APPENDIX C-3

Remedial Action Plan

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May 21, 2010

Mr. Hasan Ahmed
Spill Prevention & Response Programs
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
One Hunters Point Plaza
47-40 21st Street
Long Island City, New York 11101

RE: Remedial Action Plan
NYSDEC Spill Case No. 0812579
Bridges Juvenile Justice Center
1221 Spofford Avenue
Bronx, New York

Dear Mr. Ahmed:

Louis Berger & Assoc., P.C. (LBA) has prepared this Remedial Action Plan (RAP) on behalf of the New York City Department of Juvenile Justice (NYCDJJ) to address impacts related to a No. 2 Fuel Oil release at the Bridges Juvenile Justice Center located at 1221 Spofford Avenue in Bronx, New York. The release is listed by the New York State Department of Environmental Conservation (NYSDEC) as Spill Case #0812579. One (1) copy of the report is provided for your review.

Please do not hesitate to contact me at (212) 612-7900 x-7923 or via e-mail at smorse@louisberger.com or Sean McGonigal at (212) 612- 7900 x-1397 smcgonigal@louisberger.com should you have any questions or require further information.

Very truly yours,
LOUIS BERGER GROUP, INC.

Stephen A. Morse, P.E., LEED AP
Principal Engineer

Enclosures
cc: S. Auston (NYCDJJ)
S. McGonigal (LBA)
M. McWatters (LBA)

-FINAL-

Remedial Action Plan

NYSDEC Spill Case #0812579

Bridges Juvenile Justice Center

1221 Spofford Avenue

Bronx, New York

Prepared for:

NYC Department of Juvenile Justice

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May 21, 2010

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EXECUTIVE SUMMARY

Louis Berger & Assoc., P.C. (LBA) has prepared this Remedial Action Plan (RAP) on behalf of the New York City Department of Juvenile Justice (NYCDJJ) to address impacts related to a No. 2 Fuel Oil release at the Bridges Juvenile Justice Center located at 1221 Spofford Avenue in Bronx, New York (herein after referred to as "the Site"). The release is listed by the New York State Department of Environmental Conservation (NYSDEC) as Spill Case #0812579 and a topographic map of the area is provided as **Figure 1**. The facility, which is owned by the NYCDJJ, is composed of several wings, extending in a cross-shaped configuration. A boiler room – containing three large boilers and a generator – is located in the basement of the east wing, approximately 15 feet below parking lot grade. The spill occurred in the vicinity of two 12,000 gallon underground storage tanks (USTs) which hold fuel oil used to supply the boiler room. The USTs are positioned under the southeast parking lot, at a depth above the basement floor slab and within 10 feet of the southern wall of the boiler room.

On Tuesday, February 17, 2009, the spill was first detected near the southern wall of the basement boiler room. The spill occurred in the vicinity of the supply lines that link the parking lot USTs to the three boilers. The Veeder-Root monitoring system records for UST #2 show that approximately 2,000 gallons may have been released into the subsurface over the two day period.

To delineate the extent of the No. 2 Fuel Oil release, LBA conducted RI activities between March 23 and March 27, 2009 to assess subsurface conditions at the Site. The investigation included a geophysical survey, the advancement and sampling of thirteen (13) soil borings to depths of approximately 1 to 4.5 feet below the basement (approximately 16 to 19.5 feet below the grade of the parking lot), eleven (11) soil borings to depths between 7 and 19.5 ft bgs in the parking lot, and four (4) temporary well points (TWPs) in soil borings advanced in the basement for groundwater sampling. After the completion of investigation activities, a weekly air monitoring program was implemented at the request of the NYSDEC to evaluate air quality inside the building.

Remedial investigation activities delineated the approximate extent of the No. 2 Fuel Oil release at the Site. Based on visual inspections of the borings and the analytical results, free product was typically observed between 15 and 19 ft bgs in borings advanced in the parking lot (SB15 and SB16) and borings advanced in the basement (SB01B, SB02, and SB03). The highest concentrations of TPH were observed to the north and northwest of the UST fill box. Sample results from other borings indicate an approximately radial gradient of diminishing soil contamination extending to the north-northwest.

It appears that the gravel sub-base of the basement floor and the assumed gravel sub-base beneath the concrete vault for the USTs have provided a preferential pathway for the fuel oil. Since the fuel is a light non-aqueous phase liquid (LNAPL), it would float on the water table. In this case, only localized pockets of perched water were observed beneath the basement floor and no water was observed in the borings completed in the parking lot. The fuel is expected to seep via gravity from the relatively permeable reservoir of the gravel sub-base areas into the underlying soil and potentially into the underlying bedrock, which is assumed to be encountered between 17 and 19.5 ft bgs at the Site.

Due to the complex nature of the Site, which contains various underground structures at different depths (USTs, basement, window well, etc.), LBA recommends implementing dual-phase extraction system to remove the free product from the subsurface. Dual-phase extraction (DPE), also known as multi-phase extraction, vacuum-enhanced extraction, or sometimes bioslurping, is a technology that uses a high vacuum system to remove various combinations of contaminated groundwater, separate-phase petroleum product, and hydrocarbon vapor from the subsurface. Extracted liquids and vapor are treated and collected for disposal, or re-injected to the subsurface (where permissible under applicable state laws).

The remedial approach will consist of a treatability study and a full-scale program. The treatability study will be conducted to obtain more information about the subsurface and will consist of the installation of ten (10) extraction/monitoring wells in the basement and parking lot followed by a two day treatability study. The treatability study will be conducted using two (2) extraction locations in the parking lot, which are nearest to SB18 near the UST fill box and in between SB15 and SB16 in the area of highest observed TPH concentrations. A vacuum truck will be used on each extraction well for a period of 4 to 5 hours. While set up on an extraction well, the surrounding wells will be continuously monitored to determine the extent of vacuum influence at the Site. Airflow meters, vacuum gauges, and a product interface probe will be used to monitor the locations surrounding the extraction well. These results will help determine airflow rates, liquid productions rates, and the spacing of final wells, if additional wells are required.

A full-scale program will be designed based on the results of the treatability study to effectively remove the fuel oil release at the Site. It is assumed that the wells installed for the treatability study will be used for the full-scale program and that installation of additional wells should not be necessary. For the full-scale program, all 10 wells will be used for both extraction and monitoring. Although the full-scale dual phase extraction system cannot be effectively designed until a final assessment is made of the extent of petroleum, migration-fate-transport mechanisms, successful pilot testing results and realization of site specific conditions, the system will generally consist of the following components:

- 20-horsepower vacuum pump system;
- An oil/water separator;
- A water carbon treatment system;
- A vapor carbon treatment system; and
- Network of associated piping from the wells to the treatment system.

Based on the known volume and extent of the release, LBA anticipates that the dual phase extraction system operation will be required for a minimum of two years. The system would require regular operation and maintenance during the two-year period. Site monitoring would also be necessary periodically during operation, and would likely be conducted for one additional year after the system has been shut down.

After the majority of the free product is removed from the subsurface, a surfactant injection may also be conducted. The surfactant would be injected into the extraction wells to increase the mobility of the residual fuel oil allowing it to be more readily removed from the subsurface.

Based on discussions with the NYCDJJ representatives, the NYCDJJ has tentative plans to vacate this facility sometime in the next two (2) years between 2010 and 2012. The future use of the Site is currently unknown, and may also include demolition of the existing building and reconstruction of a new facility for currently unknown use. Once the future status of the existing building and use of the Site is determined, the proposed remedial action will be updated, and may include removal of USTs and excavation and off-site disposal of impacted soil.

1.0 INTRODUCTION

Louis Berger & Assoc., P.C. (LBA) has prepared this Remedial Action Plan (RAP) on behalf of the New York City Department of Juvenile Justice (NYCDJJ) to address impacts related to a No. 2 Fuel Oil release at the Bridges Juvenile Justice Center located at 1221 Spofford Avenue in Bronx, New York (herein after referred to as "the Site"). The release is listed by the New York State Department of Environmental Conservation (NYSDEC) as Spill Case #0812579. A topographic map of the area is provided as **Figure 1**.

The NYCDJJ facility is composed of several wings, extending in a cross-shaped configuration, as shown on the Site Plan (**Figure 2**). A boiler room, containing three large boilers and a generator, is located in the basement of the east wing, approximately 15 feet below grade. The spill occurred in the vicinity of two 12,000 gallon underground storage tanks (USTs) which hold fuel oil used to supply the boiler room. The USTs are positioned under the southeast parking lot, at a depth above the basement floor slab and within 10 feet of the southern wall of the boiler room (**Figure 2**). The two USTs beneath the parking lot are housed in a below grade concrete containment vault approximately 18 feet (east to west) by 25 feet (north to south). The bottom slab of the UST concrete vault is approximately 10 to 11 feet below ground surface (ft bgs). The USTs are approximately seven years old, double-walled, and sit directly on the concrete slab (no cradle). The diameter of the each UST is approximately eight (8) feet. The USTs are outfitted with a Veeder-Root monitoring system to continuously measure fuel volume, height, temperature and water (if accumulated in the tank). In addition, the Veeder-Root monitoring system performs in-tank testing for leaks with an alarm.

On Tuesday, February 17, 2009, fuel oil was observed seeping into the basement near the southern wall. The oil seepage occurred in the vicinity of the supply lines that link the parking lot USTs to the three boilers. The spill was called into the NYSDEC spill hotline on February 17, 2009 by Mr. Steve Auston of the NYCDJJ and assigned Spill Case #0812579 by the NYSDEC inspector. Mr. Hasan Ahmed was designated as the NYSDEC spill case manager. Based on a review of the Veeder-Root reports and the results of a tank tightness test, it was determined that the USTs were not leaking. Instead, the source of the leak was determined to be the supply lines. On Saturday, February 14, 2009, it was intended that UST #1 be shut down and UST #2 be opened up, which was completed manually. The locations of the USTs are shown on Figure 3. However, the return line, running from the boilers and generator back into UST #1 was inadvertently left open. Fuel that should have been circulating to UST #2 was diverted to UST #1, which was at capacity. Veeder-Root reports from February 15, 2009 indicated that approximately 2,000 gallons were released, which was much more than the 10-15 gallon overflow box (location directly north of the UST vault) could handle.

Between March 23 and March 27, 2009, LBA performed a Remedial Investigation (RI) at the Site to delineate the extent of the spill and assess subsurface conditions in the vicinity of the No. 2 Fuel Oil release. The RI consisted of a geophysical survey and the advancement and sampling of eleven (11) soil borings to depths of approximately 7 to 19.5 feet (ft) below ground surface (bgs) in the parking lot and thirteen (13) soil borings to depths of approximately 1 to 4.5 ft bgs in the basement (the basement level is approximately 15 feet below the grade of the parking lot).

Four (4) temporary well points (TWPs) were also installed in soil borings advanced in the basement for groundwater sampling. The following conclusions were drawn from the RI:

- The gravel sub-base of the basement floor and the assumed gravel sub-base beneath the concrete vault have likely provided a preferential pathway for the fuel release.
- Free product was observed beneath the basement floor in the three (3) borings (SB01B, SB02 and SB03) closest to the vault and nearest to the southern wall of the building. There were also indications that a historic release may have occurred below the basement slab.
- Free product was observed in two (2) borings (SB15 and SB16) in the parking lot, adjacent to, and at the approximate elevation of, the base of the vault. The free product was observed approximately 3 feet to the east of the UST vault.
- Since the fuel is a light non-aqueous phase liquid (LNAPL), it would float on the water table. However, during the RI, only localized pockets of perched water were observed beneath the basement floor and no water was observed in the borings completed in the parking lot.
- The fuel is expected to seep via gravity from the relatively permeable reservoir of the gravel sub-base areas into the underlying soil and potentially into the underlying bedrock, which is assumed to be encountered between 17 and 19.5 ft bgs at the Site.

This RAP has been generated based on the results of LBA's RI, (LBA, May 2009) and details the remedial actions proposed for the fuel oil release at the Site. Remedial actions for this Site will be implemented in accordance with the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation dated December 2002. Proper implementation of this RAP will minimize contaminant exposure pathways (e.g., dermal contact, ingestion and inhalation) for future and current occupants of the Site.

Based on discussions with the NYCDJJ representatives, the NYCDJJ has tentative plans to vacate this facility sometime in the next two (2) years between 2010 and 2012. The future use of the Site is currently unknown, and may also include demolition of the existing building and reconstruction of a new facility for currently unknown use. Once the future status of the existing building and use of the Site is determined, the proposed remedial action will be updated, and may include removal of USTs and excavation and off-site disposal of impacted soil.

2.0 SITE DESCRIPTION

The Site is located at 1221 Spofford Avenue in Bronx, Bronx County, New York (Site), and is identified as Block 2738, Lot 35 by the New York City Tax Assessors Records. The Site occupies approximately 3.5 acres and consists of a mixture of existing buildings and parking areas. The existing buildings are known to include basements extending approximately 15 ft bgs, and two (2) USTs have been identified underlying a concrete pad in the southeast section of the property. The Site is bound to the north by residential buildings and grass covered areas, to the east by existing commercial buildings and parking areas, to the south by Spofford Avenue, and to the west by Tiffany Street. **Figure 1** is an annotated USGS 7.5 minute-topographic map (Central Park, NY) showing the Site location, local topography, drainage, and cultural features. A Site plan showing the physical layout of the Site is presented as **Figure 2**.

The No. 2 Fuel Oil release occurred in the vicinity of two (2) underground storage tanks (USTs) located under the visitor's parking lot, south of the eastern wing (refer to **Figure 2**). The facility's boiler room is located in the basement of the eastern wing, approximately 15 ft bgs of the parking lot.

2.1 Topography

Based on a review of the United States Geological Survey (USGS) 7.5-Minute quadrangle for Central Park, New York, the Site is generally flat, with an average elevation of 50 feet above mean sea level (**Figure 1**). Area topography generally slopes to the south towards Flushing Bay.

The relative elevation of the parking lot is approximately 15 feet above the elevation of the basement floor based on visual inspection. The bottom slab of the UST concrete vault is approximately 10 to 11 ft bgs of the parking lot.

2.2 Geology

The *NYC Reconnaissance Soil Survey* (2005) indicates the Charlton-Greenbelt complex underlies the Site. This complex is classified as nearly level to gently sloping gneissic till soils and anthropogenic soils with urbanized areas of till plains that have been cut and filled, with up to 80 percent of the land surface covered by impervious pavement or buildings. The USGS publication *Groundwater in Bronx, New York, and Richmond Counties with Summary Data on Kings and Queens Counties, New York City, New York* (USGS, 1953), shows that the surficial soils are underlain by an unstratified layer of Pleistocene glacial deposits.

