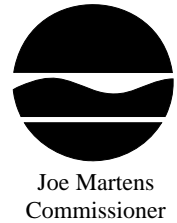


New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway, Albany, New York 12233-7014
Phone: (518) 402-9662 • **Fax:** (518) 402-9679
Website: www.dec.ny.gov



December 14, 2012

Mr. Thomas Campbell
National Grid
Environmental Department
175 East Old County Road
Hicksville, New York 11801

Re: Far Rockaway Former Manufactured Gas Plant
Site No. 241032

Dear Mr. Campbell:

The New York State Departments of Health and Environmental Conservation have reviewed the Design Investigation Work Plan dated November 21, 2012. The work plan is approved.

Please contact me if you have any questions or concerns at (518) 402-9667.

Sincerely,



William T. Ports, P.E.
Project Manager
Remedial Bureau C

ec: P. Cox, AECOM
J. O'Connell, NYSDEC Region 2
M. Schuck, NYSDOH
S. Selmer, NYSDOH

November 21, 2012

Mr. William T. Ports, P.E.
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway
Albany, New York 12233-7017

Re: Far Rockaway Former Manufactured Gas Plant
Draft Remedial Design Work Plan
Far Rockaway, New York
Site No. 2-41-032

Dear Mr. Ports:

Enclosed please find one electronic copy of the draft document entitled "Remedial Design Work Plan, Far Rockaway Former MGP Site, 1200-1224 Brunswick Avenue, Far Rockaway, Queens County, New York."

If you have any questions or require any additional information, feel free to contact me at (516) 545-2555 or Pete Cox at (978) 905-2168.

Sincerely,



for

Thomas J. Campbell
Project Manager

Enclosure



Environment

Prepared for:
National Grid
New York, NY

Prepared by:
AECOM
Chelmsford, MA
60137357
October 31, 2012

Remedial Design Work Plan

Far Rockaway Former MGP Site
1200 – 1224 Brunswick Avenue
Far Rockaway, Queens County, New York
NYSDEC Site No.: 2-41-032



Environment

Prepared for:
National Grid
New York, NY

Prepared by:
AECOM
Chelmsford, MA
60137357
October 31, 2012

Remedial Design Work Plan

A handwritten signature in black ink, reading "Cameron C. Dixon".

Prepared By Cameron C. Dixon, E.I.T., Project Engineer

A handwritten signature in blue ink, reading "Michael Gardner".

Reviewed By Michael Gardner, P.E., Senior Engineer

Engineering Certification

I, Michael J. Gardner, certify that I am currently a NYS registered professional engineer and that this Remedial Design Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Respectfully submitted,
AECOM Technical Services Northeast, Inc.



Michael J. Gardner
Registered Professional Engineer
New York License No. 089344

3/1/13

Date



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1.0 Introduction

AECOM has prepared this Remedial Design Work Plan (RDWP) for National Grid. The RDWP documents design procedures for remediation of the former Far Rockaway Manufactured Gas Plant (MGP) Site located at 1224 Brunswick Avenue in Queens, New York (Site). The site location is shown in Figure 1-1.

National Grid is performing the Site's remediation in accordance with Order on Consent #A2-0552-0660 between National Grid and the New York State Department of Environmental Conservation (NYSDEC). AECOM submitted the Remedial Investigation Report (RI) [AECOM, September 2011] to the NYSDEC and received final approval on September 14, 2011. AECOM submitted the Feasibility Study Report (FS) [AECOM, February, 2011] to the NYSDEC and received final approval on February 14, 2012.

The FS identified four remedial alternatives and provided a recommended remedy for the site. Based on the FS finding, the NYSDEC prepared the Proposed Remedial Action Plan (PRAP) and issued the Record of Decision (ROD) [NYSDEC, March 2012] in March 2012. The ROD presents the selected Site remedy and was developed with public comment and in consultation with the New York State Department of Health (NYSDOH). The summary of the remedy components, as described in more detail in the ROD, are as follows:

- Source material excavation including MGP related structures and foundations, to a maximum depth of 15 feet below the ground surface (bgs).
- Soil transportation and offsite disposal/treatment at a thermal desorption facility.
- Backfill of the excavated areas with certified clean fill from an off-site location. The clean fill will meet the requirements of 6 NYCRR Part 375-6.7(d).
- Soil cover placement over a demarcation layers to allow for commercial use of the site. Where soil cover is required it will be a minimum of one foot thick.
- Monitored Natural Attenuation of groundwater, and if determined necessary, using in-situ treatment such as an oxygen injection system to enhance natural attenuation.
- A Site Management Plan and environmental easement.

This RDWP has been prepared in accordance with DER-10 Technical Guidance for Site Investigation and Remediation [(DER-10); NYSDEC, 2010]

1.1 Nature and Extent

A copy of the ROD has been included as Appendix A of this document to satisfy the following requirements of Section 5.2 (b) of the DER-10:

- Summary of the RIR Section 5.1 of the ROD.
- Summary of sampling results collected to date of the publication of the ROD.
- Identification of all applicable Standards, Criteria, and Guidance (SCGs).

- Figures identifying all areas where the remedial action will be conducted.
- Figures showing the vertical and horizontal extent of the area to be remediated.

1.2 Design Process

In accordance with the AOC and the DER-10, technical guidance for site investigation and remediation [(DER-10); NYSDEC, 2010], the Remedial Design program will include the preparation/submittal of the following information:

- Remedial Design Work Plan (this document)
 - Schedule to implement the RD
 - Pre Design Investigation (PDI) activities
- 60% design submittal
 - Biddable quality design documents for the RD, consisting of specifications and drawings
 - Operation, Maintenance and Monitoring (OM&M) Plan
- 90% design submittal including biddable quality design documents for the RD, consisting of specifications and drawings

The following additional documents are not explicitly required by the AOC but are integral to the remedial design program. These documents will be provided in a Community Environmental Response Plan (CERP) as addenda to the 60% design submittal:

- Community Air Monitoring Plan (CAMP)
- Odor, Vapor, and Dust Control Plan (OVDCP)
- Transportation Plan
- Construction site-specific Health and Safety Plan (HASP)
- Settlement and Vibration Monitoring Plan
- Citizen's Participation Plan (CPP)
- Permitting Plan that includes associated permits and review correspondence

The remedy will be implemented in the following four phases:

- The first phase of the remedy will involved PDI activities that were completed in October 2012. The data collected during the PDI will be used to develop design drawings and specifications to execute the work. These activities will include the design of soil removal plans and systems (sequencing and support). This first phase of the remedy is more fully described in this RDWP.
- The second phase will involve the field implementation of the excavation and containment designs. Field activities will consist of installation of excavation shoring, excavation and off-site disposal of impacted soils at thermal treatment facilities pre-approved by National Grid, and the placement of clean backfill and a cover system.

- In the third phase of the remedy, a groundwater Monitored Natural Attenuation (MNA) program will be implemented to monitor groundwater impacts. If it is determined to be necessary, oxygen will be injected into the subsurface to enhance natural attenuation.
- Finally, in accordance with the AOC and the ROD, engineering and institutional controls will be imposed as the fourth phase of the remedy. These controls will be documented in a Site Management Plan (SMP), which will include a schedule for operation, maintenance, and monitoring of components of the remedy and for the submission of the periodic certification of the institutional and engineering controls.

Please note that these phases may be implemented consecutively or concurrently based on the Site conditions as they develop.

1.3 Report Format

This Work Plan is organized in the following manner:

- **Section 2** details the PDI findings
- **Section 3** presents the Work Plan for the implementation of the remedial design
- **Section 4** provides a summary of all required permits and/or substantive permit requirements
- **Section 5** provides details of the proposed schedule for the implementation of the Remedial Design program
- **Section 6** provides post-construction plans for the site
- **Section 7** are the references

2.0 Pre-Design Investigation Results

Pre-design investigation activities were completed to support design of the Site remedy. These activities include geotechnical soil borings, soil pre-characterization borings and detailed site property and topographic survey.

2.1 Geotechnical Investigation

A geotechnical investigation was conducted in September, 2009. Seven pre-design investigation borings (PDI-1 through PDI-7) were advanced to obtain geotechnical information, to support design of excavation support and dewatering systems. The borings were advanced using hollow stem auger (HSA) drilling. Continuous Standard Penetration Test (SPT) were conducted in each boring. Geotechnical samples were collected from PDI-1, PDI-3, and PDI-4 and analyzed for Atterberg limits, grain size, and Unified Soil Classification System (USCS) classification. The results of the geotechnical investigation are presented in FS.

2.2 Pre-Characterization

2.2.1 Scope of Work

Soil borings were installed from September 14 through October 8, 2012 to complete the vertical delineation of visually MGP impacted soil and to pre-characterize the soil to allow for direct loading to licensed disposal facilities. These borings were installed in accordance with the NYSDEC approved Pre-Design Investigation Work Plan dated May 30, 2012. Soil samples were collected for laboratory analyses at a ratio of 250 cubic yards (cu yd) of soil based upon a sample grid that as established across the planned excavation area. Each grid, shown on Figure 2-1, represents a soil volume of 250 cu yd or less assuming a maximum excavation depth of 15 ft bgs. Proposed soil boring locations were included in the work plan, and placed as close to the center of each grid as possible, with the exception of C-3 and C-4 where borings were positioned outside of the former holder footprint. On September 14th, GEOD Corporation of Newfoundland, N.J., under the supervision of AECOM, performed a site topographic survey, geophysical survey to identify underground utilities and structures, and to mark out the locations of the proposed PDI soil borings. Some of the locations were adjusted in the field due to site obstructions which lead to refusal. The borings shown on Figure 2-1 are the final installed locations.

Drilling activities were performed by Zebra Environmental of Lynbrook, NY from October 1 to 8, 2012. In addition to a geophysical survey, the upper five feet of each boring was advanced by soft digging techniques (soil vacuum extraction and hand digging) to prevent damage and personal injury should an unmarked utility be present. Each boring was installed using direct-push technology to 20 ft bgs using a 5 ft Marco-Core[®] discrete sampler. The Site geologist described all soil samples for soil classification visual and olfactory observations of MGP-related residuals. Samples were analyzed for total VOC headspace using a photo-ionization detector (PID). PDI soil boring logs are included in Appendix B. One discrete soil sample was collected from each boring at the depth interval with the greatest visual impacts and highest PID headspace reading. These samples were submitted to Test America in Edison, N.J., for waste characterization laboratory analyses specified by the two waste disposal facilities (Clean Earth and Bay Soil Management). In addition to the discrete samples collected for each 250 cu yd of material, aliquots from samples collected at neighboring grids were

composited for analyses required per 500 cu yd (two grids) and for analyses required per 1000 cu yd (four grids). Two additional samples were also collected from grids E-1 and E-2 to provide an initial sampling frequency (one sample per 60 cu yd) that may be required by the disposal facilities. A complete summary soil sample ids, collection frequency (60, 250, 500, 1000 cu yd), and analyses performed is provided on Table 2-1. All sample ids reference the source grid(s) and sample frequency, such that sample WCD2C2-100512-500cy is a waste characterization sample (WC) composited from grids D2 and C2 on October 5, 2012 for the 500 cu yd sample frequency analytical requirements.

2.2.2 Observations and Results

Specific observations are included on the Pre-characterization boring logs in Appendix B. Observed MGP residuals consisted of tar coated soil grains, sheen, and black staining. Tar saturated intervals or tar blebs were not observed at the site during the PDI, and no residuals were observed below 15 ft bgs in any of the PDI borings. The groundwater table was encountered between 4 and 7 ft bgs, and most residuals were observed between 5 and 10 ft bgs, with the exception of grids C1 (black staining to 14 ft bgs), C2 (black staining to 14 ft bgs), and C3 (tar coating to 11.5 ft bgs). Soil grains coated with tar were observed to the east, north, and west of the former gas holder. To the south (Brunswick Avenue), visual MGP residuals were not observed along the limits of the excavation (C-4 and E-3). To the east, north, and west, MGP-residuals consisted of black staining, with the exception of A-4 (tar coating from 5-9 ft bgs), and E-1 (sheen from 7-7.25).

Observations of tar coatings and sheen were accompanied by PID VOC headspace readings above the maximum range of the PID of 9,999 PPM, with the exception of C1 and C2 where PID readings were 1,718 PPM and 1,800 PPM, respectively. PID readings above 9,999 PPM were also recorded along with black staining at A-2 and A-3.

The final analytical results for the pre-characterization testing are currently being prepared by Test America.

2.3 Site Survey

A detailed survey base map including location of site features, property lines, topography, and location of above and below ground utilities was prepared by GEOD Corporation. This base map will be used for all subsequent design drawings.

3.0 Design Scope

This section describes the remedial goals and provides details of the remedial action and the methods and procedures by which the anticipated activities will be completed in order to satisfy the remedial objectives. This RDWP presents the approach by which the design will be completed at the Site in order to satisfy the remedial objectives specified in the ROD.

3.1 Remedial Goals

The remedial goals for the Site have been established through the remedy process stated in 6 NYCRR Part 375. As stated in the ROD, "The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles." (NYSDEC, 2012).

In accordance with the ROD, the remediation goals for this Site are to:

- Remove the source of groundwater contamination.
- Prevent ingestion/direct contact with contaminated soil.
- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.
- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.

3.2 Excavation Limits

Excavation will achieve the specific performance and design requirements presented in the ROD and summarized in Section 3.1. The current estimate of the limits of excavation, as determined in the ROD and refined by the PDI, is shown in Figure 3-1. The excavation grades shown are based on visual impacts observed in the PDI and RI soil borings. The vertical excavation limit extends at least one foot below any observed staining. The horizontal excavation limit extends beyond soil boring locations where MGP source material was observed. The excavation covers 9,700 square feet and represents an approximate excavation volume of 3,400 cubic yards. The proposed excavation will be finalized as part of the Remedial Design and will be presented to NYSDEC prior to the start of field remediation activities.

Where it is feasible the actual extent of removal will be based on visual observations as the excavation proceeds, with the concurrence of the NYSDEC on-site representative. However, excavation shoring along the 1224 Brunswick Avenue and Long Island Railroad properties (discussed below) may limit the ability to chase source material

3.3 Shoring Design

Based on the proximity of the excavation to the building located at 1224 Brunswick Avenue and to the Long Island Railroad, temporary excavation shoring will be required to allow excavation to the full

depth required, with a maximum depth of 15 feet below ground surface. The temporary shoring will be installed along the perimeter of the excavation adjacent to the LIRR ROW and the building at 1224 Brunswick Ave. as shown on Figure 3-1. The shoring may consist of steel sheet pile or other earth support systems that will be developed during the design. Prior to shoring placement, the alignment will be pre-excavated to remove any subsurface obstructions in the shallow soils that would prevent the shoring from being installed to depth. The shoring will be designed to protect adjacent structures from damage caused by settlement, lateral movement, undermining, washout or other hazards created by excavation operations.

3.3.1 Pre-condition survey

Prior to commencement of work, a structural pre-condition survey will be conducted of the adjacent structures to document any impacts due to construction. The pre-condition survey will consist of an exterior inspection and video and photographic survey of all buildings, utilities, and other site features in and adjacent to the work area before work begins.

