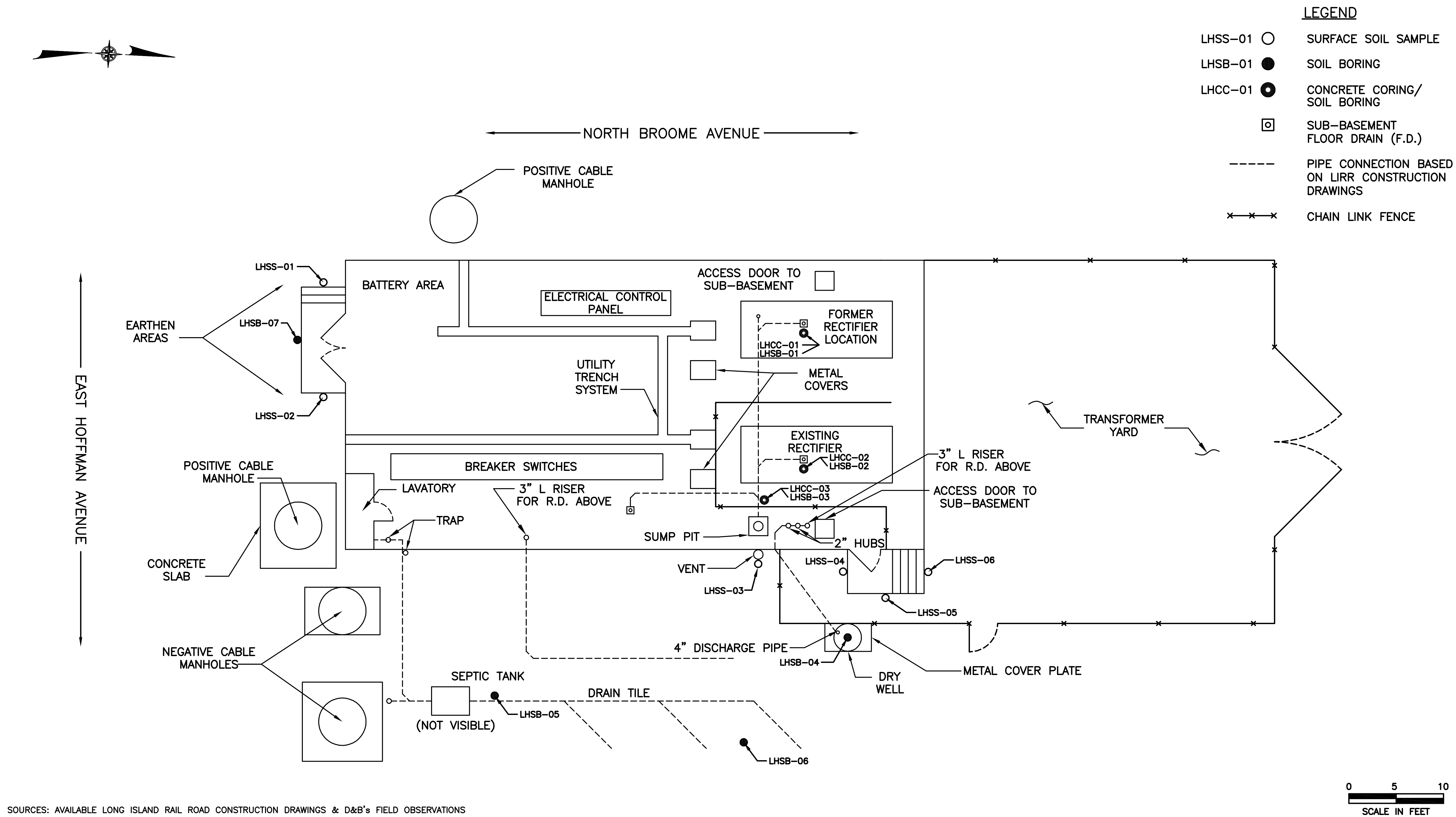

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

LINDENHURST SUBSTATION – S19

FIGURE 6.19-3

6.20 Babylon Yard-S22

6.20.1 Site Inspection

The Babylon Yard substation site is located in Babylon, Suffolk County, New York. The substation consists of an approximately 2,200 square foot one-story brick building shown on Figure 6.20-1. An approximately 2,200 square foot transformer yard is located adjacent to the substation to the west and is enclosed by a chain-linked fence. There is also a motor generator garage building located immediately adjacent to the north side of the substation. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Babylon branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking.

The Babylon substation is equipped with a basement, sanitary services (inactive) and water services. The substation interior consists of three active solid-state rectifiers. Rectifiers one and two are located over two pits that lead to the basement that once serviced mercury-containing rectifiers. The third rectifier rests on the substation concrete floor and is not associated with a pit. During the initial site inspection, D&B observed that the basement was flooded with approximately 2-3 inches of water.

The initial site inspection revealed a signal house and a positive cable pit located along the south side of the substation. A communication cable pit, a metal box with cable supplies and a wooden storage box were located along the east side of the substation. The site inspection also revealed a high voltage manhole and control cables manhole located off the north side of the substation. In addition, a high tension cable pit was observed immediately west of the transformer yard.

The site inspection also revealed a drainage swale located approximately 61 feet from the northern substation fence.

6.20.2 MVA Survey

A total of 76 mercury vapor measurements were taken in and around the substation building. As indicated in Table A-20, 2 of the 76 measurements indicated the presence of mercury vapor at a maximum concentration of 0.110 mg/m^3 at location BYMV-39 and a minimum concentration of 0.064 mg/m^3. These locations are presented on the mercury vapor measurement location plan (see Figure 6.20-2).

6.20.3 Drainage Determination

Five drain pipes located within the Babylon Yard substation were traced utilizing conventional geophysical techniques. Four drain pipes were located in the basement within the substation building, and the fifth was located in the northeastern portion of the building originating from the lavatory. The first three drains described were found to be connected to a common pipe that discharged into a sump pit located beneath the north rectifier pit. The sump inlet is approximately 0.9 feet below the basement floor. The bottom and sides of the sump pit are lined with sheet metal, and the sump was observed to be partially full with water. The sump pit was connected, via a flexible hose, to the fourth drain. The fourth drain was found to exit through the north rectifier pit wall underground where a termination point was not determined due to the substation's addition (motor generator garage). The fifth drain was traced conductively from the lavatory to an apparent termination point approximately 12 feet northeast of the northeast corner of the substation building. The report and maps associated with the pipe tracing activities are provided in Appendix B.

It should be noted that available LIRR construction drawings indicated that the Babylon Yard lavatory discharged to a septic tank and drain tile field located to the north of the substation. No visible signs of this septic system, such as manholes, cleanouts, etc., were observed during the site inspection. However, LIRR representatives indicated that the septic system was abandoned when the LIRR service building was constructed to the northeast of the substation. At that time, the substation lavatory was connected to the service building. The findings of the pipe tracing activities indicate a drainage pipe from the substation lavatory heading in the direction of the service building before the conductive signal ended abruptly, suggesting that the steel rod was coiling. In order to investigate possible impacts resulting from this service building septic pipe, D&B advanced a soil boring (BYSB-05) in the vicinity where the conductive signal terminated. The results are summarized in Section 6.20.5.

6.20.4 Geophysical Survey

D&B conducted a geophysical survey to investigate a dry well and septic system presumed to be located to the north of the substation. The grid for this survey was located in an area which measures 5 m north-south by 15 m east-west with the long axis oriented parallel to the north side of the substation building. The geophysical survey included a total magnetic gradiometer survey and a GPR survey. Several anomalous magnetic features are present along the southern half of the survey grid, which correspond with the GPR anomalies. The GPR survey reveals four anomalous areas within the grid survey, all relatively circular running east-west along the southern boundary of the survey area. Two of these anomalies roughly correspond to the dry well depicted on available LIRR construction drawings. Two other anomalies are located in the general area of the septic tank shown on the LIRR drawings. The survey report concluded, however, that these anomalies do not necessarily correspond to buried dry wells or septic systems. The report and maps associated with the geophysical survey is located in Appendix C.

In order to investigate possible impacts resulting from the dry well, D&B advanced a soil boring (BYSB-06) in the vicinity the dry well as measured from available LIRR drawings. The results are summarized in Section 6.20.5. It should be noted that D&B was prohibited by the LIRR from advancing a soil boring in the vicinity of the septic system located to the north of the substation due to the close proximity of electrical cables in the area.

6.20.5 Sampling and Analysis

The following subsections describe the findings associated with subsurface soil, surface soil and concrete coring activities.

6.20.5.1 - Subsurface Soil

As indicated in Table D-20A, the following subsurface soil samples collected in and around the substation exhibited concentrations of mercury above the NYSDEC TAGM criterion of 0.2 mg/kg. The locations of these samples are presented on the sampling location plan (see Figure 6.20-3).

North Sub-Basement Under Rectifier 2 (Sample BYSB-01). Mercury was detected at 4-6 feet bgs at a concentration of 0.43 mg/kg.

East of East Side Front Entrance Concrete Platform (Sample BYSB-04). Mercury was detected at 4-6 feet bgs at a concentration of 13.6 mg/kg.

Off Northeast Corner of Substation (Sample BYSB-05). Mercury was detected at 4-6 feet bgs at a concentration of 0.50 mg/kg.

6.20.5.2 - Surface Soil

Analytical results for surface soil samples are presented in Table D-20B. The surface sample locations are shown on Figure 6.20-3. Mercury was detected at concentrations below the NYSDEC TAGM criterion of 0.2 mg/kg except for the following:

East-End of Drainage Swale (Sample BYSS-01). Mercury was detected at 0-6 inches bgs at a concentration of 0.57 mg/kg.

East-Central Drainage Swale (Sample BYSS-02). Mercury was detected at 0-6 inches bgs at a concentration of 2.4 mg/kg.

Southeast Corner of Substation (Sample BYSS-05). Mercury was detected at 0-6 inches bgs at a concentration of 2.1 mg/kg.

West of Southwest Rear Concrete Steps (Sample BYSS-06). Mercury was detected at 0-6 inches bgs at a concentration of 2.5 mg/kg.

South of Southwest Rear Concrete Platform (Sample BYSS-07). Mercury was detected at 0-6 inches bgs at a concentration of 3.6 mg/kg.

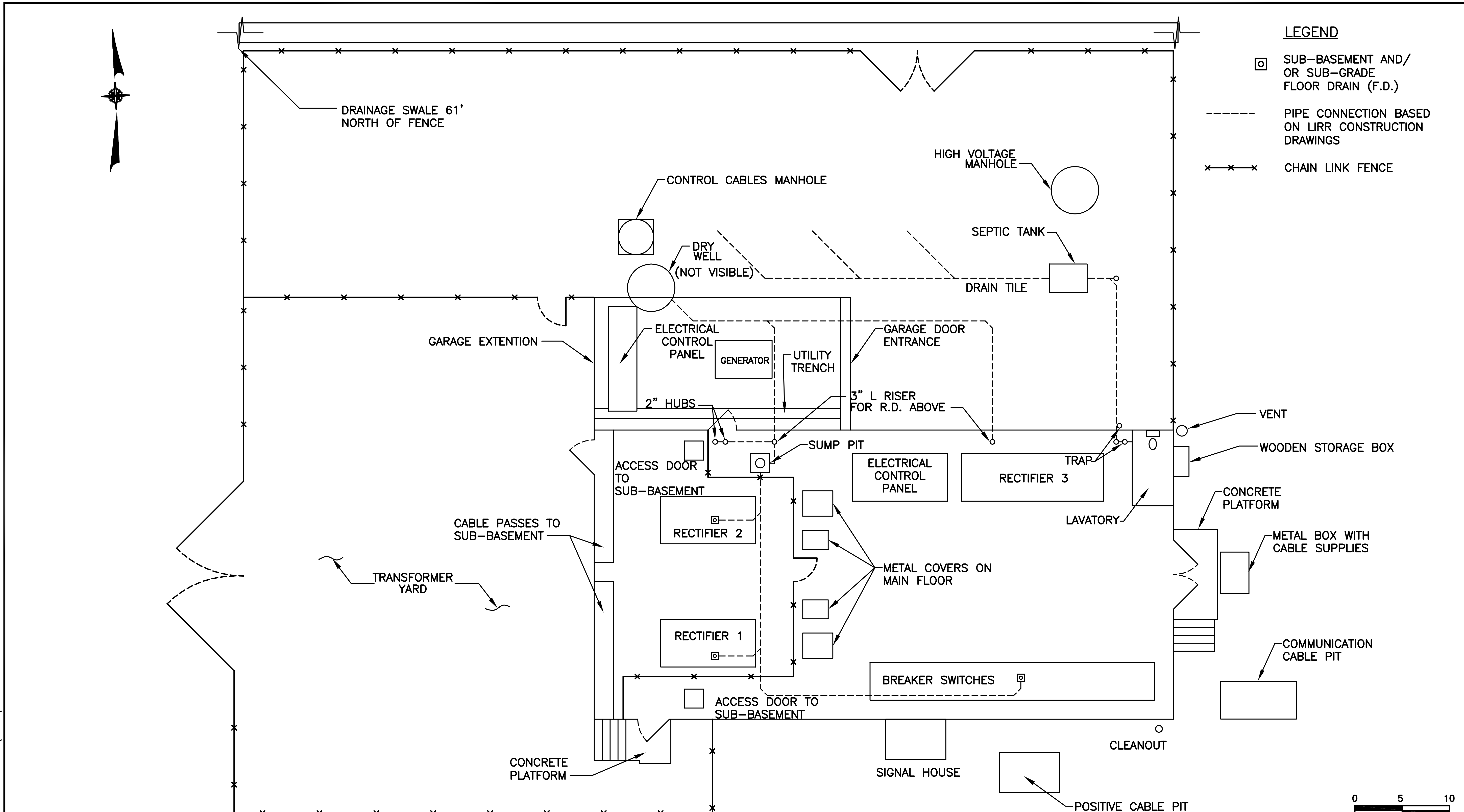
East of Southwest Rear Concrete Platform (Sample BYSS-08). Mercury was detected at 0-6 inches bgs at a concentration of 2.5 mg/kg.

6.20.5.3 - Concrete

Analytical results for concrete core samples are presented in Table D-20C and summarized below. The concrete core sample locations are shown on Figure 6.20-3. Mercury was detected in the following samples:

North Sub-Basement Under Rectifier 2 (Sample BYCC-01). Mercury was detected at a concentration of 5.6 mg/kg.

North Sub-Basement West of Sump Pit (Sample BYCC-02). Mercury was detected at a concentration of 0.37 mg/kg.



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

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SITE PLAN

BABYLON YARD SUBSTATION – S22

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 6.20–1

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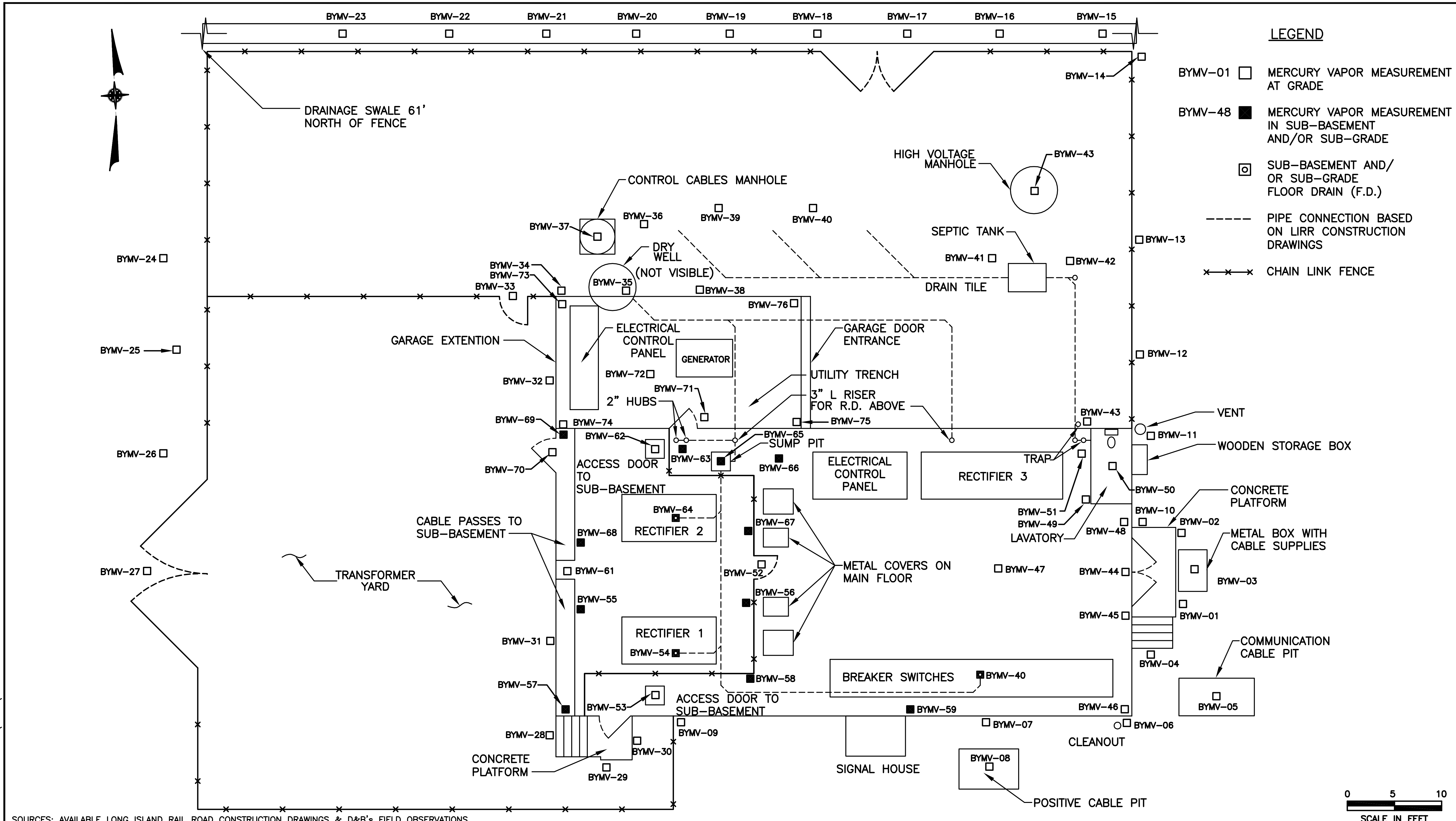

LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
MERCURY VAPOR MEASUREMENT PLAN

BABYLON YARD SUBSTATION – S22

FIGURE 6.20-2

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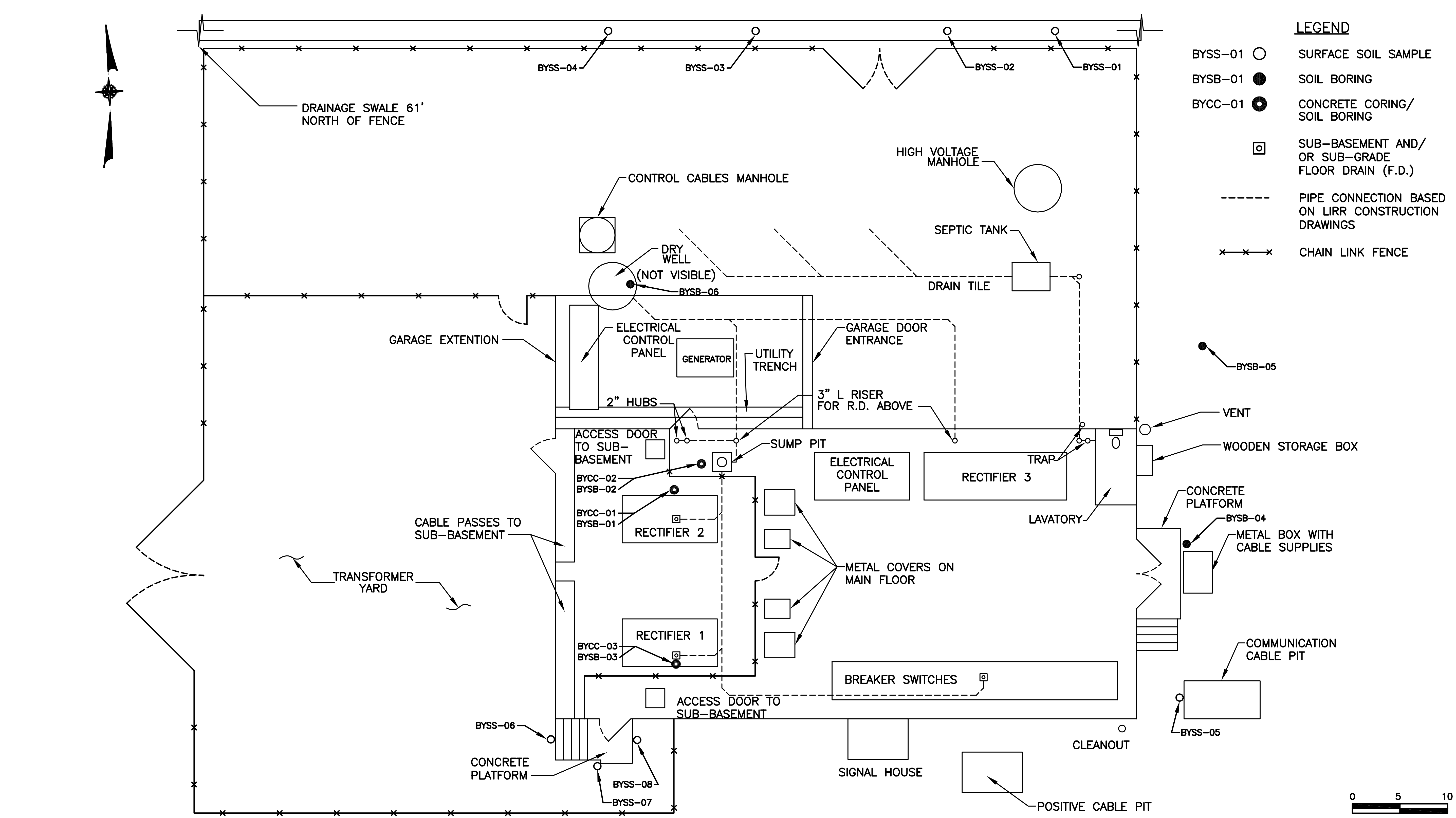

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
SITE ASSESSMENT OF 20 SUBSTATIONS FOR MERCURY CONTAMINATION
SAMPLING LOCATION PLAN

BABYLON YARD SUBSTATION – S22

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 6.20-3

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the findings of the field investigation component of the Site Assessment program discussed in Section 6.0, conclusions and recommendations are presented in this section regarding the need for further investigation or remediation activities, if necessary, at each LIRR substation and its immediate surroundings. A summary of the recommendations for each substation is presented in Table 7-1.

We have relied on the Technical and Administrative Guidance Memorandum (TAGM) No. 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels dated January 24, 1994 published by the New York State Department of Environmental Conservation (the NYSDEC) as a screening technique to support our conclusions and technical recommendations for further investigation and remediation.

It should be noted that the exact soil boring locations recommended under the sub heading *"Potential Miscellaneous Releases"* will be determined during the actual field program.

As a general recommendation, periodic interior air monitoring for mercury vapor should be conducted at each of the 20 substations. Air monitoring activities, along with periodic visual inspections, will help maintain compliant indoor air quality at each substation.

7.1 Manhasset-N10

Substation Interior

The results presented in Section 6.0 indicate that mercury impacted soil exists beneath the rectifier and water trough pits located within the substation building. However, further sampling and/or remediation is not recommended at this time. LIRR representatives have indicated that the Manhasset substation is scheduled to be renovated whereby the rectifier and water trough pits will be permanently backfilled to grade with concrete. It is anticipated that the structurally sound concrete cap will minimize, if not eliminate, any mercury migration through the subsurface soil

Table 7-1
Long Island Rail Road
Site Assessment of 20 Substations for Mercury Contamination

SUMMARY OF RECOMMENDATIONS

Substation	Delineation Phase II Investigation	Soil Remediation (1)	Test Pits (2)	Concrete Capping	UIC Closure	Geophysical Survey	Comments
Manhasset-N10	■				■		The removal of the interior slop sink is also recommended.
Shea-N02	■						
Far Rockaway-F03	■	■			■		
Valley Stream-S04	■				■		
Rockville Centre-S07	■			■			The preparation of a SPDES permit or the removal of the basement sump pump and repair the roof drainage system are also recommended.
Port Washington-N12	■				■		The removal of the solid waste surrounding the substation is also recommended.
Island Park-L03	■	■	■		■		
Floral Park-G13	■	■			■		
Mineola-G16	■				■		The sampling of the asbestos-like material in the electric manhole is also recommended.
Hempstead-H03	■		■		■		The removal of the interior slop sink is also recommended.
Nassau Blvd.-H01	■		■	■	■	■	
Massapequa-S15	■	■		■	■		
Bayside-N06	■					■	The removal of the standing water from the miscellaneous manholes and pits is also recommended.
Little Neck-N08	■		■		■		The sampling of the asbestos-like material in the manhole along the north side of the substation is also recommended.
Bellaire-G11	■		■		■		The removal of the standing water from the 2 electric manholes is also recommended.
Cedar Manor-A08	■	■		■			
Kew Gardens-G07	■		■	■			
St. Albans-S01	■			■			A confined space entry program is also recommended to sample the negative feed manhole. In addition, the removal of the standing water from the water main manhole is recommended.
Lindenhurst-S19	■				■		The removal of the standing water and debris from the four electric manholes is recommended. It is also recommended to locate the on-site sanitary system.
Babylon Yard-S22	■			■			The removal of the standing water from the miscellaneous manholes and pits is also recommended.

NOTES:

■ Activity recommended for substation.

1. Remediation recommendations reflect only those areas of concern (AOCs) that were fully delineated during the initial Site Assessment program. Additional remediation is likely to be required at a later date.
2. Tests pits are recommended to locate possible drainage features (i.e., dry wells, drain lines, septic systems, etc.).

immediately beneath the structure. If the LIRR plans to remove the concrete cap or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

Exterior Railroad Ties

Additional soil sampling and analysis is recommended to delineate the horizontal and vertical extent of mercury impacted soil in the vicinity of the railroad ties. As such, it is recommended that a soil boring be advanced immediately adjacent to boring MHSBB-06, to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 10 feet to the west and 10 feet to the south of the existing soil boring MHSBB-06. These two soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals.

In addition, it is recommended that a soil boring be advanced 10 feet to the west and 10 feet to the north of the existing soil boring MHSBB-07. These two soil borings should be advanced to a depth of 8 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

Drainage Swale

The results of the field investigation program indicate that a significant portion of the drainage swale extending to the west of the substation has been impacted by mercury to a depth of approximately 1 foot below grade. Based on the fate and transport characteristics of mercury, it is reasonable to assume that the mercury impacted soil is confined directly beneath the drainage swale. Therefore horizontal soil sampling north and south of the swale is not recommended. However, the exact western extent of mercury impacted soil within the swale has not been determined. It is, therefore, recommended that 10 additional surface soil samples be collected at 20-foot intervals extending to the west starting from the previous sample MHSS-02. All soil samples should be analyzed for mercury by Method 7471.

It should also be noted that mercury was detected in soil sample MHSBB-09 (0-2') at a concentration of 1.3 mg/kg. This soil sample is located "upgradient" to the substation and may be attributed to potential off-site sources. To further investigate the drainage swale in this vicinity, it is recommended that three soil borings be advanced within the drainage swale at 15-foot intervals extending to the east from soil boring MHSBB-09. Soil borings should be advanced to a depth of 6 feet below grade with 2-foot continuous soil sampling. In addition, three additional surface soil samples should be collected at the same 15-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

Once the horizontal extent of mercury impacted soil is determined within the drainage swale, it is recommended that the impacted soil be excavated for proper off-site disposal. Following remediation, the swale should be restored by backfilling the excavated soil with clean fill and installing corrugated PVC pipe in lieu of replacing the Belgian blocks.

Outfall to Manhasset Bay

The results summarized in Section 6.0 indicate that mercury was detected in sediment sample MHSS-08 at a concentration of 1.3 mg/kg. In order to determine if mercury has migrated outward into the bay, it is recommended that two sediment samples be collected at five-foot intervals extending to the north from soil sample MHSS-08. These sediment samples should be analyzed for mercury by Method 7471.

Slop Sink

Because the interior slop sink discharges to the ground located in the transformer yard, it is in violation of the State Pollutant Discharge Elimination System (SPDES). Therefore, the slop sink must be removed and additional sampling and analysis is warranted to determine the horizontal and vertical extent of impacted soil within the vicinity of the slop sink discharge point. It is recommended that a soil boring be advanced 5 feet to the east, 5 feet to the north, 5 feet to the south and immediately adjacent to surface soil sample MHSS-01. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Underground Injection Control

The dry well located off the southeast corner of the substation receives drainage from an interior floor drain. As a result its closure is regulated by the United States Environmental Protection Agency (USEPA) Underground Injection Control (UIC) program. Based on the Site Assessment field activities, it appears that the soil within the dry well from at least 12.5 to 16.5 feet below grade is impacted. However, additional sampling and analysis is warranted to determine the vertical extent of impacted soil within the dry well. Therefore it is recommended that a soil boring be advanced within the dry well to a depth of 26.5 feet with continuous 2-foot soil sampling from 16.5 to 26.5 feet. Soil samples should be analyzed for the UIC constituents including RCRA metals, total petroleum hydrocarbons (TPHs) by Method 8015M, and Volatile Organic Compounds (VOCs) specified in Appendix A of the Nassau County Department of Health (NCDH) document entitled "Floor Drain and Dry Well Closure Procedures."

As discussed in Section 6.0, there is a floor drain located in both the rectifier and water trough pits that discharge directly to the subsurface soil immediately beneath the substation floor. As a result, the closure of these units is regulated by the USEPA UIC program. Further investigation activities are warranted to determine the vertical extent of the impacted soil. However, LIRR representatives have indicated that the Manhasset substation is scheduled to be renovated. Consequently, any delineation activities should be completed in coordination with the proposed building renovation activities. It is recommended that a soil boring be advanced immediately adjacent to boring MHSBB-01, located in the rectifier pit, to a depth of 10 feet below the bottom of the pit. Soil samples should be collected continuously at 2-foot intervals from 2 to 10 feet. In addition, it is recommended that a soil boring be advanced immediately adjacent to boring MHSBB-02, located in the water trough pit, to a depth of 10 feet below the bottom of the pit. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. All soil samples should be analyzed for the UIC constituents including RCRA metals, total TPHs by Method 8015M, VOCs specified in Appendix A of the NCDH closure document.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the south side of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

Groundwater

The groundwater sampling results presented in Section 6.0 indicate that groundwater has not been impacted by mercury at the Manhasset substation. Therefore, further investigation and/or remediation activities with respect to groundwater does not appear to be warranted.