According to *Bedrock and Engineering geologic maps of Bronx and Parts of New York and Queens Counties, New York*, the unstratified layer of Pleistocene glacial deposits is underlain by the Hartland Formation, which is of Middle Ordovician to Lower Cambrian age, and consists of muscovite-biotite and quartz schist, with locally occurring garnet and dark greenish-black quartz-biotite amphibole. These rocks are commonly interlayered with coarse quartz-plagoclase-muscovite, pegmatite and amphibolites gneiss.

During the advancement of soil borings on Site as part of LBA's RI, fill material consisting of medium to fine brown sand with coarse to fine gravel and silt was encountered to depths ranging from approximately 16 to 19.5 ft bgs, where refusal was consistently encountered. At refusal, weathered rock fragments consisting of mica schist with quartz grains were observed in the tip of the direct push sampler, indicating that the top of bedrock may have been encountered. However, it should be noted that a geotechnical investigation conducted adjacent to the Site using mud rotary techniques identified bedrock at approximately 40 ft bgs, beneath a layer of sand, silt, clay, cobbles and boulders (till) (NYCDDC, 1999).

2.3 Hydrology

The nearest surface water body to the Site is the Bronx River, located approximately 0.5 miles east of the Site. The Bronx River flows southeast before discharging into Flushing Bay approximately 0.65 miles south of the Site. Under natural conditions, shallow groundwater would be expected to mimic local topography and flow southwest towards Flushing Bay. However, groundwater levels and/or flow direction(s) may vary due to seasonal fluctuations in precipitation, local usage demands, geology, underground structures, or dewatering operations. During the advancement of soil borings on Site, a layer of perched groundwater was encountered at an approximate depth of 17 to 18 ft bgs of the parking lot.

2.4 Wetlands

Wetlands are defined according to hydrophytic vegetation, hydric soils, hydrology, and other characteristics. According to the National Wetland Inventory, the nearest mapped wetlands are freshwater emergent wetlands located approximately 0.75 miles southeast of the Site. In addition, estuarine and marine wetlands are located approximately 1.2 miles northeast of the Site, along the bank of the Bronx River.

3.0 SUMMARY OF PREVIOUS INVESTIGATIONS

LBA conducted RI activities between March 23 and March 27, 2009 to assess subsurface conditions in the vicinity of the No. 2 Fuel Oil release at the Site. Results of the investigation are summarized in the following sections and further documented in LBA's *Remedial Investigation Report* dated May 15, 2009. The investigation included a geophysical survey, the advancement and sampling of thirteen (13) soil borings to depths of approximately 1 to 4.5 ft bgs below the basement (the basement is approximately 15 feet below the grade of the parking lot so the basement borings were advanced to between 16 and 19.5 feet below the grade of the parking lot), eleven (11) soil borings to depths of approximately 7 to 19.5 ft bgs in the parking lot, and four (4) temporary well points (TWPs) in soil borings advanced in the basement for groundwater sampling.

After the completion of investigation activities, a weekly air monitoring program was implemented at the request of the NYSDEC to evaluate air quality inside the building.

3.1 Geophysical Survey

A geophysical survey was conducted across the southeast parking lot in the vicinity of the active USTs and the fuel oil release using a combination of an electromagnetic induction (EM-31) high sensitivity detector and ground-penetrating radar (GPR).

One abandoned-in-place UST was found via GPR and EM-31 screening to the east of the two active USTs in the southeast parking lot. According to Mr. Auston of NYCDJJ, the old UST was used to store diesel fuel and was abandoned-in-place and filled with concrete over five years ago. A sewer/drainage line was identified, running approximately southwest to northeast, about 15 feet south of the active UST pad in the parking lot. Also, an electrical line was identified, running approximately north to south, about 15 feet southwest of the active UST pad. All proposed boring locations were cleared by GPR for drilling advancement.

3.2 Subsurface Soil and Groundwater Investigation

The subsurface investigation was performed to characterize the physical and chemical characteristics of the soil and groundwater at the Site. The investigation was conducted in the basement boiler room and the southeast parking lot in the vicinity of the fuel oil release and two active USTs. The investigation consisted of the advancement of soil borings below the basement slab and the parking lot using direct-push drilling techniques. Aquifer Drilling & Testing, Inc. (ADT) of Long Island, New York was the drilling contractor. The length of the soil column was inspected in each boring by the LBA scientist/geologist for evidence of contamination (visual staining in soil, petroleum odor) and all recovered soils were scanned for volatile organic vapors using a photoionization detector (PID). Soil lithology was classified and logged using the Burmister soil classification system. Boring logs are provided as **Appendix A**.

3.2.1 Soil Quality Investigation

The soil investigation included the advancement of 24 step-out borings. The number of borings was determined in the field by the on Site Scientist and the Project Manager based on indications of contamination. If an indication of contamination was present in a boring, one or more step-out borings were advanced approximately 10 feet from the previous boring in the direction of the suspected plume. Step-out borings are an industry standard approach to delineating spills both horizontally and vertically as discussed in Section 3.7.2 of NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002. Borings were all advanced to refusal, encountered between 8 and 19.5 ft bgs in the parking lot and between 1 and 4.5 ft bgs in the basement. The basement floor is approximately 15 feet below the surface of the parking lot. Therefore, the borings in the basement were advanced to between 16 and 19.5 feet below the grade of the parking lot. Locations of the soil borings are shown in **Figure 3**.

Thirteen (13) soil borings were advanced in the basement of the east wing utilizing a hand-carted Geoprobe rig. This part of investigation began with two borings advanced in proximity to the UST supply and return lines (SB01A/SB01B and SB02). After encountering significant evidence of contamination in these borings (i.e. visual staining in soil, strong petroleum odor, elevated PID readings and the presence of free product) step-out borings were performed at greater and greater distances from the spill area to better delineate the subsurface impacts.

Eleven (11) soil borings were advanced in the southeast parking lot in the vicinity of the active USTs. This part of the investigation began with borings advanced directly east and west of the concrete fill port box (SB13 and SB18, respectively). After encountering significant evidence of contamination in these borings, step-out borings were performed in the same manner as the basement borings to better delineate the subsurface impacts.

When drilling recoveries were sufficient, one grab soil sample was collected from the deepest dry soil interval (6-inch depth interval directly above the groundwater table or bottom of boring, whichever was encountered first) and one grab soil sample was collected from the depth interval exhibiting the highest evidence (visual, olfactory or elevated PID) of contamination. All soil samples were analyzed for Target Compound List Volatile Organic Compounds (TCL VOCs) by EPA Method 8260, Target Compound List Semi-Volatile Organic Compounds (TCL SVOCs) by EPA Method 8270 and Total Petroleum Hydrocarbons (TPH) by EPA method 8015.

3.2.2 Groundwater Quality Investigation

In order to characterize groundwater observed in the vicinity of the spill, four (4) TWPs were installed in soil borings advanced in the basement (SB05B, SB08, SB10 and SB12) for groundwater sampling. TWPs were installed using 1-inch diameter screened riser PVC.

Groundwater sampled from the basement was collected from a depth of 2 to 4 ft below the basement slab using dedicated sampling bailers. Groundwater sampled from TWP03 (SB10) and TWP04 (SB12) was analyzed for TCL VOCs, TCL SVOCs and TPH. Minimal groundwater was recovered from TWP01 (SB05B) and TWP02 (SB08) and therefore, these samples had volume

sufficient to run only TCL VOC analysis. Groundwater was not collected from borings where free product was observed.

3.3 Relevant Regulatory Standards

In order to evaluate subsurface soil and groundwater obtained during this RI, laboratory analytical results were compared with applicable USEPA and NYSDEC regulatory standards. Standards and guidelines used for comparison include:

- NYSDEC Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs), as per 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (2006);
- NYSDEC Technical and Administrative Guidance Memorandum #4046 (TAGM) Recommended Soil Cleanup Objectives (RSCOs) (1994);
- NYSDEC Eastern USA Soil Background concentrations included in TAGM, which have been presented for reference purposes (1994);
- NYSDEC Spill Technology and Remediation Series (STARS) Memo #1, which provides guidance for specific petroleum-related VOCs and SVOCs, and provides TCLP Alternative Guidance Values (AGVs) for waste characterization purposes (1992);
- USEPA RCRA Hazardous Waste Levels and Regulatory Limits for TCLP, published in 40 Code of Federal Regulations (CFR) 261.24 (1993); and
- NYSDEC: Class GA Groundwater Standards and Guidance Values as per NYSDEC Technical and Operational Guidance Series 1.1.1 (TOGS) (June 1998).

3.4 Subsurface Soil Results

Soil collected from each boring location was screened for volatile organics using a photoionization detector (PID), visually inspected for staining, and sampled for TCL VOCs, TCL SVOCs, and TPH. All borings advanced during this investigation are discussed in terms of depth below grade of the parking lot. The basement is approximately 15 feet below grade of the parking lot and thus, all borings performed in the basement are described as being advanced below 15 ft bgs. Refer to **Figure 3** for boring locations and **Table 1** for a summary of soil samples and PID readings. Soil analytical results are summarized in **Table 2** through **Table 4**.

3.4.1 Field Screening

Free product was observed above perched groundwater in SB01B, SB02 and SB03 at approximately 17 ft bgs. Heavy petroleum staining and elevated PID detections were also observed between 15 and 17 ft bgs of the parking lot in SB15 and SB16, advanced along the eastern side of the UST vault in the parking lot. Beyond this, the highest indications of

petroleum contamination in the form of visible staining and elevated PID detections were found at a depths between 11 and 18 ft below grade of the parking lot, in borings just north, northeast and northwest of the fuel oil release at the UST fill port box (SB01B, SB02, SB03, SB04, SB05B, SB13, SB18). **Figure 4** is a graphical representation of the staining observed in the soil.

Soil recovered from the 2 to 4 foot interval between the basement slab and bedrock in most other borings advanced in the basement (SB06, SB08, SB09, SB11 and SB12) exhibited some degree of petroleum contamination (slight staining, elevated PID detections and/or slight petroleum odor). Contamination observed in these borings was notably less concentrated and appeared to be much older than contamination observed closest to the UST vault on the south wall of the basement. Based on field observations and interviews with Mr. Steve Auston of NYCDJJ, it is believed that these lesser petroleum detections are related to a historic petroleum spill associated with older boilers that have since been replaced in the basement.

3.4.2 Soil Analytical Results

Soil analytical results showed elevated concentrations of TPH, VOCs, and SVOCs above applicable standards. The highest TPH concentrations were present in soil sampled between 16 and 19 feet below grade of the parking lot, immediately to the north and northwest of the UST fill box (SB01B and SB18). Sample results from other borings indicate an approximately radial gradient of diminishing soil contamination extending to the north-northwest (refer to **Figure 5** for a graphical representation of this approximate extent). The highest TPH detections were found in soil sampled between 15 and 17 ft bgs in SB15 (TPH detected at 48,000 ppm) and SB16 (TPH detected at 100,000 ppm). These borings were advanced along the eastern side of the UST vault.

TCL VOCs were observed above applicable standards in soil collected from seven (7) soil borings (SB01B, SB02, SB13, SB15, SB16, SB18 and SB19). These seven borings are among the closest to the fuel oil release and represent a localized radius of elevated VOC concentrations extending to the north under the basement slab and to the immediate east and west near the source of the release. TCL SVOCs were detected above applicable standards in soil collected from five (5) soil borings (SB13, SB15, SB16, SB18 and SB20). These five borings located in the parking lot directly east, west, southeast and southwest of the fuel oil release.

3.5 Subsurface Groundwater Results

Small volumes of groundwater were encountered directly above bedrock in some borings advanced in the basement from approximately 17.3 to 19 feet below grade of the parking lot (SB01B, SB02, SB03, SB05B, SB06, SB08, SB10 and SB12). Groundwater was not encountered in any borings advanced in the southeast parking lot. It is believed that the minimal groundwater observed in basement borings is not representative of the groundwater table, but rather is a localized layer of perched groundwater suspended above the bedrock.

3.5.1 Groundwater Analytical Results

Groundwater was collected from four temporary well points installed in the basement (TWP01 through TWP04) and sampled for TCL VOCs, TCL SVOCs and TPH. Analytical results are summarized in **Table 5** through **Table 7**.

Laboratory results indicate concentrations of several TCL VOCs and SVOCs above NYSDEC Class GA Groundwater Standards and Guidance Values in groundwater collected from the four temporary well points installed in the basement (TWP01 through TWP04). Of the two TWPs sampled for TPH (TWP03 and TWP04) laboratory results indicate detections of 2,700 ppm in TWP03 and 6,500 ppm in TWP04, but there is no NYSDEC standard for TPHs in groundwater.

3.6 Air Screening Activities

At the request of NYSDEC, LBA conducted weekly air screening surveys using a photoionization detector (PID) of the F wing building at the Site. The surveys were conducted on March 12th, March 19th, and March 26th, 2010 to evaluate the type of structure, floor layout, air flows and physical conditions of the building. During each Site visit, each room on each floor of the F wing building was inspected using a PID and the presence/absence and descriptions of odors as well as PID readings were noted. PID readings were also taken near products stored or used in the building.

The weekly surveys did not reveal any VOC readings in any of the rooms in each of the floors. Since no elevated VOCs were observed during any survey, LBA recommended that the air screening surveys be stopped in a *PID Survey Report* dated April 2010 to the NYSDEC.

4.0 PROPOSED REMEDIAL ACTIONS

The approximate extent of the No. 2 Fuel Oil release was delineated during the Remedial Investigation activities conducted in March 2009, and is provided in **Figure 6**. Based on the results of the field screening and laboratory analysis of soil and groundwater samples, free product was generally observed between 15 and 19 ft bgs in borings advanced in the parking lot (SB15 and SB16) and borings advanced in the basement (SB01B, SB02, and SB03). The highest concentrations of TPH in soils were observed to the north and northwest of the UST fill box. Sample results from other borings indicate a generally radial gradient of diminishing TPH soil contamination extending to the north-northwest.

Free product was observed in the vicinity of the UST fill box and UST vault and extending underneath the basement of the building. The gravel sub-base of the basement floor and the assumed gravel sub-base beneath the concrete vault for the USTs have likely provided a preferential pathway for the fuel oil. Since the fuel oil is a light non-aqueous phase liquid (LNAPL), it would float on the water table. During the investigation, only localized pockets of perched water were observed beneath the basement floor and no water was observed in the borings completed in the parking lot. The fuel is expected to seep via gravity from the relatively permeable reservoir of the gravel sub-base areas into the underlying soil and potentially into the underlying bedrock, which is assumed to be encountered at approximately 19 ft bgs at the Site.

The proposed remedial action at the Site assumes that the Site will remain an active facility and includes the implementation of a dual-phase extraction (DPE) system to first remove as much of the free product from the subsurface as feasible. Due to the complex nature of the Site, which contains various underground structures at different depths (USTs, basement, window well, etc.), LBA initially recommends implementing a DPE treatability study to evaluate its potential effectiveness and design parameters necessary to successfully remove free product from the Site. The following sections provide additional details regarding the proposed remedial approach for the Site.