3.3.2 Settlement, Vibration, and Noise Monitoring

During design a Settlement and Vibration Monitoring Plan (SVMP) will be developed. The SVMP will identify the relevant damage criteria, the proposed monitoring locations, and the mitigation procedures for responding to observed exceedances of the vibration and settlement thresholds. The SVMP will include requirements for the following items:

- Vibration monitoring
- Crack monitoring
- Settlement monitoring at adjacent building foundations
- Settlement and horizontal movement monitoring along the shoring
- Settlement and horizontal movement monitoring along the LIRR rail line
- Monitoring obstruction removal along the shoring alignment

Vibration monitoring will be conducted using tri-axle geophones (seismographs) which will be placed adjacent to designated receptors. The seismographs will have alarms and an auto-dialer to alert the Construction Manager if threshold criteria are exceeded. A pre-construction vibration survey will be undertaken for two or more days prior to the initiation of the pile driving activity to determine background levels of vibration for the site.

Settlement monitoring shall consist of settlement points (survey pins, nails, or marks) located on the sheet piles, the ground surface adjacent to building, and the rail ties. The horizontal and vertical location of each point will be surveyed at least daily with an accuracy of 0.01 feet. Any cracks in the building foundations or facades identified during the pre-condition survey will be equipped with crack monitors which will be surveyed during construction.

A Noise Mitigation Plan will be included in provided by the contractor prior to the start of work. Noise monitoring will be conducted at the site perimeter to ensure that the construction activities conform to the noise mitigation plan and New York City noise codes.

3.4 Water Management

Construction water will be generated during the dewatering activities conducted to support excavation and water containing MGP constituents will be generated during decontamination of debris and equipment. Storm water run-off from impacted areas will also be collected. The water will be sent through a temporary water treatment plant prior to discharge to the storm sewer in Brunswick Ave. During the design phase, a Stated Pollutant Discharge Elimination System (SPDES) equivalency permit will be requested from NYSDEC for discharge.

3.5 Site Restoration

Following excavation activities, demarcation fabric will be placed at the bottom of the excavation and the excavation will be backfilled with certified clean fill 12-inch lifts and properly compacted to restore the Site to within six inches of the original grade. Specifications for clean fill will be presented in the 90% design submittal and approved by NYSDEC. The existing asphalt will be removed across the entire site, and a six inch asphalt cover will be placed over the entire site as site cover in accordance with the ROD. The loading dock and other disturbed site features will be restored based on consultation with the property owners. In areas outside the limits of excavation a demarcation layer will be placed prior to placement of the asphalt. All remnants of the remediation activities will be removed from the Site after completion of remediation activities. The fence surrounding the Site and within the excavation area will be restored to its original location.

3.6 Community Air Monitoring Plan

Site perimeter and work zone air monitoring will be performed per NYSDOH and Occupational Safety and Health Administration (OSHA) requirements, and according to the site-specific Health and Safety Plan and Community Air Monitoring Plan (to be provided as an addendum following completion of the 60% design). The contaminants of concern are VOCs and particulates.

Monitoring will be continuous during the excavation and handling of impacted soils. Monitoring will be periodic during non-intrusive activities such as mobilization and equipment decontamination. Summaries of all air monitoring data will be provided to the appropriate parties' regulatory agencies on a weekly basis to facilitate the transfer of information related to potential health risks.

3.7 Community and Environmental Response Plan

Due to the proximity of residential abutters, a Community and Environmental Response Plan (CERP) will be developed during the design phase (to be provided as an addendum following completion of the 90% design). The CERP will summarize the controls, monitoring, and work practices that will be used during the construction activities and how they will protect the community. The CERP will include the plans listed in Section 1.2.

4.0 Permits and Authorizations

In addition to performance requirements established to ensure that the design of the remedial action meets the remedial action objectives set in the ROD (NYSDEC, 2012), the design will also be prepared to meet permitting and other regulatory requirements of local, state, and federal laws and regulations. As specified in Appendix 1C of the DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2012), NYSDEC may grant exemption from most state permits required for completion of this remedial action, provided the substantive requirements of the permit programs are followed. For federal and local permits that will be required, a plan will be developed to identify the application requirements, a summary of information required, and application forms. Government contacts will be identified for each permit and a potential schedule for meetings with regulators and application submittals will be developed.

4.1 New York City Permits

The contractor will generally be required to obtain the necessary permits to perform the work. A general building permit will be required prior to starting work. A sidewalk and street encumbrance permit may also be required. National Grid will obtain the site dewatering permit from the New York City Department of Environmental Protection (NYCDEP)

4.2 Railroad

Regulations concerning work near an active commuter rail system (LIRR) will be identified and addressed during design. National Grid will submit the design for review by LIRR to ensure adequate work procedures and shoring systems are utilized.

4.3 Discharge of Waters

To discharge the treated water from the on-site water treatment plant a Stated Pollutant Discharge Elimination System (SPDES) equivalency will be obtained from the NYSDEC. The design will specify the minimum requirements for the water treatment system to meet the discharge limits required by NYSDEC.

National Grid will also obtain a dewatering from the NYCDEP connect to the City stormwater system. After the SPDES equivalency has been granted by NYSDEC, the Engineer will obtain a letter of approval to obtain the dewatering permit. The remedial contractor will submit and obtain the final application to the applicable NYC Water and Sewer Record office prior to connecting the water treatment system to the storm sewer.

4.4 Property Access Agreements

National Grid will negotiate access the 1224 and 1250 Brunswick properties to compete the remediation work. National Grid will also negotiate access with other adjacent off-site property owners to gain access for equipment lay down and storage.

5.0 Schedule

The schedule key activities and submissions include the following:

- The 60% Remedy Design is anticipated to be submitted December 3, 2012.
- The 90% Remedy Design is anticipated to be submitted January 7, 2012.

Remedial activities are currently on going. Contractor mobilization is anticipated to take place in April 2013 pending weather conditions and execution of private property access agreements. A proposed detailed design schedule has been included as Fig 5-1.

6.0 Post Construction Plans

After the completion of the construction phase, a Site Management Plan (SMP) will be developed and implemented. The SMP will identify the institutional controls and engineering controls (IC/ECs) required for the remedy and detail their implementation. The SMP for this remedy will include:

1. An IC/EC control plan to establish the controls and procedures necessary to; (i) manage remaining contaminated soils that may be excavated from the Site during future activities, including procedures for soil characterization, handling, health and safety of workers and the community as well as, disposal/reuse in accordance with applicable NYSDEC regulations and procedures; (ii) evaluate the potential for vapor intrusion for any buildings developed on the Site, including mitigation of any impacts identified; (iii) maintain use restrictions regarding site development or groundwater use identified in the environmental easement; and (iv) require the property owner to provide an IC/EC certification on a periodic basis; and
2. A monitoring plan to monitor groundwater concentrations of COCs for Enhanced Monitored Natural Attenuation (EMNA). If the groundwater monitoring program determines that natural degradation is not occurring at a significant rate, attenuation of impacts will be enhanced through oxygen injections. A separate RDWP would be developed for the oxygen injection system.

Institutional control in the form of an environmental easement will be required for the remedy. The environmental easement will:

1. Restrict the use of the Site to “commercial use”;
2. Restrict the use of groundwater at the Site;
3. Require the management of the Site in accordance with the provisions of the site management plan, to be approved by the Department; and
4. Require a periodic certification to be completed and submit to the NYSDEC.

A written agreement from the property owner committing to the necessary environmental easements will be obtained prior to design completion.

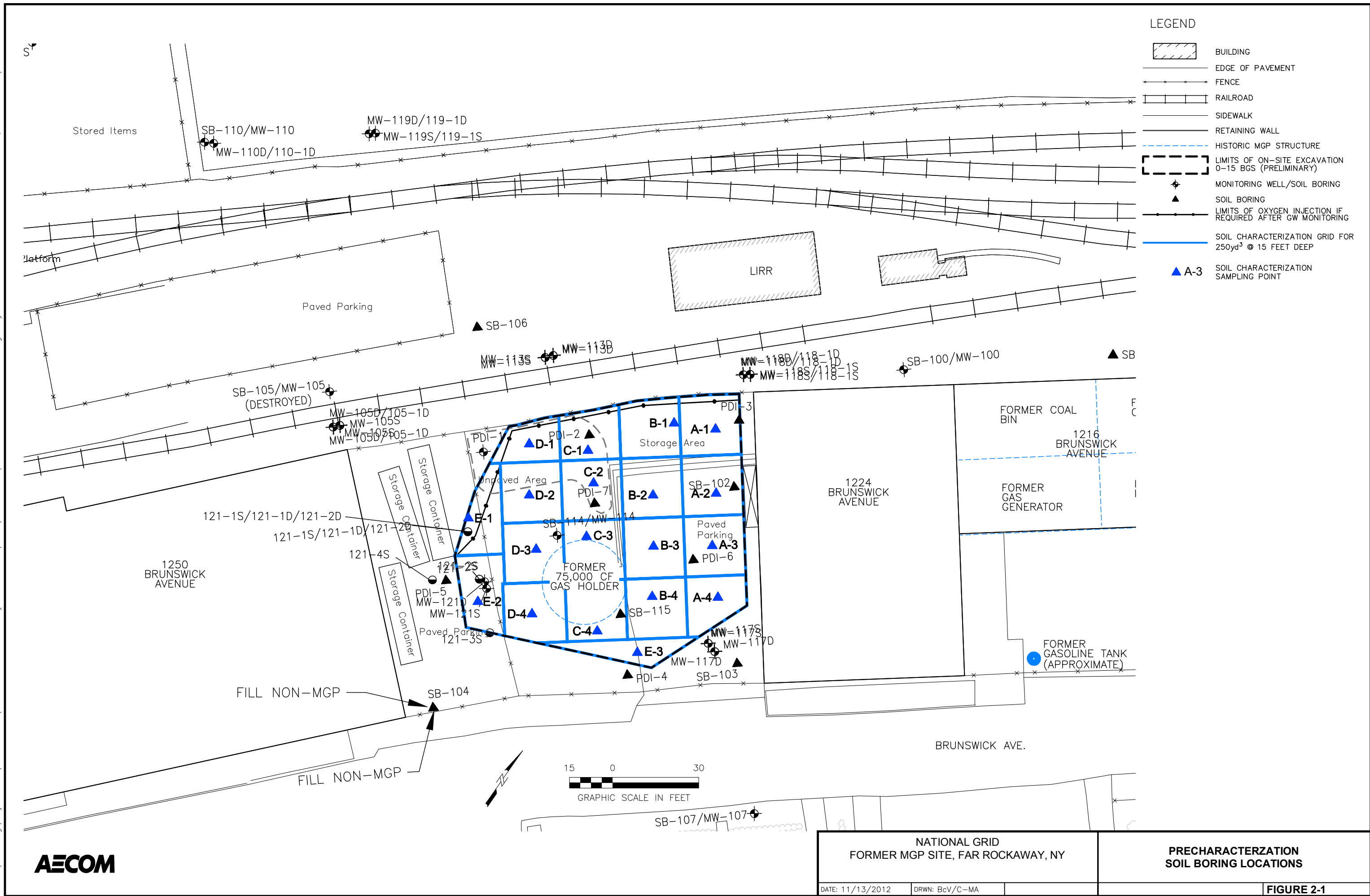
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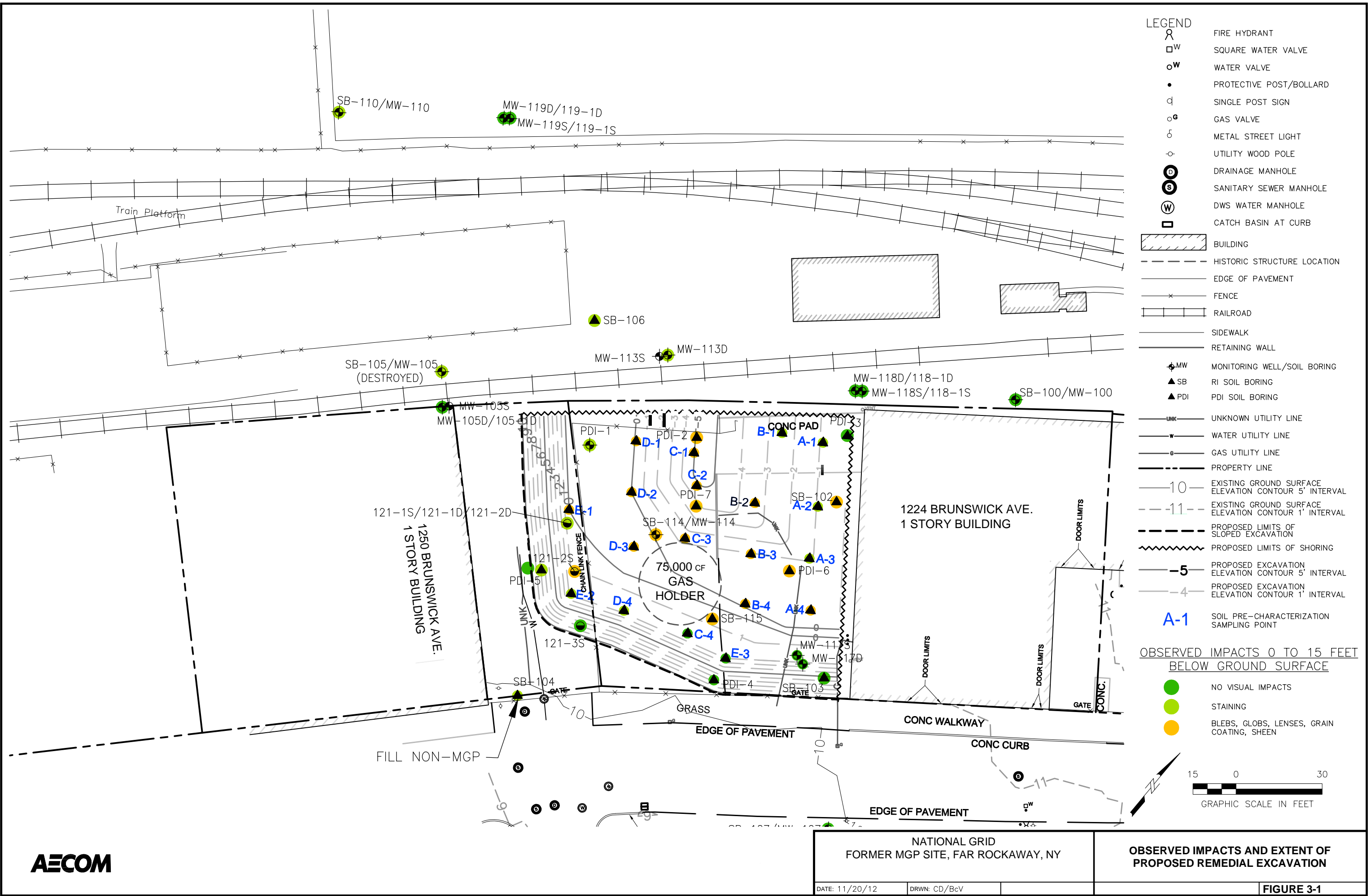
Table 2-1
Summary of Precharacterization Soil Samples and Laboratory Analysis
Former MGP Site, Far Rockaway, NY