7.2 Shea-N02

Substation Interior

The results presented in Section 6.0 indicate that mercury impacted soil exists beneath the water trough pit as well as other areas located within the substation building. Therefore, further investigation activities are warranted to determine the horizontal and vertical extent of the impacted soil. However, LIRR representatives have indicated that the Shea substation is scheduled to be demolished and rebuilt to the west of the existing substation. Consequently, any delineation activities should be performed in coordination with the demolition of the building.

It is recommended that a soil boring be advanced immediately adjacent to boring SSSBB-07, located in the water trough pit, to a depth of 10 feet below the bottom of the pit. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 15 feet to the north, 15 feet to the south and 15 feet to the east of boring SSSBB-07. These three soil borings should be advanced to a depth of 10 feet below the bottom of the pit and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

It is recommended that a soil boring be advanced within the rectifier pit to a depth of 10 feet below the bottom of the pit. Soil samples should be collected continuously at 2-foot intervals. It is also recommended that a soil boring be advanced 15 feet to the south and 15 feet to the east of the proposed rectifier pit boring. These two soil borings should be advanced to a depth of 10 feet below the bottom of the pit and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

The results in Section 6.0 indicate that the soil collected from soil boring SSSBB-05 is impacted to a depth of 6 feet below the substation floor. Therefore, it is recommended that a soil boring be advanced immediately adjacent to boring SSSBB-05, located in the southeast portion of the substation, to a depth of 10 feet below the substation floor. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 15 feet to the north, 15 feet to the south and 15 feet to the west of boring SSSBB-05. These three soil borings should be advanced to a depth of 10 feet below the substation floor and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

The results in Section 6.0 also indicate that the soil collected from soil boring SSSBB-08 located within the utility trench is impacted to a depth of 6 feet below the utility trench. Therefore, it is recommended that a soil boring be advanced immediately adjacent to boring SSSBB-08 to a depth of 10 feet below the utility trench. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 5 feet to the north, 15 feet to the south, 15 feet to the east and 15 feet to the west of boring SSSBB-08. These four soil borings should be advanced to a depth of 10 feet below the utility trench and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

It should also be noted that, as part of the building demolition activities, it is recommended that any concrete debris should be analyzed prior to disposal as it may be characteristically hazardous for mercury and as such would be subject to the Land Disposal Restriction Rule, depending on concentration. The concentration of mercury, if any, in the concrete debris can dictate the specific disposal technology required.

Concrete Loading Dock

As discussed in Section 1.0, IRM activities were conducted at the Shea substation in the vicinity of the concrete loading dock. Although impacted soil to a depth of 6 inches below grade has already been excavated for proper off-site disposal, this area has not been fully delineated or remediated. As such, it is recommended that a soil boring be advanced immediately adjacent to boring SSSBB-01, to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 10 feet to the east, 10 feet to the south and 5 feet west of the existing soil boring SSSBB-01. These three soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to boring SSSBB-02 to a depth of 8 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 4 to 8 feet. It is also recommended that a soil boring be advanced 10 feet to the east, 10 feet to the north and 5 feet west of the existing soil boring SSSBB-02. These three soil borings should be advanced to a depth of 8 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

East Side of Substation

As discussed in Section 1.0, IRM activities were conducted at the Shea substation along the east side of the building. Although impacted soil to a depth of 6 inches below grade has already been excavated for proper off-site disposal, this area has not been fully delineated or remediated. As a result, it is recommended that a soil boring be advanced immediately adjacent to boring SSSBB-03 to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 5 feet to the north of the existing soil boring SSSBB-03. This soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to boring SSSBB-04 to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 10 feet to the east, 20 feet to the east and 10 feet to the north of the existing soil boring SSSBB-04. These three soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

North Side of Substation

Based on the endpoint samples that were collected and analyzed during the IRM program, it appears that mercury impacted soil still exists along the north side of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample SSSS-03 to a depth of 8 feet below grade. Soil samples should be collected continuously at 2-foot intervals. It is also recommended that a soil boring be advanced 10 feet to the east, 20 feet to the east and 10 feet to the west of the existing surface soil sample SSSS-03. These two soil borings should be advanced to a depth of 8 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

West Side of Substation

The results presented in Section 6.0 indicate that the surface soil sample (SSSS-04) collected to the west of the substation within the transformer yard exhibited elevated levels of mercury. Therefore, it is recommended that a soil boring be advanced 10 feet to the west, 10 feet to the north, 10 feet to the south and immediately adjacent to surface soil sample SSSS-04. The four soil borings should be advanced to a depth of 8 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Pull Box South of Substation

It should be noted that the pull box located immediately south of the substation was not previously sampled. It is recommended that a soil boring be advanced through the pull box to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the south side of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

Groundwater

The groundwater sampling results presented in Section 6.0 indicate that groundwater has not been impacted by mercury at the Shea substation. Therefore, further investigation and/or remediation activities with respect to groundwater do not appear to be warranted.

7.3 Far Rockaway-F03

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the rectifier and water trough pits and in the pipe trench, further sampling and/or remediation is not recommended at this time. Since the Far Rockaway substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

North Side of Substation

Based on the endpoint samples that were collected and analyzed during the IRM program and the results of soil boring FRSB-01, it appears that mercury impacted soil exists along the north side of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to soil boring FRSB-01 to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 10 feet to the east, 20 feet to the east, 10 feet to the west, 20 feet to the west and 10 feet to the north of soil boring FRSB-01. These five soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

South Side of Substation

The results presented in Section 6.0 indicate a mercury exceedance in surface soil sample FRSS-04 located to the south of the substation within the transformer yard. Additional sampling and analysis is warranted to determine the horizontal and vertical extent of impacted soil along the south side of the substation. Therefore it is recommended that a soil boring be advanced 5 feet to the east, 5 feet to the south, 5 feet to the west and immediately adjacent to surface soil sample FRSS-04. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All soil samples should be analyzed for mercury by Method 7471.

Dry Well Off Southwest Corner of Substation

As described in Section 6.0, the dry well located off the southwest corner of the substation located within the transformer yard was backfilled with sand to about 2 to 3 feet from grade. Although this dry well may have received interior drainage from the substation, the fact that it has been abandoned with sand precludes its closure from the UIC program. However, the analytical results indicate that the soil located at the invert of the dry well has been impacted by mercury. In order to determine the vertical extent of contamination, it is recommended that a soil boring be advanced immediately adjacent to soil boring FRSB-03 to a depth of 8 feet below grade. A soil sample should be collected from the 6 to 8-foot interval for mercury analysis by Method 7471.

Miscellaneous Pits and Manholes

As discussed in Section 6.0, there is a conduit pit with an earthen bottom located along the west side of the substation. The analytical results presented in Section 6.0 indicate that mercury-impacted soil exists to a depth of at least 6.5 feet below grade. It should be noted that soil sample FRSB-02 (8.5'-10.5') did not exhibit any mercury exceedances. Therefore, it is recommended that the mercury-impacted soil from 4.5 to 8.5 feet below grade be excavated for proper off-site transportation and disposal.

In addition, there is a water meter pit with an earthen bottom located off the northeast corner of the substation and a control cable manhole with an earthen bottom located to the south of the substation within the transformer yard. Because these features have not been previously sampled, it is recommended that a soil boring be advanced to a depth of 4 feet below the bottom of each of the two pits. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Underground Injection Control

The site inspection revealed a dry well located to the south of the substation within the transformer yard that, according to LIRR drawings, received drainage from the rectifier and trough pits. As such, the closure of this dry well is regulated by the USEPA UIC program. However the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring FRSB-05 to a depth of 24 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 8 to 24 feet. All samples should be analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the east and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.4 Valley Stream-S04

Substation Interior

The results presented in Section 6.0 indicate that mercury impacted soil exists beneath the rectifier and water trough pits located within the substation building. However, further sampling and/or remediation is not recommended at this time. LIRR representatives have indicated that the Valley Stream substation is anticipated to be deactivated and utilized for storage. It is anticipated that the structurally sound concrete cap will minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If the LIRR plans to remove the concrete cap or demolish this substation, the mercury exceedances described above should be delineated and remediated as required.

North and East Sides of Substation

Based on the endpoint samples that were collected and analyzed during the IRM program and the results of soil borings VSSB-04, 05, and 06, it appears that mercury impacted soil exists along the north and east sides of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to soil borings VSSB-04, 05, and 06 to a depth of 10 feet below grade. Soil samples should be collected continuously from these three borings at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 10 feet to the south of soil boring VSSB-05, 5 feet north of soil boring VSSB-04, 10 feet east of soil boring VSSB-04, 10 feet west of soil boring VSSB-04, and 25 feet west of soil boring VSSB-04. These five soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

South Side of Substation

The results presented in Section 6.0 indicate a mercury exceedance in surface soil sample VSSS-02 located to the south of the substation within the transformer yard. Additional sampling and analysis is warranted to determine the horizontal and vertical extent of impacted soil along the south side of the substation. Therefore, it is recommended that a soil boring be advanced 5 feet to the east, 5 feet to the south, 5 feet to the west and immediately adjacent to surface soil sample VSSS-02. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All soil samples should be analyzed for mercury by Method 7471.

Negative Feed Electric Manhole

As discussed in Section 6.0, there is a negative feed electric manhole with an earthen bottom located along the west side of the substation. Since this feature was not sampled during the initial Site Assessment, it is recommended that a soil boring be advanced through the pit to a depth of 4 feet below the pit bottom. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Underground Injection Control

The site inspection revealed a dry well located to the south of the substation within the transformer yard that, according to LIRR drawings, received drainage from the rectifier and trough pits. As such, the closure of this dry well is regulated by the USEPA UIC program. However the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring VSSB-01 to a depth of 22 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 12 to 22 feet. All samples should be analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the west side of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.5 Rockville Centre-S07

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the rectifier and water trough pits, further sampling and/or remediation is not recommended at this time. Since the Rockville Centre substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

As discussed in Section 6.0, despite excavation activities and flush tests, the discharge point of the three floor drains located in the basement could not be determined. It is, therefore, recommended that these floor drains be permanently capped with concrete.

North Side of Substation

Additional soil sampling and analysis is recommended to delineate the horizontal and vertical extent of mercury impacted soil along the north side of the substation. As such, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample RCSS-01 to a depth of 6 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 6 feet. It is also recommended that a soil boring be advanced 10 feet to the north and 10 feet to the east of the existing surface soil sample RCSS-01. These two soil borings should be advanced to a depth of 6 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced 8 feet to the east, 7 feet to the west, 10 feet to the north of the existing soil boring RCSB-01. These three soil borings should be advanced to a depth of 6 feet below grade and soil samples collected continuously at 2-foot intervals. It is also recommended that a soil boring be advanced 10 feet north of surface soil sample RCSS-05, 10 feet north and 10 feet west of soil boring RCSB-05. These three soil borings should be advanced to a depth of 6 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Southwest Corner of Substation

Based on the results presented in Section 6.0, additional soil sampling and analysis is recommended to delineate the horizontal and vertical extent of mercury impacted soil adjacent to the southwest corner of the substation. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample RCSS-04 to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. It is also recommended that a soil boring be advanced 10 feet to the north, 10 feet to the south, and 10 feet to the west of the existing surface soil sample RCSS-04. These three soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced 10 feet to the east, 15 feet to the east, 10 feet to the south and 15 feet to the south of the existing soil boring RCSB-06. These four soil borings should be advanced to a depth of 6 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Sump Pump Discharge

As discussed in Section 6.0, storm water accumulates in the substation basement due to a faulty roof drainage system. Currently, there is a sump pump located in the basement that pumps the storm water onto an unpaved area to the east of the substation. Based on the results presented in Section 6.0, the soil in the vicinity of the sump pump discharge area has not been impacted by mercury. However, because this area receives discharges from the sump pump located in the basement, a NYSDEC SPDES permit is required to continue its operation. Therefore, it is recommended that either the sump pump be removed from the basement and the roof drainage system for the substation be repaired, or a SPDES permit application be completed and submitted to the NYSDEC.

Water Meter Pit

As discussed in Section 6.0, there is a water meter pit with earthen bottom located along the north side of the substation. Since this feature was not previously sampled, it is recommended that a soil boring be advanced to a depth of 4 feet below the bottom of the pit. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along both the east and west sides of the substation to a depth of 4 feet below grade to address

potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.6 Port Washington-N12

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the rectifier and water trough pits, further sampling and/or remediation is not recommended at this time. Since the Port Washington substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

East Side of Substation

Based on the endpoint samples that were collected and analyzed during the IRM program and the results of soil borings PWSB-04 and 05, it appears that mercury impacted soil exists along the east side of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to soil boring PWSB-04, to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 15 feet to the north, 10 feet to the east, and 15 feet to the south of the existing soil boring PWSB-04. These three soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that that a soil boring be advanced immediately adjacent to soil boring PWSB-05, to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 15 feet to the north, 10 feet to the east, and 15 feet to the south of the existing soil boring PWSB-04. These three soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Southwest Corner of Substation

Based on the results presented in Section 6.0, additional soil sampling and analysis is recommended to delineate the horizontal and vertical extent of mercury impacted soil adjacent to the southwest corner of the substation. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample PWSS-05 to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. It is also recommended that a soil boring be advanced 10 feet to the north, 10 feet to the south, and 10 feet to the west of the existing surface soil sample PWSS-05. These three soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Underground Injection Control

Because the dry well located off the northwest corner of the substation receives drainage from interior floor drains, its closure is regulated by the USEPA UIC program. Based on the analytical results presented in Section 6.0, it appears that the soil within the dry well from 9 to 13 feet below grade has been impacted by mercury. However, the vertical extent of impacted soil has not been determined. Therefore, it is recommended that a soil boring be advanced to a depth of 23 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 13 to 23 feet. Soil samples should be analyzed for the UIC constituents including RCRA metals, total TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, south, and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.7 Island Park-L03

Substation Interior

The results presented in Section 6.0 indicate that mercury impacted soil exists beneath the sump pump pit located within the substation building. Therefore, further investigation activities are warranted to determine the horizontal and vertical extent of the impacted soil. However, LIRR representatives have indicated that the Island Park substation is scheduled to be demolished. Consequently, any delineation activities should be performed in coordination with the demolition of the building.

It is recommended that a soil boring be advanced immediately adjacent to boring IPSB-01, located in the sump pump pit, to a depth of 8 feet below the bottom of the pit. Soil samples should be collected continuously at 2-foot intervals from 4 to 8 feet. It is also recommended that a soil boring be advanced 10 feet to the north, south, east and west of boring IPSB-01. These four soil borings should be advanced to a depth of 8 feet below the bottom of the pit and soil samples collected continuously at 2-foot intervals. All soil samples should be analyzed for mercury by Method 7471.

South Side of Substation

Based on the results presented in Section 6.0, it appears that mercury impacted soil exists along the south side of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to soil boring IPSB-04, to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 10 feet to the south, west and east of the existing soil boring IPSB-04. These three soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced 10 feet to the south and east of the existing soil boring IPSB-05. These two soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Northwest Corner of Substation

Based on the endpoint samples that were collected and analyzed during the IRM program, it appears that mercury impacted soil exists along the northeast corner of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample IPSS-04, to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals. It is also recommended that a soil boring be advanced 10 feet to the north, east, and west of the existing surface soil sample soil IPSS-04. These three soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample IPSS-01, to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Western Drainage Line

As described in Section 6.0, D&B traced a drain pipe originating from within the substation basement which was found to terminate beneath an unpaved area between the substation and the train tracks, approximately 21 feet from the west wall of the building. As previously stated, D&B was prohibited by the LIRR to excavate this area to determine if a discharge feature exists due to the presence of numerous electric utilities. Consequently, it is recommended that this area be excavated in attempt to locate a possible drainage feature such as a dry well, cesspool, etc. Excavation activities should be coordinated with building demolition so that the electric utilities in the area can be de-energized.

Rectifier Dry Well

As described in Section 6.0, D&B traced a drain pipe originating from within the substation basement that lead from the eastern wall of the substation and appeared to terminate under the parking lot approximately 30 feet east of the eastern wall of the building. It should be noted that this location roughly corresponds to the "dry well for rectifiers" identified on LIRR construction drawings. D&B conducted a geophysical survey to further investigate this area. This survey identified a magnetic anomaly in the vicinity of the rectifier dry well suggesting that a metal manhole cover was still present. Therefore, D&B advanced soil boring IPSB-08 to determine if this dry well area has been impacted. The soil sample results indicate that the rectifier dry well has not been impacted by mercury. It should be noted that D&B elected to advance soil boring IPSB-08 immediately down-gradient (from a groundwater perspective) of the rectifier dry well in order to minimize damage to the asphalt parking lot and to ensure that the soil boring would not meet refusal. Because soil boring IPSB-08 was not advanced through the rectifier dry well for the reasons described above, it is recommended that excavation activities be conducted in an attempt to locate this dry well. If the dry well is located, a soil boring should be advanced to a depth of at least 10 feet below the bottom of the dry well. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It should be noted that if, upon excavation, the rectifier dry well is determined to be active, it would require proper closure pursuant to the USEPA UIC program.

Water Meter Pit

As discussed in Section 6.0, there is a water meter pit with an earthen bottom located along the south side of the substation. The analytical results presented in Section 6.0 indicate that the soil within the meter pit is impacted to a depth of at least 4.5 feet below grade. It should be noted that soil sample IPSB-03 (6.5'-8.5') did not exhibit any mercury exceedances. It is, therefore, recommended that the mercury-impacted soil be excavated to a depth of 6.5 feet below grade from within the meter pit for proper off-site transportation and disposal.

Underground Injection Control

Because the substation lavatory discharges to an active septic tank and tile field and, given the fact that the Island Park substation is scheduled to be demolished, its closure is regulated by the USEPA UIC program. It is, therefore, recommended that the septic tank and tile field be properly closed in accordance with the USEPA UIC program. All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the east and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.8 Floral Park-G13

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the rectifier and water trough pits, further sampling and/or remediation is not recommended at this time. Since the Floral Park substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

West Side of Substation

Based on the endpoint samples that were collected and analyzed during the IRM program, it appears that mercury impacted soil exists along the west side of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to soil boring FPSB-06, to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 5 feet to the north, 10 feet to the north, 5 feet south, 5 feet east, 10 feet east, and 15 feet east of the existing soil boring FPSB-06. These six soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced 5 feet to the north, 5 feet south, 10 feet south, 5 feet east, and 10 feet east of the existing soil boring FPSB-08. These five soil borings should be advanced to a depth of 8 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to soil boring FPSB-09, to a depth of 10 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 6 to 10 feet. It is also recommended that a soil boring be advanced 5 feet east, 10 feet east, and 15 feet east of the existing soil boring FPSB-09. These three soil borings should be advanced to a depth of 10 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Miscellaneous Pits and Manholes

As discussed in Section 6.0, there are two control conduit pits with floor drains that discharge directly to the ground located along the south side of the substation. It should be noted that the vertical extent of contamination at these two control conduit pits (soil borings FPSB-10 and FPSB-11) could not be determined because refusal was experienced with each of these soil borings at a depth of 9 feet below grade (2 feet below the bottom of the pit). Therefore, it is recommended that 2 feet of soil be excavated from the bottom of each pit for proper off-site transportation and disposal since additional vertical sampling is not technically feasible.

The site inspection indicated the presence of a positive cable manhole located along the north side of the substation that contains a floor drain that discharges directly to subsurface soil. The analytical results presented in Section 6.0 indicate that mercury impacted soil exists to a depth of at least 16 feet below grade. Therefore, it is recommended that a soil boring be advanced within this manhole to a depth of 20 feet below grade to determine the vertical extent of contamination. Soil samples should be collected continuously at 2-foot intervals from 16 to 20 feet. All soil samples should be analyzed for mercury by Method 7471.

As discussed in Section 6.0, the negative feed manhole located off the northwest corner of the substation contains a floor drain that discharges directly to subsurface soil. It should be noted that the vertical extent of contamination at this negative feed manhole (soil boring FPSB-14) could not be determined because refusal was experienced at a depth of 8 feet below grade (2 feet below the bottom of the pit). Therefore, it is recommended that 2 feet of soil be excavated for proper off-site transportation and disposal since additional vertical sampling is not technically feasible.

In addition, the positive cable manhole located along the west side of the substation contains a floor drain that discharges directly to subsurface soil. The analytical results presented in Section 6.0 indicate that the soil beneath this floor drain is impacted to a depth of at least 10 feet below grade. It should be noted that soil sample FPSB-13 (12'-14') did not exhibit any mercury exceedances. It is, therefore, recommended that the soil from at least the 8 to 12-foot interval below grade be excavated for proper off-site transportation and disposal.

Similarly, the vent pit located off the southwest corner of the substation contains an earthen bottom. The analytical results presented in Section 6.0 indicate that the surface soil within this pit is impacted. It is, therefore, recommended that a soil boring be advanced to a depth of 4 feet below the bottom of the vent pit. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

There is also a conduit pit located 20 feet south of the substation that contains a floor drain that discharges directly to subsurface soil. The analytical results presented in Section 6.0 indicate that the soil beneath this floor drain is impacted to a depth of at least 6 feet below grade. It should be noted that soil sample FPSB-05 (8'-10') did not exhibit any mercury exceedances. It is, therefore, recommended that the soil from at least the 4 to 8-foot interval below grade be excavated for proper off-site transportation and disposal.

As discussed in Section 6.0, there is also a communications manhole located approximately 15 feet off the west side of the substation and a positive/negative cable pit located approximately 20 feet off the southwest corner of the substation. These two features contain floor drains that discharge directly to subsurface soil. Since these features were not sampled during the initial Site Assessment, it is recommended that a soil boring be advanced through each floor drain to a depth of 4 feet below each drain bottom. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Underground Injection Control

Since the substation lavatory discharges to a sanitary cesspool, its closure is regulated by the USEPA UIC program. It is, therefore, recommended that the cesspool be properly closed in accordance with the USEPA UIC program. However the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced through the cesspool immediately adjacent to soil boring FPSB-15 to a depth of 25.5 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 15.5 to 23.5 feet. All samples should be analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

Because the dry well located to the west of the substation receives drainage from an interior floor drain, its closure is regulated by the USEPA UIC program. However the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring FPSB-03 to a depth of 23.5 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 13.5 to 23.5 feet. All samples should be analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

As discussed in Section 6.0, there is a floor drain located in both water trough pits that discharge directly to subsurface soil. As a result, their closure is regulated by the USEPA UIC program. Further investigation activities are warranted to determine the vertical extent of the impacted soil. It is recommended that a soil boring be advanced immediately adjacent to boring FPSB-04, located in the east water trough pit, to a depth of 12 feet below the bottom of the pit. Soil samples should be collected continuously at 2-foot intervals from 6 to 12 feet. In addition, it is recommended that a soil boring be advanced immediately adjacent to boring FPSB-07, located in the west water trough pit, to a depth of 12 feet below the bottom of the pit. Soil samples should be collected continuously at 2-foot intervals from 6 to 12 feet. All soil samples should be analyzed for the UIC constituents including RCRA metals, total TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, south and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.9 Mineola-G16

Substation Interior

Although elevated levels of mercury were detected in a concrete coring advanced within the former utility trench, further sampling and/or remediation is not recommended at this time. Since the Mineola substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

South Side of Substation

Based on the analytical results presented in Section 6.0, it appears that the soil along the south side of the substation is impacted by mercury. As a result, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MISS-01, to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. It is also recommended that a soil boring be advanced 10 feet south, 10 feet east, and 10 feet west of the existing surface soil sample MISS-01. These three soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced 5 feet north, 10 feet south, 10 feet east, and 10 feet west of soil boring MISB-02. These four soil borings should be advanced to a depth of 6 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MISS-02, to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. It is also recommended that a soil boring be advanced 10 feet south, 10 feet east, and 10 feet west of surface soil sample MISS-02. These three soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

North Side of Substation

Based on the analytical results presented in Section 6.0, it appears that the soil in the vicinity of surface soil sample MISS-03 is impacted by mercury. As a result, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MISS-03, to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. It is also recommended that a soil boring be advanced 8 feet north, 10 feet east, and 10 feet west of the existing surface soil sample MISS-03. These three soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

West Side of Substation

Based on the analytical results presented in Section 6.0, it appears that the soil in the vicinity of surface soil sample MISS-04 is impacted by mercury. As a result, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MISS-04, to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. It is also recommended that a soil boring be advanced 10 feet north, 10 feet south, 10 feet east, and 10 feet west of the existing surface soil sample MISS-04. These four soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Miscellaneous Pits

As discussed in Section 6.0, there is one electric manhole and one conduit pit located off the west side of the substation that contain floor drains that discharge directly to subsurface soil. It should be noted that these features could not be sampled during the initial Site Assessment, due to an asbestos-like material in the conduit pit and a ballast filled floor drain in the electric manhole. It is recommended that the asbestos-like material located in the conduit pit be sampled to determine if the material contains asbestos. If asbestos is detected, the asbestos should be removed, following all applicable regulations, before sampling activities can be conducted. It is recommended that a soil boring be advanced to a depth of 4 feet below the bottom of the floor drain of the conduit pit. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. Since the ballast containing floor drain within the electric manhole could not be sampled initially, further investigation activities do not appear to be warranted at this time since vertical sampling is not technically feasible.

Underground Injection Control

As discussed in Section 6.0, the discharge point of the substation lavatory could not be determined due to the fact that the cesspool located to the north of the substation was full of sanitary waste. Therefore, it is recommended that the cesspool contents be removed for proper off-site transportation and disposal. Once the cesspool contents are removed, it is recommended that the lavatory discharge point be verified. If it is determined that the lavatory discharges to the sanitary cesspool, its closure would be regulated by the USEPA UIC program. After the industrial clean out of the cesspool is conducted, it recommended that a soil boring be advanced within the cesspool to a depth of 10 feet below the bottom of the cesspool. Continuous 2-foot split spoon soil samples should be collected and analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

As discussed in Section 6.0, there are three floor drains located in the substation basement that discharge directly to subsurface soil. As a result, their closure is regulated by the USEPA UIC program. It should be noted that the vertical extent of contamination at these floor drains could not be determined because refusal was experienced during sampling. Therefore, it is recommended that the maximum practical amount of soil be removed during UIC closure activities since additional vertical sampling is not technically feasible.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, east and west sides of the substation to a depth of 4 feet below grade to address

potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.10 Hempstead-H03

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the former rectifier and water trough pits, further sampling and/or remediation is not recommended at this time. Since the Hempstead substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

South Side of Substation

Based on the endpoint samples that were collected and analyzed during the IRM program, it appears that mercury impacted soil exists along the south side of the substation. As a result, it is recommended that a soil boring be advanced immediately adjacent to soil boring HSSB-02, to a depth of 4 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. It is also recommended that a soil boring be advanced 10 feet south, 10 feet east, and 10 feet west of the existing soil boring HSSB-02. These three soil borings should be advanced to a depth of 4 feet below grade and soil samples collected continuously at 2-foot intervals. Soil samples should be analyzed for mercury by Method 7471.

Meter Pit

As discussed in Section 6.0, there is a meter pit located adjacent to the southwest corner of the substation that is filled to grade with sand. However, analytical results show that mercury impacted soil exists to a depth of at least 10 feet below grade. It is, therefore, recommended that a soil boring be advanced immediately adjacent to soil boring HSSB-04 to a depth of 16 feet below grade. Two-foot soil samples should be collected from 10 to 16 feet for mercury analysis by Method 7471.

Historic Dry Well

According to available LIRR construction drawings, there appears to be a dry well located approximately 4 feet off the southeast exterior substation wall. During the field inspection, this dry well was not observed. However, a dry well located approximately 22 feet south of the substation was visible from grade. This dry well contained a drain line extending from the dry well towards the substation. During drain testing, a mechanical snake was utilized to trace the line leading from the dry well towards the building. During the procedure, the mechanical snake met refusal just before entering the substation. It was determined that this refusal may be an indication that the original dry well is still present. Therefore, it is recommended that excavation activities be conducted in an attempt to locate this historic dry well. If the dry well is located, a soil boring should be advanced to a depth of at least 10 feet below the bottom of the dry well. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It should be noted that if, upon excavation, this dry well is determined to be active, it would require proper closure pursuant to the USEPA UIC program.

Slop Sink

Because the interior slop sink discharges to the ground located in the transformer yard, it is in violation of the State Pollutant Discharge Elimination System (SPDES). Therefore, the slop sink must be removed and additional sampling and analysis is conducted to determine if the soil within the vicinity of the slop sink discharge has been impacted. It is recommended that a soil boring be advanced to a depth of 4 feet below grade at the location of the discharge point. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced 5 feet to the north, east, and west of the discharge point. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Communications Manhole and Conduit Pit

As discussed in Section 6.0, there is a communications manhole located in the transformer yard that contains a floor drain that discharges directly to subsurface soil. However, the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample HSSS-03 to a depth of 4 feet below the bottom of the manhole. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet. All samples should be analyzed for mercury by Method 7471.

There is also a conduit pit located approximately 40 feet south of the substation that contains a floor drain that discharges directly to subsurface soil. However, this feature was not sampled during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced through this floor drain to a depth of 4 feet below the bottom of the floor drain. Soil samples should be collected continuously at 2-foot intervals from 0 to 4 feet below the bottom of the drain. All samples should be analyzed for mercury by Method 7471.

Underground Injection Control

Because the dry well located approximately 22 feet to the south of the substation appears to have received drainage from an interior pit drain, its closure is regulated by the USEPA UIC program. However the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring HSSB-03 to a depth of 33 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 23 to 33 feet. All samples should be analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north and south sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.11 Nassau Boulevard-H01

Substation Interior

Although elevated levels of mercury were detected in concrete coring NBCC-02, collected from the substation basement, further sampling and/or remediation is not recommended at this time. It is important to note that soil samples collected beneath the basement floor did not indicate any mercury exceedances. In addition, LIRR representatives have indicated that the electrical equipment within the Nassau Boulevard substation is scheduled to be updated and the substation will remain in service. Consequently, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure.

Although the discharge points of the interior floor drains were not able to be determined during the initial Site Assessment, it is recommended to permanently seal these three floor drains with concrete to prevent future drainage.

Southeast Corner of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists adjacent to the southeast corner of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample NBSS-01 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced 5 feet to the south, east, and west of surface soil sample NBSS-01. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

It is also recommended that a soil boring be advanced immediately adjacent to surface soil sample NBSS-02 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced 5 feet to the south and west of surface soil sample NBSS-02. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample NBSS-03 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced 5 feet to the west of surface soil sample NBSS-03. This soil boring should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Likewise, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample NBSS-07 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced 5 feet to the north and east of surface soil sample NBSS-07. The two soil boring should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

South Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists in the vicinity of surface soil sample NBSS-04. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample NBSS-04 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced 5 feet to the south and west of surface soil sample NBSS-04. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

West Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the west side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample NBSS-05 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced 5 feet to the south and west of surface soil sample NBSS-05. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

It is also recommended that additional surface soil samples be collected 5 feet north and south of the existing soil boring NBSB-04. These two surface soil samples should be analyzed for mercury by Method 7471.