Special provisions have been included in the RAP for the handling and disposal of petroleum contaminated material, including drill cuttings, contaminated water, and absorbent material used to clean up the original spill.

Based on discussions with the NYCDJJ representatives, the NYCDJJ has tentative plans to vacate this facility sometime in the next two (2) years between 2010 and 2012. The future use of the Site is currently unknown, and may also include demolition of the existing building and reconstruction of a new facility for currently unknown use. Once the future status of the existing building and use of the Site is determined, the proposed remedial action will be updated, and may include removal of USTs and excavation and off-site disposal of impacted soil.

4.1 Dual Phase Extraction Background

Dual-phase extraction (DPE), also known as multi-phase extraction, vacuum-enhanced extraction, or sometimes bioslurping, is a technology that uses a high vacuum system to remove

various combinations of contaminated groundwater, separate-phase petroleum product, and hydrocarbon vapor from the subsurface. Extracted liquids and vapor are treated and collected for disposal, or re-injected in to the subsurface (where permissible under applicable state laws).

In DPE systems for liquid/vapor treatment, a high vacuum system is utilized to remove liquid and gas from low permeability or heterogeneous formations. The vacuum extraction well includes a screened section in the zone of contaminated soils and groundwater. It removes contaminants from above and below the water table. The system lowers the water table around the well, exposing more of the formation. Contaminants in the newly exposed vadose zone are then accessible to vapor extraction. Once above ground, the extracted vapors or liquid-phase organics and ground water are separated and treated. DPE for liquid/vapor treatment is generally combined with bioremediation, air sparging, surfactant injection, or bioventing when the target contaminants include long-chained hydrocarbons. Use of dual phase extraction with these technologies can shorten the cleanup time at a site. It also can be used with pump-and-treat technologies to recover ground water in higher-yielding aquifers.

4.2 Treatability Study

LBA recommends that a treatability study be conducted first to obtain more information about the subsurface, which would aid in developing an effective full-scale DPE program. The treatability study will consist of the installation of extraction and monitoring wells followed by a two (2) day treatability study.

LBA will coordinate the installation of the monitoring and extraction wells. A total of eight (8) wells will be installed outside of the building and in the vicinity of the USTs, and an additional two (2) wells will be installed inside the building in the basement. The outside wells will be installed as flush-mounts using a Sonic drill rig, and will be completed as 2-inch PVC wells, installed to approximately 25 ft-bgs, and screened from 15 to 25 ft bgs. The inside wells will be installed as flush-mounts using a hand carted Geoprobe rig. These wells will be completed as 1-inch PVC wells, installed to bedrock refusal at approximately 20 ft bgs, and screened from 17 to 20 ft bgs. The proposed locations are shown on **Figure 7**. After the wells are installed, LBA will gauge the wells for presence and thickness of fuel oil, depth to groundwater, and to determine groundwater flow conditions.

A treatability test will then be conducted using two (2) extraction locations. The proposed extraction locations are in the parking lot and are shown on **Figure 7.** They are nearest to SB18 near the UST fill box and in between SB15 and SB16 in the area of highest observed TPH concentrations. A vacuum truck will be used for the treatability study. The vacuum truck will be positioned either in the parking lot or on the street, in the event that the security gate does not have sufficient clearance for the vacuum truck to access the parking lot. Each extraction well will be connected to the vacuum truck for a period of 4 to 5 hours. During each extraction, the surrounding wells will be monitored to determine the vacuum response across the Site. Airflow meters, vacuum gauges, and a product interface probe will be used to monitor the surrounding locations. These results will help determine airflow rates, liquid productions rates, and the spacing of final wells, if additional wells are required.

Any drill cuttings or purge water generated during the well installation will be contained in 55-gallon drums for off-site disposal. In addition, any absorbent materials used to clean up and contain the spill in the basement will be placed in 55-gallon drums for disposal. The petroleum impacted groundwater collected by the vacuum truck during extraction will also be properly disposed of off-site.

4.3 Full-Scale Program

After completion of the treatability study, a full-scale program will be designed based on the results of the treatability study to effectively remove the free product and subsequently address any residual soil and groundwater impacts at the Site. It is anticipated that the extraction and monitoring wells installed for the treatability study will be sufficient for the full-scale program and that installation of additional wells would not be necessary. For the full-scale program, all of the 10 wells will be used for both extraction and monitoring.

Although the full-scale DPE system will be designed after completion of the treatability study, the system will generally consist of the following components:

- 20-horsepower vacuum pump system;
- An oil/water separator;
- A water carbon treatment system;
- A vapor carbon treatment system; and,
- Network of associated piping from the wells to the treatment system.

Based on the known volume and extent of the release, LBA anticipates that the dual phase extraction system operation may be required for a minimum of two years. The system would require regular operation and maintenance during the two-year period. Site monitoring would also be necessary periodically during operation, and would likely be conducted for one additional year after the system has been shut down.

After the majority of the free product is removed from the subsurface, a surfactant injection may also be conducted. The surfactant would be injected into the extraction wells, which would increase the mobility of the residual fuel oil allowing it to be more readily removed from the subsurface.

4.4 Air Screening and Monitoring Activities

As part of the proposed remedial activities for the Site, LBA will conduct quarterly air screening surveys using a photoionization detector (PID) of the F wing building at the Site. Each room on each floor of the F wing building will be screened using a PID and the presence/absence and descriptions of odors as well as PID readings will be noted. The quarterly air screening will be conducted while the facility remains active and will be discontinued once the facility is vacated for subsequent demolition and/or re-occupancy. During each inspection, the wells installed will also be gauged using a product interface probe to determine the thickness of the product.

4.5 Site Restoration

The Site is an active facility and is currently capped with paved surfaces, sidewalks, curbs, and buildings. Any portions of the Site disrupted by well installation and treatment installation activities will be restored to their previous conditions.

4.6 Permits

Any permits required to complete the proposed remedial activities at the Site will be obtained. It is anticipated that a NYSDEC State Pollutant Discharge Elimination System (SPDES) permit will be required to discharge treated water back to the groundwater during the full-scale dual phase extraction program. An underground injection permit (UIC) may also be required to perform a surfactant injection, if deemed necessary.

4.7 Engineering and Institutional Controls

Since contaminated soil (i.e., petroleum impacted soil with VOCs and SVOCs exceeding NYSDEC TAGM#4046 RSCOs) are likely to remain on the Site, engineering controls will be required to prevent unnecessary direct contact with the soil. The entire Site is currently capped by the building foundation, pavement, curbs and sidewalks. All capped areas will be restored after the installation of the dual phase extraction system.

Since it is anticipated that soil above the NYSDEC TAGM#4046 RSCOs will remain within the Site, institutional controls will also be required. The limits of documented soil contamination will be identified and noted in a Deed Restriction as required by NYCDEP.

5.0 MANAGEMENT OF PETROLEUM IMPACTED MATERIAL

Since an in-situ, dual phase extraction system is being proposed for the remediation of the fuel oil release at this Site, limited quantities of petroleum impacted soil are expected to be removed primarily during well installation activities, and any intrusive activities that might be deemed necessary as part of the full-scale treatment system installation. In addition, petroleum impacted groundwater will be treated on-site during the full-scale program and removed via vacuum truck during the treatability study.

Any petroleum impacted material will be managed in accordance with the requirements of the NYSDEC DER-10 guidance document. All site activities will be conducted in a manner that protects site personnel, the public, and the environment in accordance with all applicable federal, state, and local laws and regulations. For site activities, the provisions outlined in the Construction Health and Safety Plan (CHASP) in accordance with 29 CFR 1910, 29 CFR 1926 and a Material Handling Plan (MHP) as described below, will be followed.

5.1 Construction Health and Safety Plan

Appropriate training and planning will be developed for the protection of workers and the public during construction within the Site. The Contractor will follow the provisions outlined in the CHASP (to be submitted to and approved by NYCDEP prior to construction activities) and all applicable local, state, and federal regulations, including the health and safety requirements of OSHA 29 CFR parts 1910 and 1926. All construction personnel working in contaminated areas will be trained, qualified, and medically cleared pursuant to OSHA 29 CFR parts 1910.120. Additionally, the contractor will handle any petroleum impacted material in a manner that protects site personnel, the public, and the environment in accordance with all applicable federal, state, and local laws and regulations. The working conditions during all site activities will be monitored for conformance with the CHASP and applicable regulations, and the CHASP will be upgraded as necessary based on the conditions encountered.

5.2 Material Handling Plan

The Contractor will develop and implement a Material Handling Plan (MHP) for any petroleum impacted waste encountered, handled, and disposed and/or recycled during construction and potentially hazardous soil as a contingency. The MHP will describe the Contractor's planned techniques that will be used in handling the impacted materials so as to protect their workers, the Engineer and his representatives, visitors, the public and adjoining property owners against uncontrolled exposure to contaminated waste, and to prevent uncontrolled releases of contaminants into the environment. The MHP will detail standard operating procedures for excavation, stockpiling, transporting, sampling and analysis (as needed), measurement, transportation, and disposal of any contaminated waste. The Contractor's MHP will include, but will not be limited to, details of current environmental certification, permits, insurance types and levels of coverage, qualifications of the transportation and receiving facilities, the types of equipment to be used in transporting regulated waste, proposed route(s) to disposal facilities and

weighing facilities, waste characterization forms, sampling logs and analyses reports, transport manifests, and waste disposal documentation forms from the receiving facility.

5.2.1 Soil Stockpiling

If any soil excavation is required, the excavated soils will be stockpiled for waste classification purposes and subsequent disposal to an off-site recycling facility. Soil stockpiles will be situated in a dry area on top of a layer of PVC sheeting (minimum 10 mils thick). All joints in the underlying PVC sheeting will overlap with a minimum of 3 feet at the ends. The sheeting will be secured in place with tie downs and/or weights such as sand bags at the end of each workday and during adverse weather conditions. Stockpiles will be constructed so that the height does not exceed 15 feet. Side slopes will not be steeper than one vertical to two horizontal. All stockpiles will be contained with hay bales or silt fence placed continuously around the perimeter.

An Erosion and Sedimentation Control Plan (ESCP) will also be prepared for the proposed construction activities in accordance with NYSDEC's stormwater management requirements. Implementation of the ESCP during construction shall reduce soil erosion and sedimentation to acceptable levels. The ESCP will include, but will not be limited to, the proper use of silt fencing, hay bails, and plastic sheeting in any areas where soil or sediment is to be excavated, stockpiled or dredged.

5.2.2 Soil Disposal

The Contractor will provide all personnel, materials, and equipment needed to properly sample and characterize impacted soils to be taken off-site. The sampling will be conducted as required for applicable recycling or disposal facility approval, and in accordance with all federal, state and local government regulations. The Contractor will provide all personnel, material, and equipment needed to transport the excavated soils for off-site disposal in accordance with all applicable regulations. The Contractor will prepare and submit all documentation necessary to obtain appropriate approvals for transporting the soils. Daily soil tracking logs will be retained at the project site. The daily logs will detail the source location, quantity, and characteristics of any soil that is removed from the Site. Additionally, the Contractor will provide a copy of bills of lading, weight ticket slips, and waste manifests. All vehicles leaving the Site with soils will be inspected by the Contractor to ensure that no excess soil adheres to the wheels or undercarriage of the vehicle.

5.2.3 Dewatering

Impacted groundwater encountered during the treatability study will be contained in and disposed off-site via vacuum truck. Impacted groundwater encountered during the full-scale dual phase extraction program will be treated using an on-site groundwater treatment system and discharged back to the subsurface under appropriate and approved permits.

5.3 Community Air Monitoring Plan

Due to the presence of VOC and SVOC concentrations above applicable standards at several sampling locations, dust control procedures are recommended during drilling and installation activities. The Contractor will implement dust control measures to minimize potential airborne contaminants released as a direct result of construction activities. A Community Air Monitoring Plan (CAMP) will be developed in accordance with NYSDEC DER-10 Regulations. The CAMP may require real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress. The CAMP will be intended to provide a measure of protection for the downwind community from potential airborne contaminant releases as a direct result of investigative and remedial work activities.

6.0 REMEDIAL SCHEDULE AND COST ESTIMATE

The following provides an anticipated remedial action schedule for the proposed DPE treatability study from the date of the NYSDEC approval of this RAP:

- **Dual Phase Extraction Treatability Study**
  - Install Extraction/Monitoring Wells (1 – 2 Weeks)
  - Baseline Monitoring (1 Week)
  - Conduct Dual Phase Extraction Treatability Study (2 Days)
  - Prepare and Submit DPE Treatability Study Report (4 – 6 Weeks after the Completion of the Treatability Study

- **Dual Phase Extraction Full-scale Program (TBD based on Treatability Results)**
  - Obtain Required Permits
  - Design Full-Scale Dual Phase Extraction System
  - Install and Begin Full-Scale Dual Phase Extraction Program
  - Conduct regular Operations and Maintenance for DPE system
  - Continue to monitoring Site for one year after completion of treatment
  - Prepare and submit Remedial Action Report

The remedial actions associated with the Dual Phase Extraction Treatability Study and described above are estimated to cost approximately **$65,000**, which includes costs for well installation, the 2-day treatability study, and developing the DPE Treatability Study Report. Costs for the full-scale program will be determined based on the results of the treatability study and included in the DPE Treatability Study Report. Full-scale costs will include system installation, operations and maintenance of the system for a minimum of 2 years, monitoring and reporting.

7.0 REPORTING

After the completion of the treatability study, LBA will develop a DPE Treatability Study Report for submittal to the NYSDEC. This report will summarize the results of the treatability study and provide the design and cost for the installation and operation of a full-scale DPE system at the Site.

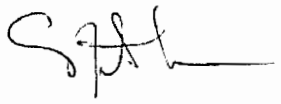
In accordance with NYCDEP requirements, a Remedial Action Report (RAR) will be submitted at the completion of all remedial actions associated with the No. 2 Fuel Oil release at the Bridges Juvenile Justice Center. The RAR will document each remedial activity specified within this RAP and should generally include the following components:

- Introduction;
- Background information section;
- Environmental setting section;
- Discussion of environmental conditions;
- Detailed description of each remedial action implemented,
- Photo log;
- Draft Deed Notice;
- Final environmental cost;
- Tables including total material reused and/or managed off-site;
- Figures illustrating remedial action locations, areas and limits; and
- Appendices including waste characterization sample results, daily field logs, fully executed manifests and bills of lading, disposal/recycling receipts, and clean backfill documentation.

8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

LBA has prepared this RAP for the Bridges Juvenile Justice Center located at 1221 Spofford Avenue, Bronx, New York. This report has been prepared on behalf of and for the exclusive use of the NYCDJJ, and is subject to and issued in connection with the Agreement and the provisions thereof.