Cubic Yard	Samples	Source Grid	DRO 8015M	GRO to C44 8015M	TOX 9020B (9023)	Total VOCs 8260B	Total SVOCs 8270C	Total PCBs 8082	Priority Pollutant Metals + As, Be, Cd, Cr, Ni, Pb 3050/6010B	Murcury 7471	Total RCRA 8 Metals + Cu, Ni, Zn, Va, Cn 6020A	Inggnitability 1010 (7.1.2)	Corrosivity 9040/9045	Reactivity Cyanides Sulfides 7.3.3.2 7.3.4.1	Sulfur ASTM D3176/ 4239D	TCLP RCRA 8 Metals + Cu, Ni, Zn	TCLP Murcury 1311/7471	TCLP VOCs 1311/8260	TCLP SVOCs 1311/8270														
																<i>Select Samples</i>																	
																1311/6010B																	
60	WCE1-100112-60yds	E1	X	X	X																												
60	WCE2-100112-60yds	E2	X	X	X																												
250	WCA1-100812-250cy	A1	X	X	X																												
250	WCA2-100812-250cy	A2	X	X	X																												
250	WCA3-100812-250cy	A3	X	X	X																												
250	WCA4-100812-250cy	A4	X	X	X																												
250	WCB1-100812-250cy	B1	X	X	X																												
250	WCB2-100812-250cy	B2	X	X	X																												
250	WCB3-100812-250cy	B3	X	X	X																												
250	WCB4-100812-250cy	B4	X	X	X																												
250	WCC1-100512-250cy	C1	X	X	X																												
250	WCC2-100512-250cy	C2	X	X	X																												
250	WCC3-100812-250cy	C3	X	X	X																												
250	WCC4-100812-250cy	C4	X	X	X																												
250	WCD1-100512-250cy	D1	X	X	X																												
250	WCD2-100512-250cy	D2	X	X	X																												
250	WCD3-100512-250cy	D3	X	X	X																												
250	WCD4-100512-250cy	D4	X	X	X																												
250	WCE1-100512-250cy	E1	X	X	X																												
250	WCE2-100512-250cy	E2	X	X	X																												
250	WCE3-100812-250cy	E3	X	X	X																												
500	WCA1A2-100812-500cy	A1, A2																		X	X	X	X	X									
500	WCA3A4-100812-500cy	A3, A4																		X	X	X	X	X									
500	WCB1B2-100812-500cy	B1, B2																		X	X	X	X	X									
500	WCB3B4-100812-500cy	B3, B4				X	X	X	X	X																							
500	WCC3C4-100812-500cy	C3, C4				X	X	X	X	X																							
500	WCD1C1-100512-500cy	D1, C1				X	X	X	X	X																							
500	WCD2C2-100512-500cy	D2, C2				X	X	X	X	X																							
500	WCD3D4-100512-500cy	D3, D4				X	X	X	X	X																							
500	WCE1E2-100512-500cy	E1, E2				X	X	X	X	X																							
500	WCE3-100812-500cy	E3				X	X	X	X	X																							
1000	WCA1A2A3A4-100812-1000cy	A1, A2, A3, A4												X	X	X	X	X	X	X	X	X											
1000	WCB1B2B3B4-100812-1000cy	B1, B2, B3, B4												X	X	X	X	X															
1000	WCC3C4E3-100812-1000cy	C3, C4, E3	X	X	X									X	X																		
1000	WCD1C1D2C2-100512-1000cy	D1, C1, D2, C2	X	X	X									X	X																		
1000	WCE1E2D3D4-100512-1000cy	E1, E2, D3, D4	X	X	X									X	X																		

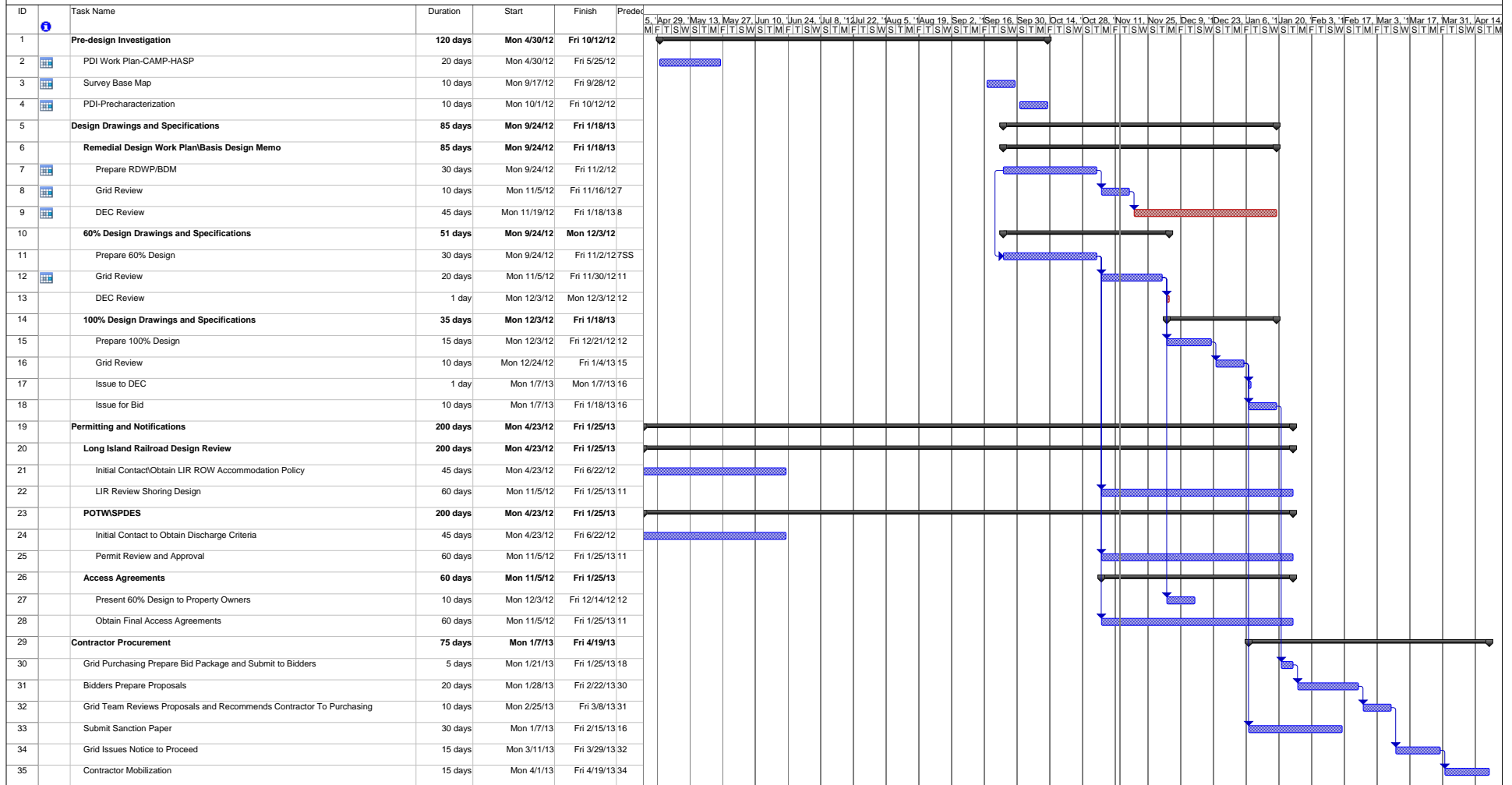
Figures

FIGURE 1-1





**Figure 5-1
INTERNAL DRAFT REMEDY SELECTION AND PROCUREMENT SCHEDULE
FORMER MANUFACTURED GAS PLANT SITE
FAR ROCKAWAY, NEW YORK**

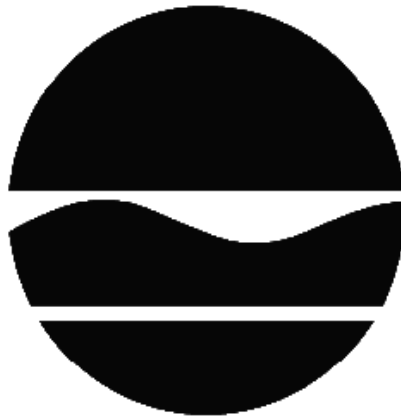


Appendix A

Record of Decision

RECORD OF DECISION

K - Far Rockaway MGP
Far Rockaway, Queens County
Site No. 241032
March 2012



Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

**K - Far Rockaway MGP
Far Rockaway, Queens County
Site No. 241032
March 2012**

Statement of Purpose and Basis

This document presents the remedy for the K - Far Rockaway MGP site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the K - Far Rockaway MGP site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

- 1) A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:
 - a) Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
 - b) Reducing direct and indirect greenhouse gas and other emissions;
 - c) Increasing energy efficiency and minimizing use of non-renewable energy;
 - d) Conserving and efficiently managing resources and materials;
 - e) Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
 - f) Maximizing habitat value and creating habitat when possible;
 - g) Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
 - h) Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.
- 2) Excavation of source materials, including the MGP related structures and foundations, to

a maximum depth of 15 feet below the ground surface (bgs) to meet soil cleanup objectives (SCOs) to allow for the commercial use of the site. Approximately 4,500 cubic yards of soil will be excavated and sent off-site for disposal/treatment at a thermal desorption facility. Dewatering of the excavation may be necessary to accomplish the excavation. Any water generated will be pre-treated prior to discharge to a permitted facility such as a publicly owned treatment works (POTW).

3) Installation of excavation shoring to protect the integrity of the railroad and adjacent buildings during excavation.

4) Backfilling of the excavation areas with clean fill from a certified off-site location to replace the excavated soil. The backfill material will meet the requirements of 6 NYCRR Part 375-6.7(d).

5) A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas of excavation. The soil cover or fill material will be placed over a demarcation layer. Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

6) Following the excavation, the remaining impacted groundwater will be treated, if determined necessary, using in-situ treatment such as oxygen injection system to enhance natural attenuation.

7) Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- prohibits agriculture or vegetable gardens on the controlled property; and
- requires compliance with the Department approved Site Management Plan.

8) A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

Engineering Controls: Groundwater treatment system and soil cover. This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in

areas of remaining contamination;

- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy; and

- a schedule of monitoring and frequency of submittals to the Department;

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan if needed includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 27, 2012

Date



Robert W. Schick, P.E., Acting Director
Division of Environmental Remediation

RECORD OF DECISION

K - Far Rockaway MGP
Far Rockaway, Queens County
Site No. 241032
March 2012

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at <http://www.dec.ny.gov/chemical/61092.html>

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Far Rockaway Former MGP Site is located in a mixed commercial and residential area of the Borough of Queens, NY. The site is located on the north side of Brunswick Avenue between Beach 12th Street and Milton Avenue. The site is also known as 1200 - 1224 Brunswick Avenue.

Site Features: The one-acre site is flat, and has three two-story buildings, paved parking lots and landscaped areas. Immediately to the north of the site are several tracks of the Long Island Railroad. Beyond the railroad tracks are commercial buildings. To the east and south are residential properties.

Current Zoning/Use: Currently the site is used for warehousing, shipping and distribution operations and is zoned commercial.

Historic Uses: The site was operated as a gas manufacturing plant between the mid 1890's and 1909. Certain activities at the former manufactured gas plant (MGP) resulted in the release of contaminants to the environment. Following the operation of the MGP, the site was utilized as office space. After 1981, no MGP-related features were present at the site with the exception of one brick building that is currently present at 1216 Brunswick Avenue which housed former MGP operations equipment and currently houses offices and warehouse space.

Site Geology and Hydrogeology: Fill, consisting of sand with coal, steel and wood fragments, brick fragments, glass, cinder and ash, was found throughout the site from the surface to a depth of about 5 to 7 feet. Sand underlies the fill to a depth of about 37 feet. A silty clay layer was found beneath the sand. The water table ranges from 3 to 7 feet below ground surface.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows

for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

No PRPs have been documented to date.

The Department and Keyspan Energy Delivery, New York and Keyspan Energy Delivery, Long Island entered into a Consent Order on February 22, 2007. The Order obligates the responsible parties to implement a full remedial program for this and 13 other former MGP sites.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

COAL TAR	ACENAPHTHENE
BENZENE	Chrysene
XYLENE (MIXED)	FLUORANTHENE
TOLUENE	FLUORENE
ETHYLBENZENE	BENZ(A)ANTHRACENE
NAPHTHALENE	BENZO(GHI)PERYLENE

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination:

Soil: Coal tar impacted soil with certain polycyclic aromatic hydrocarbons (PAHs) and BTEX exceeding the Part 375 soil cleanup objectives for commercial use was observed at depths of 5 to 15 feet below ground surface (bgs). The area of impact is approximately one half acres, largely in proximity to the former gas holder. Evidence of site related contaminants were detected to depths of up to 30 feet bgs.

Groundwater: BTEX compounds (benzene, toluene, ethylbenzene, xylene) and naphthalene exceeded groundwater standards in the shallow aquifer over an approximate 1.5 acre area, including a limited area of off-site impact beneath the adjacent commercial use areas.

The Fish and Wildlife Resources Impact Analysis concluded that no special resources are threatened in this fully developed area.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Contact with site-related contaminants in soil is unlikely because they are beneath buildings and pavement. The area is served by public water, therefore, exposure to site-related contaminants in drinking water is not expected.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the Excavation remedy.

The estimated present worth cost to implement the remedy is \$6,018,000. The cost to construct the remedy is estimated to be \$4,173,000 and the estimated average annual cost is \$120,000.

The elements of the selected remedy are as follows:

1) A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- a) Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
 - b) Reducing direct and indirect greenhouse gas and other emissions;
 - c) Increasing energy efficiency and minimizing use of non-renewable energy;
 - d) Conserving and efficiently managing resources and materials;
 - e) Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
 - f) Maximizing habitat value and creating habitat when possible;
 - g) Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
 - h) Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.
- 2) Excavation of source materials, including the MGP related structures and foundations, to a maximum depth of 15 feet below the ground surface (bgs) to meet soil cleanup objectives (SCOs) to allow for the commercial use of the site. Approximately 4,500 cubic yards of soil will be excavated and sent off-site for disposal/treatment at a thermal desorption facility. Dewatering of the excavation may be necessary to accomplish the excavation. Any water generated will be pre-treated prior to discharge to a permitted facility such as a publicly owned treatment works (POTW).
- 3) Installation of excavation shoring to protect the integrity of the railroad and adjacent buildings during excavation.
- 4) Backfilling of the excavation areas with clean fill from a certified off-site location to replace the excavated soil. The backfill material will meet the requirements of 6 NYCRR Part 375-6.7(d).
- 5) A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas of excavation. The soil cover or fill material will be placed over a demarcation layer. Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).
- 6) Following the excavation, the remaining impacted groundwater will be treated, if determined necessary, using in-situ treatment such as oxygen injection system to enhance natural attenuation.
- 7) Imposition of an institutional control in the form of an environmental easement for the controlled property that:
- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- prohibits agriculture or vegetable gardens on the controlled property; and
- requires compliance with the Department approved Site Management Plan.

8) A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

Engineering Controls: Groundwater treatment system and soil cover. This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy; and

- a schedule of monitoring and frequency of submittals to the Department;

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan if needed includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into three categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and inorganics (metals). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater and soil.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and Source areas were identified at the site.