Blocked Drain Line East of Substation

As discussed in Section 6.0, it was determined that the three floor drains located in the basement discharge to a single PVC pipe that runs west-to-east, parallel to a chain-link fence for approximately 70 feet. At the southeast corner of the transformer yard, the PVC pipe bends toward the northeast. Refusal was met at approximately 42 feet east of the chain-link fence in the vicinity of two large trees. Roots were extracted from the pipe suggesting that tree roots might have grown into the drain pipe obstructing its flow. As a result, it is recommended that this area of refusal be excavated in an attempt to determine the discharge point of the floor drains located in the substation basement.

It should also be noted that soil boring NBSB-06 was advanced in the vicinity of the point of refusal to determine if the soil has been impacted by mercury. The analytical results indicate no mercury exceedances for the two soil samples collected from the 0 to 2 and 6 to 8-foot intervals from NBSB-06.

Potential Sanitary System

Based on the geophysical surveys summarized in Section 6.0, indications of a septic system located off the northwest corner of the substation (as indicated by LIRR construction drawings) were not detected. In addition, D&B completed flush and dye tests to determine the discharge point of the substation lavatory. Several discharge points such as the sewer system located along Tanners Pond Road, the pond located across the street at the Country Club, and several clean-outs located on the substation property were observed while water and dye was flushed through the lavatory. The discharge point of the lavatory could not be established. It should also be noted that LIRR representatives indicated in the field that they thought a "new" sanitary system was installed off the southwest corner of the substation.

In an attempt to locate the sanitary system for the substation, it is recommended that a geophysical survey (magnetometry and GPR) be conducted in an area off the southwest corner of the substation. If a sanitary system is detected in this area, the soil directly beneath the system should be characterized by advancing a soil boring to a depth of 4 feet below the bottom of the sanitary system. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. In addition, if an on-site sanitary system is detected, it may require closure pursuant to the USEPA UIC regulations.

Communications Manhole

As discussed in Section 6.0, there is a communications manhole located approximately 10 feet south of the substation that contains a floor drain that discharges directly to subsurface soil. It should be noted that this floor drain was not previously sampled. Therefore, it is recommended that a soil boring be advanced through the floor drain to a depth of 4 feet below the bottom of the drain. Continuous 2-foot soil samples should be collected for analysis for mercury by Method 7471.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, south and east sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.12 Massapequa-S15

Substation Interior

Elevated levels of mercury were detected in soil borings and concrete corings advanced within the former rectifier and water trough pits and water pipe trench located within the substation building. However, further sampling and/or remediation is not recommended at this time. LIRR representatives have indicated that the Massapequa substation is scheduled to be renovated whereby the rectifier and water trough pits will be permanently backfilled to grade with concrete. It is anticipated that the structurally sound concrete cap will minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If the LIRR plans to remove the concrete cap or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

It should be noted that during the mercury vapor survey, elevated levels of mercury vapor were detected inside the conduit pipes located within the water trough pit. It is recommended that these conduit pipes be permanently sealed with concrete.

East Side of Substation

Based on the analytical results presented in Section 6.0 and the endpoint sample results from the IRM program, mercury impacted soil exists along the east side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced 5 feet north, 5 feet south, 10 feet south, 5 feet east, 10 feet east, and 15 feet east, and 5 feet west of soil boring MSSB-06. The seven soil borings should be advanced to a depth of 6 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MSSS-02 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet east, 5 feet west and 5 feet south of surface soil sample MSSS-02. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MSSS-04 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, south, east, and west of surface soil sample MSSS-04. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Likewise, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MSSS-03 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, south, east, and west of surface soil sample MSSS-03. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

West Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the west side of the substation within the transformer yard. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MSSS-06 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south and west of surface soil sample MSSS-06. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample MSSS-07 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, south and west of surface soil sample MSSS-07. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Former Dry Well

As previously discussed, available LIRR construction drawings indicate the presence of a dry well located approximately 10 feet to the north of the substation. However, this dry well was not visible from grade during the site inspection. In fact, it appears that this dry well is located directly beneath the existing railroad tracks. Since this former dry well is inaccessible, further investigation activities are not feasible.

Miscellaneous Pits

As discussed in Section 6.0, there is a communications pit located to the west of the substation within the transformer yard that contains a floor drain that discharges directly to subsurface soil. However, the vertical extent of contamination was not determined. Therefore, it is recommended that a soil boring be advanced through the floor drain (immediately adjacent to MSSB-05) to a depth of 15 feet below grade. Continuous 2-foot soil samples should be collected from 11 to 15 feet below grade for mercury analysis by Method 7471.

There is also a water service pit located adjacent to the east side of the substation that contains an earthen bottom. However, the vertical extent of contamination was not determined. Therefore, it is recommended that a soil boring be advanced through the floor drain (immediately adjacent to MSSB-07) to a depth of 11.5 feet below grade. Continuous 2-foot soil samples should be collected from 7.5 to 11.5 feet below grade for mercury analysis by Method 7471.

In addition, there is a positive breaker cable pit located adjacent to the north side of the substation that contains an earthen bottom. The analytical results presented in Section 6.0 indicate that the soil at least 7 feet below grade is impacted by mercury. It should be noted that soil sample MSSB-03 (9'-11') did not exhibit any mercury exceedance. It is, therefore, recommended that the mercury-impacted soil be excavated to a depth of 9 feet below grade for proper off-site transportation and disposal.

Underground Injection Control

Because the dry well located approximately 5 feet to the west of the substation receives drainage from an interior pit drain, its closure is regulated by the USEPA UIC program. However, the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring MSSB-04 to a depth of 22 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 12 to 22 feet. All samples should be analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document. In addition, the interior drain pipe located in the rectifier pit that discharges to the dry well must be permanently capped with concrete as part of the UIC closure program.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the south side and northeast corner of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.13 Bayside-N06

Substation Interior

Although elevated levels of mercury were detected in concrete corings advanced within the substation basement, further sampling and/or remediation is not recommended at this time. It is important to note that soil samples collected beneath the basement floor did not indicate any mercury exceedances. In addition, since the Bayside substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

West Side of Substation

Based on the analytical results presented in Section 6.0 and the endpoint sample results from the IRM program, mercury impacted soil exists along the west side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced 3 feet west of the western concrete platform (at the platform's midpoint) to a depth of 4 feet below grade. Two-foot soil samples should be collected continuously for mercury analysis by method 7471. It is also recommended that a soil boring be advanced 10 feet north, 10 feet south, and 10 feet west of the midpoint soil boring. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Northeast Corner of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the northeast corner of the substation within the transformer yard. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BSSS-01 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, 10 feet north, 5 feet east, and 5 feet west of surface soil sample BSSS-01. The four soil borings should be advanced to a depth of 4 feet below grade with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BSSS-02 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet west of surface soil sample BSSS-02. This soil boring should be advanced to a depth of 4 feet below grade with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced 5 feet east, 10 feet east, 5 feet south, and 10 feet south of soil boring BSSB-03. The four soil borings should be advanced to a depth of 6 feet below grade with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Drainage Line West of Substation

As discussed in Section 6.0, D&B traced three drain pipes originating from within the substation basement. Based on the field test results, D&B determined that the pipe terminated approximately 8-10 feet west of the west wall of the substation. In order to determine the discharge point of this pipe, D&B hand excavated this area (due to the presence of utilities) to a depth of approximately 5 feet bgs where a 6 inch diameter clay pipe was exposed. At this location, the pipe was noted to head toward the southwest and continued to the fence line (see Figure 6.13-1). In an attempt to further trace this pipe, it is recommended that a geophysical survey (magnetometry and GPR) be conducted in the area off the southwest corner of the substation between the fence line and the train tracks.

Miscellaneous Pits and Manholes

As discussed in Section 6.0, there is a communications manhole located off the northwest corner of the substation. At the time of the initial site inspection, this manhole contained water and debris precluding an accurate inspection of the bottom of the pit. It is, therefore, recommended that the water and debris be removed from the manhole. If, upon inspection, it is determined that the manhole has an earthen bottom or a floor drain that discharges directly to subsurface soil, this manhole should be sampled by advancing a soil boring to a depth of 4 feet below the bottom of the manhole. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Similarly, there is a conduit manhole located to the north of the substation and a high tension cable manhole off the northeast corner of the substation. At the time of the initial site inspection, these manholes contained water and debris precluding an accurate inspection of the pit bottoms. It is, therefore, recommended that the water and debris be removed from these manholes. If, upon inspection, it is determined that these manholes have an earthen bottom or a floor drain that discharges directly to subsurface soil, the manholes should be sampled by advancing a soil boring to a depth of 4 feet below the bottom of these manholes. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

There is also a steel covered conduit pit located off the southeast corner of the substation that contains a floor drain that discharges directly to subsurface soil. Because this floor drain was filled with ballast, it could not be sampled during this Site Assessment program. Therefore, further investigation activities do not appear to be warranted at this time, since additional vertical sampling is not feasible.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, south and east sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.14 Little Neck-N08

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the substation basement, further sampling and/or remediation is not recommended at this time. Since the Little Neck substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

East Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the east side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LNSS-03 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, 10 feet north, 5 feet east, and 10 feet east of surface soil sample LNSS-03. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LNSS-04 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil borings be advanced 5 feet south, 5 feet east, and 10 feet east of surface soil sample LNSS-04. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LNSS-05 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south, 5 feet east, and 10 feet east of surface soil sample LNSS-05. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

West Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the west side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring LNSB-09 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 6 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, 5 feet west, 10 feet west, and 5 feet south of soil boring LNSB-09. The four soil borings should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LNSS-07 to a depth of 8 feet below grade. Two-foot continuous soil samples should be collected for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 15 feet north of surface soil sample LNSS-07. This soil boring should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Drainage Creek

As discussed in Section 6.0, there is a drainage creek that flows from east to west that is located approximately 80 feet south of the Little Neck substation. According to available LIRR construction drawings, the roof drains of the substation discharge to this creek. The results summarized in Section 6.0 indicate that mercury was detected in sediment sample LNSS-01 at a concentration of 0.33 mg/kg. In order to determine if mercury has migrated toward Little Neck Bay, it is recommended that two sediment samples be collected at 15-foot intervals extending to the west from soil sample LNSS-01. These sediment samples should be analyzed for mercury by Method 7471.

Drainage Line East of Substation

As discussed in Section 6.0, D&B traced a drain pipe originating within the basement and running along the eastern side of the substation. D&B determined that the pipe terminated approximately 8 to 10 feet east of the east wall of the substation. In an attempt to further trace this pipe, it is recommended that the area approximately 10 feet east of the substation be excavated.

Manhole Along North Side of Substation

There is a manhole located on the north side of the substation that is equipped with a drain that appears to discharge directly to subsurface soil. It should also be noted that, during the site inspection, an asbestos-like material was wrapped around some of the cables within the manhole. Due to the presence of the asbestos-like material and the fact that the area is a confined space, this floor drain was not sampled during the initial Site Assessment. It is recommended that the asbestos-like material located within the manhole be sampled to determine if the material contains asbestos. If asbestos is detected within the manhole, the asbestos should be removed, following all applicable regulations. Following the asbestos sampling, the floor drain should be accessed utilizing a proper confined space entry program to inspect the floor drain and determine its discharge point. If it is determined that the floor drain discharges directly to subsurface soil beneath the manhole, we recommend that it be sampled by advancing a soil boring to 4 feet below the bottom of the floor drain. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Underground Injection Control

Because the cesspool/dry well located to the east of the substation receives interior drainage, its closure is regulated by the USEPA UIC program. However the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring LNSB-04 to a depth of 22 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 12 to 22 feet. All samples should be analyzed for the NCDH UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs specified in Appendix A of the NCDH closure document. In addition, the hopper drain associated with the drainage line leading to the cesspool/dry well should also be disconnected or properly closed.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north and south sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.15 Bellaire-G11

Substation Interior

Although elevated levels of mercury were detected in concrete corings advanced within the substation basement, further sampling and/or remediation is not recommended at this time. It is important to note that soil samples collected beneath the basement floor did not indicate any mercury exceedances. In addition, since the Bellaire substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

West Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the west side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BASS-03 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, 5 feet west, and 5 feet south of surface soil sample BASS-03. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to soil sample BASS-02 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 0 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet west of surface soil sample BASS-02. This soil boring should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to soil boring BASB-01 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 6 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet west and 5 feet south of soil boring BASB-01. The two soil borings should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Likewise, it is recommended that a soil boring be advanced immediately adjacent to soil sample BASS-01 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 0 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 10 feet west and 5 feet south of surface soil sample BASS-01. The two soil borings should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Southeast Corner of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the southeast corner of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BASS-04 to a depth of 8 feet below grade. Two-foot continuous soil samples should be collected from 0 to 8 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet west and 5 feet south of surface soil sample BASS-04. The two soil borings should be advanced to a depth of 8 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BASS-05 to a depth of 8 feet below grade. Two-foot continuous soil samples should be collected from 0 to 8 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south, 5 feet west, and 5 feet east of surface soil sample BASS-05. The three soil borings should be advanced to a depth of 8 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to soil boring BASB-04 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 4 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north and 5 feet east of soil boring BASB-04. The two soil borings should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Former Substation Septic System

As discussed in Section 6.0, the Bellaire substation contains a lavatory that has been abandoned with sand. Available LIRR construction drawings do not indicate the presence of an on-site sanitary disposal system. It should be noted that a vent and cleanout (consistent with a septic system) were noticed along the northwest corner of the substation during the site investigation. D&B conducted a geophysical survey in this area in an attempt to locate a potential septic system. The results of the geophysical survey indicate that the detected anomalies were not necessarily consistent with a buried septic system. It is, therefore, recommended that the area off the northwest corner of the substation be excavated to locate the former substation septic system.

Electric Manholes

There is an electric manhole located off the north side of the substation that contains a floor drain that discharges directly to subsurface soil. Because this floor drain was filled with ballast, it could not be sampled during this Site Assessment program. Therefore, further investigation activities are not recommended, since additional vertical sampling is not feasible.

Similarly, there are two electric manholes located to the south of the substation. At the time of the initial site inspection, these manholes contained water and debris precluding an accurate inspection. It is, therefore, recommended that the water and debris be removed from these manholes. If, upon inspection, it is determined that these manholes have an earthen bottom or a floor drain that discharges directly to subsurface soil, the manholes should be sampled by advancing a soil boring to a depth of 4 feet below the bottom of these manholes. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Underground Injection Control

Because the dry well located to the southeast of the substation receives interior drainage, its closure is regulated by the USEPA UIC program. However the vertical extent of mercury contamination was not determined during this Site Assessment program. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring BASB-07 to a depth of 23 feet below grade. Soil samples should be collected continuously at 2-foot intervals from 13 to 23 feet. All samples should be analyzed for the UIC constituents including RCRA metals, TPHs by Method 8015M, and VOCs.

It should also be noted that the three floor drains located in the basement should be permanently capped with concrete as part of the USEPA UIC closure program.

All closure activities should be conducted in accordance with the USEPA UIC program.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, south and east sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.16 Cedar Manor-A08

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the substation basement and utility trenches, further sampling and/or remediation is not recommended at this time. Since, the Cedar Manor substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

As discussed in Section 6.0, the discharge point of the two floor drains located in the basement could not be determined. It is, therefore, recommended that these floor drains be permanently capped with concrete.

South Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the south side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample CMSS-01 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south, 5 feet east, and 5 feet west of surface soil sample CMSS-01. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample CMSS-02 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that soil borings be advanced 5 feet south and 5 feet west of surface soil sample CMSS-02. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

North Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists in the vicinity of surface soil sample CMSS-04. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample CMSS-04 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that soil borings be advanced 5 feet north, south, east, and west of surface soil sample CMSS-04. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Storm Water Dry Wells

As discussed in Section 6.0, mercury impacted soil exists within two of the three storm water dry wells located to the south of the substation. Additional sampling and analysis is required to determine the vertical extent of mercury contamination in these two dry wells. Therefore, it is recommended that a soil boring be advanced immediately adjacent to soil boring CMSB-02 to a depth of 20 feet below grade. Two-foot continuous soil samples should be collected from 10 to 20 feet for mercury analysis by Method 7471. In addition, it is recommended that a soil boring be advanced immediately adjacent to soil boring CMSB-04 to a depth of 20 feet below grade. Two-foot continuous soil samples should be collected from 10 to 20 feet for mercury analysis by Method 7471.

Meter Pit and Negative Cable Manhole

As discussed in Section 6.0, there is a meter pit located along the south side of the substation that contains an earthen bottom. The analytical results presented in Section 6.0 indicate that the soil at least 5.5 feet below grade is impacted by mercury. It should be noted that soil sample CMSB-05 (7.5'-9.5') did not exhibit any mercury exceedances. It is, therefore, recommended that the mercury impacted soil be excavated to a depth of 7.5 feet below grade for proper off-site transportation and disposal.

There is also a negative cable manhole located to the north of the substation within the transformer yard that contains a floor drain that discharges directly to subsurface soil. Because this floor drain was filled with ballast, it could not be sampled during this Site Assessment program. Therefore, further investigation activities do not appear to be warranted since additional vertical sampling is not technically feasible.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, east and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.17 Kew Gardens-G07

Substation Interior

Although elevated levels of mercury were detected in concrete corings advanced within the substation basement, further sampling and/or remediation is not recommended at this time. It is important to note that soil samples collected beneath the basement floor did not indicate any mercury exceedances. In addition, since the Kew Gardens substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

North Side of Substation

Based on the analytical results presented in Section 6.0 and the IRM endpoint results, mercury impacted soil exists along the north side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample KGSS-02 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north and east of surface soil sample KGSS-02. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced 5 feet south of soil boring KGSB-02. This soil boring should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample KGSS-01 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, 5 feet west, and 10 feet west of surface soil sample KGSS-01. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Likewise, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample KGSS-03 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south and 5 feet west of surface soil sample KGSS-03. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471. It should be noted that the delineation sampling proposed in the vicinity of surface soil sample KGSS-03 should be conducted before the proposed excavation activities described under the heading "*Former Cesspool*" summarized below.

Southeast Corner of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the southeast corner of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample KGSS-05 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 0 to 10 feet for mercury analysis by Method 7471. It is also recommended that soil borings be advanced 5 feet south, east, and west of surface soil sample KGSS-05. The three soil borings should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to soil boring KGSB-03 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 6 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north and east of soil boring KGSB-03. The two soil borings should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to soil boring KGSB-04 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 6 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north of soil boring KGSB-04. This soil boring should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Former Cesspool

As discussed in Section 6.0, available LIRR construction drawings indicate that the substation lavatory discharges to a cesspool located off the west side of the substation. However, the drawings do not show the exact location of this cesspool. It should be noted that a vent consistent with a septic system was noted along the northwest corner of the substation during the site investigation. D&B was not able to visually locate this cesspool during the site inspection. It is, therefore, recommended that the area off the northwest corner of the substation be excavated to locate the former cesspool.

Former Dry Well

As summarized in Section 6.0, available LIRR construction drawings indicate that the substation floor drains discharge to a dry well located off the northeast corner of the substation. This drain pipe was traced using mechanical snaking along with conventional geophysical techniques. The drain pipe was traced to the area off the northeast corner of the substation before the signal became too faint for detection. D&B also performed a geophysical survey in this area to determine the location of the former dry well. The geophysical results indicate the presence of a linear and circular anomaly within the survey area. Therefore, D&B excavated this area in an attempt to locate the dry well. However, the excavation activities did not reveal the presence of the dry well. To determine if this area has been impacted, D&B advanced a soil boring (KGSB-01) in the vicinity of the presumed location of the dry well as determined from LIRR construction drawings. The soil sample results from this boring location do not indicate any mercury exceedances. Based on the investigation activities summarized above, further investigation and or remediation activities do not appear to be warranted with respect to the former dry well. It should also be noted that the floor drains located within the substation basement that may have discharged to this former dry well location should be permanently capped with concrete.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the south, east and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.18 St. Albans-S01

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the substation basement, further sampling and/or remediation is not recommended at this time. Since, the St. Albans substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

South Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the south side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample SASS-03 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that soil borings be advanced 5 feet south, east, and west of surface soil sample SASS-03. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample SASS-01 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that soil borings be advanced 5 feet south and west of surface soil sample SASS-01. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Northwest Corner of Substation

As discussed in Section 6.0, mercury impacted soil exists along the northwest corner of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample SASS-05 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that soil borings be advanced 5 feet south and west of surface soil sample SASS-05. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Substation Drainage Discharge

As discussed in Section 6.0, there were no LIRR construction drawings available that indicated the drainage configuration of the St. Albans substation. Therefore, D&B traced three drain pipes originating within the basement of the substation building. The three drain pipes were traced to a point that exited the southern side of the substation building and appeared to terminate beneath the unpaved area immediately south of the substation, approximately 17 feet from the building.

D&B conducted flush and dye tests to determine the discharge point of the drain pipes and lavatory. The sewer system located along Dunkirk Street as well as potential discharge points located on the substation property (i.e., dry wells, trenches, etc.) were observed while water and dye was flushed trough these drainage features. The flush and dye tests did not identify the discharge points of these features.

D&B also conducted a geophysical survey to investigate the area in which the drainage pipe was traced and met refusal approximately 17 feet south of the substation. As summarized in Section 6.0, the geophysical survey identified several magnetic and GPR anomalies. To further investigate the discharge point of the substation drainage features, D&B excavated the areas associated with the geophysical anomalies described above. The excavation activities did not reveal any drainage piping or discharge features.

Since, after thorough investigation, the discharge point of the substation drainage features was not determined, it is recommended that the drain pipes located within the substation basement be permanently capped with concrete.

Miscellaneous Manholes

As discussed in Section 6.0, there is a positive feed manhole located along the west side of the substation that contains a floor drain that discharges directly to subsurface soil. The analytical results presented in Section 6.0 indicate that the soil at least 12 feet below grade in this floor drain is impacted by mercury. However, the vertical extent of contamination has not been determined. Therefore, it is recommended that a soil boring be advanced immediately adjacent to boring SASB-03 to a depth of 16 feet below grade. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

There is also a negative feed manhole located adjacent to the northwest corner of the substation that contains a floor drain that appears to discharge directly to subsurface soil. Due to the fact that this floor drain is located in an area that is considered to be a confined space, this floor drain could not be sampled during the initial Site Assessment. It is recommended that the floor drain be inspected to determine its discharge point utilizing a proper confined space entry program. If the floor drain is found to discharge directly to the ground, it is recommended that a soil boring be advanced to a depth of 4 feet below the bottom of the floor drain. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

In addition, there is a water main manhole located to the south of the substation that appears to contain an earthen bottom. At the time of the initial site inspection, this manhole contained water and debris precluding an accurate inspection of the manhole bottom. It is, therefore, recommended that the water and debris be removed from this manhole. If, upon inspection, it is determined that this manhole has an earthen bottom or a floor drain that discharges directly to subsurface soil, the manhole should be sampled by advancing a soil boring to a depth of 4 feet below the bottom of the manhole. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, east and west sides of the substation to a depth of 4 feet below grade to address

potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.19 Lindenhurst-S19

Substation Interior

Although elevated levels of mercury were detected in concrete corings advanced within the substation basement, further sampling and/or remediation is not recommended at this time. It is important to note that soil samples collected beneath the basement floor did not indicate any mercury exceedances. In addition, since the Lindenhurst substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

South Side of Substation

Based on the analytical results presented in Section 6.0 and the IRM endpoint results, mercury impacted soil exists along the south side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LHSS-01 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south, 10 feet south, 5 feet west, and 10 feet west of surface soil sample LHSS-01. The four soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LHSS-02 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south, 10 feet south, and 5 feet west of surface soil sample LHSS-02. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Northeast Corner of Substation

Based on the analytical results presented in Section 6.0 and the IRM endpoint results, mercury impacted soil exists in the vicinity of the northeast corner of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LHSS-04 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south, 10 feet south, and 5 feet east of surface soil sample LHSS-04. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample LHSS-05 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north and 5 feet east of surface soil sample LHSS-05. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Electric Manholes

There are four electric manholes located around the southern perimeter of the substation. At the time of the initial site inspection, these manholes contained water and debris precluding an accurate inspection of the manhole bottoms. It is, therefore, recommended that the water and debris be removed from these four manholes. If, upon inspection, it is determined that these manholes contain an earthen bottom or a floor drain that discharges directly to subsurface soil, the manhole should be sampled by advancing a soil boring to a depth of 4 feet below the bottom of each manhole. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Underground Injection Control

Because the dry well located to the northeast of the substation receives interior drainage, its closure is regulated by the USEPA UIC program. The analytical results presented in Section 6.0 indicate that the soil below the bottom of this dry well is not impacted by mercury. However, it is recommended that an endpoint soil sample be collected from the bottom of the dry well for analysis for the UIC constituents including RCRA metals, total TPHs by Method 8015M, and VOCs. The analytical results will determine if further investigation and/or remediation is warranted for UIC closure.

According to available LIRR construction drawings, the substation lavatory is connected to a septic tank and drain tile field located to the east of the substation. It should be noted that there were no visible signs of this septic system during the site investigation. As described in Section 6.0, since the lavatory is still active, D&B did not conduct any excavation activities in the septic tank area and risk damaging what could be an active sanitary system. As a result, it is recommended to locate and uncover the septic tank cover to determine if the lavatory discharges to this sanitary system. Since soil samples collected from two soil borings (LHSB-05 and LHSB-06) advanced in the vicinity of the sanitary tile field did not indicate any mercury exceedances and, given the fact that this sanitary system serves less than 20 people a day, this septic tank and tile field does not appear to be regulated by the USEPA UIC program. Therefore, further investigation and/or remediation activities do not appear to be warranted.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

7.20 Babylon Yard-S22

Substation Interior

Although elevated levels of mercury were detected in soil borings and concrete corings advanced within the substation basement, further sampling and/or remediation is not recommended at this time. Since the Babylon Yard substation is anticipated to remain in service, there will be a structurally sound concrete cap in place to minimize, if not eliminate, any mercury migration through the subsurface soil immediately beneath the structure. If, however, the LIRR plans to renovate or demolish this substation in the future, that would represent the best opportunity to delineate and remediate any mercury contaminated soil as necessary.

East Side of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists along the east side of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BYSS-05 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, south, and west of surface soil sample BYSS-05. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to soil boring BYSB-04 to a depth of 10 feet below grade. Two-foot continuous soil samples should be collected from 6 to 10 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, 10 feet north, and 5 feet east of soil boring BYSB-04. The three soil borings should be advanced to a depth of 10 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to soil boring BYSB-05 to a depth of 8 feet below grade. Two-foot soil samples should be collected from the 0 to 2, 2 to 4, and 6 to 8-foot intervals for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, south, east, and west of soil boring BYSB-05. The four soil borings should be advanced to a depth of 8 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Southwest Corner of Substation

Based on the analytical results presented in Section 6.0, mercury impacted soil exists in the vicinity of the southwest corner of the substation. Additional sampling and analysis is required to determine the horizontal and vertical extent of mercury contamination in this area. Therefore, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BYSS-06 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet north, south, and west of surface soil sample BYSS-06. The three soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

In addition, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BYSS-07 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south of surface soil sample BYSS-07. This soil boring should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Similarly, it is recommended that a soil boring be advanced immediately adjacent to surface soil sample BYSS-08 to a depth of 4 feet below grade. Two-foot continuous soil samples should be collected from 0 to 4 feet for mercury analysis by Method 7471. It is also recommended that a soil boring be advanced 5 feet south and east of surface soil sample BYSS-08. The two soil borings should be advanced to a depth of 4 feet with continuous 2-foot soil sampling. All samples should be analyzed for mercury by Method 7471.

Drainage Swale

As discussed in Section 6.0, there is a drainage swale that extends from east to west that is located approximately 60 feet north of the Babylon Yard substation. The results summarized in Section 6.0 indicate that mercury was detected in surface soil samples BYSS-01 and -02 at a concentration of 0.57 mg/kg and 2.4 mg/kg, respectively. It is recommended that a soil boring be advanced immediately adjacent to samples BYSS-01 and –02 to a depth of 4 feet below grade. Continuous 2-foot soil samples should be collected from these borings for mercury analysis by Method 7471. In addition, it is recommended that a surface soil sample be collected 10 feet to the east of soil sample BYSS-01 and 10 feet to the west of soil sample BYSS-02. These surface soil samples should be analyzed for mercury by Method 7471.

Former Septic System

As discussed in Section 6.0, available LIRR construction drawings indicate that the Babylon Yard lavatory discharges to a septic tank and drain tile field located to the north of the substation. However, visible signs of this septic system were not observed during the site investigation. However, LIRR representatives indicated that the septic system was abandoned when the LIRR service building was constructed to the northeast of the substation. At that time, the substation lavatory was connected to the service building. The findings of the pipe tracing activities indicate a drainage pipe from the substation lavatory heading in the direction of the service building before the conductive signal ended abruptly, suggesting that the steel rod was coiling. In order to investigate possible impacts resulting from this service building septic pipe, D&B advanced a soil boring (BYSB-05) in the vicinity where the conductive signal terminated. The results from soil boring BYSB-05 indicate the presence of mercury in soil sample BYSB-05 (4-6) at a concentration of 0.50 mg/kg. Delineation sampling is recommended in this area as described under the heading "*East Side of Substation,*" summarized above.

It should be noted that D&B was prohibited by the LIRR from advancing a soil boring in the vicinity of the former septic system located to the north of the substation due to the close proximity of electric cables in the area.

<u>*Former Dry Well*</u>

As described in Section 6.0, available LIRR construction drawings indicate that the basement drainage features discharge to a dry well located to the north of the substation. However, this dry well was not visible from grade during the site investigation. Therefore, D&B conductively traced four drain pipes located in the substation basement to determine their discharge point. The drainage features located in the basement were traced to a pipe that exits through the northern basement wall in the direction of the former dry well. Because of a motor generator garage addition to the north side of the substation, this pipe could not be traced to its termination point. It should be noted that, based on LIRR construction drawings, it appears that the motor generator garage was constructed on top of a portion of the former dry well.

As a result, D&B conducted a geophysical survey in the area immediately north of the motor generator garage in an attempt to locate the former dry well. As described in Section 6.0, two geophysical anomalies were detected in an area that approximate the dry well depicted on available LIRR construction drawings. Due to the close proximity of the substation building, D&B could not excavate to locate the dry well. However, D&B did advance a soil boring (BYSB-06) in the vicinity the dry well as measured from LIRR drawings. The soil sample results form this soil boring do not indicate any mercury exceedances. Although no further investigation or remediation is warranted with respect to the former dry well location, it is recommended that the three floor drains and sump pit located in the basement be permanently capped with concrete.

Miscellaneous Pits and Manholes

As discussed in Section 6.0, the initial site inspection revealed several electric and communications manholes surrounding the substation including: a positive cable pit located along the south side of the substation; a communications cable pit located along the east side of the substation; a high voltage manhole and control cables manhole located off the north side of the substation; and a high tension cable pit located immediately west of the transformer yard. At the time of the initial site inspection, these pits and manholes contained varying amounts of water precluding an accurate inspection of the manhole bottoms. It is, therefore, recommended that the water be removed from these pits and manholes. If, upon inspection, it is determined that these pits and manholes contain an earthen bottom or a floor drain that discharges directly to subsurface soil, the pit or manhole should be sampled by advancing a soil boring to a depth of 4 feet below the bottom of each feature. Continuous 2-foot soil samples should be collected for mercury analysis by Method 7471.