Prepared by:



Stephen A. Morse, P.E.
Principal Engineer

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TABLES

Table 1. Environmental Boring Data
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

Boring No.	Sample ID	High PID (ppm)	Sample Interval (ftbgs)	Total VOCs (mg/kg)	Total SVOCs (mg/kg)	Metals Exceed (Yes/No)[1]	Depth to Water (ftbgs)	Total Depth (ftbgs)	Other Comments
SB01A	SB01A	315	0.5 - 1.0	8.72	20.9	N/A	N/A	2.0	
SB01B	SB01B	429	1.0 - 1.5	46.36	24.2	N/A	3	3.5	
SB02	SB02A	407	0.5 - 1.0	52.03	7.84	N/A	3	4.5	
	SB02B		1.0 - 1.5	0.6631	1.46	N/A			
SB03	SB03A	260	0.5 -1.0	10.68	9	N/A	3	3.0	
SB04									No Recoverable sample
SB05	SB05A	150	0.5 - 1.0	0.016	ND	N/A	N/A	2.0	
SB06	SB06A	431	0.5 - 1.0	1.45	2.42	N/A	1.6	2.0	
SB07	SB07A	5.2	0.5 - 1.0	0.002	ND	N/A	2	2.0	
SB08	SB08A	355	0.5 - 1.0	3.39	0.97	N/A	N/A	2.0	
SB09	SB09A	87.8	0.5 - 1.0	1.94	4.82	N/A	N/A	2.5	
	SB09B		1.5 - 2.0	0.0311	0.43	N/A			
SB10	SB10A	196	0.5 - 1.5	0.1318	1.93	N/A	N/A	2.5	
SB11	SB11A	375	0.5 - 1.0	0.2916	1.77	N/A	N/A	2.0	
SB12	SB12A	445	0.5 - 1.0	2.1	0.09	N/A	1.5	3.0	
SB13	SB13A	301	11.5 - 12	28.1	2.48	N/A	N/A	17.0	
	SB13B		16.5 - 17	0.7691	3.16	N/A			
SB14	SB14A	0.2	11.5 - 12	ND	ND	N/A	N/A	12.0	
SB15	SB15A	264	15 - 15.5	771	286	N/A	N/A	18.0	
	SB15B		17.5 - 18	0.3665	ND	N/A			
SB16	SB16A	368	15.5 - 16	3406	306	N/A	N/A	19.0	
	SB16B		18.5 - 19	0.0109	ND	N/A			
SB17	SB17A	<1	9 - 9.5	ND	ND	N/A	N/A	10.0	
SB18	SB18A	100	17 - 17.5	22.25	0.83	N/A	N/A	19.0	
	SB18B		18.5 - 19	64.4	358	N/A			
SB19	SB19A	28	19 - 19.5	2.106	2.64	N/A	N/A	19.5	
SB20	SB20A	3.1	17 - 17.5	0.0038	288.20	N/A	N/A	17.5	
SB21	SB21A	<1	17 - 17.5	ND	ND	N/A	N/A	17.5	

Notes:
1. Metal(s) exceeds TAGM 4046 or Eastern USA Soil (EUS) Background (BG) guidance values.
All soil samples were analyzed for Target Compound List (TCL) Volatile Organic Compounds, Semi-Volatile Organic Compounds (SVOCs) Pesticides, PCBs, Tareget Analyte List (TAL) Metals and Total Petroleum Hydrocarbons (TPH).
All groundwater samples were analyzed for Target Compound List (TCL) Volatile Organic Compounds, Semi-Volatile Organic Compounds (SVOCs) Pesticides, PCBs and Target Analyte List (TAL) Metals.
N/A = Not applicable. PID was not used door to poor weather.
ND = Not Detected
NE = Not Encountered
ftbgs = feet below ground surface

Table 2. Summary of Target Compound List Volatile Organic Compounds Detected in Soil
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

TCL VOC	Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs)	STARS TCLP Alternative Guidance Values	TAGM #4046 Recommended Soil Clean-up Objective	Sample ID, Date Collected and Depth													
				SB01A	SB01B	SB02A	SB02B	SB03A	SB05A	SB06A	SB07A	SB08A	SB09A	SB09B	SB10A	SB11A	SB12A
				3/24/2009	3/24/2009	3/24/2009	3/24/2009	3/24/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009
				0.5 - 1.0	1.0 - 1.5	0.5 - 1.0	1.0 - 1.5	0.5 -1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	1.5 - 2.0	0.5 - 1.5	0.5 - 1.0	0.5 - 1.0
1,2,4-Trimethylbenzene	3.6	NGV	10	1.1	6.8	2.8	0.081	0.94	ND	ND	ND	1.2	0.59	0.0082	0.049	0.0066	ND
1,3,5-Trimethylbenzene	8.4	NGV	3.3	0.52	**3.5**	0.73	0.021	0.45	ND	ND	ND	0.48	0.17	0.0026	ND	ND	ND
4-Isopropyltoluene	NS	NGV	10	0.7	5	1.1	0.011	0.78	0.01	ND	ND	0.26	0.14	0.0023	0.0098	0.029	0.25
Ethylbenzene	1	NGV	5.5	ND	0.18	0.98	0.0091	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NS	NGV	2.3	0.43	**2.6**	**3.7**	0.022	0.61	ND	ND	ND	ND	ND	ND	0.0072	0.017	0.14
Naphthalene	NS	NGV	13	2.2	5.4	9.1	0.3	2.9	ND	0.75	0.002	0.64	0.65	0.01	0.023	0.072	0.41
N-Butylbenzene	NS	NGV	10	1.6	9.1	**13**	0.067	2.1	ND	ND	ND	0.21	0.19	0.0043	0.015	0.064	0.57
n-Propylbenzene	3.9	NGV	3.7	0.97	**5.6**	**8.1**	0.048	1.2	ND	ND	ND	0.23	ND	ND	0.012	0.026	0.26
o-Xylene	NS	NGV	1.2	ND	ND	0.24	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Xylene	NS	NGV	1.2	ND	0.29	0.39	0.017	ND	ND	ND	ND	ND	ND	ND	0.0014	ND	ND
sec-Butylbenene	11	NGV	10	1.2	7.6	**11**	0.05	1.7	0.006	0.7	ND	0.37	0.2	0.0037	0.013	0.077	0.47
tert-Butylbenzene	5.9	NGV	10	ND	ND	0.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	NGV	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (Total)	0.26	NGV	1.2	ND	0.29	0.63	0.027	ND	ND	ND	ND	ND	ND	ND	0.0014	ND	ND

Notes:
All concentrations are reported in parts per million (ppm or mg/kg)
ND = Compound not detected above method detection limit (see attached lab report for mdl's)
NS = No Standard
J = Estimated concentration
TAGM RSCOs = NYSDEC Technical and Administrative Guidance Memorandum (TAGM #4046) Recommended Soil Cleanup Objectives (RSCOs) (January 24, 1994)
SCOs = Soil Cleanup Objectives as per the NYSDEC Regulations 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (December 14, 2006)
STARS TCLP Alternative Guidance Values are the Spill Technology and Remediation Series (STARS) Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values, NYSDEC STARS Memorandum 1 - Petroleum Contaminated Soil Guidance Policy (August 1992)
BOLD = Concentration exceeds NYSDEC TAGM RSCOs
Shading = Concentration exceeds Unrestricted Use (Track 1) Soil Cleanup Objectives
Underline: = Concentration exceeds STARS TCLP Alternative Guidance Values
NGV = No Guidance Value

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TCL VOC	Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs)	STARS TCLP Alternative Guidance Values	TAGM #4046 Recommended Soil Clean-up Objective	Sample ID, Date Collected and Depth												
				SB13A	SB13B	SB14A	SB15A	SB15B	SB16A	SB16B	SB17A	SB18A	SB18B	SB19A	SB20A	SB21A
				3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/27/2009	3/27/2009	3/27/2009	3/27/2009	3/27/2009
				11.5 - 12	16.5 - 17	11.5 - 12	15 - 15.5	17.5 - 18	15.5 - 16	18.5 - 19	9 - 9.5	17 - 17.5	18.5 - 19	19 - 19.5	17 - 17.5	17 - 17.5
1,2,4-Trimethylbenzene	3.6	NGV	10	7.1	0.16	ND	**190**	0.084	**790**	0.0016	ND	5.5	**17**	0.48	0.0016	ND
1,3,5-Trimethylbenzene	8.4	NGV	3.3	**3.7**	0.095	ND	**53**	0.03	**180**	ND	ND	1.3	**4.4**	0.22	ND	ND
4-Isopropyltoluene	NS	NGV	10	1	0.017	ND	**17**	0.0066	**62**	ND	ND	0.37	2	0.038	ND	ND
Ethylbenzene	1	NGV	5.5	0.25	0.011	ND	**26**	0.0093	**120**	ND	ND	0.79	2.1	0.036	ND	ND
Isopropylbenzene	NS	NGV	2.3	0.42	0.0085	ND	**10**	0.0052	**46**	ND	ND	0.27	1.1	0.015	ND	ND
Naphthalene	NS	NGV	13	4.6	0.067	ND	**85**	0.049	**390**	0.0093	ND	2.2	8.7	0.14	0.0022	ND
N-Butylbenzene	NS	NGV	10	0.97	0.011	ND	**18**	0.0063	**60**	ND	ND	0.36	3.5	ND	ND	ND
n-Propylbenzene	3.9	NGV	3.7	0.86	0.014	ND	**28**	0.013	**110**	ND	ND	0.69	2.9	0.03	ND	ND
o-Xylene	NS	NGV	1.2	**2.2**	0.089	ND	**51**	0.025	**240**	ND	ND	**1.5**	**3.1**	0.23	ND	ND
p-Xylene	NS	NGV	1.2	**1.9**	0.093	ND	**100**	0.049	**490**	ND	ND	**3.3**	**6.3**	0.31	ND	ND
sec-Butylbenene	11	NGV	10	1	0.016	ND	**18**	0.012	**68**	ND	ND	0.37	2.8	0.046	ND	ND
tert-Butylbenzene	5.9	NGV	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	NGV	1.5	ND	0.0056	ND	**24**	0.0031	**120**	ND	ND	0.8	1.1	0.021	ND	ND
Xylene (Total)	0.26	NGV	1.2	**4.1**	0.182	ND	**151**	0.074	**730**	ND	ND	**4.8**	**9.4**	0.54	ND	ND

Notes:
All concentrations are reported in parts per million (ppm or mg/kg)
ND = Compound not detected above method detection limit (see attached lab report for mdl's)
NS = No Standard
J = Estimated concentration
TAGM RSCOs = NYSDEC Technical and Administrative Guidance Memorandum (TAGM #4046) Recommended Soil Cleanup Objectives (RSCOs) (January 24, 1994)
SCOs = Soil Cleanup Objectives as per the NYSDEC Regulations 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (December 14, 2006)
STARS TCLP Alternative Guidance Values are the Spill Technology and Remediation Series (STARS) Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values, NYSDEC STARS Memorandum 1 - Petroleum Contaminated Soil Guidance Policy (August 1992)
BOLD = Concentration exceeds NYSDEC TAGM RSCOs
Shading = Concentration exceeds Unrestricted Use (Track 1) Soil Cleanup Objectives
Underline: = Concentration exceeds STARS TCLP Alternative Guidance Values
NGV = No Guidance Value

Table 3. Summary of Target Compound List Semi-Volatile Organic Compounds Detected in Soil
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

TCL SVOC	Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs)	STARS TCLP Alternative Guidance Values	TAGM #4046 Recommended Soil Clean-up Objective	Sample ID, Date Collected and Depth													
				SB01A	SB01B	SB02A	SB02B	SB03A	SB05A	SB06A	SB07A	SB08A	SB09A	SB09B	SB10A	SB11A	SB12A
				3/24/2009	3/24/2009	3/24/2009	3/24/2009	3/24/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009
				0.5 - 1.0	1.0 - 1.5	0.5 - 1.0	1.0 - 1.5	0.5 -1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	1.5 - 2.0	0.5 - 1.5	0.5 - 1.0	0.5 - 1.0
Acenaphthene	20	NGV	50	2.6	3.1	0.93	0.2	1.2	ND	0.37	ND	0.14	0.78	0.079	0.27	0.26	ND
Anthracene	100	NGV	50	ND	ND	ND	ND	ND	ND	0.18	ND	ND	0.21	ND	0.13	0.14	ND
Benzo(a)anthracene	1	NGV	0.224	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	1	NGV	0.061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	1	NGV	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	100	NGV	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.8	NGV	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	1	NGV	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.33	NGV	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	NGV	50	ND	ND	ND	ND	ND	ND	0.085	ND	ND	0.086	ND	ND	ND	ND
Fluorene	30	NGV	50	3.2	3.7	1	0.23	1.4	ND	0.42	ND	0.17	0.68	0.084	0.31	0.29	ND
Indeno(1,2,3-cd)Pyrene	0.5	NGV	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	NGV	13	6.4	6.9	1.7	0.28	2.9	ND	0.17	ND	0.16	0.52	ND	0.45	0.36	ND
Phenanthrene	100	NGV	50	7.6	9.1	3.6	0.75	3.5	ND	0.98	ND	0.41	2.2	0.27	0.66	0.61	0.088
Pyrene	100	NGV	50	1.1	1.4	0.61	ND	ND	ND	0.21	ND	0.089	0.34	ND	0.11	0.11	ND

Notes:
All concentrations are reported in parts per million (ppm or mg/kg)
ND = Compound not detected above method detection limit (see attached lab report for mdl's)
NS = No Standard
J = Estimated concentration
TAGM RSCOs = NYSDEC Technical and Administrative Guidance Memorandum (TAGM #4046) Recommended Soil Cleanup Objectives (RSCOs) (January 24, 1994)
SCOs = Soil Cleanup Objectives as per the NYSDEC Regulations 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (December 14, 2006)
STARS TCLP Alternative Guidance Values are the Spill Technology and Remediation Series (STARS) Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values, NYSDEC

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Shading = Concentration exceeds Unrestricted Use (Track 1) Soil Cleanup Objectives
Underline: = Concentration exceeds STARS TCLP Alternative Guidance Values
NGV = No Guidance Value

Table 3. Summary of Target Compound List Semi-Volatile Organic Compounds Detected in Soil
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