Manufactured gas was cooled and purified prior to distribution. Two principal waste materials were produced in this process: coal tar and purifier waste. Coal tar is a reddish brown to black oily liquid by-product which formed as a condensate as the gas cooled. Purifier waste is a mixture of iron filings and wood chips which was used to filter and remove cyanide and sulfur gases from the mix prior to distribution.

Coal tar does not readily dissolve in water. Materials such as this are commonly referred to as non-aqueous phase liquid, or NAPL. The term NAPL and coal tar are used interchangeably in this document. Although most coal tars are slightly denser than water, the difference in density is slight. Consequently, they can either float or sink when in contact with water.

Specific volatile organic compounds (VOCs) of concern are benzene, toluene, ethylbenzene and xylenes. These are referred to collectively as BTEX in this document. Specific semivolatile organic compounds of concern are the polycyclic aromatic hydrocarbons (PAHs):

acenaphthene	pyrene	acenaphthylene
<i>chrysene</i>	anthracene	fluoranthene
<i>benzo(a)anthracene</i>	<i>benzo(a)pyrene</i>	fluorene
<i>indeno(1,2,3-cd)pyrene</i>	<i>benzo(b)fluoranthene</i>	2-methylnaphthalene
benzo(g,h,i)perylene	<i>benzo(k)fluoranthene</i>	naphthalene
phenanthrene	dibenzo(a,h)anthracene	

Total PAH concentrations as referred to in this plan are the sum of the individual PAHs listed above. The italicized PAHs are probable human carcinogens.

Source areas were identified at the site as noted on Figure 3. Coal tar or source material was found at depths ranging from 5 feet to 15 feet below the ground surface (bgs).

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from monitoring wells and analyzed for volatile, semivolatile, and metals compounds to assess the nature and extent of groundwater impacts from the operation of the former MGP. The primary contaminants of concern are benzene, ethylbenzene, toluene and xylene (collectively refer to as BTEX) and PAH compounds.

Sampling results indicate that BTEX and naphthalene compounds were the prevalent contaminants detected in both the shallow and deep wells. The contamination was observed in the immediate vicinity of the former gas holder on the southwest side of site. While iron was detected in the deeper wells above the groundwater guidance values, it does not appear to be related to the operation of the former MGP. Groundwater is not used as a potable water supply locally as the surrounding area is served by public water.

Table # 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	0.71-400	1	11 of 49
Ethylbenzene	0.52-7300	5	13 of 49
Styrene	0.58-13000	5	9 of 49
Toluene	0.56-15000	5	11 of 49
Xylenes (total)	ND-19100	NA	NA
Total BTEX	0.95-34333	NA	NA
SVOCs			
Naphthalene	1.5-4100	10	12 of 36
Total PAHs	1.2-4318.8	NA	NA
Inorganics			
Iron	64-26500	300	22 of 26
Mercury	ND-0.85	0.7	1 of 26

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

ND – Not Detected

NA – Not Applicable

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will

drive the remediation of groundwater to be addressed by the remedy selection process are BTEX and naphthalene compounds.

Soil

Surface and subsurface soil samples were collected and analyzed for volatile, semi-volatile, and metals compounds during the RI to determine the nature and extent of impacts to soil as a result of the operation of the former MGP. Sample results show non-detect or low level detection of most compounds, with the exception of a few samples where individual PAH compound (e.g., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(a,h)anthracene) concentrations exceed commercial SCOs for soil. Visible contamination was detected in subsurface soil at locations near the former gas holder on the southwest side of the site at depths of 5 feet to 15 feet bgs. A thin layer (approximately 0.1 feet thick) tar saturated band of soil was detected at a depth of approximately 30 feet bgs at several sampling locations.

Table #2 - Surface Soil

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Commercial Use SCG ^c (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Total BTEX	ND-0.027	NA	NA	NA	NA
SVOCs					
Benzo(a)anthracene	0.12-6.9	1	3 of 5	5.6	1 of 5
Benzo(a)pyrene	0.13-9	1	4 of 5	1	4 of 5
Benzo(b)fluoranthene	0.32-14	1	4 of 5	5.6	1 of 5
Benzo(k)fluoranthene	0.11-5.7	0.8	3 of 5	56	0 of 5
Chrysene	0.18-8.6	1	4 of 5	56	0 of 5
Dibenzo(a,h)anthracene	0.051-1.8	0.33	2 of 5	0.56	1 of 5
Indeno(1,2,3-cd)pyrene	0.14-4.5	0.5	3 of 5	5.6	0 of 5
Total PAHs	2.538-70.82	500	0 of 5	500	0 of 5
Inorganics					
Copper	26.1-195	50	3 of 5	270	0 of 5
Lead	78.2-289	63	5 of 5	1000	0 of 5
Mercury	0.145-0.44	0.18	4 of 5	2.8	0 of 5
Zinc	123-363	109	5 of 5	10000	0 of 5

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

ND – Not Detected

NA – Not Applicable

Table #3 - Subsurface Soil

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Commercial Use SCG ^c (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Total BTEX	0.137-3.147	NA	NA	NA	NA
Xylenes (Total)	0.061-2.2	0.26	2 of 34	500	0 of 34
SVOCs					
Benzo(a)anthracene	0.072-8.4	1	1 of 34	5.6	1 of 34
Benzo(a)pyrene	0.08-7.9	1	1 of 34	1	1 of 34
Benzo(b)fluoranthene	0.045-7.2	1	1 of 34	5.6	1 of 34
Benzo(k)fluoranthene	0.28-1.8	0.8	1 of 34	56	0 of 34
Chrysene	0.041-8.7	1	1 of 34	56	0 of 34
Indeno(1,2,3-cd)pyrene	0.095-4.2	0.5	1 of 34	5.6	0 of 34
Naphthalene	0.07-140	12	1 of 34	500	0 of 34
Total PAHs	0.11-543.87	500	1 of 34	500	1 of 34
Inorganics					
Arsenic	0.283-15.1	13	1 of 34	16	0 of 34
Lead	0.188-246	63	2 of 34	1000	0 of 34
Mercury	0.004-11.6	0.18	1 of 34	2.8	1 of 34
Zinc	1.83-122	109	1 of 34	10000	0 of 34

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives value for the Protection of Public Health for Commercial Use, unless otherwise noted.

ND – Not Detected

NA – Not Applicable

Based on the findings of the Remedial Investigation, the presence of MGP related contaminants, have resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, polycyclic aromatic hydrocarbons (PAHs), and benzene, toluene, ethylbenzene and xylene (BTEX) compounds associated with residues from the operation of the former MGP.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of sub-slab soil vapor under structures, and indoor air inside structures. At this site due to the presence of buildings in the impacted area a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

Based on the concentration detected, and in comparison with the NYSDOH Soil Vapor Intrusion Guidance, no site-related soil vapor contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for soil vapor

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment. The No Action alternative does not include long-term monitoring and therefore has no associated cost.

Alternative 2: Restore Site to Pre-Release Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative will include:

- Excavation of all MGP source material and stained soil on the 1224 and 1250 Brunswick Avenue properties to depths up to 30 feet bgs;
- Disposal of the excavated material in a permitted off-site landfill or treatment at an off-site thermal desorption facility;
- The use of odor control mechanisms such as form to control fugitive emissions;
- Installation of excavation shoring system to protect the rail road and adjacent structures during excavation;
- Dewatering of excavation areas to allow for effective excavation activities;
- Backfilling the excavated areas with certified clean soil from an off-site location. The site will be restored to a pre-disturbance grade including the use of asphalt at some locations;
- Installation of injection wells for the injection of in-situ chemical oxidation compounds to treat off-site dissolved phase impacts; and
- Monitoring of groundwater to determine the effectiveness of the remedy.

The cost to implement Alternative 2 has been estimated as follows:

Present Worth:	\$10,491,000
Capital Cost:.....	\$10,491,000
Annual Cost:	\$0

Alternative 3: Excavate Source Material with Enhanced Natural Attenuation

This alternative will include the following components:

- Excavation of MGP source material, including the MGP related structures and foundations, to a maximum depth of 15 feet bgs;
- Disposal of the excavated material in a permitted off-site landfill or treatment at an off-site thermal desorption facility;

- Installation of excavation shoring system to protect the rail road and adjacent structures during excavation;
- Dewatering of excavation areas to allow for effective excavation activities;
- Backfilling the excavated areas with certified clean soil from an off-site location. Fill material will be placed over a demarcation layer. The site will be restored to a pre-disturbance grade including the use of asphalt at some locations;
- Monitoring of the groundwater plume following excavation to establish the extent of dissolved phase impacts after source area remediation;
- Injection of oxygen in the subsurface through a series of injection wells to treat impacted groundwater if determined necessary; and
- Development of a site management plan to include institutional controls to address soil and groundwater impacts including soil impacts beyond the excavation limits.

The cost to implement Alternative 3 has been estimated as follows:

Present Worth: \$6,018,000
Capital Cost: \$4,173,000
Annual Costs: \$120,000

Alternative 4: In-situ Soil Solidification (ISS) with Enhanced Natural Attenuation

Alternative 4 will include the following components:

- Perform soil solidification in the source areas to a maximum depth of 15 bgs. Prior to ISS, the materials located at the top five to six feet in the ISS area will be excavated to remove below grade obstructions. Impacted soil will be mixed with cement bentonite mixture using augers or excavator bucket;
- Excavate soil solidification spoils and dispose of at an off-site permitted facility;
- Cover the ISS areas with clean material and restore a portion of the site with asphalt;
- Injection of oxygen in the subsurface through a series of injection wells to treat impacted groundwater if determined necessary; and
- Development of a site management plan to include institutional controls to address soil and groundwater impacts including soil impacts beyond the ISS limits.

The cost to implement Alternative 4 has been estimated as follows:

Present Worth: \$6,436,000
Capital Cost: \$4,591,000
Annual Costs: \$120,000

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost (\$)	Annual Costs (\$)	Total Present Worth (\$)
No Action	\$0	\$0	\$0
Alternative 2 – Restore Site to Pre-release Conditions	\$10,491,000	\$0	\$10,491,000
Alternative 3 - Excavation with Enhanced Natural Attenuation	\$4,173,000	\$120,000	\$6,018,000
Alternative 4 - Solidification with Enhanced Natural Attenuation	4,591,000	\$120,000	\$6,436,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department has selected Alternative 3, Excavate Source Material with Enhanced Natural Attenuation as the remedy for this site. Alternative 3 will achieve the remediation goals for the site by reducing the volume, toxicity and mobility of contaminated soil due to removal and off-site disposal and/or treatment of contaminated source material. The selected remedy will greatly reduce the source of contamination to groundwater. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 4.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative 1 (No Action) does not include active remedial actions and thus will not provide any additional protection to human health and the environment over what currently exists. Additionally, this alternative will not comply with SCGs; since source material will remain in place and continue to pose a threat to both human health and the environment. Therefore, Alternative 1 is eliminated from further evaluation.

Alternatives 2, 3 and 4 will all provide comparable levels of protection to public health and the environment and were retained for further evaluation.

Alternative 2, which calls for total removal and off-site treatment/disposal of MGP impacted material will provide the greatest protection compared to the other alternatives. Alternative 3 will achieve protection and provide permanent reduction of volume of impacted materials due to source removal and off-site treatment and/or disposal. Under Alternative 3, source material will be removed to a depth up to 15 feet bgs. Alternative 4, which includes in-situ solidification of impacted material, will provide lesser amount of protection to public health and the environment. The solidified material under Alternative 4, while immobilized, will remain in place at the site.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 2 will comply with SCGs as the site will be restored to pre-release conditions. Alternative 3 will achieve SCGs and meet the RAOs by removing source material to a depth up to 15 feet bgs for off-site disposal and/or treatment, thereby limiting exposure and the likelihood of off-site migration of contaminants. Under this alternative, impacted groundwater will be actively treated using oxygen injection technology to enhance natural attenuation of groundwater contamination if necessary. Alternative 4 will also achieve SCGs by using a

combination of soil excavation and in-place treatment of source material using ISS. This alternative will provide soil cover and include institutional controls for the protection of public health.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is best achieved by Alternative 2, since all contaminated material will be removed from the site to achieve the unrestricted use SCOs, although this increase in effectiveness in comparison to Alternative 3 is slight. Alternative 3 will provide greater long-term effectiveness compared to Alternative 4 as the source material will be removed for off-site treatment/disposal. Alternative 4, while providing long-term effectiveness through ISS treatment (i.e., immobilization) of source material, will allow the treated material to remain in place.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternatives 2 and 3 will both provide a significant reduction in toxicity, mobility and volume as approximately 7,000 cubic yards (cy) and 4,500 cy of source material will be addressed, respectively. Residual material left in place under Alternative 3 will be addressed using in-situ oxygen injection, if required, based on monitoring results. Although Alternative 4 will reduce toxicity and mobility of on-site source material, it will not, reduce the volume of impacted material as the ISS material will be left in place at the site.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 2, 3 and 4 will all have short-term impacts to the community and workers due to construction activities. Alternative 2 with total removal of impacted materials to full depth of approximately 30 feet bgs will result in the greatest short-term impacts to the community. The extensive excavation to be performed under Alternative 2 will result in a large amount of excavated material in need of transport through the community for off-site treatment and/or disposal. In addition, excavation to a depth of 30 feet bgs will result in significant disruption to the community, nearby residences and commercial establishments as a result of the need for large scale dewatering, treatment and disposal of water as well as significantly more fill brought to the site. Alternative 3 with lesser removal (compared to Alternative 2) but equally effective will be sustainable as the alternative will result in significant lesser use of landfill space and reduction of carbon footprint due to lesser material handling and transportation. Alternative 4 will result in slightly higher short-term impacts compared to Alternatives 3. Alternative 4 which addresses the impacted material with application of ISS, will generate ISS spoils and possibly odors during the construction. Each of these alternatives can be accomplished in approximately 6 months. Additional time will be required for groundwater treatment if determined necessary.

6. Implementability. The technical and administrative feasibility of implementing each alternative are

evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternatives 2, 3 and 4 are all implementable but with varied degrees of difficulties. Excavation shoring required under Alternative 3 will require close coordination and approval by the Long Island Rail Road (LIRR) Authority. For alternative 2 with the significantly greater depth will be the most challenging to design. Alternative 4 will also have to address possible impacts in the subsurface due to the fluffing of the stabilized mass given the proximity to the LIRR. Potential implementation of the in-situ treatment at off-site locations under Alternatives 3 and 4 will require an access agreement with the property owner and/or LIRR for well installation, etc.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The costs to implement Alternative 2 (total removal) are predictably higher than those of Alternatives 3 and 4. Though Alternative 2 will result in significant reduction in the volume of contaminated materials, however it will only provide minimal additional protection of public health and the environment over the selected remedy. The incremental increase in cost of over 70 percent compared to cost to implement the selected alternative is not justified by the marginal increase in protection. Alternative 4, though comparable in cost to the selected Alternative 3, it is not as desirable due to its potential to result in more disruption to the community.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Alternative 2 will allow for any future use of the property. Alternatives 3 and 4 will allow the property to be used for commercial purposes. Since the present and anticipated future use of the site is commercial, Alternative 3 will be desirable as source material will be removed up to 15 feet bgs.