Potential Miscellaneous Releases

Due to the unknown historic use of the mercury containing rectifiers, it is possible that inadvertent, non-specific releases may have occurred in the areas immediately surrounding the substation. The results provided in Section 6.0 indicate that, exterior areas not necessarily associated with known areas of concern (i.e., loading docks, entrance ways, dry wells, trenches, etc.) may have been impacted. It is, therefore, recommended that two soil borings be advanced along the north, south, and west sides of the substation to a depth of 4 feet below grade to address potential releases not previously investigated. Soil samples should be collected continuously at 2-foot intervals and analyzed for mercury by Method 7471.

APPENDIX A

MERCURY VAPOR MEASUREMENT RESULTS

TABLE A-1

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - MANHASSET-N10

(June 16, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
MHMV-01	0.003
MHMV-02	0.010
MHMV-03	0.032
MHMV-04	0.000
MHMV-05	0.001
MHMV-06	0.027
MHMV-07	0.003
MHMV-08	0.029
MHMV-09	0.011
MHMV-10	0.017
MHMV-11	0.004
MHMV-12	0.000
MHMV-13	0.013
MHMV-14	0.007
MHMV-15	0.006
MHMV-16	0.002
MHMV-17	0.002
MHMV-18	0.002
MHMV-19	0.004
MHMV-20	0.003
MHMV-21	0.002

TABLE A-2

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - SHEA-N02

(June 28, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
SSMV-01	0.000
SSMV-02	0.000
SSMV-03	0.000
SSMV-04	0.196
SSMV-05	0.000
SSMV-06	0.000
SSMV-07	0.000
SSMV-08	0.009
SSMV-09	0.020

TABLE A-3

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - FAR ROCKAWAY-F03

(July 9, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
FRMV-01	0.000
FRMV-02	0.010
FRMV-03	0.070
FRMV-04	0.090
FRMV-05	0.025
FRMV-06	0.000
FRMV-07	0.000
FRMV-08	0.000
FRMV-09	0.000
FRMV-10	0.000
FRMV-11	0.000
FRMV-12	0.000
FRMV-13	0.000
FRMV-14	0.000
FRMV-15	0.000
FRMV-16	0.000
FRMV-17	0.009
FRMV-18	0.024
FRMV-19	0.000
FRMV-20	0.000
FRMV-21	0.030

TABLE A-4

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - VALLEY STREAM-S04

(July 16, 1999)

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

TABLE A-5

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - ROCKVILLE CENTRE-S07

(July 23, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
RCMV-01	0.000
RCMV-02	0.000
RCMV-03	0.000
RCMV-04	0.000
RCMV-05	0.000
RCMV-06	0.000
RCMV-07	0.000
RCMV-08	0.000
RCMV-09	0.000
RCMV-10	0.000
RCMV-11	0.000
RCMV-12	0.000
RCMV-13	0.000
RCMV-14	0.000
RCMV-15	0.000
RCMV-16	0.000
RCMV-17	0.000
RCMV-18	0.000
RCMV-19	0.030
RCMV-20	0.000
RCMV-21	0.000
RCMV-22	0.000
RCMV-23	0.000
RCMV-24	0.000
RCMV-25	0.000
RCMV-26	0.000

TABLE A-6

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - PORT WASHINGTON-N12

(July 30, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
PWMV-01	0.000
PWMV-02	0.000
PWMV-03	0.000
PWMV-04	0.000
PWMV-05	0.000
PWMV-06	0.000
PWMV-07	0.000
PWMV-08	0.000
PWMV-09	0.000
PWMV-10	0.000
PWMV-11	0.000
PWMV-12	0.000
PWMV-13	0.000
PWMV-14	0.000
PWMV-15	0.000
PWMV-16	0.000
PWMV-17	0.000
PWMV-18	0.000
PWMV-19	0.000
PWMV-20	0.000
PWMV-21	0.000
PWMV-22	0.000
PWMV-23	0.000
PWMV-24	0.000
PWMV-25	0.000
PWMV-26	0.000
PWMV-27	0.000
PWMV-28	0.000
PWMV-29	0.000
PWMV-30	0.000
PWMV-31	0.000
PWMV-32	0.000
PWMV-33	0.000
PWMV-34	0.000
PWMV-35	0.000
PWMV-36	0.000
PWMV-37	0.000
PWMV-38	0.000
PWMV-39	0.000
PWMV-40	0.000
PWMV-41	0.000
PWMV-42	0.000
PWMV-43	0.000
PWMV-44	0.000
PWMV-45	0.000
PWMV-46	0.000
PWMV-47	0.000

TABLE A-6 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - PORT WASHINGTON-N12

(July 30, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
PWMV-48	0.000
PWMV-49	0.000
PWMV-50	0.000
PWMV-51	0.000
PWMV-52	0.000
PWMV-53	0.000
PWMV-54	0.000
PWMV-55	0.000
PWMV-56	0.000
PWMV-57	0.000
PWMV-58	0.000

TABLE A-7

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - ISLAND PARK-L03

(August 6, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
IPMV-01	0.000
IPMV-02	0.000
IPMV-03	0.000
IPMV-04	0.000
IPMV-05	0.000
IPMV-06	0.000
IPMV-07	0.000
IPMV-08	0.000
IPMV-09	0.000
IPMV-10	0.000
IPMV-11	0.000
IPMV-12	0.000
IPMV-13	0.000
IPMV-14	0.000
IPMV-15	0.000
IPMV-16	0.000
IPMV-17	0.000
IPMV-18	0.000
IPMV-19	0.000
IPMV-20	0.000
IPMV-21	0.000
IPMV-22	0.000
IPMV-23	0.000
IPMV-24	0.000
IPMV-25	0.000
IPMV-26	0.000
IPMV-27	0.000
IPMV-28	0.000
IPMV-29	0.000
IPMV-30	0.000
IPMV-31	0.000
IPMV-32	0.000
IPMV-33	0.000
IPMV-34	0.000
IPMV-35	0.000
IPMV-36	0.000
IPMV-37	0.000
IPMV-38	0.000
IPMV-39	0.000
IPMV-40	0.000
IPMV-41	0.000
IPMV-42	0.000
IPMV-43	0.000
IPMV-44	0.000
IPMV-45	0.000
IPMV-46	0.000
IPMV-47	0.000

TABLE A-7 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - ISLAND PARK-L03

(August 6, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
IPMV-48	0.000

TABLE A-8

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - FLORAL PARK-G13

(August 13, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
FPMV-01	0.000
FPMV-02	0.000
FPMV-03	0.000
FPMV-04	0.000
FPMV-05	0.000
FPMV-06	0.000
FPMV-07	0.000
FPMV-08	0.000
FPMV-09	0.000
FPMV-10	0.000
FPMV-11	0.000
FPMV-12	0.000
FPMV-13	0.000
FPMV-14	0.000
FPMV-15	0.000
FPMV-16	0.000
FPMV-17	0.000
FPMV-18	0.000
FPMV-19	0.000
FPMV-20	0.000
FPMV-21	0.000
FPMV-22	0.000
FPMV-23	0.000
FPMV-24	0.000
FPMV-25	0.000
FPMV-26	0.000
FPMV-27	0.000
FPMV-28	0.000
FPMV-29	0.000
FPMV-30	0.000
FPMV-31	0.000
FPMV-32	0.010
FPMV-33	0.010
FPMV-34	0.020
FPMV-35	0.010
FPMV-36	0.010
FPMV-37	0.000
FPMV-38	0.010
FPMV-39	0.010
FPMV-40	0.000
FPMV-41	0.000
FPMV-42	0.010

TABLE A-9

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - MINEOLA-G16

(September 20, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
MIMV-01	0.000
MIMV-02	0.000
MIMV-03	0.000
MIMV-04	0.000
MIMV-05	0.000
MIMV-06	0.000
MIMV-07	0.000
MIMV-08	0.000
MIMV-09	0.000
MIMV-10	0.000
MIMV-11	0.000 - 0.001
MIMV-12	0.000
MIMV-13	0.000 - 0.002
MIMV-14	0.000
MIMV-15	0.000
MIMV-16	0.000
MIMV-17	0.000
MIMV-18	0.000
MIMV-19	0.000
MIMV-20	0.000
MIMV-21	0.000
MIMV-22	0.000
MIMV-23	0.000
MIMV-24	0.000
MIMV-25	0.000
MIMV-26	0.000
MIMV-27	0.000
MIMV-28	0.000
MIMV-29	0.000
MIMV-30	0.000
MIMV-31	0.000
MIMV-32	0.000
MIMV-33	0.000
MIMV-34	0.000
MIMV-35	0.000
MIMV-36	0.000
MIMV-37	0.000
MIMV-38	0.000
MIMV-39	0.000
MIMV-40	0.000
MIMV-41	0.000
MIMV-42	0.000
MIMV-43	0.000
MIMV-44	0.000
MIMV-45	0.000
MIMV-46	0.000
MIMV-47	0.000

TABLE A-9 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - MINEOLA-G16

(September 20, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
MIMV-48	0.000
MIMV-49	0.000
MIMV-50	0.000
MIMV-51	0.000
MIMV-52	0.000
MIMV-53	0.000
MIMV-54	0.000
MIMV-55	0.000
MIMV-56	0.000
MIMV-57	0.000
MIMV-58	0.000
MIMV-59	0.000
MIMV-60	0.000
MIMV-61	0.000
MIMV-62	0.000
MIMV-63	0.000
MIMV-64	0.000
MIMV-65	0.000
MIMV-66	0.000
MIMV-67	0.000
MIMV-68	0.000
MIMV-69	0.000
MIMV-70	0.000
MIMV-71	0.000
MIMV-72	0.000
MIMV-73	0.000
MIMV-74	0.000
MIMV-75	0.000
MIMV-76	0.000
MIMV-77	0.000
MIMV-78	0.000
MIMV-79	0.000
MIMV-80	0.000
MIMV-81	0.000
MIMV-82	0.000
MIMV-83	0.000
MIMV-84	0.000
MIMV-85	0.000
MIMV-86	0.000
MIMV-87	0.000
MIMV-88	0.000
MIMV-89	0.000
MIMV-90	0.000

TABLE A-10

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - HEMPSTEAD-H03

(November 8, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
HSMV-01	0.040
HSMV-02	0.000
HSMV-03	0.000
HSMV-04	0.000
HSMV-05	0.000
HSMV-06	0.000
HSMV-07	0.000
HSMV-08	0.000
HSMV-09	0.000
HSMV-10	0.000
HSMV-11	0.000
HSMV-12	0.000
HSMV-13	0.000
HSMV-14	0.000
HSMV-15	0.000
HSMV-16	0.000
HSMV-17	0.000
HSMV-18	0.000
HSMV-19	0.000
HSMV-20	0.000
HSMV-21	0.000
HSMV-22	0.000
HSMV-23	0.000
HSMV-24	0.000
HSMV-25	0.000
HSMV-26	0.000
HSMV-27	0.000

TABLE A-11

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - NASSAU BOULEVARD-H01

(October 28, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
NBMV-01	0.000
NBMV-02	0.000
NBMV-03	0.000
NBMV-04	0.000
NBMV-05	0.000
NBMV-06	0.000
NBMV-07	0.000
NBMV-08	0.000
NBMV-09	0.000
NBMV-10	0.000
NBMV-11	0.000
NBMV-12	0.000
NBMV-13	0.000
NBMV-14	0.000
NBMV-15	0.000
NBMV-16	0.000
NBMV-17	0.000
NBMV-18	0.000
NBMV-19	0.000
NBMV-20	0.000
NBMV-21	0.000
NBMV-22	0.000
NBMV-23	0.000
NBMV-24	0.000
NBMV-25	0.000
NBMV-26	0.000
NBMV-27	0.000
NBMV-28	0.000
NBMV-29	0.000
NBMV-30	0.000
NBMV-31	0.000
NBMV-32	0.000
NBMV-33	0.000
NBMV-34	0.000
NBMV-35	0.000
NBMV-36	0.000
NBMV-37	0.000
NBMV-38	0.000
NBMV-39	0.000
NBMV-40	0.000
NBMV-41	0.000
NBMV-42	0.000
NBMV-43	0.000
NBMV-44	0.000
NBMV-45	0.000
NBMV-46	0.000
NBMV-47	0.000

TABLE A-11 (Continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - NASSAU BOULEVARD-H01

(October 28, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
NBMV-48	0.000
NBMV-49	0.000
NBMV-50	0.000
NBMV-51	0.000
NBMV-52	0.000
NBMV-53	0.000
NBMV-54	0.000
NBMV-55	0.000
NBMV-56	0.000

TABLE A-12

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - MASSAPEQUA-S15

(November 15, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
MSMV-01	0.000
MSMV-02	0.000
MSMV-03	0.000
MSMV-04	0.000
MSMV-05	0.000
MSMV-06	0.000
MSMV-07	0.000
MSMV-08	0.000
MSMV-09	0.000
MSMV-10	0.000
MSMV-11	0.000
MSMV-12	0.000
MSMV-13	0.000
MSMV-14	0.000
MSMV-15	0.000
MSMV-16	0.000
MSMV-17	0.000
MSMV-18	0.000
MSMV-19	0.000
MSMV-20	0.000
MSMV-21	0.000
MSMV-22	0.000
MSMV-23	0.000
MSMV-24	0.000
MSMV-25	0.000
MSMV-26	0.000
MSMV-27	0.000
MSMV-28	0.000
MSMV-29	0.000
MSMV-30	0.000
MSMV-31	0.100
MSMV-32	0.480
MSMV-33	0.080
MSMV-34	0.400
MSMV-35	0.240
MSMV-36	0.020

TABLE A-13

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - BAYSIDE-N02

(November 22, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
BSMV-01	0.000
BSMV-02	0.000
BSMV-03	0.000
BSMV-04	0.000
BSMV-05	0.000
BSMV-06	0.000
BSMV-07	0.000
BSMV-08	0.000
BSMV-09	0.000
BSMV-10	0.000
BSMV-11	0.000
BSMV-12	0.000
BSMV-13	0.000
BSMV-14	0.000
BSMV-15	0.000
BSMV-16	0.000
BSMV-17	0.000
BSMV-18	0.000
BSMV-19	0.000
BSMV-20	0.000
BSMV-21	0.000
BSMV-22	0.000
BSMV-23	0.000
BSMV-24	0.000
BSMV-25	0.000
BSMV-26	0.000
BSMV-27	0.000
BSMV-28	0.000
BSMV-29	0.000
BSMV-30	0.000
BSMV-31	0.000
BSMV-32	0.000
BSMV-33	0.000
BSMV-34	0.000
BSMV-35	0.000
BSMV-36	0.000
BSMV-37	0.000
BSMV-38	0.000
BSMV-39	0.000
BSMV-40	0.060
BSMV-41	0.000
BSMV-42	0.000
BSMV-43	0.000
BSMV-44	0.000
BSMV-45	0.000
BSMV-46	0.000
BSMV-47	0.000

TABLE A-13 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - BAYSIDE-N06

(November 22, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
BSMV-48	0.000
BSMV-49	0.000
BSMV-50	0.000
BSMV-51	0.000
BSMV-52	0.000
BSMV-53	0.000
BSMV-54	0.000
BSMV-55	0.000
BSMV-56	0.000

TABLE A-14

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - LITTLE NECK-N08

(November 29, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
LNMV-01	0.000
LNMV-02	0.000
LNMV-03	0.000
LNMV-04	0.000
LNMV-05	0.000
LNMV-06	0.000
LNMV-07	0.000
LNMV-08	0.000
LNMV-09	0.000
LNMV-10	0.000
LNMV-11	0.000
LNMV-12	0.000
LNMV-13	0.000
LNMV-14	0.000
LNMV-15	0.000
LNMV-16	0.000
LNMV-17	0.000
LNMV-18	0.000
LNMV-19	0.000
LNMV-20	0.000
LNMV-21	0.000
LNMV-22	0.000
LNMV-23	0.000
LNMV-24	0.000
LNMV-25	0.000
LNMV-26	0.000
LNMV-27	0.000
LNMV-28	0.000
LNMV-29	0.000
LNMV-30	0.000
LNMV-31	0.000
LNMV-32	0.000
LNMV-33	0.000
LNMV-34	0.000
LNMV-35	0.000
LNMV-36	0.000
LNMV-37	0.000
LNMV-38	0.000
LNMV-39	0.000
LNMV-40	0.000
LNMV-41	0.000
LNMV-42	0.000
LNMV-43	0.000
LNMV-44	0.000
LNMV-45	0.000
LNMV-46	0.000
LNMV-47	0.000

TABLE A-14 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - LITTLE NECK-N08

(November 29, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
LNMV-48	0.000
LNMV-49	0.000
LNMV-50	0.000
LNMV-51	0.000
LNMV-52	0.000
LNMV-53	0.000
LNMV-54	0.000
LNMV-55	0.000
LNMV-56	0.000
LNMV-57	0.000
LNMV-58	0.000
LNMV-59	0.000
LNMV-60	0.000
LNMV-61	0.000
LNMV-62	0.000
LNMV-63	0.000
LNMV-64	0.000
LNMV-65	0.000
LNMV-66	0.000
LNMV-67	0.000
LNMV-68	0.000
LNMV-69	0.000
LNMV-70	0.000
LNMV-71	0.000
LNMV-72	0.000
LNMV-73	0.000
LNMV-74	0.000
LNMV-75	0.000
LNMV-76	0.000

TABLE A-15

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - BELLAIRE-G11

(December 6, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
BAMV-01	0.000
BAMV-02	0.000
BAMV-03	0.000
BAMV-04	0.000
BAMV-05	0.000
BAMV-06	0.000
BAMV-07	0.000
BAMV-08	0.000
BAMV-09	0.000
BAMV-10	0.000
BAMV-11	0.000
BAMV-12	0.000
BAMV-13	0.000
BAMV-14	0.000
BAMV-15	0.000
BAMV-16	0.000
BAMV-17	0.000
BAMV-18	0.000
BAMV-19	0.000
BAMV-20	0.000
BAMV-21	0.000
BAMV-22	0.000
BAMV-23	0.000
BAMV-24	0.000
BAMV-25	0.000
BAMV-26	0.000
BAMV-27	0.000
BAMV-28	0.000
BAMV-29	0.000
BAMV-30	0.000
BAMV-31	0.000
BAMV-32	0.000
BAMV-33	0.000
BAMV-34	0.000
BAMV-35	0.000
BAMV-36	0.000
BAMV-37	0.000
BAMV-38	0.000
BAMV-39	0.000
BAMV-40	0.000
BAMV-41	0.000
BAMV-42	0.000
BAMV-43	0.000
BAMV-44	0.000
BAMV-45	0.000
BAMV-46	0.000
BAMV-47	0.000

TABLE A-15 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - BELLAIRE-G11

(December 6, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
BAMV-48	0.000
BAMV-49	0.000
BAMV-50	0.000
BAMV-51	0.000
BAMV-52	0.000

TABLE A-16

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - CEDAR MANOR-A08

(December 13, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
CMMV-01	0.000
CMMV-02	0.000
CMMV-03	0.000
CMMV-04	0.000
CMMV-05	0.000
CMMV-06	0.000
CMMV-07	0.000
CMMV-08	0.000
CMMV-09	0.000
CMMV-10	0.000
CMMV-11	0.000
CMMV-12	0.000
CMMV-13	0.000
CMMV-14	0.000
CMMV-15	0.000
CMMV-16	0.000
CMMV-17	0.000
CMMV-18	0.000
CMMV-19	0.000
CMMV-20	0.000
CMMV-21	0.000
CMMV-22	0.000
CMMV-23	0.000
CMMV-24	0.000
CMMV-25	0.000
CMMV-26	0.000
CMMV-27	0.000
CMMV-28	0.000
CMMV-29	0.000
CMMV-30	0.000
CMMV-31	0.000
CMMV-32	0.000
CMMV-33	0.000
CMMV-34	0.000
CMMV-35	0.000
CMMV-36	0.000
CMMV-37	0.000
CMMV-38	0.000
CMMV-39	0.000
CMMV-40	0.000
CMMV-41	0.000
CMMV-42	0.000
CMMV-43	0.000
CMMV-44	0.000
CMMV-45	0.000
CMMV-46	0.000
CMMV-47	0.000

TABLE A-16 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - CEDAR MANOR-A08

(December 13, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
CMMV-48	0.000
CMMV-49	0.000
CMMV-50	0.000
CMMV-51	0.000
CMMV-52	0.000
CMMV-53	0.000
CMMV-54	0.000
CMMV-55	0.000
CMMV-56	0.000
CMMV-57	0.000
CMMV-58	0.000
CMMV-59	0.000
CMMV-60	0.000
CMMV-61	0.000
CMMV-62	0.000

TABLE A-17

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - KEW GARDENS-G07

(December 20, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
KGMV-01	0.000
KGMV-02	0.000
KGMV-03	0.000
KGMV-04	0.000
KGMV-05	0.000
KGMV-06	0.000
KGMV-07	0.000
KGMV-08	0.000
KGMV-09	0.000
KGMV-10	0.000
KGMV-11	0.000
KGMV-12	0.000
KGMV-13	0.000
KGMV-14	0.000
KGMV-15	0.000
KGMV-16	0.000
KGMV-17	0.000
KGMV-18	0.000
KGMV-19	0.000
KGMV-20	0.000
KGMV-21	0.000
KGMV-22	0.000
KGMV-23	0.000
KGMV-24	0.000
KGMV-25	0.010
KGMV-26	0.000
KGMV-27	0.000
KGMV-28	0.000
KGMV-29	0.000
KGMV-30	0.020
KGMV-31	0.000
KGMV-32	0.010
KGMV-33	0.000
KGMV-34	0.010
KGMV-35	0.000
KGMV-36	0.000
KGMV-37	0.000
KGMV-38	0.000
KGMV-39	0.110
KGMV-40	0.000
KGMV-41	0.000
KGMV-42	0.000

TABLE A-18

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - ST. ALBANS-S01

(October 18, 1999)

Measurement I.D.	MVA (mg/m^3 Hg)
SAMV-01	0.000
SAMV-02	0.000
SAMV-03	0.000
SAMV-04	0.000
SAMV-05	0.000
SAMV-06	0.000
SAMV-07	0.000
SAMV-08	0.000
SAMV-09	0.000
SAMV-10	0.000
SAMV-11	0.000
SAMV-12	0.000
SAMV-13	0.000
SAMV-14	0.000
SAMV-15	0.000
SAMV-16	0.000
SAMV-17	0.000
SAMV-18	0.000
SAMV-19	0.000
SAMV-20	0.000
SAMV-21	0.000
SAMV-22	0.000
SAMV-23	0.000
SAMV-24	0.000
SAMV-25	0.000
SAMV-26	0.000
SAMV-27	0.000
SAMV-28	0.000
SAMV-29	0.000
SAMV-30	0.000
SAMV-31	0.000
SAMV-32	0.000
SAMV-33	0.000
SAMV-34	0.000
SAMV-35	0.000
SAMV-36	0.000

TABLE A-19

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - LINDENHURST-S19

(January 4, 2000)

Measurement I.D.	MVA (mg/m^3 Hg)
LHMV-01	0.000
LHMV-02	0.000
LHMV-03	0.000
LHMV-04	0.000
LHMV-05	0.000
LHMV-06	0.000
LHMV-07	0.000
LHMV-08	0.000
LHMV-09	0.000
LHMV-10	0.000
LHMV-11	0.000
LHMV-12	0.000
LHMV-13	0.000
LHMV-14	0.000
LHMV-15	0.000
LHMV-16	0.000
LHMV-17	0.020
LHMV-18	0.000
LHMV-19	0.000
LHMV-20	0.000
LHMV-21	0.000
LHMV-22	0.010
LHMV-23	0.000
LHMV-24	0.000
LHMV-25	0.000
LHMV-26	0.000
LHMV-27	0.000
LHMV-28	0.000
LHMV-29	0.000
LHMV-30	0.000
LHMV-31	0.000
LHMV-32	0.000
LHMV-33	0.000
LHMV-34	0.000
LHMV-35	0.000
LHMV-36	0.000
LHMV-37	0.000
LHMV-38	0.000
LHMV-39	0.000
LHMV-40	0.000
LHMV-41	0.000
LHMV-42	0.000
LHMV-43	0.000
LHMV-44	0.000
LHMV-45	0.000
LHMV-46	0.000
LHMV-47	0.000

TABLE A-19 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - LINDENHURST-S19

(January 4, 2000)

Measurement I.D.	MVA (mg/m^3 Hg)
LHMV-48	0.000
LHMV-49	0.000
LHMV-50	0.000
LHMV-51	0.010
LHMV-52	0.000
LHMV-53	0.010
LHMV-54	0.010
LHMV-55	0.010
LHMV-56	0.000
LHMV-57	0.000
LHMV-58	0.000
LHMV-59	0.000
LHMV-60	0.000
LHMV-61	0.000
LHMV-62	0.000
LHMV-63	0.000
LHMV-64	0.000
LHMV-65	0.000
LHMV-66	0.000

TABLE A-20

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - BABYLON YARD-S22

(January 10, 2000)

Measurement I.D.	MVA (mg/m^3 Hg)
BYMV-01	0.000
BYMV-02	0.000
BYMV-03	0.000
BYMV-04	0.000
BYMV-05	0.000
BYMV-06	0.000
BYMV-07	0.000
BYMV-08	0.000
BYMV-09	0.000
BYMV-10	0.000
BYMV-11	0.000
BYMV-12	0.000
BYMV-13	0.000
BYMV-14	0.000
BYMV-15	0.000
BYMV-16	0.000
BYMV-17	0.000
BYMV-18	0.000
BYMV-19	0.000
BYMV-20	0.000
BYMV-21	0.000
BYMV-22	0.000
BYMV-23	0.000
BYMV-24	0.000
BYMV-25	0.000
BYMV-26	0.000
BYMV-27	0.000
BYMV-28	0.000
BYMV-29	0.000
BYMV-30	0.000
BYMV-31	0.000
BYMV-32	0.000
BYMV-33	0.000
BYMV-34	0.000
BYMV-35	0.000
BYMV-36	0.000
BYMV-37	0.000
BYMV-38	0.000
BYMV-39	0.110
BYMV-40	0.000
BYMV-41	0.000
BYMV-42	0.000
BYMV-43	0.000
BYMV-44	0.064
BYMV-45	0.000
BYMV-46	0.000
BYMV-47	0.000

TABLE A-20 (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MERCURY VAPOR MEASUREMENT RESULTS - BABYLON YARD-S22

(January 10, 2000)

Measurement I.D.	MVA (mg/m^3 Hg)
BYMV-48	0.000
BYMV-49	0.000
BYMV-50	0.000
BYMV-51	0.000
BYMV-52	0.000
BYMV-53	0.000
BYMV-54	0.000
BYMV-55	0.000
BYMV-56	0.000
BYMV-57	0.000
BYMV-58	0.000
BYMV-59	0.000
BYMV-60	0.000
BYMV-61	0.000
BYMV-62	0.000
BYMV-63	0.000
BYMV-64	0.000
BYMV-65	0.000
BYMV-66	0.000
BYMV-67	0.000
BYMV-68	0.000
BYMV-69	0.000
BYMV-70	0.000
BYMV-71	0.000
BYMV-72	0.000
BYMV-73	0.000
BYMV-74	0.000
BYMV-75	0.000
BYMV-76	0.000

APPENDIX B

DRAIN PIPE TRACING REPORTS

APPENDIX C

GEOPHYSICAL SURVEY REPORTS

APPENDIX D

ANALYTICAL RESULTS

TABLE D-1A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	Rectifier Pit		Water Trough Pit		Southeast Exterior Conduit Pit			
SAMPLE ID	**MHSBB-01**	**MHSBB-01**	**MHSBB-02**	**MHSBB-02**	**MHSBB-03**	**MHSBB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**2-3**	**2-4**	**4-6**	**7-9**	**9-11**		
DATE OF COLLECTION	6/24/1999	6/24/1999	6/22/1999	6/22/1999	6/21/1999	6/21/1999		
PERCENT SOLIDS	88	91	92	94	92	97		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	171	392	514	247	0.054 U	0.043 U	0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-1A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	Dry Well			South Exterior Conduit Pit		South of West Rail Road Ties		
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MHSBB-04** **12.5-14.5** 6/24/1999 96 (mg/kg)	**MHSBB-04** **14.5-16.5** 6/24/1999 88 (mg/kg)	**MHSBB-04(2)** **SEE NOTES(3)** 6/24/1999 92 (mg/kg)	**MHSBB-05** **2-4** 6/21/1999 93 (mg/kg)	**MHSBB-05** **6-8** 6/21/1999 96 (mg/kg)	**MHSBB-06** **0-2** 6/22/1999 95 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	1.7	0.87	0.089 B	0.054 U	0.042 U	0.272 U	0.1	0.001 - 0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

(2) Composite sample.

(3) Depth is 0-6 inches.

QUALIFIERS:

U: Constituent analyzed for but not detected.