TCL SVOC	Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs)	STARS TCLP Alternative Guidance Values	TAGM #4046 Recommended Soil Clean-up Objective	Sample ID, Date Collected and Depth												
				SB13A	SB13B	SB14A	SB15A	SB15B	SB16A	SB16B	SB17A	SB18A	SB18B	SB19A	SB20A	SB21A
				3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/27/2009	3/27/2009	3/27/2009	3/27/2009	3/27/2009
				11.5 - 12	16.5 - 17	11.5 - 12	15 - 15.5	17.5 - 18	15.5 - 16	18.5 - 19	9 - 9.5	17 - 17.5	18.5 - 19	19 - 19.5	17 - 17.5	17 - 17.5
Acenaphthene	20	NGV	50	0.35	ND	ND	32	ND	37	ND	ND	ND	5.7	0.15	ND	ND
Anthracene	100	NGV	50	0.12	ND	ND	ND	ND	11	ND	ND	ND	20	0.084	8.3	ND
Benzo(a)anthracene	1	NGV	0.224	ND	**0.39**	ND	ND	ND	ND	ND	ND	ND	**28**	0.14	**28**	ND
Benzo(a)pyrene	1	NGV	0.061	ND	ND	ND	ND	ND	ND	ND	ND	ND	**14**	0.13	**16**	ND
Benzo(b)fluoranthene	1	NGV	1.1	ND	0.45	ND	ND	ND	ND	ND	ND	0.092	**21**	0.21	**25**	ND
Benzo(g,h,i)perylene	100	NGV	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.9	0.13	6.7	ND
Benzo(k)fluoranthene	0.8	NGV	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	**8.9**	ND	**9.5**	ND
Chrysene	1	NGV	0.4	ND	ND	ND	ND	ND	ND	ND	ND	0.088	**23**	0.27	**26**	ND
Dibenz(a,h)anthracene	0.33	NGV	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.2**	ND	**2.3**	ND
Fluoranthene	100	NGV	50	ND	0.79	ND	ND	ND	ND	ND	ND	0.095	**78**	0.3	**70**	ND
Fluorene	30	NGV	50	0.29	ND	ND	27	ND	28	ND	ND	ND	6.3	0.23	ND	ND
Indeno(1,2,3-cd)Pyrene	0.5	NGV	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	**6**	0.11	**6.4**	ND
Naphthalene	12	NGV	13	0.51	ND	ND	**120**	ND	**120**	ND	ND	0.2	12	0.2	ND	ND
Phenanthrene	100	NGV	50	1	0.85	ND	**92**	ND	**95**	ND	ND	0.21	**66**	0.36	29	ND
Pyrene	100	NGV	50	0.21	0.68	ND	15	ND	15	ND	ND	0.14	**61**	0.33	**61**	ND

Notes:
All concentrations are reported in parts per million (ppm or mg/kg)
ND = Compound not detected above method detection limit (see attached lab report for mdl's)
NS = No Standard
J = Estimated concentration
TAGM RSCOs = NYSDEC Technical and Administrative Guidance Memorandum (TAGM #4046) Recommended Soil Cleanup Objectives (RSCOs) (January 24, 1994)
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STARS TCLP Alternative Guidance Values are the Spill Technology and Remediation Series (STARS) Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values, NYSDEC

BOLD = Concentration exceeds NYSDEC TAGM RSCOs
Shading = Concentration exceeds Unrestricted Use (Track 1) Soil Cleanup Objectives
Underline: = Concentration exceeds STARS TCLP Alternative Guidance Values
NGV = No Guidance Value

Table 4. Summary of Total Petroleum Hydrocarbon Detected in Soil
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

Target Analyte List Metal	RCRA Hazardous Waste Levels (mg/L)	20 Times RCRA Hazardous Waste Levels	Eastern USA Soil Background	TAGM #4046 Recommended Soil Clean-up Objective	Sample ID, Date Collected and Depth													
					SB01A	SB01B	SB02A	SB02B	SB03A	SB05A	SB06A	SB07A	SB08A	SB09A	SB09B	SB10A	SB11A	SB12A
					3/24/2009	3/24/2009	3/24/2009	3/24/2009	3/24/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009	3/25/2009
					0.5 - 1.0	1.0 - 1.5	0.5 - 1.0	1.0 - 1.5	0.5 -1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	1.5 - 2.0	0.5 - 1.5	0.5 - 1.0	0.5 - 1.0
Total Petroleum Hydrocarbons	NS	NS	NS	NS	5600	9500	2200	330	4700	3400	1700	86	580	3600	400	1400	970	560

Notes:
All concentrations are in parts per million (ppm or mg/kg)
ND = Compound not detected above method detection limit (see attached lab report for mdl's)
NS = No Standard
SB = Site Background Concentration
TAGM RSCOs = NYSDEC Technical and Administrative Guidance Memorandum (TAGM #4046) Recommended Soil Cleanup Objectives (RSCOs) (January 24, 1994)
BOLD = Concentration exceeds NYSDEC TAGM RSCOs
Shading = Detected concentration exceeds Eastern Soil Background Concentrations as per TAGM RSCOs
Underline = Concentration exceeds twenty time RCRA Hazardous Waste Level
*Background levels for lead vary widely.

Table 4. Summary of Total Petroleum Hydrocarbon Detected in Soil
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

Target Analyte List Metal	RCRA Hazardous Waste Levels (mg/L)	20 Times RCRA Hazardous Waste Levels	Eastern USA Soil Background	TAGM #4046 Recommended Soil Clean-up Objective	Sample ID, Date Collected and Depth												
					SB13A	SB13B	SB14A	SB15A	SB15B	SB16A	SB16B	SB17A	SB18A	SB18B	SB19A	SB20A	SB21A
					3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/26/2009	3/27/2009	3/27/2009	3/27/2009	3/27/2009	3/27/2009
					11.5 - 12	16.5 - 17	11.5 - 12	15 - 15.5	17.5 - 18	15.5 - 16	18.5 - 19	9 - 9.5	17 - 17.5	18.5 - 19	19 - 19.5	17 - 17.5	17 - 17.5
Total Petroleum Hydrocarbons	NS	NS	NS	NS	250	730	ND	48000	210	100000	ND	ND	310	6100	2400	1600	ND

Notes:
All concentrations are in parts per million (ppm or mg/kg)
ND = Compound not detected above method detection limit (see attached lab report for mdl's)
NS = No Standard
SB = Site Background Concentration
TAGM RSCOs = NYSDEC Technical and Administrative Guidance Memorandum (TAGM #4046) Recommended Soil Cleanup Objectives (RSCOs) (January 24, 1994)
BOLD = Concentration exceeds NYSDEC TAGM RSCOs
Shading = Detected concentration exceeds Eastern Soil Background Concentrations as per TAGM RSCOs
Underline = Concentration exceeds twenty time RCRA Hazardous Waste Level
*Background levels for lead vary widely.

**Table 5. Summary of Target Compound List Volatile Organic Compounds Detected in Groundwater
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York**

TCL VOC	NYSDEC Class GA Groundwater Standards and Guidance Values	Sample ID, Date Collected and Depth			
		TWP01	TWP02	TWP03	TWP04
		3/26/2009	3/26/2009	3/26/2009	3/26/2009
		2.0	**1.3**	**2.0**	**1.5**
1,2,4-Trimethylbenzene	5	**1.4**	**22**	**9.4**	**4.9**
1,3,5-Trimethylbenzene	5	ND	**9.1**	**1.9**	ND
4-Isopropyltoluene	5	ND	**3.2**	ND	**2.3**
Benzene	1	ND	ND	ND	**14**
Ethylbenzene	5	**1.1**	**1.1**	ND	**6.1**
Isopropylbenzene	5	ND	**2.6**	**1.7**	**3.9**
Methyl tert-butyl ether	10	ND	**0.83**	ND	**2.7**
Naphthalene	10	ND	**8.6**	**12**	**6.8**
N-Butylbenzene	5	ND	**1.1**	ND	**4.4**
n-Propylbenzene	5	ND	**3.4**	**2.3**	**4.8**
o-Xylene	5	**2**	**1.1**	ND	**2.6**
p-Xylene	5	**3.5**	**1.5**	ND	**5.4**
sec-Butylbenene	5	ND	**4.4**	ND	**6.5**
Toluene	5	**130**	**310**	**190**	**43**
Xylene (Total)	5	**5.5**	**2.6**	ND	**8**

Notes:
All concentrations are reported in parts per billion (ug/L)
U = Unfiltered sample
ND = Compoound not detected above method detection limit (see attached lab report for mdl's)
NS = No standard
Bold = Positive detection
Shading = Concentration exceeds NYSDEC Class GA Groundwater Standards and Guidance Values
NYSDEC Class GA Groundwater Standards and Guidance Values as per NYSDEC Technical and Operational Guidance Series (TOGS)

Table 6. Summary of Target Compound List Semi-Volatile Organic Compounds Detected in Groundwater
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

TCL SVOC	NYSDEC Class GA Groundwater Standards and Guidance Values	Date Collected and Sample ID	
		TWP03	TWP04
		3/26/2009	3/26/2009
		2.0	1.5
Acenaphthene	20	**2.8**	**2.9**
Fluorene	50	ND	**2.3**
Naphthalene	10	**12**	**3.7**
Phenanthrene	50	**3.6**	**4.9**

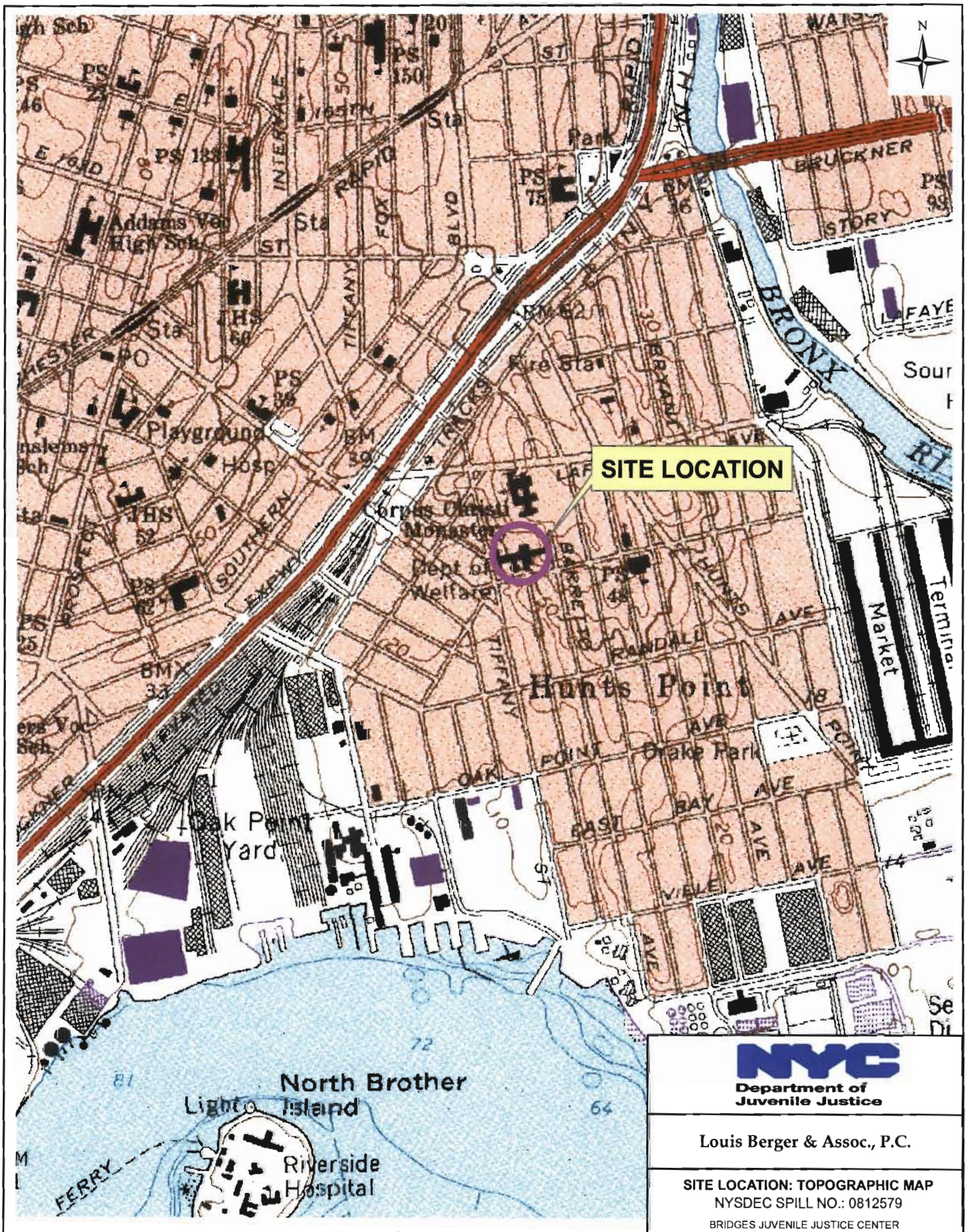
Notes:
All concentrations are reported in parts per billion (ug/L)
U = Unfiltered sample
ND = Compoound not detected above method detection limit (see attached lab report for mdl's)
NS = No standard
Bold = Positive detection
Shading = Concentration exceeds NYSDEC Class GA Groundwater Standards and Guidance Values
NYSDEC Class GA Groundwater Standards and Guidance Values as per NYSDEC Technical and Operational Guidance Series (TOGS)

Table 7. Summary of Total Petroleum Hydrocarbon Detected in Groundwater
Remedial Investigation of NYSDEC Spill Case #0812579 for Bridges Juvenile Justice Center
1221 Spofford Avenue, Bronx, New York

Parameter	NYSDEC Class GA Groundwater Standards and Guidance Values	Date Collected and Sample ID	
		TWP03	TWP04
		3/26/2009	3/26/2009
		2.0	1.5
Total petroleum Hydrocarbon	NS	**2700**	**6500**

Notes:
All concentrations are reported in parts per billion (ug/L)
U = Unfiltered sample
ND = Compoound not detected above method detection limit (see attached lab report for mdl's)
NS = No standard
Bold = Positive detection
Shading = Concentration exceeds NYSDEC Class GA Groundwater Standards and Guidance Values
NYSDEC Class GA Groundwater Standards and Guidance Values as per NYSDEC Technical and Operational Guidance Series (TOGS)

FIGURES



Source: USGS Quadrangle Central Park, NY

NYC Department of Juvenile Justice

Louis Berger & Assoc., P.C.