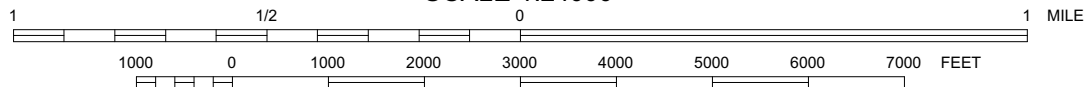
The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised.

Alternative 3 has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

**SOURCE: USGS QUADRANGLES:
LAWRENCE, 1979**

SCALE 1:24000

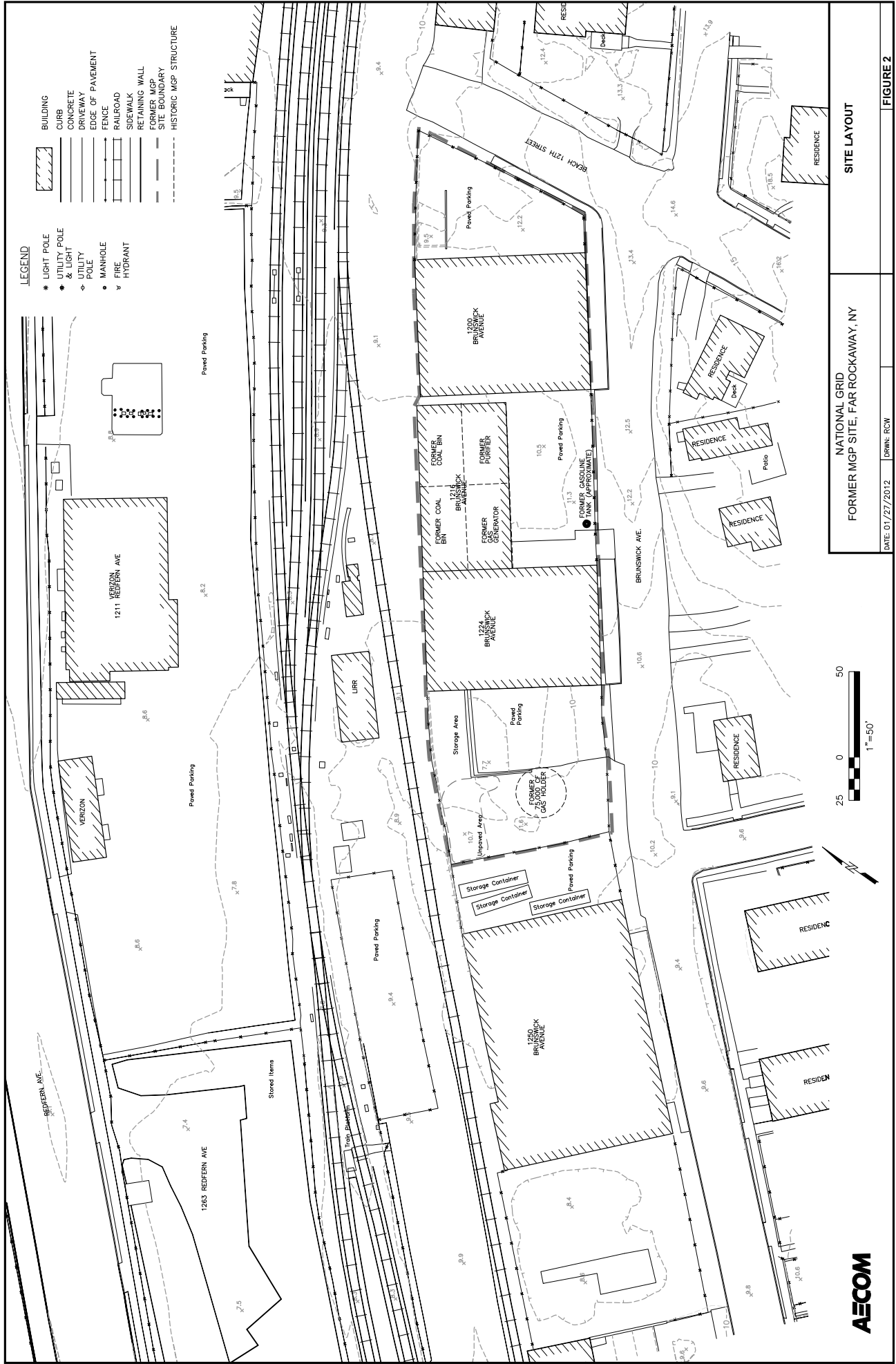


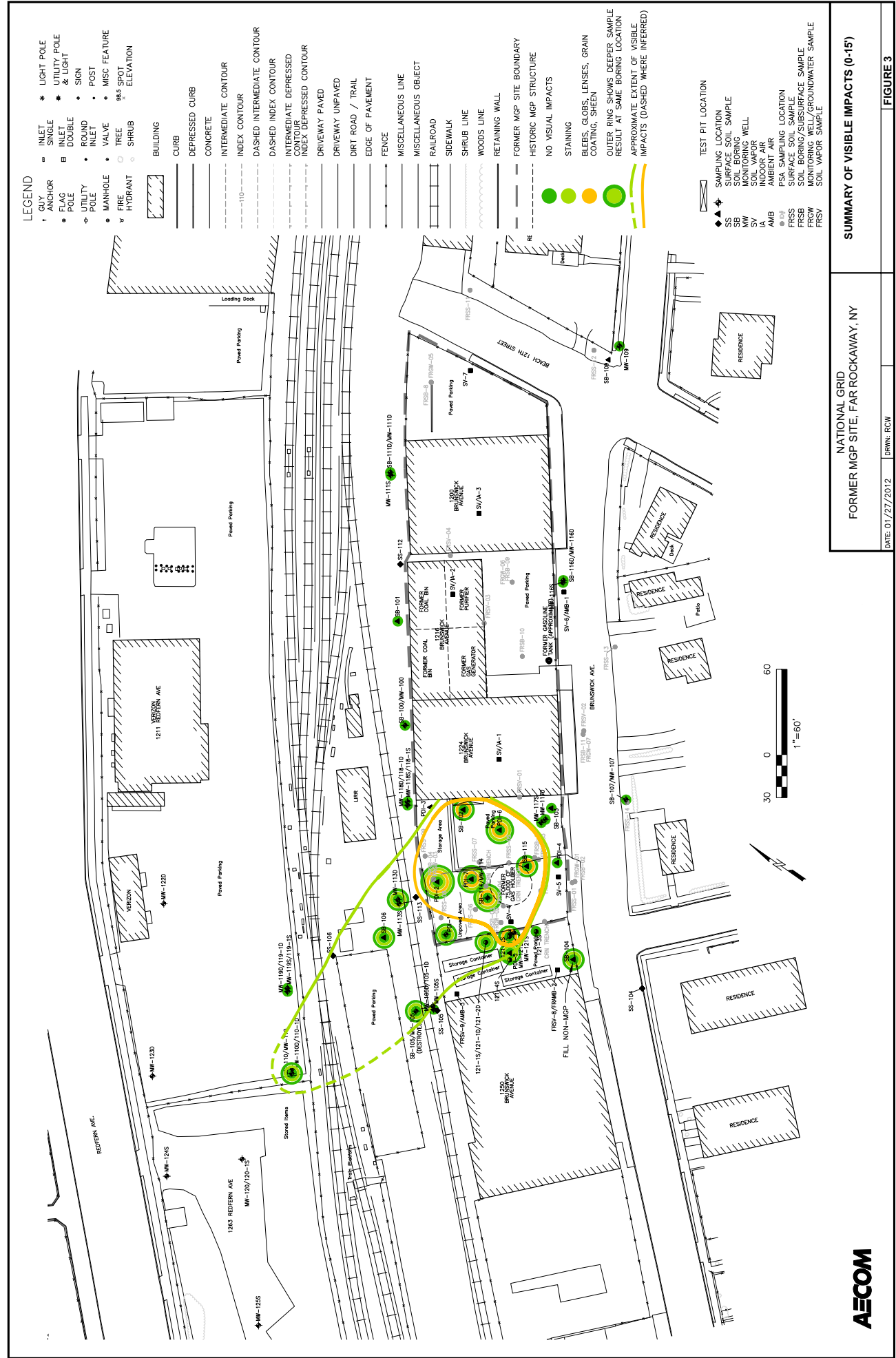
NATIONAL GRID
FORMER MGP, FAR ROCKAWAY, NY

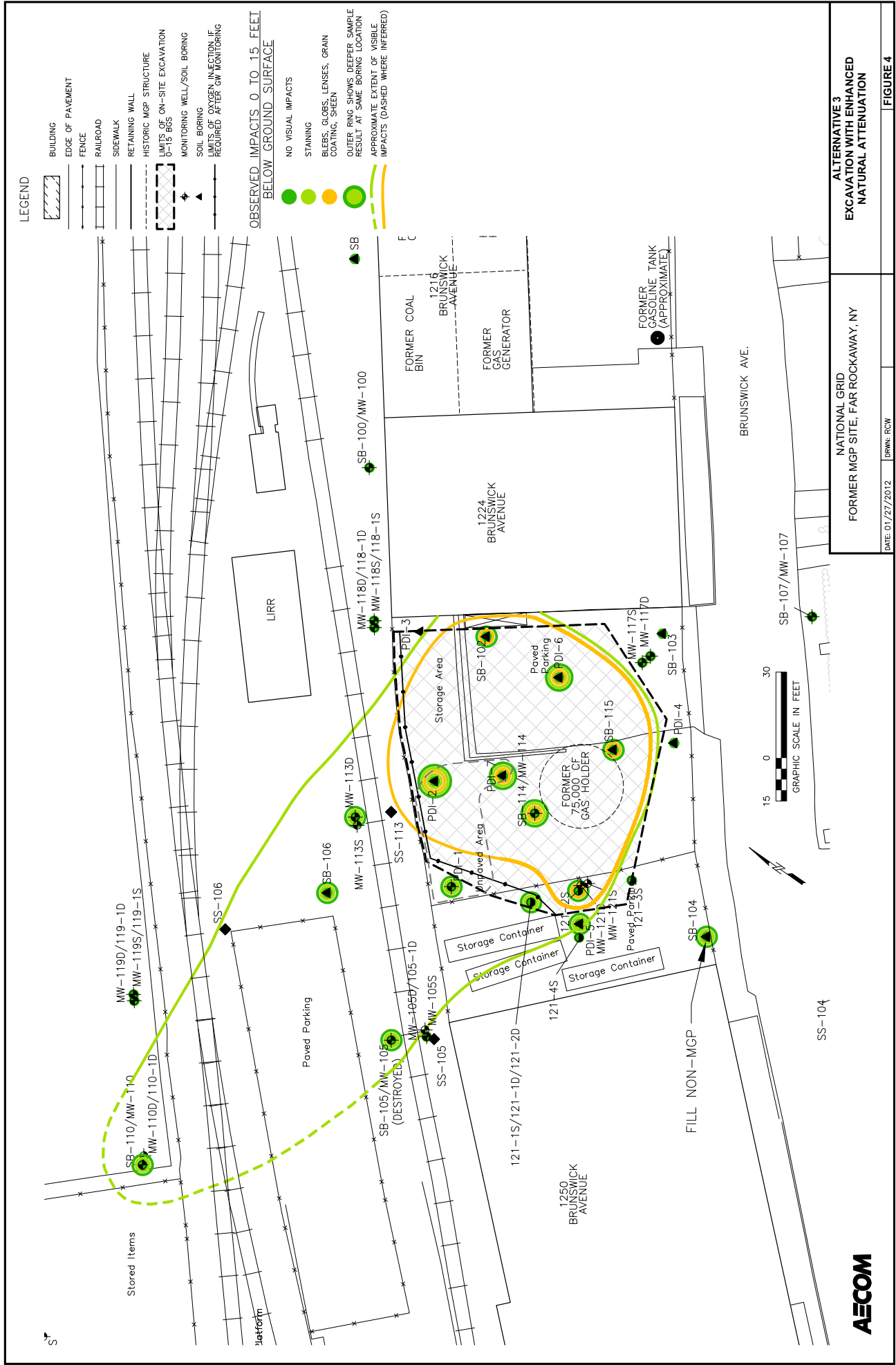
SITE LOCATION MAP

DATE: 01/27/12	DRWN: RCW
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FIGURE 1







RESPONSIVENESS SUMMARY

K – Far Rockaway MGP Queens County, New York Site No. 241032

The Proposed Remedial Action Plan (PRAP) for the Far Rockaway MGP Site, was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 18, 2012. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the Far Rockaway MGP Site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 6, 2012, which included a presentation of the remedial investigation and feasibility study (RI/FS) for the Far Rockaway MGP Site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 22, 2012.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: Are there any private water wells within the affected area?

RESPONSE 1: The groundwater plume extends only about 200 feet from the site boundary in a northwesterly direction, largely beneath the railroad tracks. The area is served by public water and there are no known private wells within the immediate area.

COMMENT 2: There is a car wash facility in the area that may be using groundwater for its operations.

RESPONSE 2: The Department is not aware of any car wash facility within the affected areas. Also, please see Response 1.

COMMENT 3: This looks like a very small site; will a tent be in use during excavation and will foam be used to suppress odor?

RESPONSE 3: Given the extent and nature of the contamination and the site configuration, we do not anticipate the use of a temporary structure or tent during excavation. Appropriate engineering controls will be in place to control vapors, odors, and dust. A community air monitoring plan (CAMP) will also be in place which will require continuous air monitoring for vapors, odors, and dust and set action levels to protect the health of the community. Work at the site will be suspended

if the established action levels are exceeded and will not resume until any additional controls are implemented, which would allow work to resume.

COMMENT 4: I have lived in this area for over 15 years, what kind of health related contamination have I been exposed to over the years?

RESPONSE 4: Exposure of the general community to site-related contaminants is unlikely because the area is serviced by a public water supply system that is not affected by this contamination and no one is known to be using the contaminated groundwater. In addition, surface soil is not impacted by the operation of the MGP at the site. Unless a person digs into the contaminated material present at depth starting approximately 5 feet below the groundwater surface, there will not be a complete exposure pathway.

COMMENT 5: You indicated in your presentation that there will be yearly costs of \$120,000. What will this money be used for?

RESPONSE 6: The proposed remedy includes a monitoring program to determine the effectiveness of the proposed remedy for a period of 30 years. The monitoring program will include groundwater plume monitoring, site inspection to ensure that cap remains in place and effective, and reporting of any mechanical or physical components of the remedy. The estimated \$120,000 yearly costs will be expended for this purpose, however, the monitoring needs will be assessed periodically and the potential exists that the annual cost will decrease with time (e.g., fewer monitoring points).

COMMENT 7: Is there any health related issues given frequent overflow of the storm drain in the area?

RESPONSE 7: No. There is no surface contamination associated with the operation of the former MGP; consequently surface runoff into the storm drain is not impacted by the site.

COMMENT 8: Will the remedy impact the railroad?

RESPONSE 9: No. The railroad will remain operational during the remedial activities at the site.

COMMENT 10: How will this impact the children in the neighborhood during remediation?

RESPONSE 10: As discussed in Response 3, engineering controls and a CAMP will be in place to monitor any emissions resulting from the site activities and insure appropriate controls are in place for the duration of the remedial action. These will allow the remedy to be implemented in a manner which avoids impacts to children and the general public.