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-1A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	South of West Rail Road Ties	North of West-End Rail Road Ties		Drainage Swale				
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MHSBB-06** **4-6** 6/22/1999 93 (mg/kg)	**MHSBB-07** **2-4** 6/22/1999 94 (mg/kg)	**MHSBB-07** **4-6** 6/22/1999 91 (mg/kg)	**MHSBB-08** **0-2** 6/22/1999 94 (mg/kg)	**MHSBB-08** **4-6** 6/22/1999 89 (mg/kg)	**MHSBB-09** **0-2** 6/21/1999 60 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	1.1	38.2	0.050 U	0.046 U	0.066 B	1.3	0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-1A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	Drainage Swale							
SAMPLE ID	**MHSBB-09**	**MHSBB-10**	**MHSBB-10**	**MHSBB-11**	**MHSBB-11**	**MHFB-01**	**Instrument Detection Limits**	**Eastern USA Background Levels(1)**
SAMPLE DEPTH (ft.)	**4-6**	**0-2**	**4-6**	**0-2**	**4-6**	**----**		
DATE OF COLLECTION	6/21/1999	6/21/1999	6/21/1999	6/21/1999	6/21/1999	6/22/1999		
PERCENT SOLIDS	80	88	96	88	92	**----**		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)	(mg/kg)
Mercury	0.17 B	0.045 U	0.043 U	0.13 B	0.049 U	7.3	0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-1A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	**West of Substation**							
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MHSBB-12** **0-2** 6/22/1999 92 (mg/kg)	**MHSBB-12** **4-6** 6/22/1999 87 (mg/kg)					**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.057 B	0.063 B					0.1	0.001 - 0.2

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

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-1B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	Slop Sink Discharge Point	Drainage Swale				North of West-End Rail Road Ties		
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MHSS-01** **0-6** 6/21/1999 86 (mg/kg)	**MHSS-02** **0-6** 6/21/1999 85 (mg/kg)	**MHSS-03** **0-6** 6/21/1999 94 (mg/kg)	**MHSS-04** **0-6** 6/21/1999 85 (mg/kg)	**MHSS-05** **0-6** 6/21/1999 79 (mg/kg)	**MHSS-06** **0-6** 6/21/1999 86 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	25.1	2.1	0.75	3.6	7.4	143	0.1	0.001 - 0.2

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

TABLE D-1B (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	South of West-End Rail Road Ties	Out Fall to Manhasset Bay	Drainage Swale					
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MHSS-07** **0-6** 6/21/1999 85 (mg/kg)	**MHSS-08** **0-6** 6/24/1999 25 (mg/kg)	**MHSS-09** **0-6** 6/25/1999 86 (mg/kg)	**MHSS-10** **0-6** 6/25/1999 83 (mg/kg)	**MHSS-11** **0-6** 6/25/1999 76 (mg/kg)	**MHSS-12** **0-6** 6/25/1999 79 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	166	1.3	127	110	9,880	1,890	0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-1B (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	**Drainage Swale**							
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MHSS-13** **0-6** 6/25/1999 89 (mg/kg)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	13.7						0.1	0.001 - 0.2

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

TABLE D-1C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MONITORING WELL GROUNDWATER SAMPLING RESULTS - MANHASSET-N10
MERCURY

LOCATION	Northwest of Substation Front Entrance (Downgradient)		Southeast of Substation Transformer Yard (Upgradient)				Instrument Detection Limit	Groundwater Guidance Value for GA Class [1]
SAMPLE ID	MHMW-01	MHMW-01F[2]	MHMW-02	MHMW-02F[2]	FB-07	FB-07[2]		
DATE OF COLLECTION	7/29/1999	7/29/1999	7/29/1999	7/29/1999	7/29/1999	7/29/1999		
UNITS	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Mercury	1.5	0.15 U	0.26 B	0.15 U	0.16 U	0.15 U	0.1	0.7

NOTES:

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

[2] Filtered sample.

QUALIFIERS:

U: Constituent analyzed for but not detected.

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-2A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - SHEA-N02
MERCURY

LOCATION	East of Concrete Loading Dock				East of Substation Centrally Located in Front of South Sliding Door			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**SSSBB-01** **0-2** 7/1/1999 87 (mg/kg)	**SSSBB-01** **4-6** 7/1/1999 85 (mg/kg)	**SSSBB-02** **0-2** 7/1/1999 82 (mg/kg)	**SSSBB-02** **2-4** 7/1/1999 78 (mg/kg)	**SSSBB-03** **2-4** 7/1/1999 80 (mg/kg)	**SSSBB-03** **4-6** 7/1/1999 75 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	292	22.2	88.7	11.1	132	7.5	0.1	0.001 - 0.2

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

TABLE D-2A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - SHEA-N02
MERCURY

LOCATION	East Side of Substation, North of Concrete Stairs		Southeast Interior Section of Substation		West Section of Water Trough Pit			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**SSSBB-04** **0-2** 7/1/1999 89 (mg/kg)	**SSSBB-04** **4-6** 7/1/1999 81 (mg/kg)	**SSSBB-05** **0-2** 7/2/1999 87 (mg/kg)	**SSSBB-05** **4-6** 7/2/1999 81 (mg/kg)	**SSSBB-07** **2-4** 7/2/1999 83 (mg/kg)	**SSSBB-07** **4-6** 7/2/1999 68 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	8.7	11.8	93.1	7.1	16.4	8.7	0.1	0.001 - 0.2

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-2A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - SHEA-N02
MERCURY

LOCATION	**East Section of Utility Trench**							
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**SSSBB-08** **2-4** 7/2/1999 76 (mg/kg)	**SSSBB-08** **4-6** 7/2/1999 67 (mg/kg)					**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	40.8	11.7					0.1	0.001 - 0.2

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

TABLE D-2B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - SHEA-N02
MERCURY

LOCATION	Southeast Corner of Former Concrete Loading Dock	Northeast Corner of Substation	Central North Side of Substation	Northwest Side of Substation	Northeast Corner of Former Concrete Loading Dock			
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**SSSS-01** **0-6** 7/1/1999 79 (mg/kg)	**SSSS-02** **0-6** 7/1/1999 79 (mg/kg)	**SSSS-03** **0-6** 7/1/1999 86 (mg/kg)	**SSSS-04** **0-6** 7/1/1999 87 (mg/kg)	**SSSS-05** **0-6** 7/6/1999 86 (mg/kg)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	45.9	575	13.1	6.8	160,000		0.1	0.001 - 0.2

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

TABLE D-2C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - SHEA-N02
MERCURY

LOCATION	Southeast Interior Section of Substation	West Section of Water Trough Pit	East Section of Utility Trench	East Interior Section of Substation			
SAMPLE ID	**SSCS-01**	**SSCS-02**	**SSCS-03**	**SSCS-04**			**Instrument Detection Limits**
DATE OF COLLECTION	7/1/1999	7/6/1999	7/6/1999	7/6/1999			
PERCENT SOLIDS	91	92	96	97			
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)			(ug/L)
Mercury	0.38	1,760	0.068 B	10,300			0.1

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-2D

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
MONITORING WELL GROUNDWATER SAMPLING RESULTS - SHEA SUBSTATION
MERCURY

LOCATION	North of Substation Park Dept Parking Lot (Downgradient)		South of LIRR Rail Road Tracks (Upgradient)					Groundwater Guidance Value for GA Class Water[1]
SAMPLE ID	**SSMW-01**	**SSMW-01F[2]**	**SSMW-02**	**SSMW-02F[2]**	**FB-01**	**FB-01[2]**	**Instrument Detection**	
DATE OF COLLECTION	5/1/2000	5/1/2000	5/1/2000	5/1/2000	5/1/2000	5/1/2000		
UNITS	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Mercury	18.4	0.15 U	11.7	0.14 U	0.15 U	0.15 U	0.1	0.7

NOTES:

[1] Background level for mercury provided in
NYSDEC Division of Water (TOGS 1.1.1) dated June 1998.

[2] Filtered sample.

QUALIFIERS:

U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL,
but greater than the IDL.

TABLE D-3A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FAR ROCKAWAY-F03
MERCURY

LOCATION	Southwest Corner of North-End Concrete Steps		Exterior Conduit Pit Floor Drain		West Dry Well			
SAMPLE ID	**FRSB-01**	**FRSB-01**	**FRSB-02**	**FRSB-02**	**FRSB-03**	**FRSB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**4.5-6.5**	**8.5-10.5**	**4-6**	**8-10**		
DATE OF COLLECTION	7/13/1999	7/13/1999	7/13/1999	7/13/1999	7/13/1999	7/13/1999		
PERCENT SOLIDS	92	82	72	86	83	84		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	2,860	3	91.3	0.086 B	2.9	0.050 U	0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-3A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FAR ROCKAWAY-F03
MERCURY

LOCATION	Northeast Interior Corner Pipe Trench		South Dry Well		Rectifier Pit			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**FRSB-04** **0-2** 7/14/1999 87 (mg/kg)	**FRSB-04** **4-6** 7/14/1999 89 (mg/kg)	**FRSB-05** **4-6** 7/14/1999 85 (mg/kg)	**FRSB-05** **6-8** 7/14/1999 83 (mg/kg)	**FRSB-06** **0-2** 7/14/1999 93 (mg/kg)	**FRSB-06** **4-6** 7/14/1999 83 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	2.3	0.19	3.1	0.28	0.82	0.87	0.1	0.001 - 0.2

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

TABLE D-3A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FAR ROCKAWAY-F03
MERCURY

LOCATION	**Interior Water Trough Pit**							
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**FRSB-07** **0-2** 7/20/1999 86 (mg/kg)	**FRSB-07** **4-6** 7/20/1999 80 (mg/kg)	**FRFB-01** **----** 7/14/1999 **----** (ug/L)				**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	1.4	0.83	0.14 U				0.1	0.001 - 0.2

NOTES:

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

QUALIFIERS:

U: Constituent analyzed for but not detected.

TABLE D-3B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - FAR ROCKAWAY-F03
MERCURY

LOCATION	Northwest Exterior Corner of Substation	Southeast Corner of North-End Concrete Steps	Northeast Exterior of Substation	Southwest Exterior of Substation				
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**FRSS-01** **0-6** 7/13/1999 74 (mg/kg)	**FRSS-02** **0-6** 7/13/1999 88 (mg/kg)	**FRSS-03** **0-6** 7/13/1999 94 (mg/kg)	**FRSS-04** **0-6** 7/13/1999 93 (mg/kg)			**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	132	1,020	322	6.6			0.1	0.001 - 0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-3C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - FAR ROCKAWAY-F03
MERCURY

LOCATION	**Northeast Interior Corner Pipe Trench**	**Rectifier Pit**	**Water Trough Pit**				
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**FRCC-01** 7/14/1999 94 (mg/kg)	**FRCC-02** 7/14/1999 98 (mg/kg)	**FRCC-03** 7/20/1999 92 (mg/kg)	**FRFB-02** 7/20/1999 **----** (ug/L)			**Instrument Detection Limits** (ug/L)
Mercury	6.5	186	26	1.2			0.1

NOTES:
----: Not applicable.

TABLE D-4A

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

LOCATION	Dry Well		Water Trough Pit West of Rectifier Pit		Rectifier Pit			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**VSSB-01** **6-8** 7/20/1999 96 (mg/kg)	**VSSB-01** **10-12** 7/20/1999 80 (mg/kg)	**VSSB-02** **2-4** 7/20/1999 91 (mg/kg)	**VSSB-02** **4-6** 7/20/1999 91 (mg/kg)	**VSSB-03** **2-4** 7/21/1999 95 (mg/kg)	**VSSB-03** **4-6** 7/21/1999 91 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	1.8	1.6	22.7	4.1	103	2	0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-4A (continued)

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

LOCATION	Northeast Exterior Corner of Substation		Northeast Exterior Corner of Substation		Northeast Exterior Corner of Substation			
SAMPLE ID	**VSSB-04**	**VSSB-04**	**VSSB-05**	**VSSB-05**	**VSSB-06**	**VSSB-06**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**2-4**	**4-6**	**0-2**	**4-6**	**2-4**	**4-6**		
DATE OF COLLECTION	7/21/1999	7/21/1999	7/21/1999	7/21/1999	7/21/1999	7/21/1999		
PERCENT SOLIDS	80	91	94	93	91	90		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	10.6	87.9	5,910	2,600	426	1,240	0.1	0.001 - 0.2

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

TABLE D-4A (continued)

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

LOCATION								
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**VSFB-01** **----** 7/20/1999 **----** (ug/L)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	0.38						0.1	0.001 - 0.2

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

TABLE D-4B

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

LOCATION	**East of North Concrete Steps**	**Southwest Exterior of Substation**						
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**VSSS-01** **0-6** 7/20/1999 86 (mg/kg)	**VSSS-02** **0-6** 7/20/1999 82 (mg/kg)					**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	249,000	22.6					0.1	0.001 - 0.2

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-4C

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

LOCATION	Water Trough Pit	Rectifier Pit					
SAMPLE ID	**VSCC-01**	**VSCC-02**	**VSFB-02**				**Instrument**
DATE OF COLLECTION	7/20/1999	7/21/1999	7/20/1999				**Detection**
PERCENT SOLIDS	90	97	**----**				**Limits**
UNITS	(mg/kg)	(mg/kg)	(ug/L)				(ug/L)
Mercury	181	580	1.5				0.1

NOTES:
----: Not applicable.

TABLE D-5A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ROCKVILLE CENTRE-S07
MERCURY

LOCATION	North of North Concrete Platform		Southeast Exterior Corner of Substation		Northwest Utility Manhole			
SAMPLE ID	**RCSB-01**	**RCSB-01**	**RCSB-02**	**RCSB-02**	**RCSB-03**	**RCSB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**4-6**	**8.5-10.5**	**12.5-14.5**		
DATE OF COLLECTION	7/27/1999	7/27/1999	7/27/1999	8/2/1999	7/27/1999	7/27/1999		
PERCENT SOLIDS	81	98	74	83	92	95		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	1.4	0.049 U	0.081 B	0.050 U	0.19	0.046 U	0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-5A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ROCKVILLE CENTRE-S07
MERCURY

LOCATION	West Rectifier Pit		Northwest Water Meter Pit		South of Southwest Concrete Steps			
SAMPLE ID	**RCSB-04**	**RCSB-04**	**RCSB-05**	**RCSB-05**	**RCSB-06**	**RCSB-06**	**Instrument Detection Limits**	**Eastern USA Background Levels**[1]
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**4-6**	**8-10**	**0-2**	**4-6**		
DATE OF COLLECTION	8/2/1999	8/2/1999	8/2/1999	8/2/1999	8/2/1999	8/2/1999		
PERCENT SOLIDS	90	87	88	96	88	88		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	15.9	10.7	0.057 B	1.2	1.4	0.17	0.1	0.001 - 0.2

NOTES:

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

QUALIFIERS:

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-5A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ROCKVILLE CENTRE-S07
MERCURY

LOCATION	East Rectifier Pit		Northwest Suspect Dry Well Location					
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**RCSB-07** **0-2** 8/2/1999 88 (mg/kg)	**RCSB-07** **4-6** 8/2/1999 98 (mg/kg)	**RCSB-08** **10-12** 8/2/1999 93 (mg/kg)	**RCSB-08** **14-16** 8/2/1999 85 (mg/kg)	**RCFB-01** **----** 7/27/1999 **----** (ug/L)	**RCFB-02** **----** 7/27/1999 **----** (ug/L)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	0.047 U	0.041 U	0.043 U	0.051 U	0.15 U	0.16 U	0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-5B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - ROCKVILLE CENTRE-S07
MERCURY

LOCATION	East of Northeast Concrete Steps	East of North Concrete Platform	South of Southwest Concrete Steps	West of Southwest Concrete Platform	West of North Concrete Platform			
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**RCSS-01** **0-6** 7/27/1999 80 (mg/kg)	**RCSS-02** **0-6** 7/27/1999 75 (mg/kg)	**RCSS-03** **0-6** 7/27/1999 84 (mg/kg)	**RCSS-04** **0-6** 7/27/1999 83 (mg/kg)	**RCSS-05** **0-6** 7/27/1999 88 (mg/kg)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	22.8	50.8	4.3	16.3	21.5		0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-5C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - ROCKVILLE CENTRE-S07
MERCURY

LOCATION	**East Rectifier Pit**							
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**RCCC-01** 8/2/1999 97 (mg/kg)	**RCFB-03** 8/2/1999 **----** (ug/L)						**Instrument Detection Limits** (ug/L)
Mercury	3.5	0.10	U					0.1

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-6A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - PORT WASHINGTON-N12
MERCURY

LOCATION	South Rectifier Pit		North Rectifier Pit		Dry Well			
SAMPLE ID	**PWSB-01**	**PWSB-01**	**PWSB-02**	**PWSB-02**	**PWSB-03**	**PWSB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**2-4**	**0-2**	**2-4**	**9-11**	**13-15**		
DATE OF COLLECTION	8/3/1999	8/3/1999	8/3/1999	8/3/1999	8/3/1999	8/3/1999		
PERCENT SOLIDS	82	95	95	84	89	95		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.085 B	0.16	0.048 U	0.060 U	0.33	0.15	0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-6A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - PORT WASHINGTON-N12
MERCURY

LOCATION	East of Concrete Platform on East Side of Substation		East of Concrete Platform on Northeast Side of Substation		Exterior Water Meter Pit			
SAMPLE ID	**PWSB-04**	**PWSB-04**	**PWSB-05**	**PWSB-05**	**PWSB-06**	**PWSB-06**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**4-6**	**2.5-4.5**	**6.5-8.5**		
DATE OF COLLECTION	8/3/1999	8/3/1999	8/3/1999	8/3/1999	8/3/1999	8/3/1999		
PERCENT SOLIDS	89	81	95	90	82	86		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	2.7	1.7	0.33	4.1	0.12 B	0.092 B	0.1	0.001 - 0.2

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

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-6A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - PORT WASHINGTON-N12
MERCURY

LOCATION								
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**PWFB-01** **----** 8/3/1999 ---- (ug/L)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.15 U						0.1	0.001 - 0.2

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

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-6B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - PORT WASHINGTON-N12
MERCURY

LOCATION	South of Concrete Steps on East Side of Substation	Southeast of Concrete Platform on East Side of Substation	Northeast of Concrete Platform on East Side of Substation	North of Concrete Steps on Northeast Side of Substation	West of Concrete Steps on Southwest Side of Substation			
SAMPLE ID	**PWSS-01**	**PWSS-02**	**PWSS-03**	**PWSS-04**	**PWSS-05**		**Instrument Detection Limits**	**Eastern USA Background Levels(1)**
SAMPLE DEPTH (in.)	**0-6**	**0-6**	**0-6**	**0-6**	**0-6**			
DATE OF COLLECTION	8/3/1999	8/3/1999	8/3/1999	8/3/1999	8/3/1999			
PERCENT SOLIDS	91	93	89	91	93			
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(ug/L)	(mg/kg)
Mercury	4.5	5.1	37	4	1.5		0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-6C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - PORT WASHINGTON-N12
MERCURY

LOCATION	South Rectifier Pit	North Rectifier Pit					
SAMPLE ID	**PWCC-01**	**PWCC-02**	**PWFB-02**				**Instrument**
DATE OF COLLECTION	8/3/1999	8/3/1999	8/3/1999				**Detection**
PERCENT SOLIDS	96	96	----				**Limits**
UNITS	(mg/kg)	(mg/kg)	(ug/L)				(ug/L)
Mercury	16.9	1,600	0.208 B				0.1

NOTES:
----: Not applicable.
QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-7A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ISLAND PARK-L03
MERCURY

LOCATION	Sump Pump Pit			West Corner Utility Trench				Exterior Water Meter Pit					
SAMPLE ID	**IPSB-01**		**IPSB-01**	**IPSB-02**		**IPSB-02**		**IPSB-03**	**IPSB-03**		**Instrument**	**Eastern USA**
SAMPLE DEPTH (ft.)	**0-2**		**2-4**	**0-2**		**4-6**		**2.5-4.5**	**6.5-8.5**		**Detection**	**Background**
DATE OF COLLECTION	10/4/1999		10/4/1999	10/4/1999		10/4/1999		8/10/1999	8/10/1999		**Limits**	**Levels(1)**
PERCENT SOLIDS	80		78	89		85		82	95			
UNITS	(mg/kg)		(mg/kg)	(mg/kg)		(mg/kg)		(mg/kg)	(mg/kg)		(ug/L)	(mg/kg)
Mercury	0.10	B	0.24	0.056	U	0.074	B	0.44	0.047	U	0.1	0.001-0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:

U: Constituent analyzed for but not detected.

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-7A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ISLAND PARK-L03
MERCURY

LOCATION	South Front-Entrance Concrete Platform		South Front-Entrance Concrete Platform		North Dry Well			
SAMPLE ID	**IPSB-04**	**IPSB-04**	**IPSB-05**	**IPSB-05**	**IPSB-06**	**IPSB-06**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**4-6**	**5-7**	**9-11**		
DATE OF COLLECTION	8/10/1999	8/10/1999	8/10/1999	8/10/1999	10/5/1999	10/5/1999		
PERCENT SOLIDS	92	84	84	75	81	36		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	2	0.23	1.9	0.063 U	0.062 U	0.13 U	0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-7A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ISLAND PARK-L03
MERCURY

LOCATION	South Dry Well		South of Dry Well For Rectifiers		East of West Dry Well			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**IPSB-07** **5-7** 10/5/1999 82 (mg/kg)	**IPSB-07** **9-11** 10/5/1999 68 (mg/kg)	**IPSB-08** **5-7** 10/5/1999 83 (mg/kg)	**IPSB-08** **9-11** 10/5/1999 36 (mg/kg)	**IPSB-09** **5-7** 10/5/1999 80 (mg/kg)	**IPSB-09** **9-11** 10/5/1999 51 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.049 U	0.070 U	0.060 U	0.14 U	0.060 U	0.085 U	0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-7A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ISLAND PARK-L03
MERCURY

LOCATION								
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**IPFB-01** **----** 10/8/1999 **----** (ug/L)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.17 U						0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-7B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - ISLAND PARK-L03
MERCURY

LOCATION	South of Rear Concrete Platform	West of Rear Concrete Steps\Pad	North of Rear Concrete Steps\Pad	East of Rear Concrete Steps\Pad				
SAMPLE ID	**IPSS-01**	**IPSS-02**	**IPSS-03**	**IPSS-04**			**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-6**	**0-6**	**0-6**	**0-6**				
DATE OF COLLECTION	8/10/1999	8/10/1999	8/10/1999	8/10/1999				
PERCENT SOLIDS	88	84	87	85				
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)			(ug/L)	(mg/kg)
Mercury	12.2	35.4	10.8	27			0.1	0.001-0.2

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

TABLE D-7C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - ISLAND PARK-L03
MERCURY

LOCATION	Sump Pump Pit	West Corner Utility Trench					
SAMPLE ID	**IPCC-01**	**IPCC-02**	**IPFB-02**				**Instrument**
DATE OF COLLECTION	10/4/1999	10/4/1999	10/4/1999				**Detection**
PERCENT SOLIDS	97	94	----				**Limits**
UNITS	(mg/kg)	(mg/kg)	(ug/L)				(ug/L)
Mercury	4.7	0.93	0.16 B				0.1

NOTES:
----: Not applicable.

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-8A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	East Rectifier Pit		West Rectifier Pit		Dry Well on East Side of Substation			
SAMPLE ID	**FPSB-01**	**FPSB-01**	**FPSB-02**	**FPSB-02**	**FPSB-03**	**FPSB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**4-6**	**5.5-7.5**	**11.5-13.5**		
DATE OF COLLECTION	10/7/1999	10/7/1999	10/7/1999	10/7/1999	10/7/1999	10/7/1999		
PERCENT SOLIDS	97	98	94	98	89	97		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	3	1.8	4.8	1	76.4	4.4	0.1	0.001-0.2

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

TABLE D-8A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	East Water Trough Pit		Conduit Pit in South/Southeast Section of Transformer Yard		Center of Wood-Plank Double Swing Doors on East Side of Substation			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**FPSB-04** **0-2** 10/7/1999 77 (mg/kg)	**FPSB-04** **4-6** 10/7/1999 98 (mg/kg)	**FPSB-05** **4-6** 10/7/1999 96 (mg/kg)	**FPSB-05** **8-10** 10/7/1999 97 (mg/kg)	**FPSB-06** **0-2** 10/7/1999 97 (mg/kg)	**FPSB-06** **4-6** 10/7/1999 98 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	19,500	130	0.47	0.052 U	27.8	1.3	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-8A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	West Water Trough pit		East Front Door Entrance to Substation		North of North-End Concrete Retaining Wall on East Side of Substation			
SAMPLE ID	**FPSB-07**	**FPSB-07**	**FPSB-08**	**FPSB-08**	**FPSB-09**	**FPSB-09**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**4-6**	**2-4**	**4-6**		
DATE OF COLLECTION	10/7/1999	10/7/1999	10/8/1999	10/8/1999	10/8/1999	10/8/1999		
PERCENT SOLIDS	81	95	89	86	96	98		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	50,400	136	99.3	0.14 B	1.6	0.37	0.1	0.001-0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-8A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	East Control Conduit Pit on South Side of Substation	West Control Conduit Pit on South Side of Substation	Positive Cable Manhole on North Side of Substation		Positive Cable Manhole on West Side of Substation			
SAMPLE ID	**FPSB-10**	**FPSB-11**	**FPSB-12**	**FPSB-12**	**FPSB-13**	**FPSB-13**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**7-9**	**7-9**	**10-12**	**14-16**	**8-10**	**12-14**		
DATE OF COLLECTION	10/8/1999	10/8/1999	10/8/1999	10/8/1999	10/8/1999	10/8/1999		
PERCENT SOLIDS	93	93	96	95	69	97		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	20.7	3.9	0.052 U	20.5	2.3	0.048 B	0.1	0.001-0.2

NOTES:

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

QUALIFIERS:

U: Constituent analyzed for but not detected.

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-8A (continued)
LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	**Negative Feed Manhole off Northwest Corner of Substation**	**Cesspool off Southwest Corner of Substation**						
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**FPSB-14** **6-8** 10/8/1999 77 (mg/kg)	**FPSB-15** **9.5-11.5** 10/8/1999 59 (mg/kg)	**FPSB-15** **13.5-15.5** 10/8/1999 88 (mg/kg)	**FPFB-02** 10/8/1999 ---- (ug/L)			**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	2	3.2	2.7	0.67			0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

TABLE D-8B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	North-End Corner of Wood-Plank Double Swing Doors	South-End Corner of Wood-Plank Double Swing Doors	North of Front Door Entrance to Substation	South of Front Door Entrance to Substation	North of Exterior Concrete Steps On East Side of Substation	Center-North of North Concrete Retaining Wall		
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**FPSS-01** **0-6** 10/7/1999 76 (mg/kg)	**FPSS-02** **0-6** 10/7/1999 73 (mg/kg)	**FPSS-03** **0-6** 10/7/1999 85 (mg/kg)	**FPSS-04** **0-6** 10/7/1999 85 (mg/kg)	**FPSS-05** **0-6** 10/7/1999 89 (mg/kg)	**FPSS-06** **0-6** 10/7/1999 88 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	793	147	14.7	200	1,650	364	0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-8B (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	Southeast Corner of Exterior Concrete Steps	South of Rail Road Tie Lying East on South Side of Substation	North of Rail Road Tie Lying East on South Side of Substation	Center of Vent Pit off Southwest Corner of Substation				
SAMPLE ID	**FPSS-07**	**FPSS-08**	**FPSS-09**	**FPSS-10**			**Instrument**	**Eastern USA**
SAMPLE DEPTH (in.)	**0-6**	**0-6**	**0-6**	**0-6**			**Detection**	**Background**
DATE OF COLLECTION	10/7/1999	10/7/1999	10/7/1999	10/8/1999			**Limits**	**Levels(1)**
PERCENT SOLIDS	84	85	83	73				
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)			(ug/L)	(mg/kg)
Mercury	1,700	6,150	41.9	44.7			0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-8C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - FLORAL PARK-G13
MERCURY

LOCATION	**East Rectifier Pit**	**West Rectifier Pit**					
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**FPCC-01** 10/7/1999 94 (mg/kg)	**FPCC-02** 10/7/1999 96 (mg/kg)	**FPFB-01** 10/7/1999 ---- (ug/L)				**Instrument Detection Limits** (ug/L)
Mercury	2.6	8	0.42				0.1

NOTES:
----: Not applicable.

TABLE D-9A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MINEOLA-G16
MERCURY

LOCATION	South of Substation in Center of Front Doors		South Exterior Corner of Substation		Center Sub-Basement Floor Drain	North Open Grate Dry Well		
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MISB-01** **0-2** 11/3/1999 93 (mg/kg)	**MISB-01** **4-6** 11/3/1999 99 (mg/kg)	**MISB-02** **0-2** 11/3/1999 91 (mg/kg)	**MISB-02** **4-6** 11/3/1999 100 (mg/kg)	**MISB-03** **0-2** 11/3/1999 82 (mg/kg)	**MISB-07** **0-2** 11/3/1999 98 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	0.11	0.044 U	0.22	0.045 U	1,550	0.17	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-9A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MINEOLA-G16
MERCURY

LOCATION	North Open Grate Dry Well		East Open Grate Dry Well			South Open Grate Dry Well								
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MISB-07** **4-6** 11/3/1999 99 (mg/kg)		**MISB-08** **0-2** 11/3/1999 100 (mg/kg)		**MISB-08** **4-6** 11/3/1999 100 (mg/kg)		**MISB-11** **0-2** 11/3/1999 97 (mg/kg)		**MISB-11** **4-6** 11/3/1999 100 (mg/kg)		**MIFB-02** ---- 11/3/1999 ---- (ug/L)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)	
Mercury	0.065	B	0.044	B	0.040	U	0.19		0.042	U	0.56	0.1	0.001-0.2	

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-9B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MINEOLA-G16
MERCURY

LOCATION	South Side of Substation	South Corner of Substation	North Side of Substation	West Side of Substation in Storage Yard Area				
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MISS-01** **0-6** 11/3/1999 97 (mg/kg)	**MISS-02** **0-6** 11/3/1999 86 (mg/kg)	**MISS-03** **0-6** 11/3/1999 96 (mg/kg)	**MISS-04** **0-6** 11/3/1999 88 (mg/kg)	**MIFB-02** ---- 11/3/1999 ---- (ug/L)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	2	6.4	50.7	0.59	0.56		0.1	0.001-0.2

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

TABLE D-9C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - MINEOLA-G16
MERCURY

LOCATION	South Interior Corner of Substation						
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**MICC-01** 11/3/1999 95 (mg/kg)	**MIFB-01** 11/3/1999 ---- (ug/L)					**Instrument Detection Limits** (ug/L)
Mercury	0.64	0.19 B					0.1

NOTES:
----: Not applicable.

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-10A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - HEMPSTEAD-H03
MERCURY

LOCATION	Southwest, Between Sliding Chain-Link Fence Entrance		South of South Front Entrance Substation Doors		South Dry Well			
SAMPLE ID	**HSSB-01**	**HSSB-01**	**HSSB-02**	**HSSB-02**	**HSSB-03**	**HSSB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**4-6**	**17-19**	**21-23**		
DATE OF COLLECTION	1/20/2000	1/20/2000	1/20/2000	1/20/2000	1/20/2000	1/20/2000		
PERCENT SOLIDS	84	91	83	84	97	96		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.11	0.13	0.11 B	0.11	2.1	45.6	0.1	0.001-0.2

NOTES:

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

QUALIFIERS:

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-10A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - HEMPSTEAD-H03
MERCURY

LOCATION	Southwest Exterior Water Meter Pit		Depression, North of Substation Inside Transformer Yard		Water Trough Pit			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**HSSB-04** **4-6** 1/20/2000 96 (mg/kg)	**HSSB-04** **8-10** 1/20/2000 97 (mg/kg)	**HSSB-05** **0-2** 1/20/2000 78 (mg/kg)	**HSSB-05** **4-6** 1/20/2000 96 (mg/kg)	**HSSB-06** **0-2** 1/21/2000 85 (mg/kg)	**HSSB-06** **4-6** 1/21/2000 98 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels**[(1)] (mg/kg)
Mercury	8.3	1.2	0.16	0.045 U	1.7	0.39	0.1	0.001-0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:

U: Constituent analyzed for but not detected.