SITE LOCATION: TOPOGRAPHIC MAP

NYSDEC SPILL NO.: 0812579

BRIDGES JUVENILE JUSTICE CENTER
1221 SPOFFORD AVENUE
BRONX, NY 10474

DATE: 5/5/2010	FIGURE: 1

NYC Department of Juvenile Justice

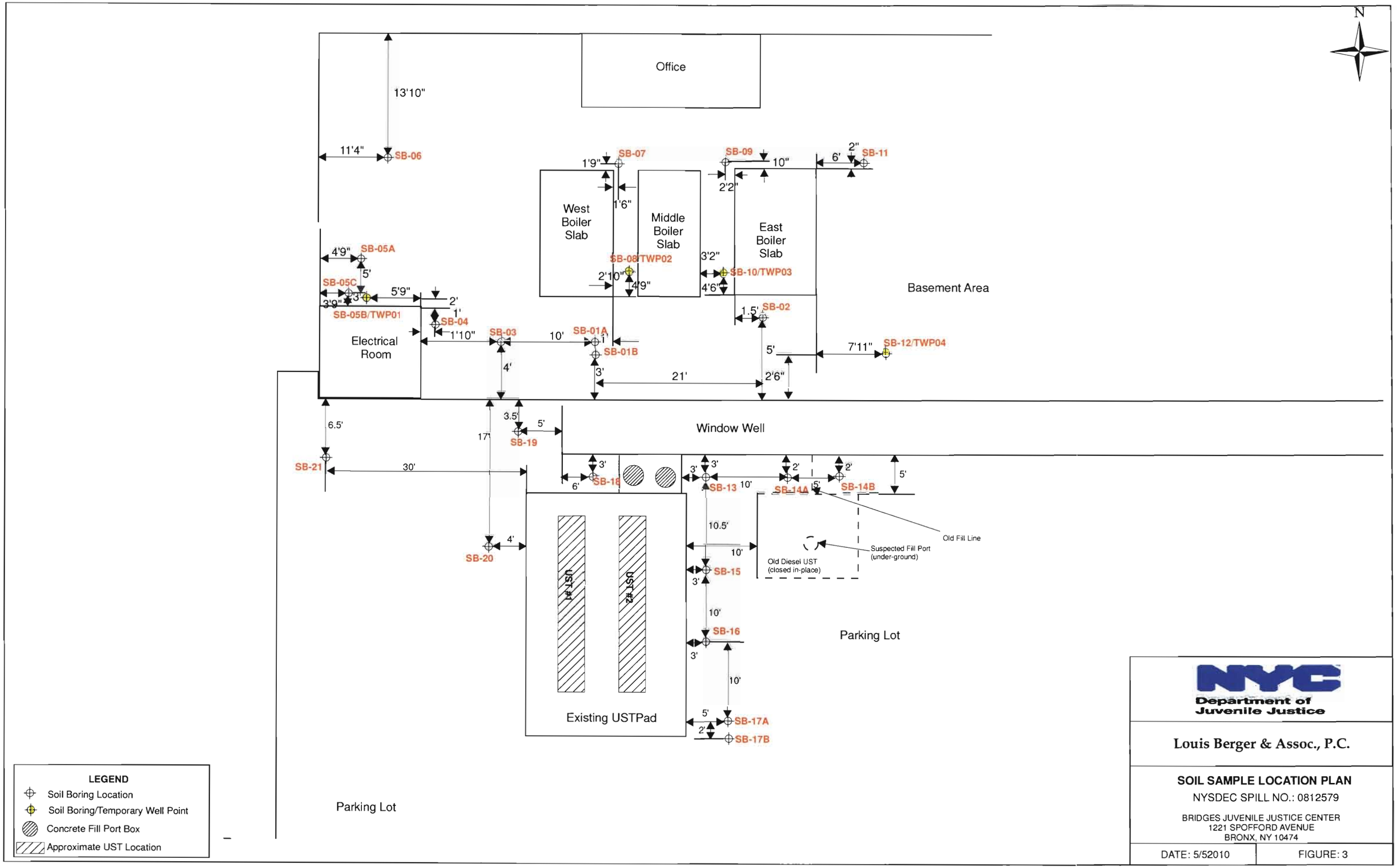
Louis Berger & Assoc., P.C.

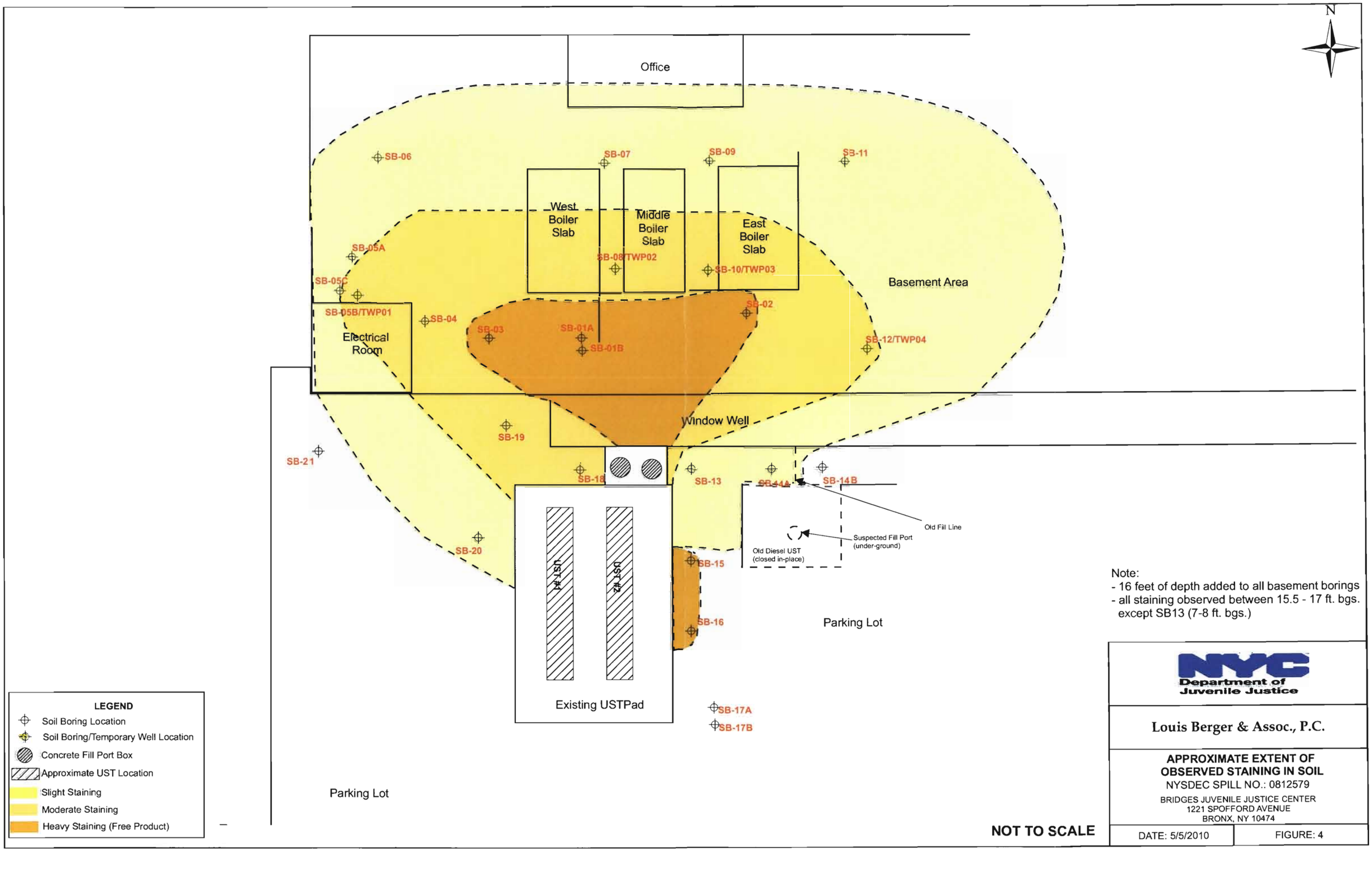
SITE PLAN

NYSDEC SPILL NO.: 0812579

BRIDGES JUVENILE JUSTICE CENTER
1221 SPOFFORD AVENUE
BRONX, NY 10474

DATE: 5/5/2010	FIGURE: 2


N
Office
13'10"
11'4"
SB-06
SB-07
1'9"
1'6"
SB-09
10"
2'2"
6'
2"
SB-11
West Boiler Slab
Middle Boiler Slab
East Boiler Slab
SB-08/TWP02
2'10"
4'9"
3'2"
SB-10/TWP03
4'6"
Basement Area
4'9"
SB-05A
5'
SB-05C
3'9"
5'9"
2'
1'
SB-05B/TWP01
SB-04
1'10"
Electrical Room
SB-03
10'
SB-01A
SB-01B
1.5'
SB-02
5'
7'11"
SB-12/TWP04
4'
3'
21'
2'6"
6.5'
3.5'
5'
17'
SB-19
Window Wall
SB-21
30'
3'
6'
SB-18
3'
3'
SB-13
10'
2'
SB-14A
5'
2'
SB-14B
5'
10.5'
10'
Old Fill Line
Suspected Fill Port (under-ground)
Old Diesel UST (closed in-place)
4'
SB-20
UST #1
UST #2
SB-15
3'
10'
SB-16
3'
10'
Existing USTPad
5'
SB-17A
2'
SB-17B
Parking Lot
Parking Lot
LEGEND
Soil Boring Location
Soil Boring/Temporary Well Point
Concrete Fill Port Box
Approximate UST Location
Department of Juvenile Justice
Louis Berger & Assoc., P.C.
SOIL SAMPLE LOCATION PLAN
NYSDEC SPILL NO.: 0812579
BRIDGES JUVENILE JUSTICE CENTER
1221 SPOFFORD AVENUE
BRONX, NY 10474
DATE: 5/52010
FIGURE: 3



Note:
- 16 feet of depth added to all basement borings
- all staining observed between 15.5 - 17 ft. bgs. except SB13 (7-8 ft. bgs.)

NYC Department of Juvenile Justice

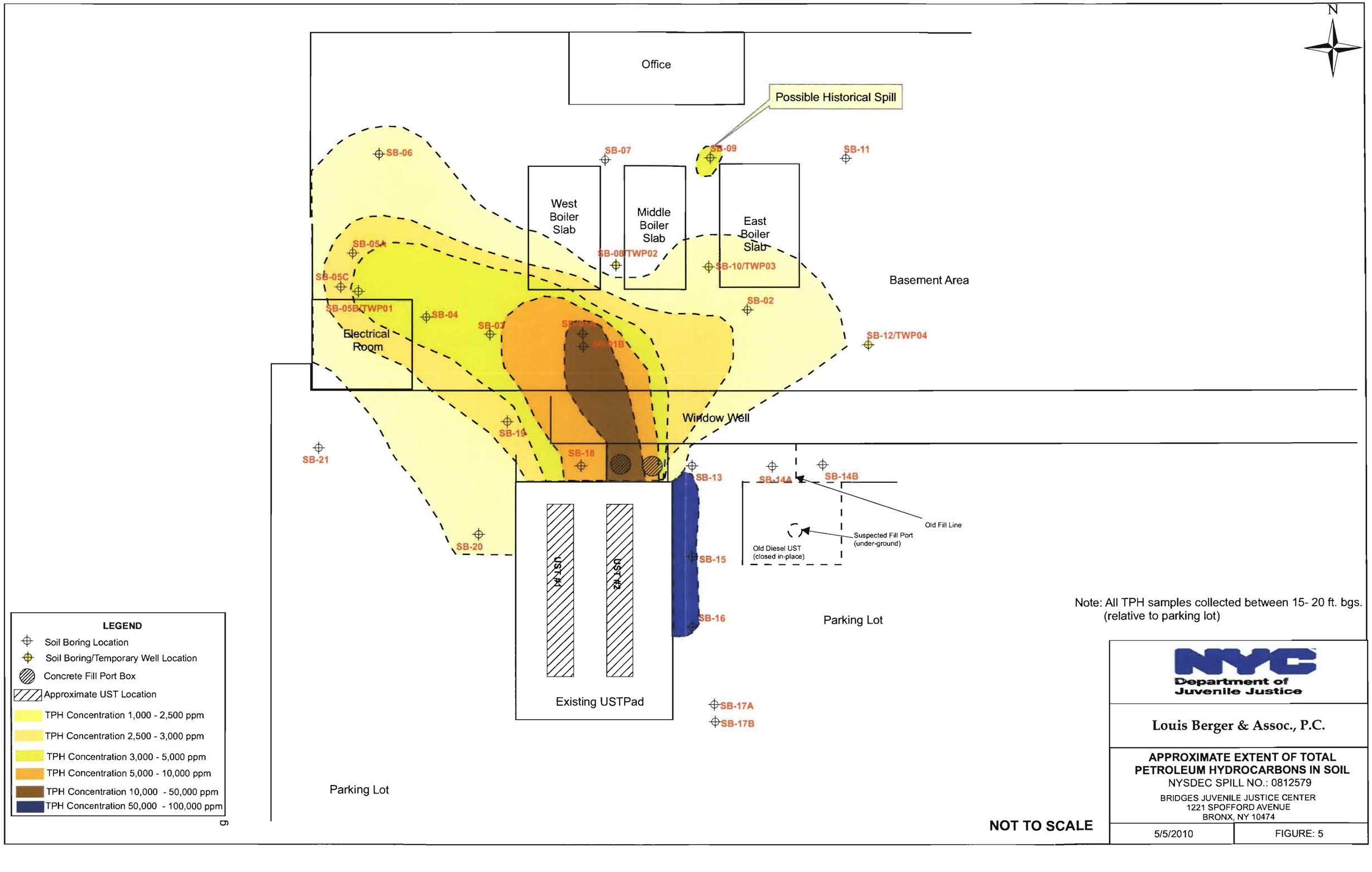
Louis Berger & Assoc., P.C.