The following comments were received from Michael Greene (nearby resident) in an email dated March 21, 2012:

COMMENT 11: How will the cleanup be paid for by National Grid?

RESPONSE 11: The project will be paid for by National Grid and will be included in their operating costs which are regulated by the Public Service Commission.

COMMENT 12: The project is unnecessary and the cost estimate to clean-up the contamination is very expensive.

RESPONSE 12: The remedial project is necessary because contamination from the former Manufactured Gas Plant waste was discovered to be disposed of or discharged at this site. The site soils and groundwater have been contaminated above 6 NYCRR 375 Soil Cleanup Objectives and 6NYCRR 703 Ambient Water Quality Standards. The cost estimate is typical for these types of sites that require excavation and disposal of contaminated material at a permitted off-site facility.

COMMENT 13: What is the work that will be performed for the estimated annual cost of \$120,000?

RESPONSE 13: See Response 6.

COMMENT 14: I recommend the first alternative, which is No Action, be selected.

RESPONSE 14: The Department evaluated the results of the remedial investigation and all the alternatives and determined that Alternative 3 will provide the most balanced and cost effective alternative to address the site contamination.

COMMENT 15: The level of involvement by the state appeared to be excessive given the turn out by the public for the meeting.

RESPONSE 15: Comment noted.

APPENDIX B

Administrative Record

Administrative Record
K – Far Rockaway Former MGP Site
Far Rockaway, Queens County, New York
Site No. 241032

1. Remedial Investigation Report, Far Rockaway Former MGP Site, prepared by AECOM, Inc., August 2011.
2. Feasibility Study Report, Far Rockaway Former MGP Site, prepared by AECOM, Inc., December, 2011.
3. Far Rockaway Former MGP Site, Preliminary Site Assessment Report, prepared by Paulus, Sokolowski and Sartor, Engineering PC, March 2003.
4. Remedial Investigation Work Plan, Far Rockaway Former Manufactured Gas Plant Site, prepared by The RETEC Group, Inc, June 2007.
5. Proposed Remedial Action Plan, K Far Rockaway MGP, prepared by the NYSDEC, February 2012.
6. Order on Consent and Administrative Settlement Index No. A2-0552-0606, executed February 22, 2007.

Appendix B

Pre-Characterization Soil Boring Logs



20 Exchange Place
New York, NY 10005

Boring ID: A1

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

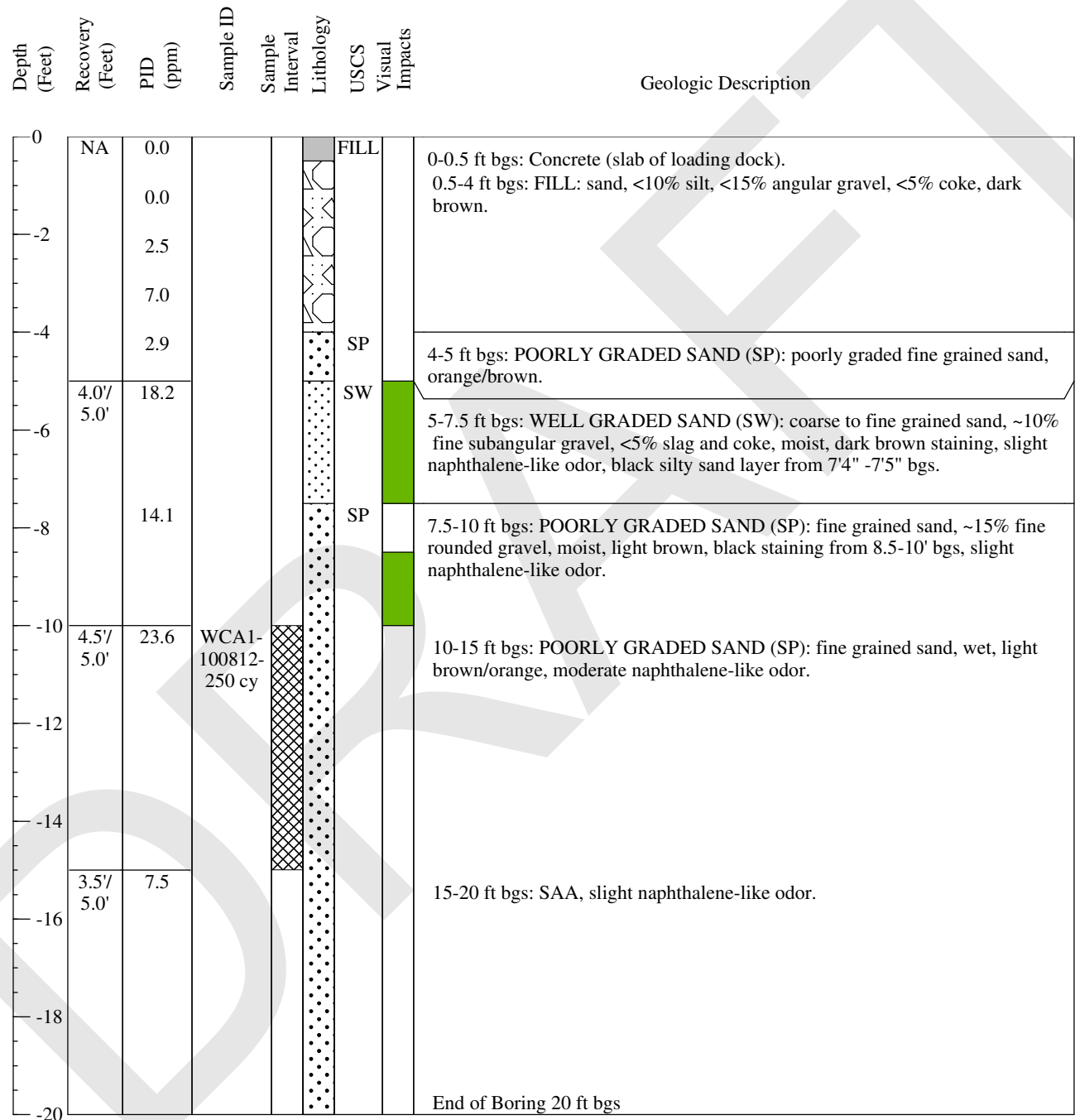
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/4/2012 - Hand cleared to 5 ft bgs, saw cut and jack hammer to remove 6" of concrete.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
New York, NY 10005

Boring ID: A2

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

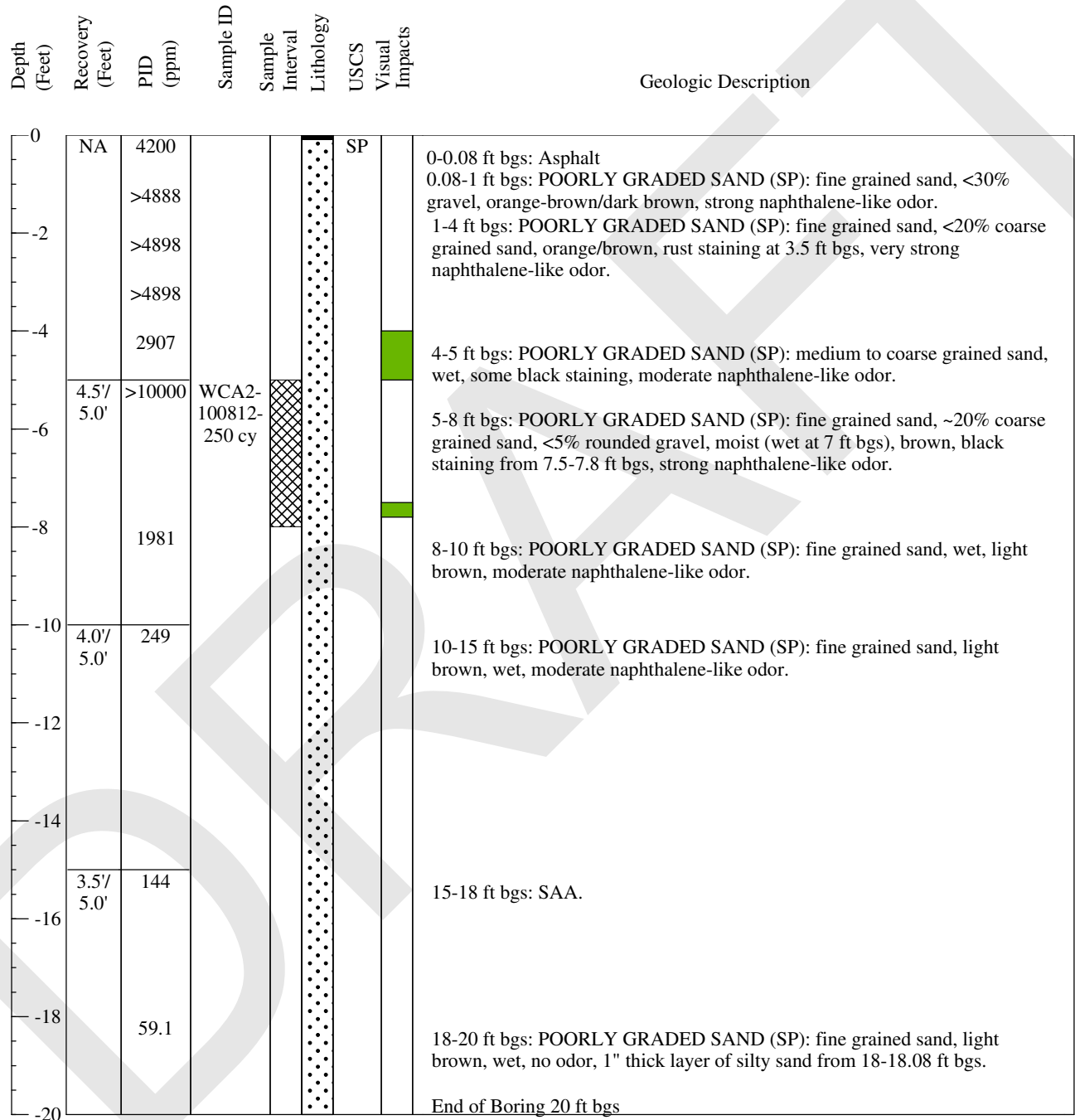
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/4/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
New York, NY 10005

Boring ID: A3

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

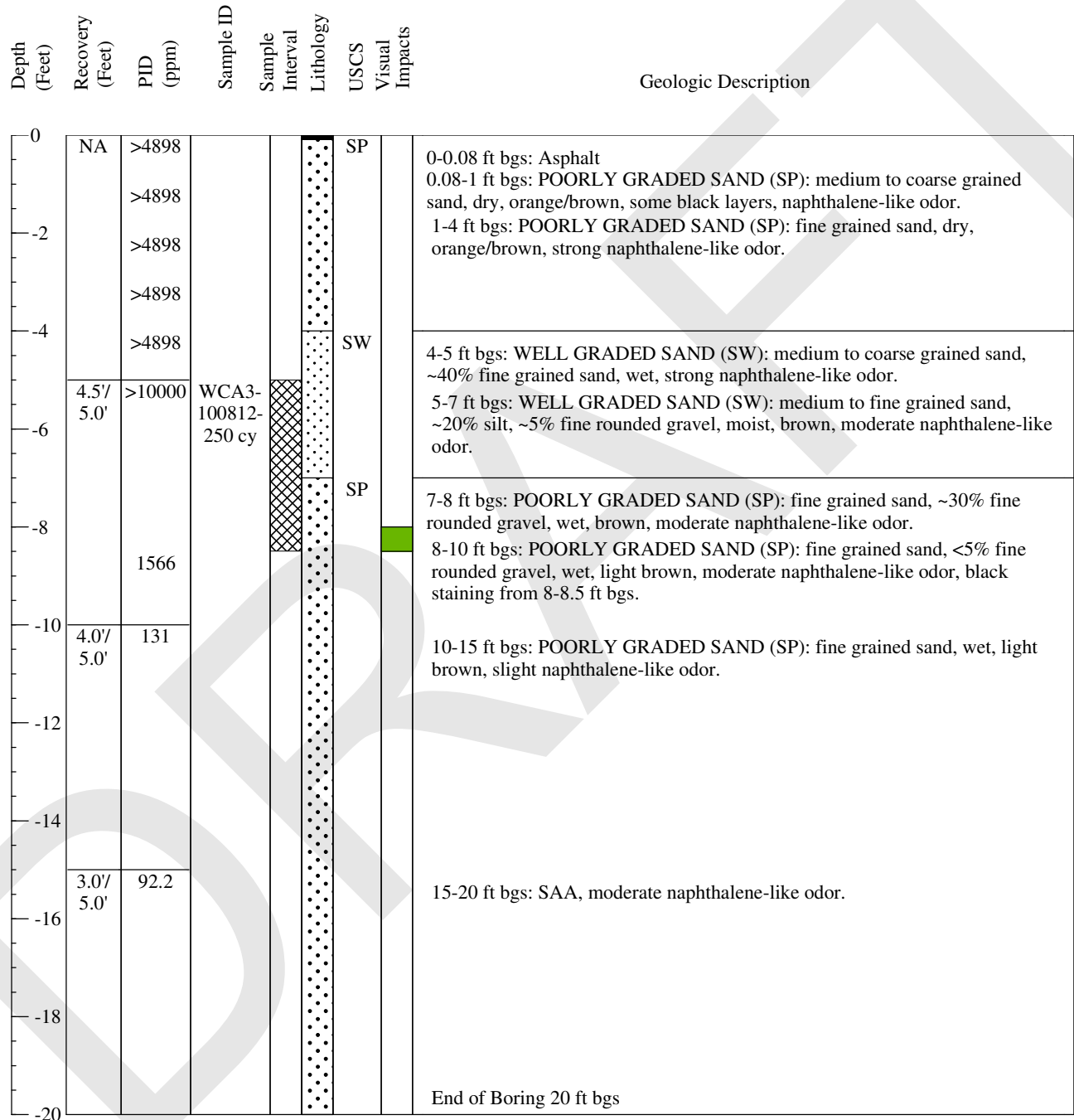
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/4/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
New York, NY 10005