TABLE D-10A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - HEMPSTEAD-H03
MERCURY

LOCATION	**Rectifier Pit**							
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**HSSB-07** **0-2** 1/21/2000 91 (mg/kg)	**HSSB-07** **2-4** 1/21/2000 92 (mg/kg)	**HSFB-01** ---- 1/21/2000 ---- (ug/L)				**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	13.8	1.7	0.29				0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

TABLE D-10B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - HEMPSTEAD-H03
MERCURY

LOCATION	East of South Front Entrance Substation Doors	West of South Front Entrance Substation Doors	Northeast Communi-cations Cable Pit					
SAMPLE ID	**HSSS-01**	**HSSS-02**	**HSSS-03**				**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (in.)	**0-6**	**0-6**	**See Notes[2]**					
DATE OF COLLECTION	1/20/2000	1/20/2000	1/20/2000					
PERCENT SOLIDS	84	92	87					
UNITS	(mg/kg)	(mg/kg)	(mg/kg)				(ug/L)	(mg/kg)
Mercury	236	198	3.1				0.1	0.001 - 0.2

NOTES:

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

[2] Sample collected between 5-6 feet below grade surface.

TABLE D-10C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - HEMPSTEAD-H03
MERCURY

LOCATION	**Water Trough Pit**	**Rectifier Pit**						
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**HSCC-01** 1/21/2000 89 (mg/kg)	**HSCC-02** 1/21/2000 100 (mg/kg)	**HSFB-02** 1/21/2000 ---- (ug/L)					**Instrument Detection Limits** (ug/L)
Mercury	4.8	52.8	0.16	B				0.1

NOTES:
----: Not applicable.

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-11A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - NASSAU BOULEVARD-H01
MERCURY

LOCATION	South of Northeast Sub-Basement Floor Drain				North of Southeast Sub-Basement Floor Drain				Center of Southwest Corner Water Meter Pit					
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**NBSB-01** **0-2** 11/9/1999 97 (mg/kg)		**NBSB-01** **4-6** 11/9/1999 98 (mg/kg)		**NBSB-02** **0-2** 11/9/1999 92 (mg/kg)		**NBSB-02** **4-6** 11/9/1999 98 (mg/kg)		**NBSB-03** **0-2** 11/9/1999 96 (mg/kg)		**NBSB-03** **4-6** 11/9/1999 97 (mg/kg)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels**(1) (mg/kg)
Mercury	0.088	B	0.051	U	0.043	U	0.049	U	0.10		0.040	U	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE 11A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - NASSAU BOULEVARD-H01
MERCURY

LOCATION	**West of West-Side Concrete Platform**			**Off Northwest Corner of Substation**			**East of East-Side Transformer Yard Entrance Gates**				
SAMPLE ID	**NBSB-04**	**NBSB-04**		**NBSB-05**	**NBSB-05**		**NBSB-06**	**NBSB-06**		**Instrument**	**Eastern USA**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**		**0-2**	**6-8**		**0-2**	**6-8**		**Detection**	**Background**
DATE OF COLLECTION	11/9/1999	11/9/1999		11/9/1999	11/9/1999		11/9/1999	11/9/1999		**Limits**	**Levels[1]**
PERCENT SOLIDS	95	96		92	96		97	97			
UNITS	(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)		(ug/L)	(mg/kg)
Mercury	0.050 U	0.052 U		0.074 B	0.050 U		0.041 U	0.041 U		0.1	0.001-0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-11A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - NASSAU BOULEVARD-H01
MERCURY

LOCATION								
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**NBFB-01** ---- 11/9/1999 ---- (ug/L)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	0.14 U						0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-11B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - NASSAU BOULEVARD-H01
MERCURY

LOCATION	South of Southeast Corner Concrete Stairs	South of Southeast Corner Concrete Platform	West of Southeast Corner Concrete Platform	South of South-Side Roof Drain PVC Pipe	South of West-Side Concrete Stairs	North of West-Side Concrete Platform		
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**NBSS-01** **0-6** 11/9/1999 84 (mg/kg)	**NBSS-02** **0-6** 11/9/1999 86 (mg/kg)	**NBSS-03** **0-6** 11/9/1999 91 (mg/kg)	**NBSS-04** **0-6** 11/9/1999 84 (mg/kg)	**NBSS-05** **0-6** 11/9/1999 86 (mg/kg)	**NBSS-06** **0-6** 11/9/1999 97 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	224	6.4	4.3	0.82	0.44	0.19	0.1	0.001 - 0.2

NOTES:

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

TABLE D-11B (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - NASSAU BOULEVARD-H01
MERCURY

LOCATION	**East of South-East Corner Concrete Stairs**							
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**NBSS-07** **0-6** 11/9/1999 90 (mg/kg)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	5						0.1	0.001 - 0.2

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

TABLE D-11C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - NASSAU BOULEVARD-H01
MERCURY

LOCATION	South of Northeast Sub-Basement Floor Drain	North of Southeast Sub-Basement Floor Drain					
SAMPLE ID	**NBCC-01**	**NBCC-02**	**NBFB-02**				**Instrument Detection Limits**
DATE OF COLLECTION	11/9/1999	11/9/1999	11/9/1999				
PERCENT SOLIDS	96	96	----				
UNITS	(mg/kg)	(mg/kg)	(ug/L)				(ug/L)
Mercury	0.14	0.90	0.14 U				0.1

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-12A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MASSAPEQUA-S15
MERCURY

LOCATION	Interior Water Trough Pit	Rectifier Pit	North-end Positive Breaker Cable Pit		Northwest Dry Well			
SAMPLE ID	**MSSB-01**	**MSSB-02**	**MSSB-03**	**MSSB-03**	**MSSB-04**	**MSSB-04**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**0-2**	**5-7**	**9-11**	**6-8**	**10-12**		
DATE OF COLLECTION	11/23/1999	11/23/1999	11/23/1999	11/23/1999	11/23/1999	11/23/1999		
PERCENT SOLIDS	90	99	94	97	87	85		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	4.4	10	1.8	0.072 B	42.3	0.20	0.1	0.001-0.2

NOTES:

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

QUALIFIERS:

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-12A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MASSAPEQUA-S15
MERCURY

LOCATION	Northwest Control Communications Pit		Far East of Exterior Water Service Pit		Exterior Water Service Pit			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MSSB-05** **5-7** 11/23/1999 84 (mg/kg)	**MSSB-05** **9-11** 11/23/1999 94 (mg/kg)	**MSSB-06** **0-2** 11/23/1999 95 (mg/kg)	**MSSB-06** **4-6** 11/23/1999 97 (mg/kg)	**MSSB-07** **3.5-5.5** 11/23/1999 97 (mg/kg)	**MSSB-07** **5.5-7.5** 11/23/1999 97 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	10	0.37	0.37	0.049 U	2.5	2.7	0.1	0.001-0.2

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-12A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - MASSAPEQUA-S15
MERCURY

LOCATION	East of East-Side Bituminous Entrance											
SAMPLE ID	**MSSB-08**		**MSSB-08**		**MSFB-01**						**Instrument Detection Limits**	**Eastern USA Background Levels[(1)]**
SAMPLE DEPTH (ft.)	**0-2**		**4-6**		----							
DATE OF COLLECTION	11/23/1999		11/23/1999		11/23/1999							
PERCENT SOLIDS	96		91		----							
UNITS	(mg/kg)		(mg/kg)		(ug/L)						(ug/L)	(mg/kg)
Mercury	11.3		0.072	B	0.17	U					0.1	0.001-0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

----: Not applicable.

QUALIFIERS:

U: Constituent analyzed for but not detected.

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-12B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - MASSAPEQUA-S15
MERCURY

LOCATION	Northeast of Exterior Water Service Pit	Far East of Southeast Substation Corner	Far East of East-Side Wood Plank Double Swing Doors	East of Southeast Chain Link Double Swing Doors	South off Southeast Exterior Substation Corner	Northwest Exterior Corner of Substation		
SAMPLE ID	**MSSS-01**	**MSSS-02**	**MSSS-03**	**MSSS-04**	**MSSS-05**	**MSSS-06**	**Instrument**	**Eastern USA**
SAMPLE DEPTH (in.)	**0-6**	**0-6**	**0-6**	**0-6**	**0-6**	**0-6**	**Detection**	**Background**
DATE OF COLLECTION	11/23/1999	11/23/1999	11/23/1999	11/23/1999	11/23/1999	11/23/1999	**Limits**	**Levels(1)**
PERCENT SOLIDS	92	93	93	93	90	92		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	25.3	8	0.86	1.1	169	13.5	0.1	0.001 - 0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-12B (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - MASSAPEQUA-S15
MERCURY

LOCATION	**Southwest Exterior Corner of Substation**							
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**MSSS-07** **0-6** 11/23/1999 89 (mg/kg)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	4.9						0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-12C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - MASSAPEQUA-S15
MERCURY

LOCATION	**Interior Water Trough Pit**	**Rectifier Pit**	**Interior Water Pipe Trench**				
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**MSCC-01** 11/23/1999 94 (mg/kg)	**MSCC-02** 11/23/1999 97 (mg/kg)	**MSCC-03** 11/23/1999 93 (mg/kg)	**MSFB-02** 11/23/1999 ---- (ug/L)			**Instrument Detection Limits** (ug/L)
Mercury	68	682	12.5	0.16 U			0.1

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-13A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - BAYSIDE-N06
MERCURY

LOCATION	North Rectifier Pit			South Rectifier Pit				East of Northeast Corner Concrete Stairs					
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BSSB-01** **0-2** 12/1/1999 86 (mg/kg)		**BSSB-01** **4-6** 12/1/1999 92 (mg/kg)		**BSSB-02** **0-2** 12/1/1999 85 (mg/kg)		**BSSB-02** **4-6** 12/1/1999 83 (mg/kg)		**BSSB-03** **0-2** 12/1/1999 86 (mg/kg)	**BSSB-03** **4-6** 12/1/1999 83 (mg/kg)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.086	B	0.054	U	0.059	U	0.057	U	2.4	0.10	B	0.1	0.001-0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-13A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - BAYSIDE-NO6
MERCURY

LOCATION	Southwest Exterior Corner Water Meter Pit			North of West-Side Concrete Stairs										
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BSSB-04** **3.5-5.5** 12/1/1999 86 (mg/kg)		**BSSB-04** **7.5-9.5** 12/1/1999 88 (mg/kg)		**BSSB-05** **0-2** 12/1/1999 85 (mg/kg)		**BSSB-05** **4-6** 12/1/1999 91 (mg/kg)		**BSFB-01** ---- 12/1/1999 ---- (ug/L)				**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.058	U	0.057	U	0.047	U	0.052	U	0.16	U			0.1	0.001-0.2

NOTES:

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

----: Not applicable.

QUALIFIERS:

U: Constituent analyzed for but not detected.

TABLE D-13B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - BAYSIDE-N06
MERCURY

LOCATION	North of Northeast Corner Concrete Platform	West of Northeast Corner Concrete Platform	North of West-Side Concrete Stairs	South of West-Side Concrete Stairs				
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BSSS-01** **0-6** 12/1/1999 90 (mg/kg)	**BSSS-02** **0-6** 12/1/1999 89 (mg/kg)	**BSSS-03** **0-6** 12/1/1999 84 (mg/kg)	**BSSS-04** **0-6** 12/1/1999 86 (mg/kg)			**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	5.5	5.1	105	384			0.1	0.001 - 0.2

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

TABLE D-13C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - BAYSIDE-N06
MERCURY

LOCATION	North Rectifier Pit	South Rectifier Pit					
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**BSCC-01** 12/1/1999 96 (mg/kg)	**BSCC-02** 12/1/1999 96 (mg/kg)	**BSFB-02** 12/1/1999 ---- (ug/L)				**Instrument Detection Limits** (ug/L)
Mercury	6.9	19.9	0.15 U				0.1

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-14A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - LITTLE NECK-N08
MERCURY

LOCATION	Off Southeast Corner of Substation		West Basement Under Existing Rectifier		East of Substation			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**LNSB-01** **4-6** 12/8/1999 92 (mg/kg)	**LNSB-01** **8-10** 12/8/1999 90 (mg/kg)	**LNSB-02** **2-4** 12/8/1999 93 (mg/kg)	**LNSB-02** **4-6** 12/8/1999 89 (mg/kg)	**LNSB-03** **0-2** 12/8/1999 85 (mg/kg)	**LNSB-03** **4-6** 12/8/1999 84 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	0.045 U	0.044 U	0.051 U	3.1	0.059 U	0.057 U	0.1	0.001-0.2

NOTES:

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

QUALIFIERS:

U: Constituent analyzed for but not detected.

TABLE D-14A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - LITTLE NECK-N08
MERCURY

LOCATION	East/Southeast Cesspool	South/Southeast Former Conduit Pit			East Basement Under Existing Rectifier								
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**LNSB-04** **10-12** 12/8/1999 98 (mg/kg)	**LNSB-05** **3-5** 12/8/1999 98 (mg/kg)		**LNSB-05** **5-7** 12/8/1999 87 (mg/kg)		**LNSB-06** **0-2** 12/9/1999 84 (mg/kg)		**LNSB-06** **4-6** 12/9/1999 86 (mg/kg)		**LNFB-02** **----** 12/9/1999 ---- (ug/L)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	4	0.046	U	0.052	U	0.060	U	0.048	U	0.068	U	0.1	0.001-0.2

NOTES:
[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-14A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - LITTLE NECK-N08
MERCURY

LOCATION	Central Basement Under Former Rectifier				West Negative Cable Manhole				West of Southwest Rear Concrete Slab Entrance			
SAMPLE ID	LNSB-07		LNSB-07		LNSB-08		LNSB-08		LNSB-09	LNSB-09	Instrument Detection Limits	Eastern USA Background Levels[1]
SAMPLE DEPTH (ft.)	0-2		4-6		7-9		11-13		0-2	4-6		
DATE OF COLLECTION	12/9/1999		12/9/1999		12/9/1999		12/9/1999		12/9/1999	12/9/1999		
PERCENT SOLIDS	86		91		88		90		90	89		
UNITS	(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.058	U	0.048	U	0.047	U	0.056	U	1.4	0.30	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-14B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - LITTLE NECK-N08
MERCURY

LOCATION	**Southeast Creek**	**Northeast Corner of Substation**	**North of East-Side Front Entrance Steps**	**South of East-Side Front Entrance Steps**	**Southeast Corner of Substation**	**West, Adjacent to Substation Wall**		
SAMPLE ID	**LNSS-01**	**LNSS-02**	**LNSS-03**	**LNSS-04**	**LNSS-05**	**LNSS-06**	**Instrument Detection Limits**	**Eastern USA Background Levels[(1)]**
SAMPLE DEPTH (in.)	**0-6**	**0-6**	**0-6**	**0-6**	**0-6**	**0-6**		
DATE OF COLLECTION	12/8/1999	12/8/1999	12/8/1999	12/8/1999	12/8/1999	12/8/1999		
PERCENT SOLIDS	40	93	89	92	88	92		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.33	0.12	2.5	7.5	7.7	0.098 B	0.1	0.001 - 0.2

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-14B (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - LITTLE NECK-N08
MERCURY

LOCATION	**North of Rear Southwest Entrance Door**							
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**LNSS-07** **0-6** 12/8/1999 91 (mg/kg)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.45						0.1	0.001 - 0.2

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

TABLE D-14C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - LITTLE NECK-N08
MERCURY

LOCATION	West Basement	East Basement	Central Basement				
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**LNCC-01** 12/8/1999 96 (mg/kg)	**LNCC-02** 12/8/1999 92 (mg/kg)	**LNCC-03** 12/9/1999 85 (mg/kg)	**LNFB-01** 12/9/1999 ---- (ug/L)			**Instrument Detection Limits** (ug/L)
Mercury	2,220	48.3	12.6	0.087 B			0.1

NOTES:
----: Not applicable.

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-15A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - BELLAIRE-G11
MERCURY

LOCATION	West of West-Side Concrete Platform		Off Northwest Corner of Substation		East of Southeast Concrete Steps			
SAMPLE ID	**BASB-01**	**BASB-01**	**BASB-02**	**BASB-02**	**BASB-04**	**BASB-04**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**2-4**	**0-2**	**2-4**		
DATE OF COLLECTION	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000	2/22/2000		
PERCENT SOLIDS	95	96	93	96	89	92		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.12	0.50	0.14	0.045 U	26.4	1.3	0.1	0.001-0.2

NOTES:

(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:

U: Constituent analyzed for but not detected.

TABLE D-15A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - BELLAIRE-G11
MERCURY

LOCATION	**South Sub-Basement (Rectifer 2)**				**North Sub-Basement (Rectifier1)**				**Southeast Dry Well**			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BASB-05** **0-2** 2/22/2000 97 (mg/kg)		**BASB-05** **4-6** 2/22/2000 98 (mg/kg)		**BASB-06** **0-2** 2/22/2000 97 (mg/kg)		**BASB-06** **4-6** 2/22/2000 98 (mg/kg)		**BASB-07** **7-9** 2/23/2000 90 (mg/kg)	**BASB-07** **11-13** 2/23/2000 94 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.052	U	0.043	U	0.047	U	0.043	U	4.4	9.3	0.1	0.001-0.2

NOTES:
[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-15A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - BELLAIRE-G11
MERCURY

LOCATION								
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BAFB-01** ---- 2/22/2000 ---- (ug/L)						**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.15 U						0.1	0.001-0.2

NOTES:
[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-15B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - BELLAIRE-G11
MERCURY

LOCATION	South of West-Side Concrete Steps	North of West-Side Concrete Platform	Northwest of Substation	West of Southeast Concrete Platform	South of Southeast Concrete Platform			
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BASS-01** **0-6** 2/22/2000 95 (mg/kg)	**BASS-02** **0-6** 2/22/2000 94 (mg/kg)	**BASS-03** **0-6** 2/22/2000 94 (mg/kg)	**BASS-04** **0-6** 2/22/2000 88 (mg/kg)	**BASS-05** **0-6** 2/22/2000 89 (mg/kg)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[(1)]** (mg/kg)
Mercury	40.3	274	28.7	20.3	51.2		0.1	0.001 - 0.2

NOTES:
[(1)] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-15C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - BELLAIRE-G11
MERCURY

LOCATION	South Sub-Basement (Rectifier 2)	North Sub-Basement (Rectifier 1)						
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**BACC-01** 2/22/2000 97 (mg/kg)	**BACC-02** 2/22/2000 98 (mg/kg)	**BAFB-02** 2/22/2000 ---- (ug/L)					**Instrument Detection Limits** (ug/L)
Mercury	4.7	1.4	0.15 U					0.1

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-16A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	South of Substation Front Doors				Southwest Storm Water Dry Well		Dry Well off Southwest Corner of Substation				Dry Well South of Substation Front Doors		
SAMPLE ID	**CMSB-01**		**CMSB-01**		**CMSB-02**		**CMSB-03**		**CMSB-03**		**CMSB-04**	**Instrument**	**Eastern USA**
SAMPLE DEPTH (ft.)	**0-2**		**4-6**		**8-10**		**8-10**		**12-14**		**8-10**	**Detection**	**Background**
DATE OF COLLECTION	12/21/1999		12/21/1999		12/21/1999		12/21/1999		12/21/1999		12/21/1999	**Limits**	**Levels[1]**
PERCENT SOLIDS	98		99		84		97		97		84		
UNITS	(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.046	B	0.051	U	2.7		0.062	B	0.045	U	1.7	0.1	0.001-0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-16A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	Dry Well South of Substation	Southwest Exterior Meter Pit		West Rectifier 2 Sub-Basement		East Rectifier 1 Sub-Basement		
SAMPLE ID	**CMSB-04**	**CMSB-05**	**CMSB-05**	**CMSB-06**	**CMSB-06**	**CMSB-08**	**Instrument Detection Limits**	**Eastern USA Background Levels(1)**
SAMPLE DEPTH (ft.)	**12-14**	**3.5-5.5**	**7.5-9.5**	**0-2**	**4-6**	**0-2**		
DATE OF COLLECTION	12/21/1999	12/21/1999	12/21/1999	12/21/1999	12/21/1999	12/22/1999		
PERCENT SOLIDS	23	93	86	93	94	91		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	7.6	13.8	0.10 B	1.6	2.3	0.19	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-16A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	East Rectifier 1 Sub-Basement	Southeast Interior Sanitary Pipe Trench		Central/South-Central Utility Trench in Original Substation				
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**CMSB-08** **4-6** 12/22/1999 98 (mg/kg)	**CMSB-09** **0-2** 12/21/1999 89 (mg/kg)	**CMSB-09** **4-6** 12/21/1999 96 (mg/kg)	**CMSB-10** **0-2** 12/21/1999 94 (mg/kg)	**CMFB-02** **----** 12/21/1999 ---- (ug/L)		**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	0.071 B	1.9	0.20	3	0.14 U		0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-16B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - CEDAR MANOR-G07
MERCURY

LOCATION	East of Front Entrance Doors	South of Front Entrance Doors	Southwest Corner of Substation	Northeast Corner of Substation				
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**CMSS-01** **0-6** 12/21/1999 63 (mg/kg)	**CMSS-02** **0-6** 12/21/1999 89 (mg/kg)	**CMSS-03** **0-6** 12/21/1999 95 (mg/kg)	**CMSS-04** **0-6** 12/21/1999 91 (mg/kg)			**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	2	2.2	0.13	0.41			0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-16C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	West Sub-Basement	East Sub-Basement	Southeast Corner Sanitary Pipe Trench	West/Southwest Utility Trench in Substation	Central/South-Central Utility Trench in Original Substation		
SAMPLE ID	**CMCC-01**	**CMCC-02**	**CMCC-03**	**CMCC-04**	**CMCC-05**	**CMFB-01**	**Instrument**
DATE OF COLLECTION	12/21/1999	12/22/1999	12/22/1999	12/22/1999	12/22/1999	12/22/1999	**Detection**
PERCENT SOLIDS	97	91	87	99	98	----	**Limits**
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)
Mercury	0.16	0.44	1.2	4	2.7	0.14 U	0.1

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-17A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - KEW GARDENS-G07
MERCURY

LOCATION	Area of Suspect Dry Well Off Northeast Corner of Substation		North of North Concrete Steps		Southeast Corner Concrete Platform			
SAMPLE ID	**KGSB-01**	**KGSB-01**	**KGSB-02**	**KGSB-02**	**KGSB-03**	**KGSB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**10-12**	**14-16**	**0-2**	**4-6**	**0-2**	**4-6**		
DATE OF COLLECTION	1/6/2000	1/6/2000	1/6/2000	1/6/2000	1/6/2000	1/6/2000		
PERCENT SOLIDS	93	87	96	95	89	91		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.15	0.057 U	0.050 U	0.050 U	14.6	3.6	0.1	0.001-0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-17A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - KEW GARDENS-G07
MERCURY

LOCATION	North of Northeast Corner Concrete Platform		East, Rectifier 2 Sub-Basement		West Rectifier 1 Sub-Basement			
SAMPLE ID	**KGSB-04**	**KGSB-04**	**KGSB-06**	**KGSB-06**	**KGSB-07**	**KGFB-01**	**Instrument Detection Limits**	**Eastern USA Background Levels(1)**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**4-6**	**0-2**	----		
DATE OF COLLECTION	1/6/2000	1/6/2000	1/14/2000	1/14/2000	1/14/2000	1/6/2000		
PERCENT SOLIDS	85	90	95	95	95	----		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)	(mg/kg)
Mercury	67.4	5.8	0.068 B	0.042 U	0.064 B	0.14 U	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-17B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - KEW GARDENS-G07
MERCURY

LOCATION	West of North Concrete Platform	East of North Concrete Steps	Northwest Corner of Substation	Southwest Corner of Substation	Southeast Corner of Substation			
SAMPLE ID	**KGSS-01**	**KGSS-02**	**KGSS-03**	**KGSS-04**	**KGSS-05**		**Instrument Detection Limits**	**Eastern USA Background Levels(1)**
SAMPLE DEPTH (in.)	**0-6**	**0-6**	**0-6**	**0-6**	**0-6**			
DATE OF COLLECTION	1/6/2000	1/6/2000	1/6/2000	1/6/2000	1/6/2000			
PERCENT SOLIDS	71	97	65	93	91			
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(ug/L)	(mg/kg)
Mercury	137	223	5.2	0.35	4		0.1	0.001 - 0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-17C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - KEW GARDENS-G07
MERCURY

LOCATION	**East Rectifier 2 Sub-Basement**	**West Rectifier 1 Sub-Basement**					
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**KGCC-01** 1/14/2000 96 (mg/kg)	**KGCC-02** 1/14/2000 98 (mg/kg)	**KGFB-02** 1/14/2000 ---- (ug/L)				**Instrument Detection Limits** (ug/L)
Mercury	70.3	430	25.4				0.1

NOTES:
----: Not applicable.

TABLE D-18A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ST. ALBANS-S01
MERCURY

LOCATION	South of Substation		Utility Trench		Floor Drain Inside Positive Feed Manhole For Third Rail			
SAMPLE ID	**SASB-01**	**SASB-01**	**SASB-02**	**SASB-02**	**SASB-03**	**SASB-03**	**Instrument Detection Limits**	**Eastern USA Background Levels(1)**
SAMPLE DEPTH (ft.)	**0-2**	**4-6**	**0-2**	**2-4**	**6-8**	**10-12**		
DATE OF COLLECTION	11/1/1999	11/1/1999	11/1/1999	11/1/1999	11/1/1999	11/1/1999		
PERCENT SOLIDS	93	99	97	94	96	99		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.049 U	0.042 U	0.20	0.16	0.33	0.82	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-18A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - ST. ALBANS-S01
MERCURY

LOCATION	Western Rectifier	Eastern Rectifier		West Concrete Stairs				
SAMPLE ID	**SASB-04**	**SASB-05**	**SASB-05**	**SASB-07**	**SASB-07**	**SAFB-01**	**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**	**0-2**	**4-6**	**0-2**	**4-6**	----		
DATE OF COLLECTION	11/1/1999	11/1/1999	11/1/1999	11/1/1999	11/1/1999	11/1/1999		
PERCENT SOLIDS	94	98	99	97	98	----		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)	(mg/kg)
Mercury	0.95	0.13	0.36	0.052 U	0.062 B	0.14 B	0.1	0.001-0.2

NOTES:

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

----: Not applicable.

QUALIFIERS:

U: Constituent analyzed for but not detected.

B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-18B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - ST. ALBANS-S01
MERCURY

LOCATION	West of South Concrete Stairs	Southwest Corner of Substation	South of South Concrete Platform	East of Former Negative Cable Raceway	West Concrete Platform			
SAMPLE ID	**SASS-01**	**SASS-02**	**SASS-03**	**SASS-04**	**SASS-05**		**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (in.)	**0-6**	**0-6**	**0-6**	**0-6**	**0-6**			
DATE OF COLLECTION	11/1/1999	11/1/1999	11/1/1999	11/1/1999	11/1/1999			
PERCENT SOLIDS	96	97	92	96	94			
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(ug/L)	(mg/kg)
Mercury	0.54	0.043 B	12.4	0.052 B	1.9		0.1	0.001 - 0.2

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

QUALIFIERS:
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-18C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - ST. ALBANS-S01
MERCURY

LOCATION	Utility Trench		West Rectifier	East Rectifier				
SAMPLE ID	**SACC-01**		**SACC-02**	**SACC-03**	**SAFB-02**			**Instrument Detection Limits**
DATE OF COLLECTION	11/1/1999		11/1/1999	11/1/1999	11/1/1999			
PERCENT SOLIDS	95		97	97	----			
UNITS	(mg/kg)		(mg/kg)	(mg/kg)	(ug/L)			(ug/L)
Mercury	0.044	U	79.3	353	0.42			0.1

NOTES:
----: Not applicable.

TABLE D-19A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - LINDENHURST-S19
MERCURY

LOCATION	West Sub-Basement Under Former Rectifier			East Sub-Basement Under Existing Solid-State Rectifier			East Sub-Basement West of Sump Pit		Northeast Dry Well			
SAMPLE ID	LHSB-01		LHSB-01		LHSB-02		LHSB-02		LHSB-03		LHSB-04		Instrument Detection Limits	Eastern USA Background Levels[1]
SAMPLE DEPTH (ft.)	0-2		4-6		0-2		4-6		3-5		4-6			
DATE OF COLLECTION	1/12/2000		1/12/2000		1/12/2000		1/12/2000		1/12/2000		1/12/2000			
PERCENT SOLIDS	91		85		95		89		87		89			
UNITS	(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(ug/L)	(mg/kg)
Mercury	0.052	U	0.047	U	0.042	U	0.056	U	0.069	B	0.054	U	0.1	0.001-0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-19A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - LINDENHURST-S19
MERCURY

LOCATION	Northeast Dry Well	East/Southeast Area of Suspect Septic Tank		East/Northeast Area of Suspect Tile Field		South of South Concrete Entrance Platform		
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**LHSB-04** **8-10** 1/12/2000 89 (mg/kg)	**LHSB-05** **0-2** 1/12/2000 96 (mg/kg)	**LHSB-05** **4-6** 1/12/2000 98 (mg/kg)	**LHSB-06** **0-2** 1/12/2000 94 (mg/kg)	**LHSB-06** **4-6** 1/12/2000 95 (mg/kg)	**LHSB-07** **0-2** 1/12/2000 96 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels(1)** (mg/kg)
Mercury	0.047 U	0.047 U	0.044 U	0.051 U	0.044 U	0.11	0.1	0.001-0.2

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-19A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - LINDENHURST-S19
MERCURY

LOCATION	South of South Concrete Entrance Platform							
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**LHSB-07** **4-6** 1/12/2000 86 (mg/kg)	**LHFB-02** **----** 1/12/2000 ---- (ug/L)					**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.047 U	0.14 U					0.1	0.001-0.2

NOTES:
[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-19B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - LINDENHURST-S19
MERCURY

LOCATION	**West of South Concrete Steps**	**East of South Concrete Platform**	**East of East/Northeast Discharge Pipe**	**South of Northeast Concrete Platform**	**East of Northeast Concrete Steps**	**North of Northeast Concrete Steps**		
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**LHSS-01** **0-6** 1/12/2000 98 (mg/kg)	**LHSS-02** **0-6** 1/12/2000 81 (mg/kg)	**LHSS-03** **0-6** 1/12/2000 67 (mg/kg)	**LHSS-04** **0-6** 1/12/2000 88 (mg/kg)	**LHSS-05** **0-6** 1/12/2000 83 (mg/kg)	**LHSS-06** **0-6** 1/12/2000 92 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.37	6	5	2.6	121	2.1	0.1	0.001 - 0.2

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

TABLE D-19C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - LINDENHURST-S19
MERCURY

LOCATION	**West Sub-Basement Under Former Rectifier**		**East Sub-Basement Under Existing Solid-State Rectifier**		**East Sub-Basement West of Sump Pit**							
SAMPLE ID	**LHCC-01**		**LHCC-02**		**LHCC-03**		**LHFB-01**				**Instrument Detection Limits**	
DATE OF COLLECTION	1/12/2000		1/12/2000		1/12/2000		1/12/2000					
PERCENT SOLIDS	96		95		93		----					
UNITS	(mg/kg)		(mg/kg)		(mg/kg)		(ug/L)				(ug/L)	
Mercury	2.8		0.62		0.043	U	0.14	U			0.1	

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-20A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - BABYLON YARD-S22
MERCURY

LOCATION	North Sub-Basement Under Rectifier 2			North Sub-Basement West of Sump Pit			South Sub-Basement Under Rectifier 1					
SAMPLE ID	**BYSB-01**		**BYSB-01**	**BYSB-02**		**BYSB-02**		**BYSB-03**		**BYSB-03**		**Instrument Detection Limits**	**Eastern USA Background Levels[1]**
SAMPLE DEPTH (ft.)	**0-2**		**4-6**	**0-2**		**2-4**		**0-2**		**4-6**			
DATE OF COLLECTION	1/18/2000		1/18/2000	1/18/2000		1/18/2000		1/18/2000		1/18/2000			
PERCENT SOLIDS	91		85	88		87		91		88			
UNITS	(mg/kg)		(mg/kg)	(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(ug/L)	(mg/kg)
Mercury	0.044	U	0.43	0.047	U	0.048	U	0.055	U	0.057	U	0.1	0.001-0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-20A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - BABYLON YARD-S22
MERCURY

LOCATION	East of East Side Front Entrance Concrete Platform		Off Northeast Corner of Substation		Northwest Corner of Substation Area of Suspect Dry Well			
SAMPLE ID SAMPLE DEPTH (ft.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BYSB-04** **2-4** 1/19/2000 91 (mg/kg)	**BYSB-04** **4-6** 1/19/2000 93 (mg/kg)	**BYSB-05** **4-6** 1/19/2000 93 (mg/kg)	**BYSB-05** **8-10** 1/19/2000 90 (mg/kg)	**BYSB-06** **10-12** 1/19/2000 84 (mg/kg)	**BYSB-06** **14-16** 1/19/2000 90 (mg/kg)	**BYFB-02** ---- 1/18/2000 ---- (ug/L)	**Instrument Detection Limits** (ug/L)
Mercury	0.046 U	13.6	0.50	0.046 U	0.060 U	0.044 U	0.14 U	0.1

NOTES:
(1) Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-20B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - BABYLON YARD-S22
MERCURY

LOCATION	East- End of Drainage Swale	East/Central Drainage Swale	Central Drainage Swale	Northwest End of Drainage Swale	Southeast Corner of Substation	West of Southwest Rear Concrete Steps		
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BYSS-01** **0-6** 1/18/2000 92 (mg/kg)	**BYSS-02** **0-6** 1/18/2000 66 (mg/kg)	**BYSS-03** **0-6** 1/18/2000 96 (mg/kg)	**BYSS-04** **0-6** 1/18/2000 98 (mg/kg)	**BYSS-05** **0-6** 1/18/2000 94 (mg/kg)	**BYSS-06** **0-6** 1/19/2000 95 (mg/kg)	**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	0.57	2.4	0.099	0.044 U	2.1	2.5	0.1	0.001 - 0.2

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

QUALIFIERS:
U: Constituent analyzed for but not detected.