APPROXIMATE EXTENT OF OBSERVED STAINING IN SOIL

NYSDEC SPILL NO.: 0812579

BRIDGES JUVENILE JUSTICE CENTER
1221 SPOFFORD AVENUE
BRONX, NY 10474

DATE: 5/5/2010 | FIGURE: 4



NYC Department of Juvenile Justice

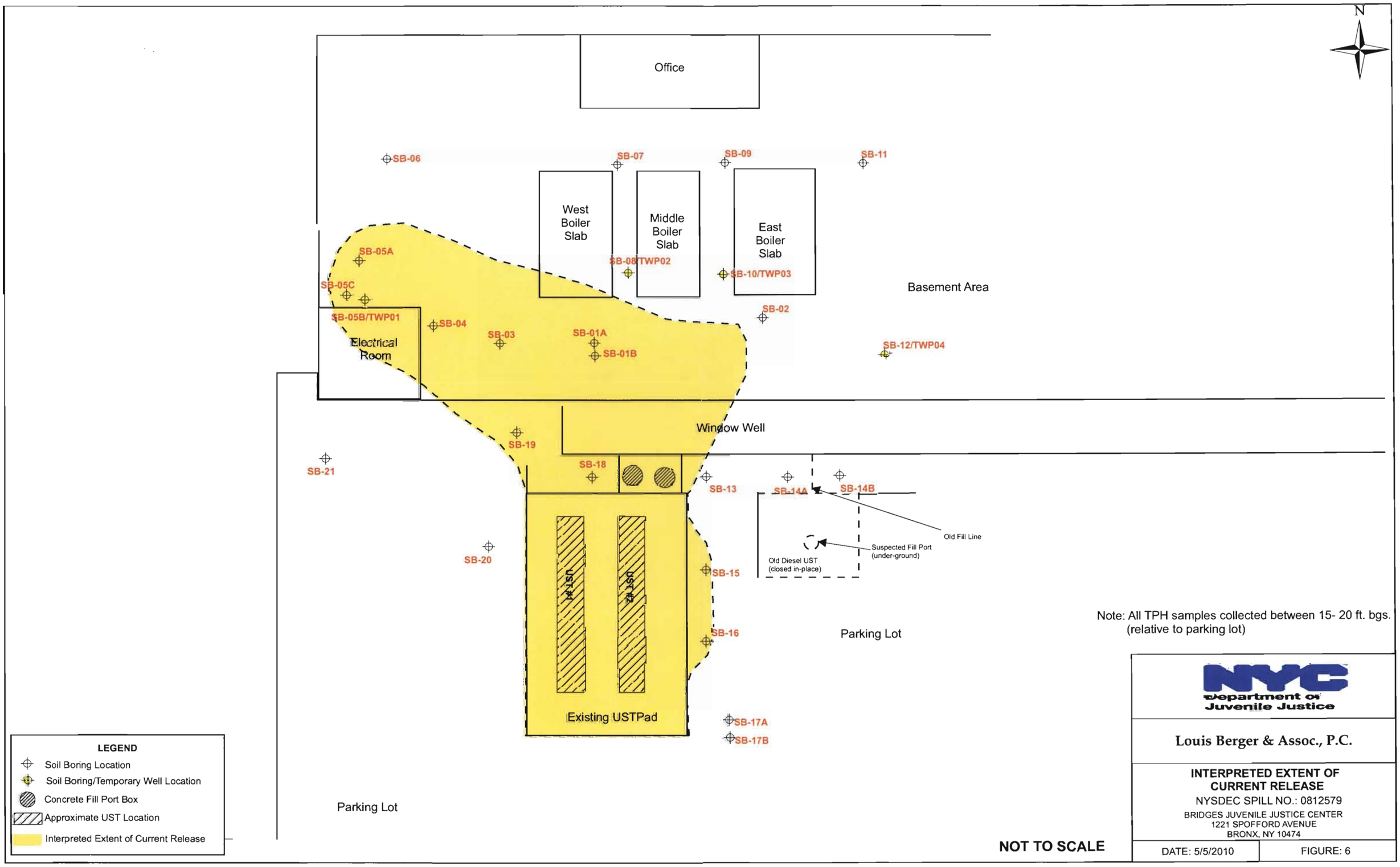
Louis Berger & Assoc., P.C.

APPROXIMATE EXTENT OF TOTAL PETROLEUM HYDROCARBONS IN SOIL

NYSDEC SPILL NO.: 0812579

BRIDGES JUVENILE JUSTICE CENTER
1221 SPOFFORD AVENUE
BRONX, NY 10474

5/5/2010	FIGURE: 5



Note: All TPH samples collected between 15- 20 ft. bgs. (relative to parking lot)

NOT TO SCALE

NYC Department of Juvenile Justice

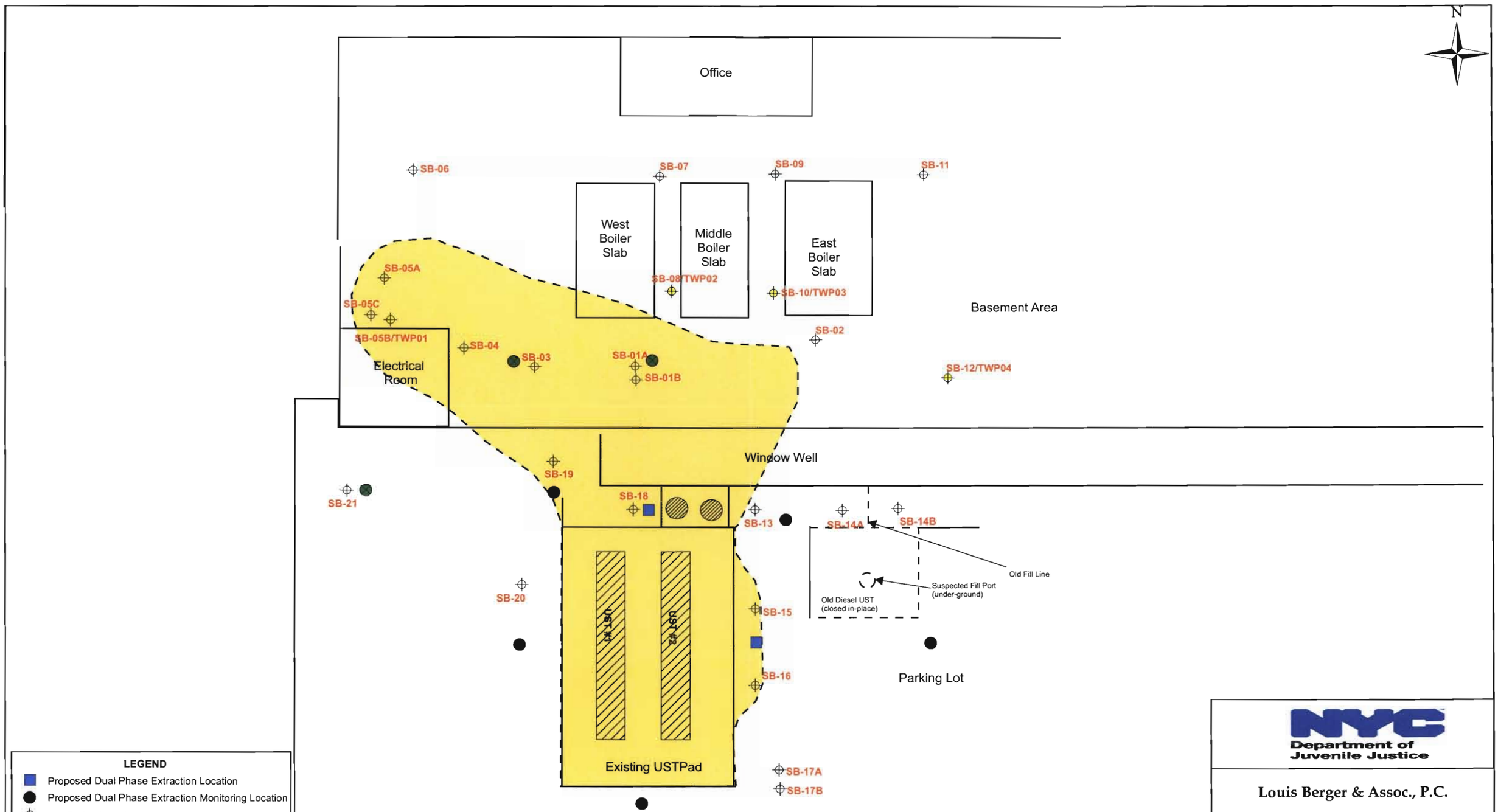
Louis Berger & Assoc., P.C.

INTERPRETED EXTENT OF CURRENT RELEASE

NYSDEC SPILL NO.: 0812579

BRIDGES JUVENILE JUSTICE CENTER
1221 SPOFFORD AVENUE
BRONX, NY 10474

DATE: 5/5/2010 | FIGURE: 6



NYC Department of Juvenile Justice

Louis Berger & Assoc., P.C.

DUAL PHASE EXTRACTION TREATABILITY STUDY

NYSDEC SPILL NO.: 0812579

BRIDGES JUVENILE JUSTICE CENTER
1221 SPOFFORD AVENUE
BRONX, NY 10474

DATE: 5/14/2010

FIGURE: 7

APPENDIX A

SOIL BORING LOGS

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 1	**BORING ID:** SB01A **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction			**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center			**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.			**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push			**DATE STARTED:** 3/24/2009
BOREHOLE DATA	**WELL DATA**		**DATE FINISHED:** 3/24/2009
Diameter (in): 2	**Well Diameter:** N/A		**DRILLER:** C. Stratton
Total Depth (ft): 17.00	**Total Depth (ft):** N/A		**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 17.0	**Screen Length (ft):** N/A		**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A		**EASTING:** N/A
Depth to Rock (ft): 17.0	**Slot Size:** N/A		**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
			FILL				315	Brownish gray (5YR 4/1) fine SAND, some coarse to fine Gravel; moist.	**Gravelly Sand (Fill), Petroleum Odor Noted**
	16		FILL				27.8	Brownish gray (5YR 4/1) medium to fine SAND, some medium to fine Gravel; moist.	**Strong Petroleum Odor and Back Staining Noted from 16.5-16.7 ft. bgs.**
			FILL				31.0	Brownish gray (5YR 4/1) to medium dark gray (N4) medium to fine SAND, some medium to fine Gravel; moist.	**End of Boring at 17 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**
	17								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB01B **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction			**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center			**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.			**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push			**DATE STARTED:** 3/24/2009
BOREHOLE DATA	**WELL DATA**		**DATE FINISHED:** 3/24/2009
Diameter (in): 2	**Well Diameter:** N/A		**DRILLER:** C. Stratton
Total Depth (ft): 18.50	**Total Depth (ft):** N/A		**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): N/A	**Screen Length (ft):** N/A		**NORTHING:** N/A
Depth to Water (ft): 18.0	**Depth to Water (ft):** N/A		**EASTING:** N/A
Depth to Rock (ft): 18.5	**Slot Size:** N/A		**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
	16		FILL				429	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), Petroleum Odor Noted** **Collected SB01A from 15.5 - 16.0 ft. bgs.** **Collected SB01B from 15.0 - 16.5 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB01B
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	17		FILL				204	Brownish gray (5YR 4/1) medium to fine SAND, some medium to fine Gravel; moist.	
									Water Level at 18.0 ft. bgs.
	18		FILL				346	Brownish gray (5YR 4/1) medium to fine SAND; wet.	**Sand (Fill)** **End of Boring at 18.5 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB02 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/24/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/24/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 19.50	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): N/A	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): 18.0	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 19.5	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
	16		FILL				407	Brownish black (5YR 2/1) medium to fine SAND, trace Silt, trace medium to fine Gravel; moist.	**Sand (Fill), Staining from 15.5-16.0 ft. bgs.** **Collected SB02A from 15.5 - 16.0 ft. bgs.** **Collected SB02B from 16.0 - 16.5 ft. bgs.**
	17		FILL				44.8	Brownish gray (5YR 4/1) medium to fine SAND, and medium to fine Gravel; saturated.	**Gravelly Sand (Fill)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB02
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	18		FILL				16.7	Brownish gray (5YR 4/1) medium to fine SAND, trace medium to fine Gravel; saturated.	**Water Level at 18.0 ft. bgs.** ▽ **Strong Petroleum Odor at 18.0 ft. bgs.**
	19								**End of Boring at 19.5 ft. bgs.(Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB03 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/24/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/24/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 18.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): N/A	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): 18.0	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 18.0	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
	16		Fill				260	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; wet.	**Gravelly Sand (Fill), Black Staining, Strong Petroleum Odor** **Collected SB03A from 15.5 - 16.0 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB03
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	17								Black Free Product at 18.0 ft. bgs. End of Boring at 18.0 ft. bgs..(Refusal, Weathered Schist observaed in tip of sampler) Water Level at 18.0 ft. bgs. ▽
	18								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 1	**BORING ID:** SB04 **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction			**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center			**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.			**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push			**DATE STARTED:** 3/25/2009
BOREHOLE DATA	**WELL DATA**		**DATE FINISHED:** 3/25/2009
Diameter (in): 2	**Well Diameter:** N/A		**DRILLER:** C. Stratton
Total Depth (ft): 16.00	**Total Depth (ft):** N/A		**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 16.0	**Screen Length (ft):** N/A		**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A		**EASTING:** N/A
Depth to Rock (ft): 16.0	**Slot Size:** N/A		**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
			FILL				446	Grayish black (N2) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), Black Staining, Strong Petroleum Odor** **End of Boring at 16.0 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**
	16								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB05 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/25/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/25/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): N/A	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): 16.6	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.0	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
			FILL				150	Grayish Black (N2) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand, (Fill) Black Staining and Moderate Petroleum Odor.**
	16								**Collected SB05A from15.5 to 16.0 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB05
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	17								**Water Level at 16.6 ft. bgs.** ⧖ **End of Boring at 18.0 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB06 **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction		**PROJECT NO:**	KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:**	BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:**	6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:**	3/25/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:**	3/25/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:**	C. Stratton
Total Depth (ft): 17.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:**	A. Trescott
Depth to Refusal (ft): N/A	**Screen Length (ft):** N/A	**NORTHING:**	N/A
Depth to Water (ft): 16.6	**Depth to Water (ft):** N/A	**EASTING:**	N/A
Depth to Rock (ft): 17.0	**Slot Size:** N/A	**SURFACE ELEVATION:**	N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
	16		FILL				431	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), Black Staining from 15.5 to 15.75 ft. bgs.** **Collected SB06A from 15.5 to 16.0 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB06
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	17								Moderate Petroleum Odor. Water Level at 16.6 ft. bgs. ▽ End of Boring at 17.0 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB07 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/25/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/25/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): N/A	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): 17.00	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.0	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
			FILL				5.2	Moderate borwn (5YR 3/4) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), No Petroleum Odor and Staining.**
	16								**Collected SB07A from 15.5 to 16.0 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB07
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	17								End of Boring at 17.0 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler) Water Level at 17.0 ft. bgs. ▽

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB08 **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/25/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/25/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 17.0	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.0	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
	16		FILL				355	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), Moderate Petroleum Odor. Black Staining Collected SB08A from 15.5 to 16.0 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB08
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	17								End of Boring at 17.0 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB09 **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction		**PROJECT NO:**	KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:**	BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:**	6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:**	3/25/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:**	3/25/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:**	C. Stratton
Total Depth (ft): 17.50	**Total Depth (ft):** N/A	**LBA INSPECTOR:**	A. Trescott
Depth to Refusal (ft): 17.5	**Screen Length (ft):** N/A	**NORTHING:**	N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:**	N/A
Depth to Rock (ft): 17.5	**Slot Size:** N/A	**SURFACE ELEVATION:**	N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
	16		FILL				87.8	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), Moderate Petroleum Odor. Black Staining from 15.5 to 16.5 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB09
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
			FILL				41.9	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Collected SB09A from 15.5 to 16.0 ft. bgs.**
	17								**Collected SB09B from 16.5 to 17.0 ft. bgs.**
									End of Boring at 17.5 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB10 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/25/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/25/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.50	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 17.5	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.5	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
	16		FILL				196	Black (N1) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), Moderate Petroleum Odor. Black Staining from 15.5 to 16.5 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB10
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
			FILL				18.0	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Collected SB10A from 15.5 to 16.5 ft. bgs.**
	17								**End of Boring at 17.5 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB11 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/25/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/25/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 17.0	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.0	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light gray (N7) Concrete. Basement Slab.	**Concrete**
			FILL				375	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill), Moderate Petroleum Odor. Black Staining**
	16								**Collected SB11A from 15.5 to 16.0 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB11
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	17								**End of Boring at 17.0 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB12 **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction			**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center			**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.			**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push			**DATE STARTED:** 3/25/2009
BOREHOLE DATA	**WELL DATA**		**DATE FINISHED:** 3/25/2009
Diameter (in): 2	**Well Diameter:** N/A		**DRILLER:** C. Stratton
Total Depth (ft): 18.00	**Total Depth (ft):** N/A		**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): N/A	**Screen Length (ft):** N/A		**NORTHING:** N/A
Depth to Water (ft): 16.5	**Depth to Water (ft):** N/A		**EASTING:** N/A
Depth to Rock (ft): 18.0	**Slot Size:** N/A		**SURFACE ELEVATION:** N/A

NOTES: Boring was advanced in basement of building, log begins at 15.0 ft. bgs.