Boring ID: A4

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

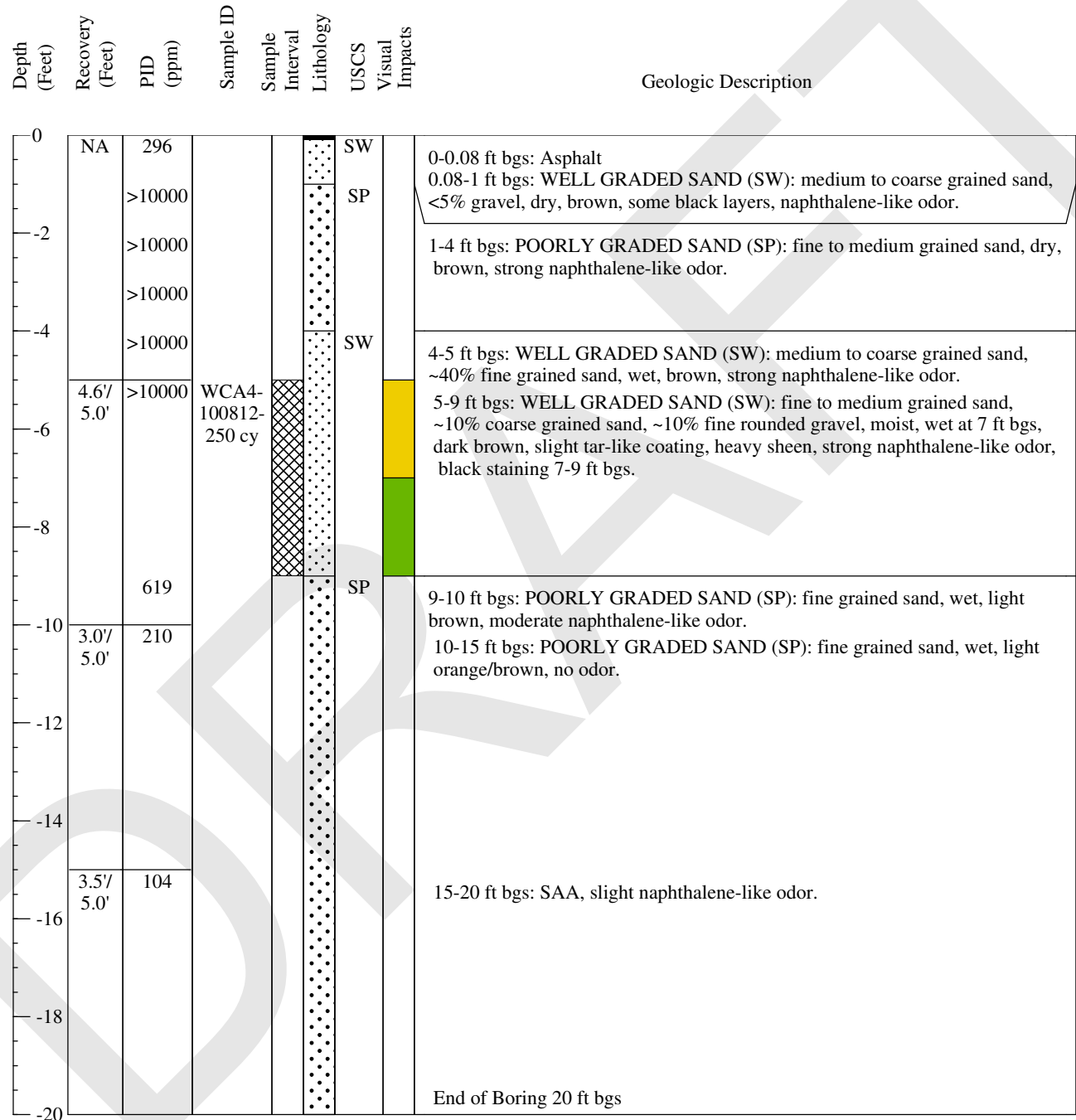
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/4/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
New York, NY 10005

Boring ID: B1

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

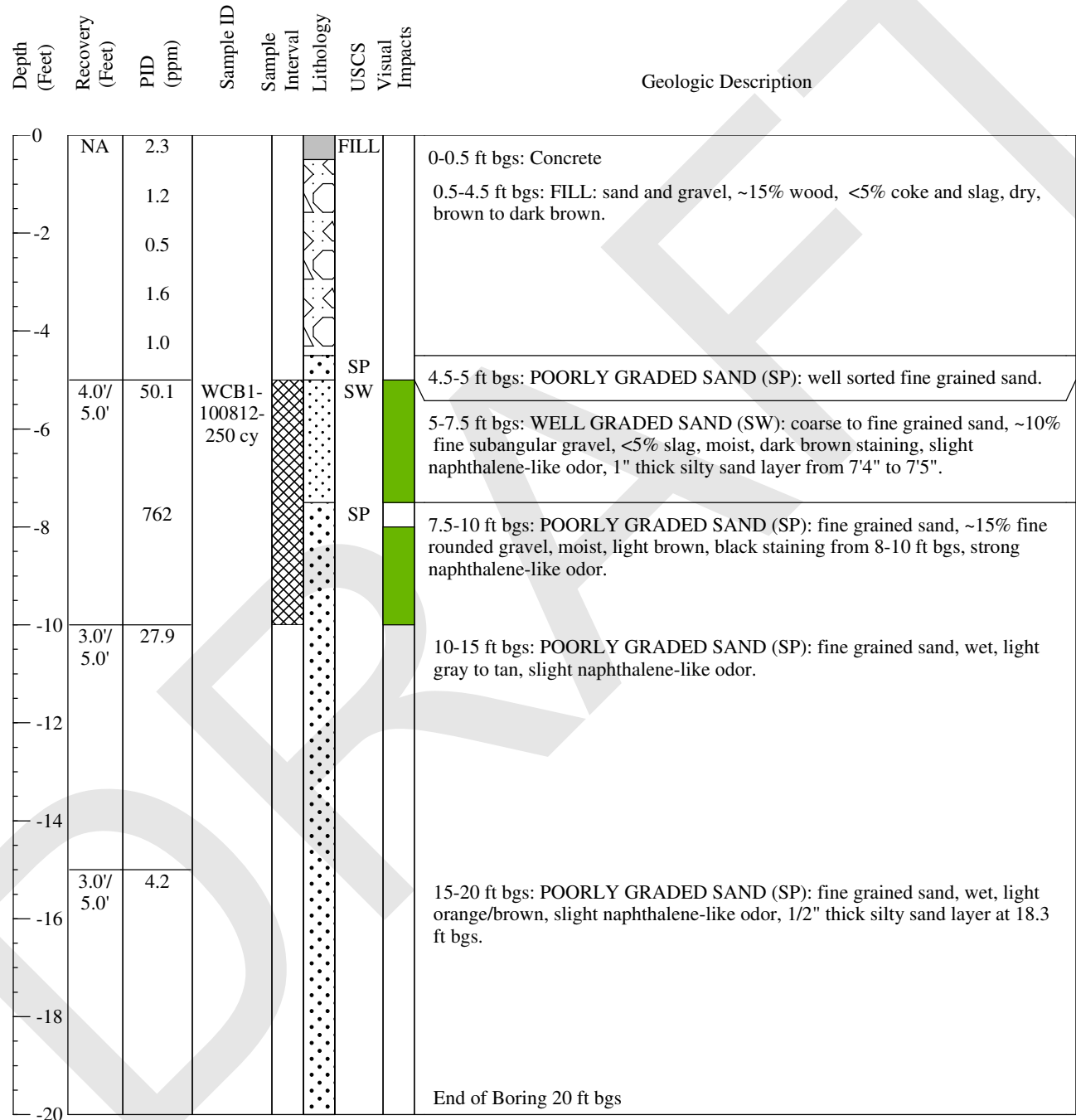
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/4/2012 - Hand cleared to 5 ft bgs, saw cut and jackhammered concrete.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
New York, NY 10005

Boring ID: B2

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

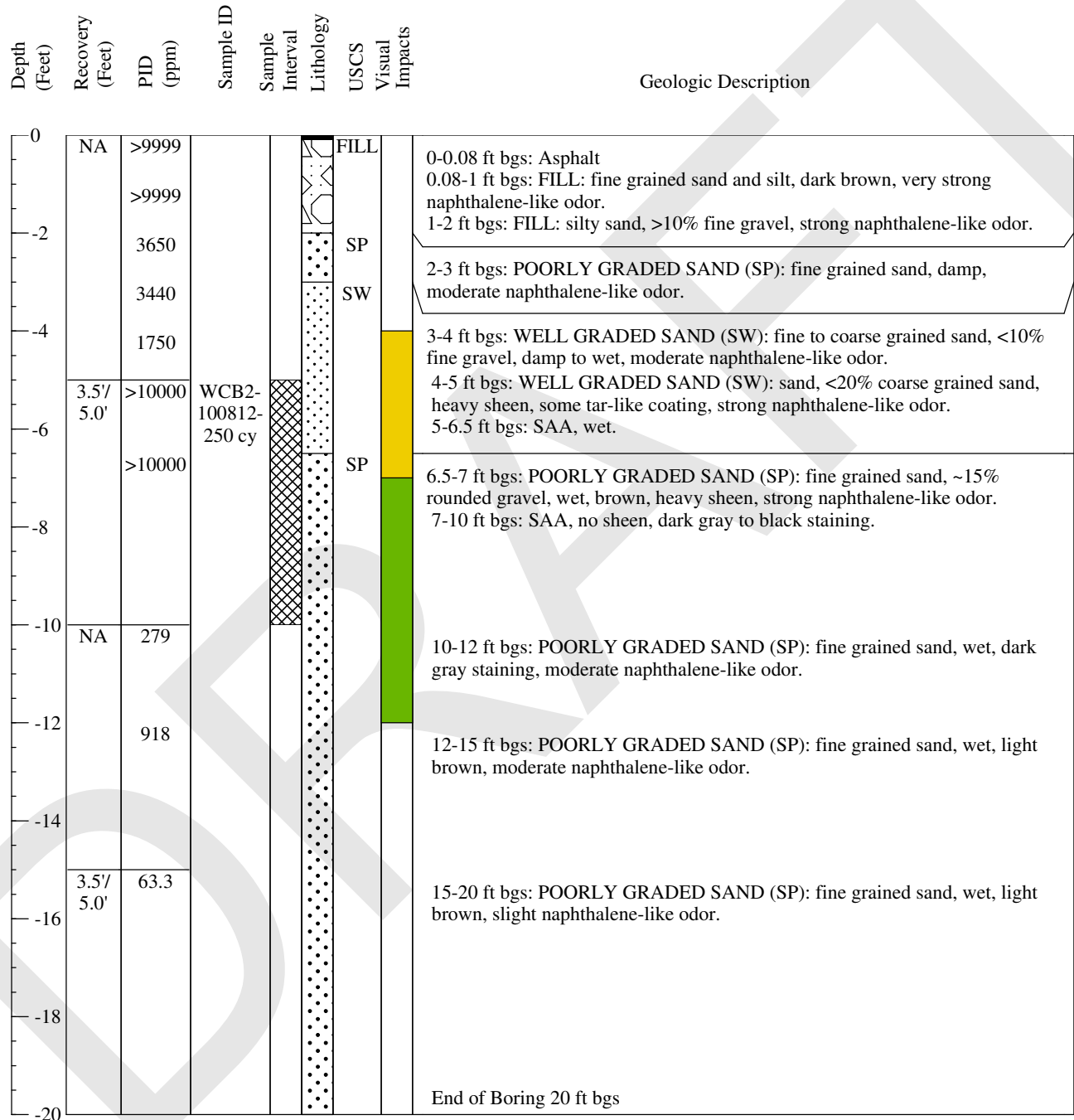
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/4/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.

No measured recovery from 10-15 ft bgs due to Macro-Core® stuck in sampler.



20 Exchange Place
New York, NY 10005

Boring ID: B3

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen

Depth (Feet)	Recovery (Feet)	PID (ppm)	Sample ID	Sample Interval	Lithology	USCS	Visual Impacts	Geologic Description
0								
		25				FILL		0-0.08 ft bgs: Asphalt.
		289						0.08-1 ft bgs: FILL: sand, ~40% gravel, moderate brown, dry, moderate naphthalene-like odor.
-2						SP		1-2 ft bgs: FILL: gravel.
		1728						2-3 ft bgs: POORLY GRADED SAND (SP): well sorted fine grained sand, brown with some staining.
-4		1472				SW		3-4 ft bgs: SAA, <10% coarse grained sand, wet.
	4.0'/5.0'	>10000	WCB3-100812-250 cy					4-5 ft bgs: WELL GRADED SAND (SW): well graded, medium to coarse grained sand, ~40% fine grained sand, moderate sheen, naphthalene-like odor.
-6								5-6 ft bgs: WELL GRADED SAND (SW): fine to medium grained sand, moist, dark brown, strong naphthalene-like odor.
		180				SP		6-8 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~10% coarse grained sand, wet, dark brown, slight tar-like coating from 6-7 ft bgs, heavy sheen from 6-7 ft bgs, strong naphthalene-like odor.
-8								8-10 ft bgs: POORLY GRADED SAND (SP): fine grained sand, wet, light brown, moderate naphthalene-like odor.
-10	3.0'/5.0'	269						10-15 ft bgs: POORLY GRADED SAND (SP): fine grained sand, wet, light orange/brown, slight naphthalene-like odor.
-12								
-14								
-16	3.5'/5.0'	35.5						15-20 ft bgs: SAA, slight organic odor.
-18								
-20								End of Boring 20 ft bgs

Comments: 10/4/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
New York, NY 10005

Boring ID: B4

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/4/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

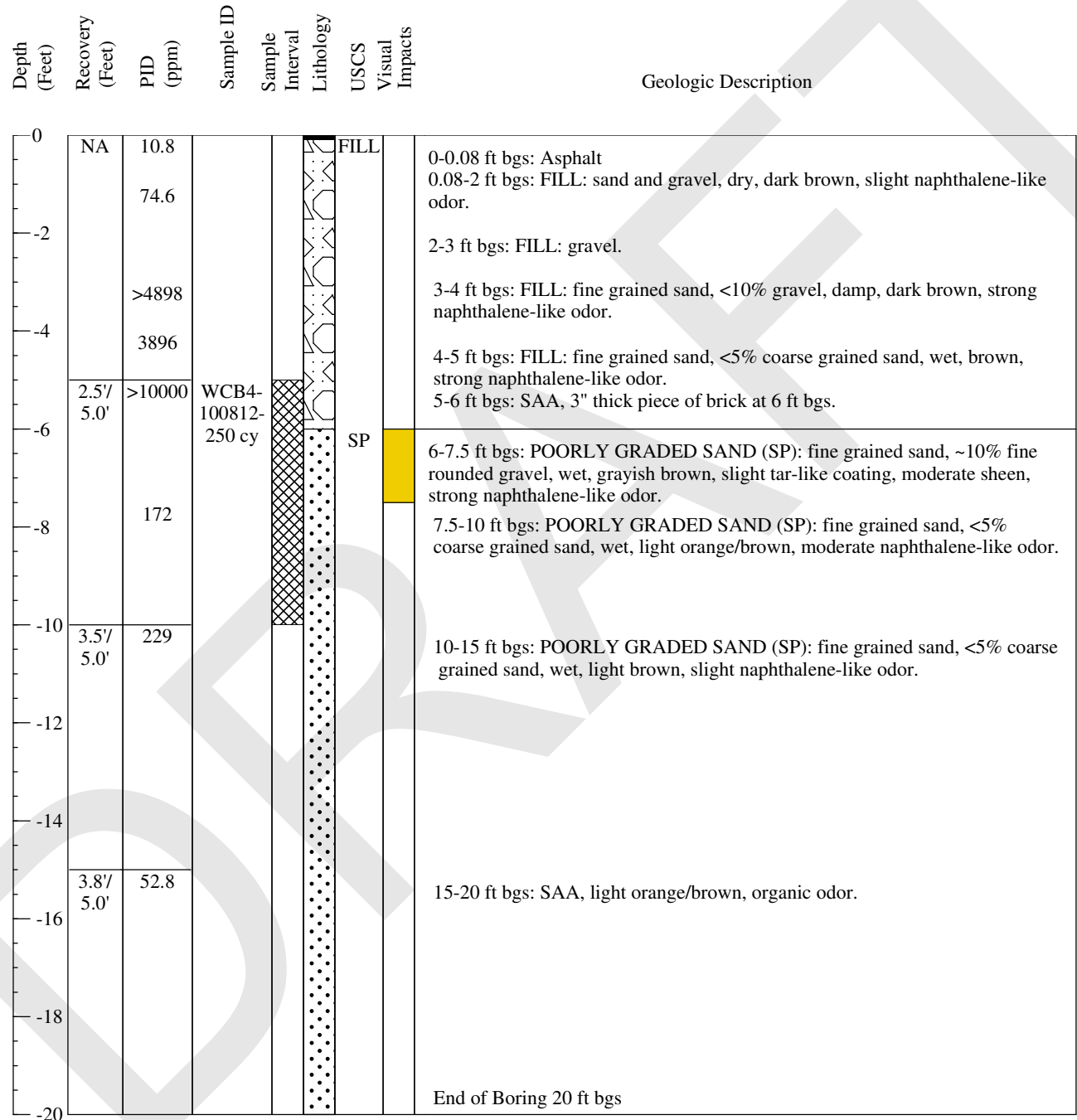
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/4/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
New York, NY 10005