TABLE D-20B (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - BABYLON YARD-S22
MERCURY

LOCATION	South of Southwest Rear Concrete Platform	East of Southwest Rear Concrete Platform						
SAMPLE ID SAMPLE DEPTH (in.) DATE OF COLLECTION PERCENT SOLIDS UNITS	**BYSS-07** **0-6** 1/19/2000 89 (mg/kg)	**BYSS-08** **0-6** 1/19/2000 92 (mg/kg)					**Instrument Detection Limits** (ug/L)	**Eastern USA Background Levels[1]** (mg/kg)
Mercury	3.6	2.5					0.1	0.001 - 0.2

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

TABLE D-20C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - BABYLON YARD-S22
MERCURY

LOCATION	North Sub-Basement Under Rectifier 2		North Sub-Basement West of Sump Pit		South Sub-Basement Under Rectifier 1									
SAMPLE ID DATE OF COLLECTION PERCENT SOLIDS UNITS	**BYCC-01** 1/18/2000 96 (mg/kg)		**BYCC-02** 1/18/2000 96 (mg/kg)		**BYCC-03** 1/18/2000 90 (mg/kg)		**BYFB-01** 1/18/2000 ---- (ug/L)						**Instrument Detection Limits** (ug/L)	
Mercury	5.6		0.37		0.046	U	0.19	B					0.1	

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

APPENDIX E

SOIL BORING LOGS/WELL CONSTRUCTION LOGS

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Project No.: 1648 **Boring No.:** MHSBB-09
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: June 21, 1999
Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.001	0.0	Dark brown, sub-angular/sub-rounded medium to fine grain sand.
2 - 4	2	HA	--	24	0.000	0.0	Light brown, sub-angular/sub-rounded fine grain sand and moist with trace gravel.
4 - 6	3*	HA	--	24	0.000	0.0	Dark brown, sub-angular/sub-rounded medium to fine grain sand and moist with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-03
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1	GP	--	8	0.001	0.0	Dark brown, sub-angular/sub-rounded medium to fine grain sand and moist with trace gravel.
2 - 4	2*	GP	--	12	0.007	0.0	Light brown, sub-angular/sub-rounded medium to fine grain sand and moist with trace gravel.
4 - 6	3*	GP	--	18	0.002	0.0	Light brown, sub-angular/sub-rounded medium to fine grain sand and moist with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.
**: Collection of samples began at the invert of the utility pit 5 feet below grade surface (bgs).

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Project No.: 1648 **Boring No.:** MHSBB-05
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	20	0.002	0.0	Dark brown, sub-angular/sub-rounded medium to fine grain sand.
2 - 4	2	GP	--	10	0.000	0.0	Light brown, sub-angular/sub-rounded medium to fine grain sand and moist.
4 - 6	3*	GP	--	20	0.000	0.0	Light brown, sub-angular/sub-rounded medium to fine grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the utility pit 2 feet below grade surface (bgs).

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Project No.: 1648 **Boring No.:** MHSBB-11
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	7	0.000	0.0	Dark brown-black, silty, sub-angular/sub-rounded fine grain sand and moist.
2 - 4	2	GP	--	12	0.000	0.0	Light brown, silty, sub-angular/sub-rounded medium to course grain sand and moist with trace gravel.
4 - 6	3*	GP	--	15	0.001	0.0	Light brown, silty, sub-angular/sub-rounded medium to course grain sand and moist with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-10
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	20	0.005	0.0	Grey to light brown, silty, sub-angular/sub-rounded medium to fine grain sand and moist.
2 - 4	2	GP	--	12	0.000	0.0	Grey to light brown, silty, sub-angular/sub-rounded medium to fine grain sand and moist.
4 - 6	3*	GP	--	18	0.001	0.0	Grey to light brown, silty, sub-angular/sub-rounded medium to fine grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-02
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: June 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: June 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth	Soil Sample				Jerome MVA	PID/ OVA	Lithology Description
	Sample		Blows	Rec.			
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1	HA	--	24	0.100	1.2	Dark brown, sub-angular/sub-rounded medium to fine grain sand and moist.
2 - 4	2*	HA	--	24	0.460	1.1	Light brown, sub-angular/sub-rounded medium to fine grain sand and moist.
4 - 6	3*	HA	--	24	0.660	0.7	Light brown, sub-angular/sub-rounded medium to fine grain sand and wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-07
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1	GP	--	18	0.010	0.5	Beige, silty, sub-angular/sub-rounded fine grain sand.
2 - 4	2*	GP	--	12	0.020	0.1	Beige, silty, sub-angular/sub-rounded fine grain sand.
4 - 6	3*	GP	--	13	0.040	0.0	Beige, silty, sub-angular/sub-rounded fine grain sand.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-06
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	20	0.010	0.7	Dark brown, silty, sub-angular/sub-rounded fine grain sand.
2 - 4	2	GP	--	24	0.000	0.0	Light brown, silty, sub-angular/sub-rounded fine grain sand with trace gravel.
4 - 6	3*	GP	--	18	0.000	0.0	Light brown, silty, sub-angular/sub-rounded fine grain sand with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-12
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	20	0.000	0.0	Dark brown-black, silty, sub-angular/sub-rounded fine grain sand and moist with trace gravel.
2 - 4	2	GP	--	24	0.000	0.0	Light brown, silty, clay lenses, sub-angular/sub-rounded fine grain sand and moist with trace gravel.
4 - 6	3*	GP	--	20	0.000	0.0	Light brown, silty, clay lenses, sub-angular/sub-rounded fine grain sand and moist with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-08
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: June 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: June 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	16	0.010	0.0	Light brown-beige, silty, sub-angular/sub-rounded fine grain sand and moist with trace gravel.
2 - 4	2	GP	--	18	0.001	0.0	Light brown-beige, silty, sub-angular/sub-rounded fine grain sand and moist with trace gravel.
4 - 6	3*	GP	--	24	0.000	0.0	Light brown-beige, silty, sub-angular/sub-rounded fine grain sand and moist with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
*: Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MHSBB-01
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: June 24, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: June 24, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	1.140	0.0	Dark brown, silty, sub-angular/sub-rounded fine grain sand and moist.
2 - 4**	2*	HA	--	24	1.207	0.0	Dark brown, silty, sub-angular/sub-rounded fine grain sand and moist.
4 - 6	3	--	--	24	--	--	Refusal

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Refusal at 3 feet.

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Project No.: 1648 **Boring No.:** MHSBB-04
Project Location: Manhasset, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: June 24, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: June 24, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.756	0.0	Brown, sub-angular/sub-rounded medium to fine grain sand and moist with trace gravel.
2 - 4	2	HA	--	24	0.105	0.0	Brown, sub-angular/sub-rounded medium to fine grain sand and moist with trace gravel.
4 - 6	3*	HA	--	24	0.031	0.0	Brown, sub-angular/sub-rounded medium to fine grain sand and moist with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 12.5 feet below grade surface (bgs).

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Project No.: 1648 **Boring No.:** SSSBB-01
Project Location: Flushing, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: July 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	19	0.100	0.0	Dark brown, silty, sub-angular/sub-rounded medium to fine grain sand
2 - 4	2	GP	--	15	0.009	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine grain sand
4 - 6	3*	GP	--	12	0.139	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Boring No.: SSSBB-02
Project Location: Flushing, NY
Sheet 1 **of** 1
Project Name: LIRR Mercury Investigation
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: July 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	--	0.045	0.0	Dark brown, silty, sub-angular/sub-rounded medium to fine grain sand.
2 - 4	2*	GP	--	--	0.015	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine grain sand.
4 - 6	3	GP	--	--	--	--	No recovery.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** SSSBB-03
Project Location: Flushing, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: July 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1	GP	--	17	0.241	0.0	Dark brown, silty, sub-angular/sub-rounded medium to fine grain sand with trace gravel.
2 - 4	2*	GP	--	18	0.794	0.0	Medium brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel.
4 - 6	3*	GP	--	19	0.285	0.0	Medium brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** SSSBB-04
Project Location: Flushing, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: July 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	16	0.541	0.0	Dark brown, silty, sub-angular/sub-rounded medium to fine grain sand.
2 - 4	2	GP	--	16	0.062	0.0	Dark brown, silty, sub-angular/sub-rounded medium to fine grain sand.
4 - 6	3*	GP	--	12	0.820	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** SSSBB-05
Project Location: Flushing, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 2, 1999

Geologist: Straty Eoanidis
Drilling Methods: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: July 2, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.019	0.0	Dark brown, silty, sub-angular/sub-rounded medium grain sand with bituminous fill.
2 - 4	2	HA	--	24	0.013	0.0	Dark brown, silty, sub-angular/sub-rounded medium grain sand with bituminous fill.
4 - 6	3*	HA	--	24	0.027	0.0	Dark brown, silty, sub-angular/sub-rounded medium grain sand with bituminous fill.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. SSCS-01 (0 - 15.5")
Jerome MVA = 0.019mg/m^{3}Hg | PID = 0.0ppmv

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Project No.: 1648 | **Boring No.:** SSSBB-08
Project Location: Flushing, NY | **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation | **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 2, 1999

Geologist: Straty Eoanidis
Drilling Methods: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: July 2, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppm)	Lithology Description
0 - 2	1	HA	--	24	0.046	0.0	Dark brown, silty, traces of mica and gravel.
2 - 4	2*	HA	--	24	0.103	0.0	Dark brown, silty, traces of mica and gravel.
4 - 6	3*	HA	--	24	0.232	0.0	Dark brown, silty, traces of mica and gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. SSCS-04 (0 - 8")
Jerome MVA = 0.019mg/m^{3}Hg | PID = 0.0ppmv
(Concrete core collected on July 6, 1999)

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Project No.: 1648 **Boring No.:** SSSBB-07
Project Location: Flushing, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 2, 1999

Geologist: Straty Eoanidis
Drilling Methods: **See Notes**
Drive Hammer Weight: --
Date Completed: July 2, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Chips: **Y** **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppm)	Lithology Description
0 - 2	1	HA	--	24	0.028	0.0	Dark brown, slightly silty, black fill material.
2 - 4	2*	HA	--	24	0.042	0.0	Very dark brown, silty, black fill material and moist.
4 - 6	3*	HA	--	24	0.055	0.0	Very dark brown, silty, black fill material and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Drilling methods utilized: core drill, Hand Auger & hammer drill.
Concrete chip sample I.D. SSCS-03
Jerome MVA = 0.040mg/m^3Hg | PID = 0.0ppmv
(Concrete chips collected on July 6, 1999, concrete core lost in void space).

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Project No.: 1648 **Boring No.:** ** SSSBB-06
Project Location: Flushing, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: July 6, 1999

Geologist: Straty Eoanidis
Drilling Method: Hammer Drill
Drive Hammer Weight: --
Date Completed: July 6, 1999

Boring Completion Depth: -- ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: -- in.
***Concrete Chips:** **Y** **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
--	--	--	--	--	--	--	None.
--	--	--	--	--	--	--	None.
--	--	--	--	--	--	--	None.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Sample submitted for laboratory analyses.
Concrete chips sample I.D. SSCS-02
Jerome MVA = 0.081mg/m^3Hg | PID = 0.0ppmv
** Soil sample SSSBB-06 unobtainable utilizing core drill due to concrete thickness.

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Project No.: 1648 **Boring No.:** PWSB-03
Project Location: Port Washington, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: Geoprobe
Date Started: August 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: August 3, 1999

Boring Completion Depth: 15 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	12	0.010	95.3	Grey, silty, poorly sorted, clay lenses, with trace gravel and moist.
2 - 4	2	GP	--	8	0.000	59.0	Light brown, silty, sub-angular/sub-rounded medium to course grain sand with traces of bituminous fill and moist.
4 - 6	3*	GP	--	6	0.000	37.0	Moist, light brown, silty, sub-angular/sub-rounded medium to course grain sand with traces of bituminous fill and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 9 feet below grade surface (bgs).

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Project No.: 1648 **Boring No.:** PWSB-01
Project Location: Port Washington, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 3, 1999

Geologist: Straty Eoanidis
Drilling Methods: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: August 3, 1999

Boring Completion Depth: 3 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **Y** **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	73.0	Light brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
2 - 4	2*	HA	--	24	0.000	37.0	Light brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
4 - 6	3	HA	--	24	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. PWCC-01 (0 - 6")
Jerome MVA = 0.000mg/m^3Hg PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** PWSB-02
Project Location: Port Washington, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 3, 1999

Geologist: Straty Eoanidis
Drilling Methods: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: August 3, 1999

Boring Completion Depth: 3 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Light brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
2 - 4	2*	HA	--	24	0.000	0.0	Light brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
4 - 6	3	HA	--	24	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. PWCC-02 (0 - 6")
Jerome MVA = 0.000mg/m^{3}Hg PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** PWSB-05
Project Location: Port Washington, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: August 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth	Soil Sample				Jerome MVA	PID/ OVA	Lithology Description
	Sample		Blows	Rec.			
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	GP	--	10	0.000	0.0	Medium brown, silty, trace gravel, and bituminous fill.
2 - 4	2	GP	--	12	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded, fine grain sand with clay lenses.
4 - 6	3*	GP	--	15	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded, fine grain sand with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Port Washington, NY
Project Name: LIRR Mercury Investigation
Boring No.: PWSB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: August 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth	Soil Sample				Jerome MVA	PID/ OVA	Lithology Description
	Sample		Blows	Rec.			
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	GP	--	19	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with black bituminous fill.
2 - 4	2	GP	--	20	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with clay lenses and moist.
4 - 6	3*	GP	--	18	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with clay lenses and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** PWSB-06
Project Location: Port Washington, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: August 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	20	0.000	0.0	Light/medium brown, with clay lenses and moist.
2 - 4	2	GP	--	22	0.000	0.0	Light/medium brown, with clay lenses and moist.
4 - 6	3*	GP	--	6	0.000	0.0	Light/medium brown, with clay lenses and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** IPSB-05
Project Location: Island Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 10, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: August 10, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded course grain sand, trace gravel, and traces of bituminous fill.
2 - 4	2	GP	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
4 - 6	3*	GP	--	20	0.000	0.0	Grey, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** IPSB-04
Project Location: Island Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 10, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: August 10, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	19	0.000	118	Medium brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel.
2 - 4	2	GP	--	19	0.000	690	Light brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel.
4 - 6	3*	GP	--	17	0.000	131	Grey, silty, wet, sub-angular/sub-rounded course grain sand with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** IPSB-03
Project Location: Island Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: August 10, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: August 10, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	10	0.000	0.0	Dark brown-black, silty, with clay lenses and wet.
2 - 4	2	GP	--	10	0.000	0.0	Dark brown, silty, clay lenses, with trace gravel and wet.
4 - 6	3*	GP	--	8	0.000	0.0	Grey, silty, sub-angular/sub-rounded course grain sand with trace gravel and wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** IPSB-01
Project Location: Island Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: October 4, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: October 4, 1999

Boring Completion Depth: 5 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 3 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	56.4	Dark brown-black, silty, sub-angular/sub-rounded course grain sand exhibiting odor with trace gravel and wet.
2 - 4	2*	HA	--	24	0.000	64.2	Grey-brown, silty, sub-angular/sub-rounded course grain sand exhibiting odor with trace gravel and wet.
4 - 6	3	HA	--	24	--	--	No recovery due to soil saturation.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. IPCC-01 (0 -11.5")
Jerome MVA = 0.000mg/m^3Hg | PID = 183ppmv

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Project No.: 1648 **Boring No.:** IPSB-02
Project Location: Island Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: October 4, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: October 4, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 3 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	16.4	Medium brown, sub-angular/sub-rounded course grain sand with trace gravel and asphalt and also wet.
2 - 4	2	HA	--	24	0.000	11.7	Medium brown, sub-angular/sub-rounded course grain sand with trace gravel and asphalt and also wet.
4 - 6	3*	HA	--	24	0.000	25.8	Grey-brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel, asphalt and clay lenses and also wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. IPCC-02 (0 -2")
Jerome MVA = 0.000mg/m^{3}Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** IPSB-06
Project Location: Island Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: October 5, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: October 5, 1999

Boring Completion Depth: 11 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
5 - 7	1*	GP	--	36	0.000	3.2	Grey-brown, silty, sub-angular/sub-rounded medium to course grain sand, with clay lenses and wet.
7 - 9	2	GP	--	24	0.000	3.4	Grey-brown, silty, sub-angular/sub-rounded fine grain sand, with clay lenses and exhibiting odor and sheen and also wet.
9 - 11	3*	GP	--	24	0.000	0.0	Grey-brown, silty, sub-angular/sub-rounded fine grain sand, with clay lenses, peat (at 11 feet) and exhibiting odor and sheen and also wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** IPSB-07
Project Location: Island Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: October 5, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: October 5, 1999

Boring Completion Depth: 11 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
5 - 7	1*	GP	--	36	0.000	0.3	Grey, silty, sub-angular/sub-rounded medium grain sand and wet.
7 - 9	2	GP	--	24	0.000	0.0	Grey, silty, sub-angular/sub-rounded medium grain sand exhibiting odor and wet.
9 - 11	3*	GP	--	24	0.000	0.0	Grey, silty, sub-angular/sub-rounded medium grain sand with peat (at 11 feet) and exhibiting odor and also wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Island Park, NY
Project Name: LIRR Mercury Investigation
Boring No.: IPSB-09
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: October 5, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: October 5, 1999

Boring Completion Depth: 11 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
5 - 7	1*	GP	--	36	0.000	40	Grey, silty, sub-angular/sub-rounded medium to fine grain sand with clay lenses and exhibiting odor and also wet.
7 - 9	2	GP	--	24	0.000	50.1	Grey, silty, sub-angular/sub-rounded medium to fine grain sand with clay lenses and exhibiting odor and also wet.
9 - 11	3*	GP	--	24	0.000	48.2	Grey, silty, sub-angular/sub-rounded fine grain sand with clay lenses, peat (at 11 feet) and exhibiting odor and also wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Island Park, NY
Project Name: LIRR Mercury Investigation
Boring No.: IPSB-08
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: October 5, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: October 5, 1999

Boring Completion Depth: 11 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
5 - 7	1*	GP	--	36	0.000	20.1	Gray, silty, sub-angular/sub-rounded medium to fine grain sand with clay lenses and exhibiting odor and also wet.
7 - 9	2	GP	--	24	0.000	20	Grey, silty, sub-angular/sub-rounded medium to fine grain sand with clay lenses and exhibiting odor and also wet.
9 - 11	3*	GP	--	24	0.000	34.1	Gray, silty, sub-angular/sub-rounded fine grain sand with clay lenses, peat (at 11 feet) and exhibiting odor and wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-01
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: October 7, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 7, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 3 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.020	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
2 - 4	2	HA	--	24	0.030	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
4 - 6	3*	HA	--	24	0.060	0.0	Very light brown, sub-angular/sub-rounded medium to course grain with trace gravel and what appeared to be traces of mercury beads and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. FPCC-01 (0 -6")
Jerome MVA = 0.000mg/m^{3}Hg | PID = 0.4ppmv

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Project No.: 1648 **Boring No.:** FPSB-02
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: October 7, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 7, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 3 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	118	Medium brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel.
2 - 4	2	HA	--	24	0.000	690	Light brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel.
4 - 6	3*	HA	--	24	0.000	131	Grey, silty, sub-angular/sub-rounded course grain sand with trace gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. IPCC-01 (0 -11.5")
Jerome MVA = 0.000mg/m^3Hg | PID = 183ppmv

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Project No.: 1648 **Boring No.:** FPSB-03
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 7, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 7, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown-black, silty with clay lenses and wet.
2 - 4	2	HA	--	24	0.000	0.0	Dark brown-black, silty with clay lenses and wet.
4 - 6	3*	HA	--	24	0.000	0.0	Grey, silty, sub-angular/sub-rounded course grain sand with trace gravel and wet.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 5.5 feet below grade surface (bgs)

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Project No.: 1648
Project Location: Floral Park, NY
Project Name: LIRR Mercury Investigation
Boring No.: FPSB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: October 7, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 7, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.160	0.0	Dark brown-black, silty with visible mercury beads and moist.
2 - 4	2	HA	--	24	0.110	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
4 - 6	3*	HA	--	24	0.120	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-05
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 7, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: N/A
Date Completed: October 7, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 3 in.
Concrete Core: **N**

Depth	Soil Sample				Jerome MVA	PID/ OVA	Lithology Description
	Sample		Blows	Rec.			
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	GP	--	12	0.000	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand and moist.
2 - 4	2	GP	--	12	0.000	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand and moist.
4 - 6	3*	GP	--	12	0.000	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-06
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 7, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: N/A
Date Completed: October 7, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	36	0.030	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
2 - 4	2	GP	--	24	0.020	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.
4 - 6	3*	GP	--	24	0.040	0.0	Light brown, sub-angular/sub-rounded medium to course grain sand with trace gravel and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-07
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, and moist.
2 - 4	2	HA	--	24	0.080	0.0	Dark brown, silty with trace gravel and moist.
4 - 6	3*	HA	--	24	0.080	0.0	Light brown, sub-angular/sub-rounded medium grain to fine grain sand with trace gravel and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Floral Park, NY
Project Name: LIRR Mercury Investigation
Boring No.: FPSB-09
Sheet 1 **of** 1
By: MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1	HA	--	24	--	0.0	Brown-beige, silty, sub-angular/sub-rounded fine grain sand with light staining and trace gravel.
2 - 4	2*	HA	--	24	--	0.0	Light brown-beige, silty, sub-angular/sub-rounded fine grain sand.
4 - 6	3*	HA	--	24	--	0.0	Light brown-beige, silty, sub-angular/sub-rounded fine grain sand.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-08
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	--	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine grain sand with clay lenses.
2 - 4	2	HA	--	24	--	0.0	Brown-beige, silty, sub-angular/sub-rounded medium to fine grain sand with clay lenses and trace gravel.
4 - 6	3*	HA	--	24	--	0.0	Light brown-beige, silty with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-10
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	--	0.0	Brown-beige, silty and dry.
2 - 4	2	HA	--	--	--	--	Gravel.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Floral Park, NY
Project Name: LIRR Mercury Investigation
Boring No.: FPSB-11
Sheet 1 **of** 1
By: MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	--	0.0	Brown-beige, silty sub-angular/sub-rounded medium to fine grain sand and dry.
2 - 4	2	HA	--	--	--	--	Refusal.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-12
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	--	0.0	Dark brown to light brown, silty sub-angular/sub-rounded medium to fine grain sand and dry.
2 - 4	2	HA	--	24	--	0.0	Refusal.
4 - 6	3*	HA	--	24	--	0.0	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-13
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	--	0.0	Dark brown, silty and moist.
2 - 4	2	HA	--	24	--	0.0	Dark brown-beige, silty, sub-angular/sub-rounded medium to fine grain sand.
4 - 6	3*	HA	--	24	--	0.0	Light brown, sub-angular/sub-rounded fine grain sand.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** FPSB-14
Project Location: Floral Park, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	--	0.0	Dark brown and silty with clay lenses.
2 - 4	2	HA	--	--	--	--	Refusal.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Floral Park, NY
Project Name: LIRR Mercury Investigation
Boring No.: FPSB-15
Sheet 1 **of** 1
By: MR

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: October 8, 1999

Geologist: Mark Rauber
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: October 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m³ Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	--	0.0	Dark brown and silty with clay lenses and trace gravel\stones and also moist.
2 - 4	2	HA	--	24	--	0.0	Dark brown and silty with clay lenses and trace gravel\stones and also moist.
4 - 6	3*	HA	--	24	--	0.0	Light brown, sub-angular/sub-rounded coarse to fine grain sand.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** MISB-01
Project Location: Mineola, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: Geoprobe
Date Started: November 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: N/A
Date Completed: November 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	36	0.000	0.0	Dark brown, very silty, with trace gravel/bituminous and moist.
2 - 4	2	GP	--	12	0.000	0.0	Dark brown/black, very silty, with trace gravel and moist.
4 - 6	3*	GP	--	12	0.000	0.0	Medium to light brown, silty, sub-angular/sub-rounded medium to course grain sand with trace gravel/stones and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Mineola, NY
Project Name: LIRR Mercury Investigation

Boring No.: MISB-02
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: November 3, 1999

Geologist: Straty Eoanidis
Drilling Methods: Geoprobe
Drive Hammer Weight: N/A
Date Completed: November 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth	Soil Sample				Jerome MVA	PID/ OVA	Lithology Description
	Sample		Blows	Rec.			
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	GP	--	12	0.000	0.0	Dark brown/black, very silty, with trace gravel/stones and moist.
2 - 4	2	GP	--	12	0.000	0.0	Dark brown/black, very silty, with trace gravel/stones and moist.
4 - 6	3*	GP	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded course grain sand with trace gravel and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Mineola, NY
Project Name: LIRR Mercury Investigation
Boring No.: MISB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: November 3, 1999

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 3, 1999

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	6	0.000	0.0	Dark brown/black, very silty, with trace gravel and moist.
2 - 4	2	--	--	--	--	--	Refusal
4 - 6	3	--	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Mineola, NY
Project Name: LIRR Mercury Investigation

Boring No.: MISB-07
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: November 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to coarse grain sand with trace stones, and moist.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to coarse grain sand with trace stones, and moist.
4 - 6	3*	HA	--	24	0.000	0.0	Medium to light brown, silty, sub-angular/sub-rounded medium to coarse grain sand with trace stones, and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 12.4 feet below grade surface (bgs)

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Project No.: 1648
Project Location: Mineola, NY
Project Name: LIRR Mercury Investigation

Boring No.: MISB-08
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: November 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	20	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
2 - 4	2	HA	--	20	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 13.5 feet below grade surface (bgs)

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Project No.: 1648
Project Location: Mineola, NY
Project Name: LIRR Mercury Investigation

Boring No.: MISB-11
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: November 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 3, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to coarse grain sand with trace stones and moist.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to coarse grain sand with trace stones and moist.
4 - 6	3*	HA	--	20	0.000	0.0	Medium to light brown, silty, sub-angular/sub-rounded medium to coarse grain sand with trace stones and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 14.7 feet below grade surface (bgs)

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Project No.: 1648 **Boring No.:** **MISB-06
Project Location: Mineola, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Chris O'Shea
Drill Rig: None
Date Started: November 3, 1999

Geologist: Straty Eoanidis
Drilling Method: Core Drill
Drive Hammer Weight: N/A
Date Completed: November 3, 1999

Boring Completion Depth: -- ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: -- in.
***Concrete Core:** **Y** **See Notes**

Depth** (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
--	--	--	--	--	--	--	Negative recovery.
--	--	--	--	--	--	--	Negative recovery.
--	--	--	--	--	--	--	Negative recovery.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Sample submitted for laboratory analyses.
Concrete core sample I.D. MICC-01 (0-1.5')
Jerome MVA = 0.081mg/m^{3}Hg | PID = 0.0ppmv
** Soil sample MISB-06 unobtainable utilizing hand auger due to compacted ballast.

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Project No.: 1648
Project Location: Hempstead, NY
Project Name: LIRR Mercury Investigation

Boring No.: HSSB-01
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 20, 2000

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: January 20, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth	Soil Sample				Jerome	PID/	Lithology Description
	Sample		Blows	Rec.	MVA	OVA	
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	GP	--	24	0.000	0.0	Medium brown, silty, wet, sub-angular/sub-rounded medium grain sand with trace stones.
2 - 4	2	GP	--	24	0.000	0.0	Medium brown, silty, wet, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	GP	--	24	0.000	0.0	Medium brown, silty, wet, sub-angular/sub-rounded medium grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Hempstead, NY
Project Name: LIRR Mercury Investigation
Boring No.: HSSB-02
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 20, 2000

Geologist: Straty Eoanidis
Drilling Methods: Geoprobe
Drive Hammer Weight: --
Date Completed: January 20, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.000	0.0	Medium to dark brown, very silty with clay lenses.
2 - 4	2	GP	--	24	0.000	0.0	Medium to dark brown, very silty with clay lenses.
4 - 6	3*	GP	--	24	0.000	0.0	Medium to dark brown, very silty with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Hempstead, NY
Project Name: LIRR Mercury Investigation

Boring No.: HSSB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 20, 2000

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: --
Date Completed: January 20, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.005	0.0	Medium orange brown, moist, sub-angular/sub-rounded medium grain sand with stones.
2 - 4	2	HA	--	24	0.017	0.0	Medium orange brown, moist, sub-angular/sub-rounded medium grain sand with stones.
4 - 6	3*	HA	--	24	0.060	0.0	Medium orange brown, moist, sub-angular/sub-rounded medium grain sand with stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 17.4 feet below grade surface (bgs)

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Project No.: 1648
Project Location: Hempstead, NY
Project Name: LIRR Mercury Investigation
Boring No.: HSSB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: James Petersen
Drill Rig: None
Date Started: January 20, 2000

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: January 20, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, moist, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, moist, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, moist, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at 4 feet below grade surface (bgs) of the water meter pit.