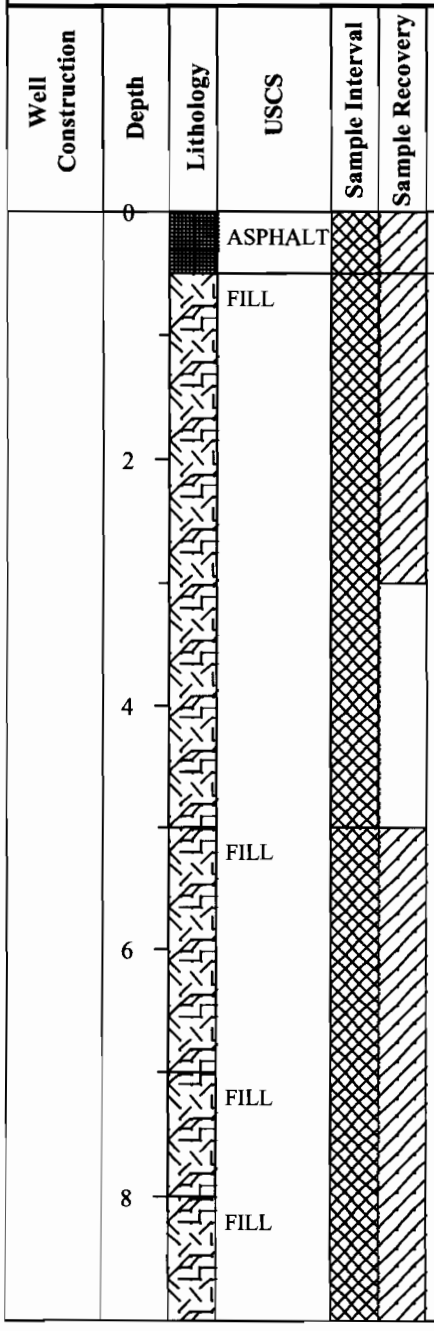
Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	15		Concrete				N/A	Light grey(N7) Concrete. Basement Slab.	**Concrete**
			FILL				445	Brownish black (5YR 2/1) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill)**
	16		FILL				14.4	Moderate brown (5YR 3/4) medium to fine SAND, some Silt, little medium to fine Gravel; wet.	**Silty Sand (Fill)** **Water Level at 16.5 ft. bgs.**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB12
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									⧖ Collected SB12A from 15.5- 16.0 ft bgs
	17								Petroleum odor and Black Staining at 15.5-16.0 ft. bgs.
	18								End of Boring at 18 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB13 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/26/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/26/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 17.0	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.0	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES:



Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				< 1	Black (N1) ASPHALT - Gravel Base	**Asphalt**
			FILL				3.2	Moderate brown (5YR 4/4) medium to fine SAND, little medium to fine Gravel; moist	**Sand (Fill)**
	2								
	4								
			FILL				6.7	Moderate brown (5YR 4/4) medium to fine SAND, some medium to fine Gravel; moist	**Gravelly Sand (Fill), Faint Petroleum Odor**
	6								
			FILL				126	Moderate brown (5YR 4/4) to dusky brown (5YR 2/2) fine SAND, little Silt, little medium to fine Gravel; moist	**Sand (Fill), Moderate Petroleum Odor, Black Staining**
	8		FILL				49	Dark yellowish brown (10YR 4/2) to Moderate brown (5YR 4/4) fine SAND, little Silt, little medium to fine Gravel; moist	

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB13
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		FILL				7.3	Moderate brown (5YR 4/4) fine SAND, some medium to fine Gravel; moist	**Gravelly Sand (Fill)**
			FILL				301	Light olive gray (5Y 6/1) fine SAND, some medium to fine Gravel; moist	**Collected SB13A from 11.5 to 12 ft. bgs.**
	12								
	14								**Collected SB13B from 16.5 to 17 ft. bgs.**
			FILL				6.4	Dark yellowish brown (10YR 4/2) medium to fine SAND, some medium to fine Gravel; moist	**End of Boring at 17 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**
	16								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 1	**BORING ID:** SB14A **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/26/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/26/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 8.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 8.0	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): N/A	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				N/A	Black (N1) to light gray (N7) ASPHALT, GRAVEL.	**Asphalt**
			FILL				0.1	Pale yellowish brown (10YR 6/2) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill)**
	2		FILL				0.1	Dark yellowish brown (10YR 4/2) medium to fine SAND, some medium to fine Gravel; moist.	
	4								
			FILL				0.1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace black debris; moist.	**Sand (Fill)**
	6								**End of Boring at 8.0 ft. bgs. (Refusal, No Schist observaed in tip of sampler)**
			FILL				0.2	Light gray (N7) medium to fine SAND, some medium to fine Gravel; moist.	
	8								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB14B **WELL ID:** N/A **LOCATION:** Bronx, NY

CLIENT: New York City Department of Design and Construction			**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center			**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.			**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push			**DATE STARTED:** 3/26/2009
BOREHOLE DATA	**WELL DATA**		**DATE FINISHED:** 3/26/2009
Diameter (in): 2	**Well Diameter:** N/A		**DRILLER:** C. Stratton
Total Depth (ft): 12.00	**Total Depth (ft):** N/A		**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 12.0	**Screen Length (ft):** N/A		**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A		**EASTING:** N/A
Depth to Rock (ft): N/A	**Slot Size:** N/A		**SURFACE ELEVATION:** N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				N/A	Black (N1) to light gray (N7) ASPHALT, GRAVEL.	**Asphalt**
			FILL				0.2	Light brown (5YR 6/4) medium to fine SAND, some medium to fine Gravel; moist.	**Gravelly Sand (Fill)**
			FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, some medium to fine Gravel, little brick debris; moist.	
	2								
	4		FILL				<1	Dark yellowish brown (10YR 4/2) medium to fine SAND, some medium to fine Gravel; moist.	
	6								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB14B
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	0		FILL				<1	Light olive gray (5Y 6/1) medium to fine SAND, some medium to fine Gravel; moist.	
	8								
	10		FILL				<1	Medium light gray (N6) medium to fine SAND, some medium to fine Gravel; moist.	**Collected SB14A from 11.5 to 12.0 ft. bgs.**
	12								**End of Boring at 12.0 ft. bgs.(Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 3	**BORING ID:** SB15 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/26/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/26/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 18.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 18.0	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 18.0	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				N/A	Black (N1) to light gray (N7) ASPHALT, GRAVEL.	**Asphalt**
	2								
	4								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB15
	Page 2 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
			FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel; moist.	**Sand (Fill)**
	6								
	8								
	10		FILL				<1	Medium light gray (N6) medium to fine SAND, little medium to fine Gravel; moist.	
	12								**Faint Petroleum**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB15
	Page 3 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									Odor from 13.5 to 14.5 ft. bgs.
			FILL				95	Medium light gray (N6) to light gray (N7) medium to fine SAND, little medium to fine Gravel; moist.	
	14								**Collected SB15A from 15 to 15.5 ft. bgs.**
			FILL				264	Dark yellowish brown (10YR 4/2) medium to fine SAND, some coarse to fine Gravel; moist.	**Gravelly Sand (Fill)** **Black Staining, Moderate Petroleum Odor.**
	16		FILL				22	Light gray (N7) medium to fine SAND, some coarse to fine Gravel; moist.	**Collected SB15B from 17.5 to 18 ft. bgs.**
	18								**End of Boring at 18.0 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB16
	Page 3 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
			FILL				0.5	Light gray (N7) medium to fine SAND, little medium to fine Gravel; moist.	
	14								
			FILL				95	Light olive gray (5Y 6/1) medium to fine SAND, little medium to fine Gravel; moist.	**Collected SB16A from 15.5 to 16.0 ft. bgs.**
			FILL				368	Grayish black (N2) medium to fine SAND, little medium to fine Gravel; moist.	
	16								
			FILL				29	Light gray (N7) medium to fine SAND, little medium to fine Gravel; moist.	**Strong Petroleum Odor. Heavily Stained**
									Collected SB16B from 18.5 to 19 ft. bgs.
	18								**End of Boring at 19.0 ft. bgs. (Refusal, No Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 3	**BORING ID:** SB18 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/27/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/27/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 19.00	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 19.0	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): N/A	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A
NOTES:		

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				N/A	Black (N1) ASPHALT, GRAVEL.	**Asphalt**
			FILL				<1	Light gray (N7) coarse to fine SAND, some coarse to fine Gravel; moist.	**Gravelly Sand (Fill)**
	2		FILL				<1	Moderate yellowish brown (10YR 5/4) coarse to fine SAND, little coarse to fine Gravel, trace Silt; moist.	**Sand (Fill)**
	4		FILL				<1	Moderate yellowish brown (10YR 5/4) coarse to fine SAND, little coarse to fine Gravel, trace Silt; moist.	
	6								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB18
	Page 3 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	16								**Strong Petroleum Odor. No Staining.**
									Woos Debris, Staining, Petroleum Odors
									Collected SB18B from 18.5 to 19 ft. bgs.
	18								**End of Boring at 19.0 ft. bgs. (Refusal, No Schist observaed in tip of sampler)**
			FILL				60	Medium dark gray (N4) coarse to fine SAND, some coarse to fine Gravel; moist.	

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 3	**BORING ID:** SB19 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/27/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/27/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 19.5	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 19.5	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 19.5	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A
NOTES:		

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				N/A	Black (N1) ASPHALT, GRAVEL.	**Asphalt**
			FILL				<1	Light gray (N7) coarse to fine SAND, some coarse to fine Gravel; moist.	**Gravelly Sand (Fill)** **UST Backfill**
	2								
	4								
			FILL				1.0	Light gray (N7) coarse to fine SAND, some coarse to fine Gravel; moist.	

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB19
	Page 2 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	6								
			FILL				1.0	Moderate brown (5YR 4/4) medium to fine SAND, little medium to fine Gravel; moist.	**Sand (Fill)**
	8								
	10		FILL				<1	Moderate brown (5YR 4/4) to moderate yellowish brown (10YR 5/4) medium to fine SAND, little coarse to fine Gravel, trace Silt; moist.	
	12								
	14								
			FILL				11	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little coarse to fine Gravel, trace Silt; moist.	

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB19
	Page 3 of 3	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
			FILL				28	Medium dark gray (N4) coarse to fine SAND, some coarse to fine Gravel; moist.	**Gravelly Sand (Fill)**
	16								**Staining, Petroleum Odors**
	18								**Collected SB19A from 19.0 to 19.5 ft. bgs.**
									End of Boring at 19.5 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB20 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/27/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/27/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.5	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 17.5	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.5	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				N/A	Black (N1) ASPHALT, GRAVEL.	**Concrete**
			FILL				2.4	Light gray (N7) coarse to fine SAND, some coarse to fine Gravel; moist.	**Gravelly Sand (Fill)**
			FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace Silt; moist.	**Sand (Fill), UST Backfill**
	2								
	4								
			FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace Silt; moist.	
	6								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB20
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	8								
	10		FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace Silt; moist.	
	12								
	14								
			FILL				3.1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace Silt; moist.	**Collected SB20A from 17.0 to 17.5 ft. bgs.**
	16								**End of Boring at 17.5 ft. bgs. (Refusal, Weathered Schist observaed in tip of sampler)**

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	**Drilling Log** Page 1 of 2	**BORING ID:** SB21 **WELL ID:** N/A **LOCATION:** Bronx, NY
CLIENT: New York City Department of Design and Construction		**PROJECT NO:** KT880L2
PROJECT: Remedial Investigation for Bridges Juvenile Justice Center		**FMS ID#:** BXDETCT
DRILLING CONTRACTOR: Aquifer Drilling and Testing, Inc.		**WOL #:** 6055-LBA-2-5879
DRILLING METHOD: Direct Push		**DATE STARTED:** 3/27/2009
BOREHOLE DATA	**WELL DATA**	**DATE FINISHED:** 3/27/2009
Diameter (in): 2	**Well Diameter:** N/A	**DRILLER:** C. Stratton
Total Depth (ft): 17.5	**Total Depth (ft):** N/A	**LBA INSPECTOR:** A. Trescott
Depth to Refusal (ft): 17.5	**Screen Length (ft):** N/A	**NORTHING:** N/A
Depth to Water (ft): N/A	**Depth to Water (ft):** N/A	**EASTING:** N/A
Depth to Rock (ft): 17.5	**Slot Size:** N/A	**SURFACE ELEVATION:** N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				N/A	Black (N1) ASPHALT, GRAVEL.	**Asphalt**
			FILL				<1	Light gray (N7) coarse to fine SAND, some coarse to fine Gravel; moist.	**Gravelly Sand (Fill)**
			FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace Silt; moist.	**Sand (Fill)**
	2								
			FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace Silt; moist.	
	4								
			FILL				<1	Moderate yellowish brown (10YR 5/4) medium to fine SAND, little medium to fine Gravel, trace Silt; moist.	
	6								
	8								

Louis Berger & Assoc., P.C. 199 Water Street, 23rd Floor New York, New York 10038	PROJECT NO.: KT880L2	BORING NO.: SB21
	Page 2 of 2	WELL NO.: N/A

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10		SCHIST				<1	Light gray (N7) to dark yellowish orange (10YR 6/6) Decomposed Mica SCHIST; moist.	**Bedrock. No Odor or Staining**
	12								
	14								
			SCHIST				<1	Light gray (N7) to dark yellowish orange (10YR 6/6) Decomposed Mica SCHIST; moist.	
	16								**Collected SB21A from 17.0 to 17.5 ft. bgs.** **End of Boring at 17.5 ft. bgs.**