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Project No.: 1648
Project Location: Hempstead, NY
Project Name: LIRR Mercury Investigation
Boring No.: HSSB-05
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: James Petersen
Drill Rig: None
Date Started: January 20, 2000

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: January 20, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample – Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown and silty with clay lenses.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown and silty with clay lenses.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones and gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Hempstead, NY
Project Name: LIRR Mercury Investigation
Boring No.: HSSB-06
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 21, 2000

Geologist: Straty Eoanidis
Drilling Method: Hammer Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: January 21, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y See notes

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.005	0.0	Dark brown, silty, dry, sub-angular/sub-rounded fine grain sand with trace stones and gravel.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, silty, dry, sub-angular/sub-rounded fine grain sand with trace stones and gravel.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. HSCC-01 (0 - 3")
Jerome MVA = 0.000mg/m3Hg PID = 0.0ppmv

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Project No.: 1648
Project Location: Hempstead, NY
Project Name: LIRR Mercury Investigation
Boring No.: HSSB-07
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: January 21, 2000

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: January 21, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.005	0.0	Medium brown, silty, dry, sub-angular/sub-rounded fine grain sand with trace stones.
2 - 4	2*	HA	--	24	0.008	0.0	Medium brown, silty, dry, sub-angular/sub-rounded fine grain sand with trace stones.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. HSCC-02 (0 - 3")
Jerome MVA = 0.007mg/m3Hg PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** MSSB-01
Project Location: Massapequa, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: November 23, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 23, 1999

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, moist with trace stones and gravel.
2 - 4	--	--	--	--	--	--	Negative recovery (hand auger could not pick-up extremely dry coarse sand consisting of stones and gravel).
4 - 6	--	--	--	--	--	--	Negative recovery (hand auger could not pick-up extremely dry coarse sand consisting of stones and gravel).

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. MSCC-01 (0 - 3")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** MSSB-02
Project Location: Massapequa, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: November 23, 1999

Geologist: Straty Eoanidis
Drilling Methods: Hammer Drill/Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 23, 1999

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Chips: Y See notes

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Very light brown, sub-angular/sub-rounded medium grain to fine grain sand with stones.
--	--	--	--	--	--	--	Negative recovery (hand auger could not pick-up extremely dry coarse sand consisting of stones and gravel).
--	--	--	--	--	--	--	Negative recovery (hand auger could not pick-up extremely dry coarse sand consisting of stones and gravel).

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. MSCC-02 (chips)
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** MSSB-03
Project Location: Massapequa, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: November 23, 1999

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 23, 1999

Boring Completion Depth: 10 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium/light brown, sub-angular/sub-rounded medium grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Light brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Light brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the positive breaker cable pit 4' feet below grade surface (bgs)

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Project No.: 1648 **Boring No.:** MSSB-04
Project Location: Massapequa, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: November 23, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 23, 1999

Boring Completion Depth: 12 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth** (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with trace stones and wet.
2 - 4	2	HA	--	24	0.000	0.0	Medium/light brown, silty, sub-angular/sub-rounded medium to coarse grain sand and moist.
4 - 6	3*	HA	--	24	0.000	0.0	Light brown, sub-angular/sub-rounded coarse grain sand with trace stones and wet. Note: Groundwater observed at approximately 10' feet below grade surface (bgs).

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 5.7' bgs.

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Project No.: 1648 **Boring No.:** MSSB-05
Project Location: Massapequa, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: November 23, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 23, 1999

Boring Completion Depth: 11 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth** (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium grain with clay and trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Medium orange brown, sub-angular/sub-rounded coarse grain sand with trace stones and gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the control communications pit 5' feet below grade surface (bgs).

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Project No.: 1648 **Boring No.:** MSSB-06
Project Location: Massapequa, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: November 23, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: N/A
Date Completed: November 23, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.000	0.0	Medium brown/gray, silty, sub-angular/sub-rounded medium grain sand with trace stones and moist.
2 - 4	2	GP	--	24	0.000	0.0	Light brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones and moist.
4 - 6	3*	GP	--	24	0.000	0.0	Light brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Massapequa, NY
Project Name: LIRR Mercury Investigation
Boring No.: MSSB-07
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: November 23, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: N/A
Date Completed: November 23, 1999

Boring Completion Depth: 8 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth**	Soil Sample				Jerome	PID/	Lithology Description
	Sample		Blows	Rec.	MVA	OVA	
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	GP	--	24	0.000	0.0	Very light brown/gray, sub-angular/sub-rounded coarse grain sand with trace stones and gravel.
2 - 4	2*	GP	--	24	1.000	0.0	Medium/light brown/gray, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3	GP	--	24	0.000	0.0	Very light brown, sub-angular/sub-rounded coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the water service pit 2' feet below grade surface (bgs).

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Project No.: 1648
Project Location: Bayside, NY
Project Name: LIRR Mercury Investigation
Boring No.: BSSB-01
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: December 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark to medium brown, very silty, moist, sub-angular/sub-rounded fine to medium grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Dark to medium brown, very silty, moist, sub-angular/sub-rounded fine to medium grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Dark to medium brown, very silty, moist, sub-angular/sub-rounded fine to medium grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. BSCC-01 (0 - 4")
Jerome MVA = 0.000mg/m^{3}Hg | PID = 164ppmv

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Project No.: 1648 **Boring No.:** BSSB-02
Project Location: Bayside, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 1, 1999

Geologist: Straty Eoanidis
Drilling Methods: Corer/Hand Auger
Drive Hammer Weight: --
Date Completed: December 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y See notes

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, silty, very silty, tightly compacted.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, silty, very silty, tightly compacted.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, silty, very silty, tightly compacted.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. BSCC-02 (0 - 4")
Jerome MVA = 0.000mg/m^3Hg | PID = 64.5ppmv

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Project No.: 1648
Project Location: Bayside, NY
Project Name: LIRR Mercury Investigation

Boring No.: BSSB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 1, 1999

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: --
Date Completed: December 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Black, very silty, with trace gravel and lava rock .
2 - 4	2	HA	--	24	0.000	0.0	Black, very silty, with trace gravel and lava rock .
4 - 6	3*	HA	--	24	0.000	0.0	Black/brown, very silty, moist, with trace gravel and lava rock .

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** BSSB-04
Project Location: Bayside, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: December 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, very silty and compacted with clay lenses.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, very silty and compacted with clay lenses.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, very silty and compacted with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the water meter pit 2 feet below grade surface (bgs).

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Project No.: 1648
Project Location: Bayside, NY
Project Name: LIRR Mercury Investigation

Boring No.: BSSB-05
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: December 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.000	0.0	Medium brown, very silty and compacted with clay lenses.
2 - 4	2	GP	--	24	0.000	0.0	Medium brown, very silty and compacted with clay lenses.
4 - 6	3*	GP	--	24	0.000	0.0	Medium brown, very silty and compacted with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Little Neck, NY
Project Name: LIRR Mercury Investigation
Boring No.: LNSB-01
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: Geoprobe
Date Started: December 8, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: December 8, 1999

Boring Completion Depth: 10 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
4 - 6	1*	GP	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine sand with trace stones.
6 - 8	2	GP	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine sand with trace stones.
8 - 10	3*	GP	--	24	0.000	0.0	Light orange brown, silty, sub-angular/sub-rounded fine grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** LNSB-02
Project Location: Little Neck, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 8, 1999

Geologist: Straty Eoanidis
Drilling Methods: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: December 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1	HA	--	24	0.010	0.0	Light brown, sub-angular/sub-rounded fine grain sand.
2 - 4	2*	HA	--	24	0.030	0.0	Light brown, sub-angular/sub-rounded fine grain sand.
4 - 6	3*	HA	--	24	0.120	0.0	Light brown, sub-angular/sub-rounded fine grain sand.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. LNCC-01 (0-8")
Jerome MVA = 0.500mg/m^{3}Hg | PID = 20.7ppmv

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Project No.: 1648
Project Location: Little Neck, NY
Project Name: LIRR Mercury Investigation
Boring No.: LNSB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 8, 1999

Geologist: Straty Eoanidis
Drilling Methods: Geoprobe
Drive Hammer Weight: --
Date Completed: December 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.000	0.0	Light reddish brown, sub-angular/sub-rounded coarse grain sand with clay lenses.
2 - 4	2	GP	--	24	0.000	0.0	Light reddish brown, sub-angular/sub-rounded coarse grain sand with clay lenses.
4 - 6	3*	GP	--	24	0.000	0.0	Very light brown, sub-angular/sub-rounded fine grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Little Neck, NY
Project Name: LIRR Mercury Investigation
Boring No.: LNSB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 8, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: December 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth**	Soil Sample				Jerome	PID/	Lithology Description
	Sample		Blows	Rec.	MVA	OVA	
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	HA	--	24	0.000	0.0	Dark and light brown, silty and very wet.
2 - 4	2	HA	--	--	--	--	Sample unobtainable.
4 - 6	3	HA	--	--	--	--	Sample unobtainable.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 10 feet below grade surface (bgs).

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Project No.: 1648
Project Location: Little Neck, NY
Project Name: LIRR Mercury Investigation
Boring No.: LNSB-05
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 8, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: December 8, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Light orange brown, sub-angular/sub-rounded fine grain sand with trace stones.
2 - 4	2*	HA	--	24	0.000	0.0	Light orange brown, sub-angular/sub-rounded fine grain sand with trace stones.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the former conduit pit 3 feet below grade surface (bgs)

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Project No.: 1648 **Boring No.:** LNSB-06
Project Location: Little Neck, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 9, 1999

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: December 9, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.030	0.0	Light brown, silty, sub-angular/sub-rounded very fine grain sand with clay lenses.
2 - 4	2	HA	--	24	0.040	0.0	Light brown, silty, sub-angular/sub-rounded very fine grain sand with clay lenses.
4 - 6	3*	HA	--	24	0.090	0.0	Light brown, silty, sub-angular/sub-rounded very fine grain sand with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. LNCC-02 (0-8")
Jerome MVA = 0.060mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** LNSB-07
Project Location: Little Neck, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 9, 1999

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: December 9, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.030	0.0	Light brown, silty, sub-angular/sub-rounded very fine grain sand with clay lenses.
2 - 4	2	HA	--	24	0.020	0.0	Light brown, silty, sub-angular/sub-rounded very fine grain sand with clay lenses.
4 - 6	3*	HA	--	24	0.010	0.0	Light brown, silty, sub-angular/sub-rounded very fine grain sand with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Sample submitted for laboratory analyses.
Concrete core sample I.D. LNCC-03 (0-8")
Jerome MVA = 0.040mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** LNSB-08
Project Location: Little Neck, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 9, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: December 9, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.020	0.0	Light brown, silty with clay lenses.
2 - 4	2	HA	--	24	0.020	0.0	Very light brown, silty with clay lenses.
4 - 6	3*	HA	--	24	0.020	0.0	Very light brown, silty, sub-angular/sub-rounded coarse grain sand with clay lenses.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Sample submitted for laboratory analyses.
** Collection of samples began at the invert of the conduit pit 7 feet below grade surface (bgs).

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Project No.: 1648 **Boring No.:** LNSB-09
Project Location: Little Neck, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 9, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: December 9, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.020	0.0	Dark brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel and stones.
2 - 4	2*	HA	--	24	0.020	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel and stones.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Sample submitted for laboratory analyses.

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Project No.: 1648
Project Location: Bellaire, NY
Project Name: LIRR Mercury Investigation

Boring No.: BASB-01
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: February 22, 2000

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: February 22, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.002	0.0	Medium brown, sub-angular/sub-rounded medium grain sand with trace stones.
2 - 4	2	GP	--	24	0.001	0.0	Medium brown, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	GP	--	24	0.001	0.0	Medium brown, sub-angular/sub-rounded medium grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Bellaire, NY
Project Name: LIRR Mercury Investigation
Boring No.: BASB-02
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: February 22, 2000

Geologist: Straty Eoanidis
Drilling Methods: Geoprobe
Drive Hammer Weight: --
Date Completed: February 22, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.001	0.0	Dark brown, silty, sub-angular/sub-rounded fine grain sand with trace stones.
2 - 4	2	GP	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	GP	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Bellaire, NY
Project Name: LIRR Mercury Investigation

Boring No.: BASB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: February 22, 2000

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: --
Date Completed: February 22, 2000

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth	Soil Sample				Jerome	PID/	Lithology Description
	Sample		Blows	Rec.	MVA	OVA	
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded fine grain sand with trace stones and gravel.
2 - 4	2	HA	--	--	--	--	Refusal.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Bellaire, NY
Project Name: LIRR Mercury Investigation
Boring No.: BASB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: February 22, 2000

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: February 22, 2000

Boring Completion Depth: 4 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded fine grain sand with trace stones and gravel.
2 - 4	2*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded fine grain sand with trace stones and gravel.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Bellaire, NY
Project Name: LIRR Mercury Investigation

Boring No.: BASB-05
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: February 23, 2000

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: February 23, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium to dark brown, silty, sub-angular/sub-rounded fine grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Medium to dark brown, silty, sub-angular/sub-rounded fine grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Medium to light brown, sub-angular/sub-rounded fine grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. BACC-01 (0 - 3")
Jerome MVA = 0.000mg/m3Hg PID = 0.0ppmv

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Project No.: 1648
Project Location: Bellaire, NY
Project Name: LIRR Mercury Investigation

Boring No.: BASB-06
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: February 23, 2000

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: February 23, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, dry, sub-angular/sub-rounded fine grain sand with trace stones and gravel.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, silty, dry, sub-angular/sub-rounded fine grain sand with trace stones and gravel.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. BACC-02 (0 - 3")
Jerome MVA = 0.000mg/m3Hg PID = 0.0ppmv

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Project No.: 1648
Project Location: Bellaire, NY
Project Name: LIRR Mercury Investigation

Boring No.: BASB-07
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: February 23, 2000

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: February 23, 2000

Boring Completion Depth: 13 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown/black, silty, sub-angular/sub-rounded medium grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Dark brown/black, silty, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	HA	--	24	0.003	0.0	Medium brown, sub-angular/sub-rounded medium grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 7 feet below grade surface (bgs).

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Project No.: 1648 **Boring No.:** CMSB-01
Project Location: Cedar Manor, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: Geoprobe
Date Started: December 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: December 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stor
2 - 4	2	GP	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stor
4 - 6	3*	GP	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Cedar Manor, NY
Project Name: LIRR Mercury Investigation
Boring No.: CMSB-02
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 21, 1999

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: --
Date Completed: December 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.010	0.0	Medium to black brown, silty, sub-angular/sub-rounded medium grain sand with trace stones and slight odor.
2 - 4	2	HA	--	--	--	--	Refusal.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 10 feet below grade surface (bgs).

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Project No.: 1648
Project Location: Cedar Manor, NY
Project Name: LIRR Mercury Investigation
Boring No.: CMSB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: James Petersen
Drill Rig: None
Date Started: December 21, 1999

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: --
Date Completed: December 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 8 feet below grade surface (bgs).

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Project No.: 1648
Project Location: Cedar Manor, NY
Project Name: LIRR Mercury Investigation
Boring No.: CMSB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: James Petersen
Drill Rig: None
Date Started: December 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: December 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth**	Soil Sample				Jerome	PID/	
	Sample		Blows	Rec.	MVA	OVA	Lithology Description
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	HA	--	24	0.010	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
2 - 4	2	HA	--	24	0.010	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
4 - 6	3*	HA	--	24	0.010	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 8 feet below grade surface (bgs).

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Project No.:	1648	**Boring No.:**	CMSB-05
Project Location:	Cedar Manor, NY	**Sheet**	1 **of** 1
Project Name:	LIRR Mercury Investigation	**By:**	SE

Drilling Contractor:	LAWES	**Geologist:**	Straty Eoanidis	**Boring Completion Depth:**	6 ft.
Driller:	Christopher O'Shea	**Drilling Method:**	Hand Auger	**Ground Surface Elevation:**	0 ft.
Drill Rig:	None	**Drive Hammer Weight:**	--	**Boring Diameter:**	2 in.
Date Started:	December 21, 1999	**Date Completed:**	December 21, 1999	**Concrete Core:**	**N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the water meter pit 2 feet below grade surface (bgs)

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Project No.: 1648
Project Location: Cedar Manor, NY
Project Name: LIRR Mercury Investigation
Boring No.: CMSB-06
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 21, 1999

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: December 21, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded medium fine grain sand with trace gravel and stones.
2 - 4	2	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded medium fine grain sand with trace gravel and stones.
4 - 6	3*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded medium fine grain sand with trace gravel and stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. CMCC-01 (0-4")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** CMSB-08
Project Location: Cedar Manor, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: December 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.010	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand and moist.
2 - 4	2	HA	--	24	0.010	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand and moist.
4 - 6	3*	HA	--	24	0.010	0.0	Light brown, slightly silty, sub-angular/sub-rounded medium grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Sample submitted for laboratory analyses.
Concrete core sample I.D. CMCC-02 (0-4")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** CMSB-09
Project Location: Cedar Manor, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: December 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, wet, sub-angular/sub-rounded medium grain sand with trace stones.
2 - 4	2	HA	--	24	0.000	0.0	Dark brown, silty, wet, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium to coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Sample submitted for laboratory analyses.
Concrete core sample I.D. CMCC-03 (0-3")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** CMSB-10
Project Location: Cedar Manor, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: December 22, 1999

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: December 22, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded fine grain sand.
2 - 4	2	HA	--	--	--	--	Refusal.
4 - 6	3	HA	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Sample submitted for laboratory analyses.
Concrete core sample I.D. CMCC-05 (0-6")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** KGSB-01
Project Location: Kew Gardens, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: Geoprobe
Date Started: January 6, 2000

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: January 6, 2000

Boring Completion Depth: 16 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
10 - 12	1*	GP	--	24	See Notes	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine sand with trace stones and gravel.
12 - 14	2	GP	--	24	See Notes	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine sand with trace stones and gravel.
14 - 16	3*	GP	--	24	See Notes	0.0	Medium brown, silty, sub-angular/sub-rounded medium to fine sand with trace stones and gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
MVA inoperable at the time of sampling.

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Project No.: 1648
Project Location: Kew Gardens, NY
Project Name: LIRR Mercury Investigation

Boring No.: KGSB-02
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 6, 2000

Geologist: Straty Eoanidis
Drilling Methods: Geoprobe
Drive Hammer Weight: --
Date Completed: January 6, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	See Notes	0.0	Medium brown, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones.
2 - 4	2	GP	--	24	See Notes	0.0	Medium brown, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	GP	--	24	See Notes	0.0	Medium brown, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
MVA inoperable at the time of sampling.

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Project No.: 1648 **Boring No.:** KGSB-03
Project Location: Kew Gardens, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Rick Doering
Drill Rig: None
Date Started: January 6, 2000

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: --
Date Completed: January 6, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	See Notes	0.0	Medium brown, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones and gravel.
2 - 4	2	HA	--	24	See Notes	0.0	Medium brown, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones and gravel.
4 - 6	3*	HA	--	24	See Notes	0.0	Medium brown, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones and gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
MVA inoperable at the time of sampling.

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Project No.: 1648
Project Location: Kew Gardens, NY
Project Name: LIRR Mercury Investigation

Boring No.: KGSB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Rick Doering
Drill Rig: None
Date Started: January 6, 2000

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: --
Date Completed: January 6, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	See Notes	0.0	Black, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones and gravel.
2 - 4	2	HA	--	24	See Notes	0.0	Black, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones and gravel.
4 - 6	3*	HA	--	24	See Notes	0.0	Brown/black, silty, moist, sub-angular/sub-rounded medium grain sand with trace stones and gravel.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
MVA inoperable at the time of sampling.

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Project No.: 1648
Project Location: Kew Gardens, NY
Project Name: LIRR Mercury Investigation
Boring No.: KGSB-06
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 14, 2000

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: January 14, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.014	0.0	Medium to dark brown, silty, sub-angular/sub-rounded fine grain sand.
2 - 4	2	HA	--	24	0.000	0.0	Medium to dark brown, silty, sub-angular/sub-rounded fine grain sand.
4 - 6	3*	HA	--	24	0.000	0.0	Medium to dark brown, silty, sub-angular/sub-rounded fine grain sand.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. KGCC-01 (0-8")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.:	1648	**Boring No.:**	KGSB-07
Project Location:	Kew Gardens, NY	**Sheet**	1 **of** 1
Project Name:	LIRR Mercury Investigation	**By:**	SE

Drilling Contractor:	LAWES	**Geologist:**	Straty Eoanidis	**Boring Completion Depth:**	6 ft.
Driller:	Christopher O'Shea	**Drilling Method:**	Core Drill/Hand Auger	**Ground Surface Elevation:**	0 ft.
Drill Rig:	None	**Drive Hammer Weight:**	--	**Boring Diameter:**	2 in.
Date Started:	January 14, 2000	**Date Completed:**	January 14, 2000	**Concrete Core:**	**Y** **See notes**

Depth (ft.)	**Soil Sample** Sample **No.**	**Type**	**Blows** (Per 6")	**Rec.** (inches)	**Jerome MVA** (mg/m^3 Hg)	**PID/ OVA** (ppmv)	**Lithology Description**
0 - 2	1*	HA	--	24	0.000	0.0	Medium to dark brown, silty, sub-angular/sub-rounded fine grain sand.
2 - 4	2	HA	--	--	--	--	Refusal
4 - 6	3	HA	--	--	--	--	Refusal

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. KGCC-02 (0-8")
Jerome MVA = $0.000 mg/m^3 Hg$ | PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** SASB-01
Project Location: St. Albans, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: Geoprobe
Date Started: November 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, very silty, with trace sub-angular/sub-rounded medium to fine grain and moist.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, very silty, with trace sub-angular/sub-rounded medium to fine grain and moist.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, very silty, with trace sub-angular/sub-rounded medium to fine grain and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: St. Albans, NY
Project Name: LIRR Mercury Investigation
Boring No.: SASB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: November 1, 1999

Geologist: Straty Eoanidis
Drilling Methods: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel.
2 - 4	2	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded medium grain sand with gravel and moist.
4 - 6	3*	HA	--	24	0.000	0.0	Dark brown, silty, mostly gravel with trace sub-angular/sub-rounded medium grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the manhole 6.3 feet below grade surface (bgs)

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Project No.: 1648
Boring No.: SASB-02
Project Location: St. Albans, NY
Sheet 1 **of** 1
Project Name: LIRR Mercury Investigation
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea and Robert Allegrezza
Drill Rig: None
Date Started: November 1, 1999

Geologist: Straty Eoanidis
Drilling Methods: Corer/Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 1, 1999

Boring Completion Depth: 4 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel and moist.
2 - 4	2*	HA	--	24	0.000	0.0	Dark brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel and moist.
4 - 6	3	--	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. SACC-01 (0 - 4")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648
Project Location: St. Albans, NY
Project Name: LIRR Mercury Investigation

Boring No.: SASB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: November 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 1, 1999

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth	Soil Sample				Jerome	PID/	Lithology Description
	Sample		Blows	Rec.	MVA	OVA	
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
0 - 2	1*	HA	--	10	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded medium grain sand and moist.
2 - 4	2	--	--	--	--	--	Refusal.
4 - 6	3	--	--	--	--	--	Refusal.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. SACC-02 (0 - 4.5")
Jerome MVA = 0.000mg/m^3Hg | PID = 0.0ppmv

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Project No.: 1648
Project Location: St. Albans, NY
Project Name: LIRR Mercury Investigation
Boring No.: SASB-05
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: November 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Corer/Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See Notes**

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Soil Sample: Blows (Per 6")	Soil Sample: Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.010	0.0	Medium brown, silty, sub-angular/sub-rounded fine grain sand and moist.
2 - 4	2	GP	--	24	0.010	0.0	Medium brown, silty, sub-angular/sub-rounded fine grain sand and moist.
4 - 6	3*	GP	--	24	0.000	0.0	Medium brown, silty, sub-angular/sub-rounded fine grain sand and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. SACC-03 (0 - 4.5")
Jerome MVA = 0.000mg/m^3Hg | PID = 28.4ppmv

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Project No.: 1648 **Boring No.:** SASB-07
Project Location: St. Albans, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Robert Allegrezza
Drill Rig: None
Date Started: November 1, 1999

Geologist: Straty Eoanidis
Drilling Method: Hand Auger
Drive Hammer Weight: N/A
Date Completed: November 1, 1999

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Dark to medium brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel and moist.
2 - 4	2	HA	--	24	0.000	0.0	Dark to medium brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel and moist.
4 - 6	3*	HA	--	24	0.000	0.0	Light brown, silty, sub-angular/sub-rounded medium grain sand with trace gravel and moist.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648 **Boring No.:** LHSB-01
Project Location: Lindenhurst, NY **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 12, 2000

Geologist: Straty Eoanidis
Drilling Method: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: January 12, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.000	0.0	Medium brown, moist, sub-angular/sub-rounded medium to coarse grain sand.
2 - 4	2	HA	--	24	0.000	0.0	Medium brown, moist, sub-angular/sub-rounded medium to coarse grain sand.
4 - 6	3*	HA	--	24	0.000	0.0	Medium brown, wet, sub-angular/sub-rounded coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. LHCC-01 (0-6")
Jerome MVA = 0.000mg/m^3Hg PID = 0.0ppmv

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Project No.: 1648 **Boring No.:** LHSB-02
Project Location: **Sheet** 1 **of** 1
Project Name: LIRR Mercury Investigation **By:** SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 12, 2000

Geologist: Straty Eoanidis
Drilling Methods: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: January 12, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	HA	--	24	0.005	0.0	Medium to light brown, moist, sub-angular/sub-rounded coarse grain sand with trace stones.
2 - 4	2	HA	--	24	0.003	0.0	Medium to light brown, moist, sub-angular/sub-rounded coarse grain sand with trace stones.
4 - 6	3*	HA	--	24	0.004	0.0	Medium to light brown, moist, sub-angular/sub-rounded coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. LHCC-02 (0-6")
Jerome MVA = 0.006mg/m^{3}Hg PID = 0.0ppmv

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Project No.: 1648
Project Location: Lindenhurst, NY
Project Name: LIRR Mercury Investigation
Boring No.: LHSB-03
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 12, 2000

Geologist: Straty Eoanidis
Drilling Methods: Core Drill/Hand Auger
Drive Hammer Weight: --
Date Completed: January 12, 2000

Boring Completion Depth: 2 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: Y **See notes**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
3 - 5	1*	HA	--	24	0.004	0.0	Medium to light brown, wet, sub-angular/sub-rounded coarse grain sand with stones.
5 - 7	2	HA	--	--	--	--	Negative recovery.
7 - 9	3	HA	--	--	--	--	Negative recovery.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
Concrete core sample I.D. LHCC-03 (0-9")
Jerome MVA = $0.004 mg/m^3$Hg | PID = 0.0ppmv

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Project No.: 1648
Project Location: Lindenhurst, NY
Project Name: LIRR Mercury Investigation

Boring No.: LHSB-04
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 12, 2000

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: January 12, 2000

Boring Completion Depth: 10 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth**	Soil Sample				Jerome	PID/	Lithology Description
	Sample		Blows	Rec.	MVA	OVA	
(ft.)	No.	Type	(Per 6")	(inches)	(mg/m^3 Hg)	(ppmv)	
4 - 6	1*	GP	--	24	0.010	0.0	Medium to light brown, wet, sub-angular/sub-rounded coarse grain sand with stones.
6 - 8	2	GP	--	24	0.003	0.0	Medium to light brown, wet, sub-angular/sub-rounded coarse grain sand with stones.
8 - 10	3*	GP	--	24	0.011	0.0	Medium to light brown, wet, sub-angular/sub-rounded coarse grain sand with stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes:
--: Not applicable.
* Samples submitted for laboratory analyses.
** Collection of samples began at the invert of the dry well 4 feet below grade surface (bgs).

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Project No.: 1648
Project Location: Lindenhurst, NY
Project Name: LIRR Mercury Investigation

Boring No.: LHSB-05
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 12, 2000

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: January 12, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth** (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.007	0.0	Medium to light brown, sub-angular/sub-rounded coarse grain sand with trace stones.
2 - 4	2	GP	--	24	0.004	0.0	Medium to light brown, sub-angular/sub-rounded coarse grain sand with trace stones.
4 - 6	3*	GP	--	24	0.004	0.0	Medium to light brown, sub-angular/sub-rounded coarse grain sand with trace stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Lindenhurst, NY
Project Name: LIRR Mercury Investigation
Boring No.: LHSB-06
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 12, 2000

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: January 12, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: **N**

Depth (ft.)	Soil Sample: Sample No.	Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/ OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.007	0.0	Dark brown/black, silty, sub-angular/sub-rounded medium grain sand with trace stones.
2 - 4	2	GP	--	24	0.000	0.0	Dark brown/black, silty, sub-angular/sub-rounded medium grain sand with trace stones.
4 - 6	3*	GP	--	24	0.005	0.0	Medium brown, sub-angular/sub-rounded medium fine grain sand with trace gravel and stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Samples submitted for laboratory analyses.

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Project No.: 1648
Project Location: Lindenhurst, NY
Project Name: LIRR Mercury Investigation

Boring No.: LHSB-07
Sheet 1 **of** 1
By: SE

Drilling Contractor: LAWES
Driller: Christopher O'Shea
Drill Rig: None
Date Started: January 12, 2000

Geologist: Straty Eoanidis
Drilling Method: Geoprobe
Drive Hammer Weight: --
Date Completed: January 12, 2000

Boring Completion Depth: 6 ft.
Ground Surface Elevation: 0 ft.
Boring Diameter: 2 in.
Concrete Core: N

Depth (ft.)	Soil Sample: Sample No.	Soil Sample: Sample Type	Blows (Per 6")	Rec. (inches)	Jerome MVA (mg/m^3 Hg)	PID/OVA (ppmv)	Lithology Description
0 - 2	1*	GP	--	24	0.000	0.0	Medium to brown, silty, moist clay.
2 - 4	2	GP	--	24	0.000	0.0	Medium to brown, wet, sub-angular/sub-rounded coarse grain sand with stones.
4 - 6	3*	GP	--	24	0.000	0.0	Medium to brown, wet, sub-angular/sub-rounded coarse grain sand with stones.

Sample Type:
SS = Split Spoon HA = Hand Auger GP = Geoprobe
CC = Concrete Core HP = Hydropunch

Notes: --: Not applicable.
* Sample submitted for laboratory analyses.