Boring ID: C1

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/2/2012 & 10/5/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

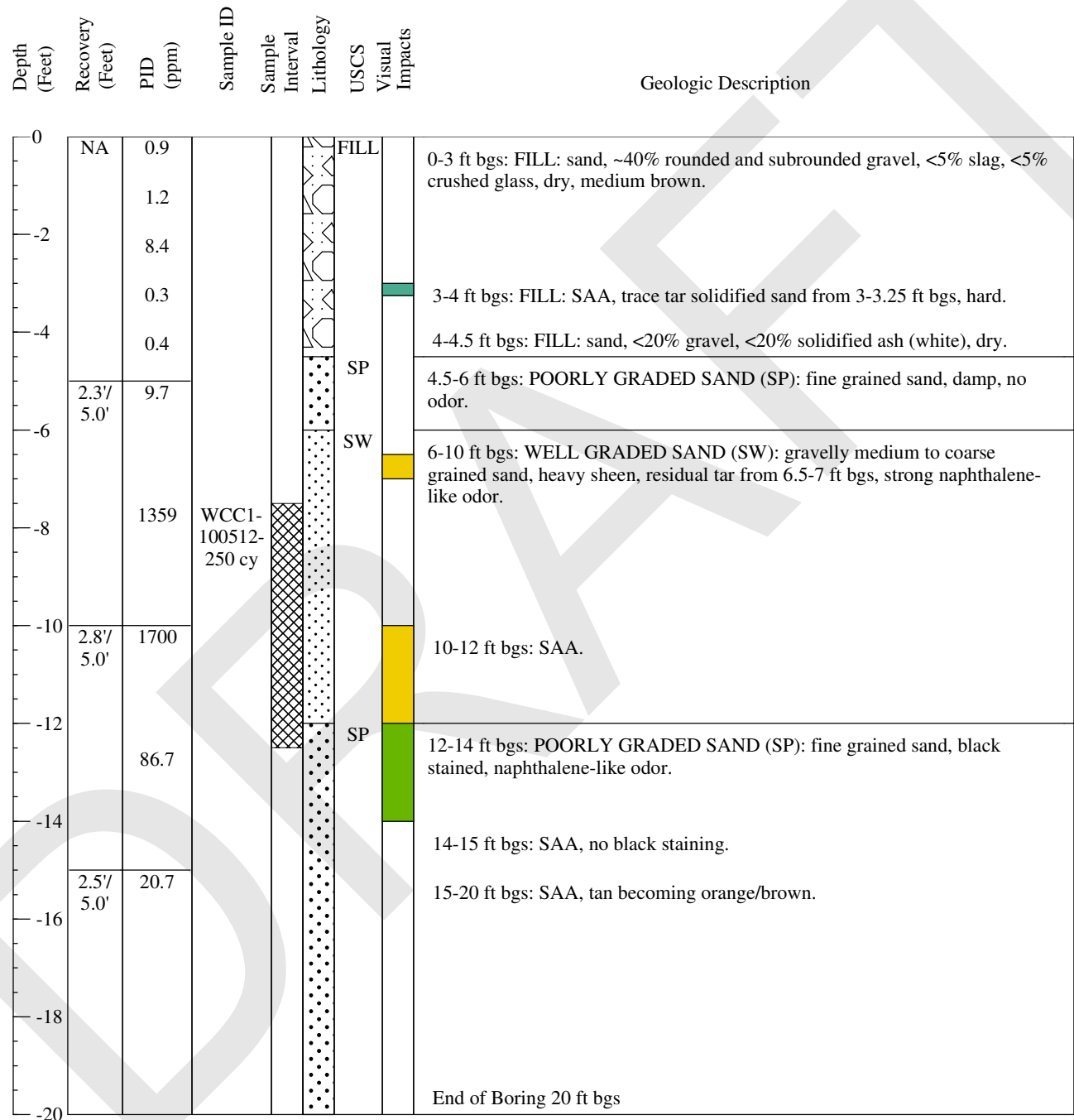
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard



Comments: 10/2/2012 - Hand cleared to 5 ft bgs.

10/5/2012 - Drilled from 5 ft bgs to 20 ft bgs.



20 Exchange Place
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Boring ID: C2

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/2/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

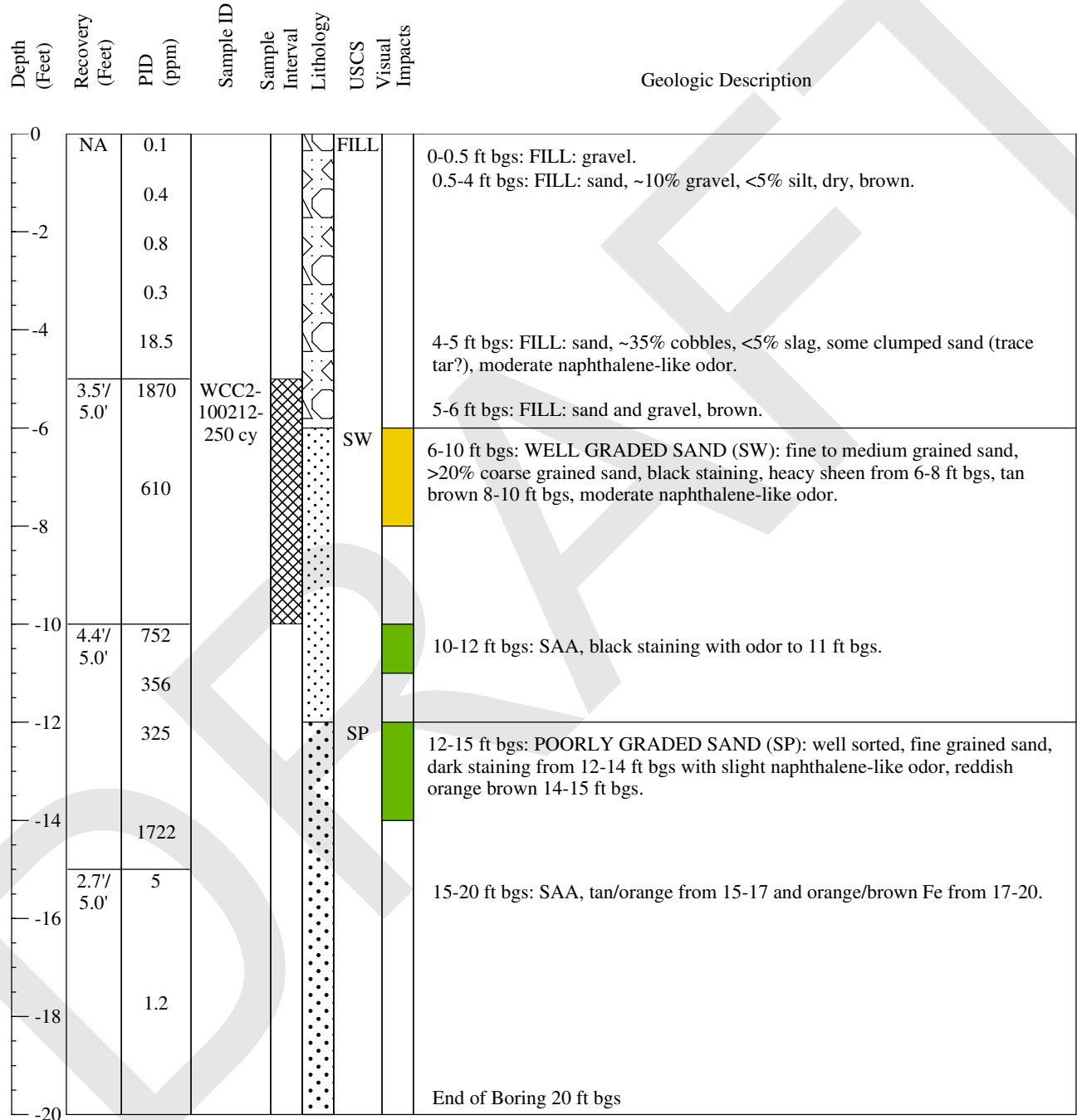
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard



Comments: 10/2/2012 - Hand cleared to 5 ft bgs.



20 Exchange Place
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Boring ID: C3

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/2/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen

Depth (Feet)	Recovery (Feet)	PID (ppm)	Sample ID	Sample Interval	Lithology	USCS	Visual Impacts	Geologic Description
0	NA					FILL		0-3 ft bgs: FILL: sand and gravel, ~35% cobbles, <5% slag.
-2		0						
		1.4						
-4		42.4						3-5 ft bgs: FILL: sand and gravel, <5% slag, dry, dark brown, no odor.
-6	3.8'/ 5.0'	48.7				SP		5-7 ft bgs: POORLY GRADED SAND (SP): fine grained sand, <5% gravel, ~5% silt, moist, brown, no odor.
-8		>10000	WCC3- 100812- 250 cy					7-8.5 ft bgs: SAA, ~10% fine gravel, moist, dark brown/black, slight tar-like coating, moderate sheen, moderate naphthalene-like odor.
		>10000						8.5-10 ft bgs: POORLY GRADED SAND (SP): fine grained sand, ~20% fine rounded gravel, wet, brown, slight naphthalene-like odor.
-10	5.0'/ 5.0'	8367						10-11.5 ft bgs: POORLY GRADED SAND (SP): medium to fine grained sand, ~20% fine rounded gravel, wet, dark brown, moderate sheen, moderate naphthalene-like odor.
-12		432						11.5-12 ft bgs: SAA, no sheen, no odor.
-14								12-13 ft bgs: POORLY GRADED SAND (SP): fine grained sand, ~20% medium grained sand, wet, brownish gray, slight naphthalene-like odor.
-16	3.7'/ 5.0'	29.7						13-15 ft bgs: SAA, orange/brown, no odor.
-18								15-20 ft bgs: POORLY GRADED SAND (SP): fine grained sand, ~15% medium grained sand, wet, no odor, 1" thick sandy silt layer at 18 ft bgs.
-20								End of Boring 20 ft bgs

Comments: 10/2/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.

Adjusted C3 location due to concrete refusal at 3 ft in proposed boring location.



20 Exchange Place
New York, NY 10005

Boring ID: C4

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/3/2012 & 10/8/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

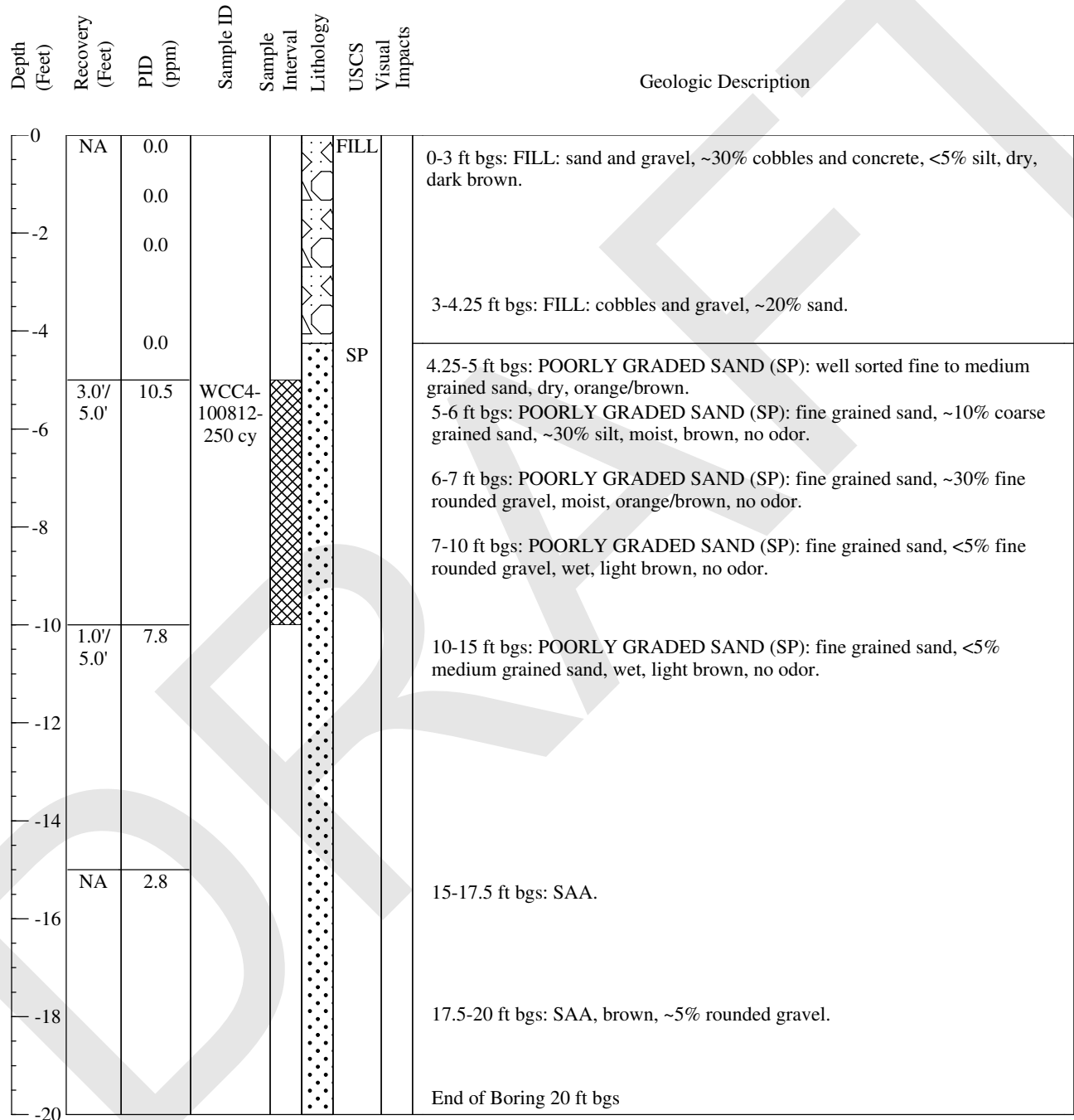
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/3/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.

No measured recovery from 15-20 ft bgs due to Macro-Core® stuck in sampler.



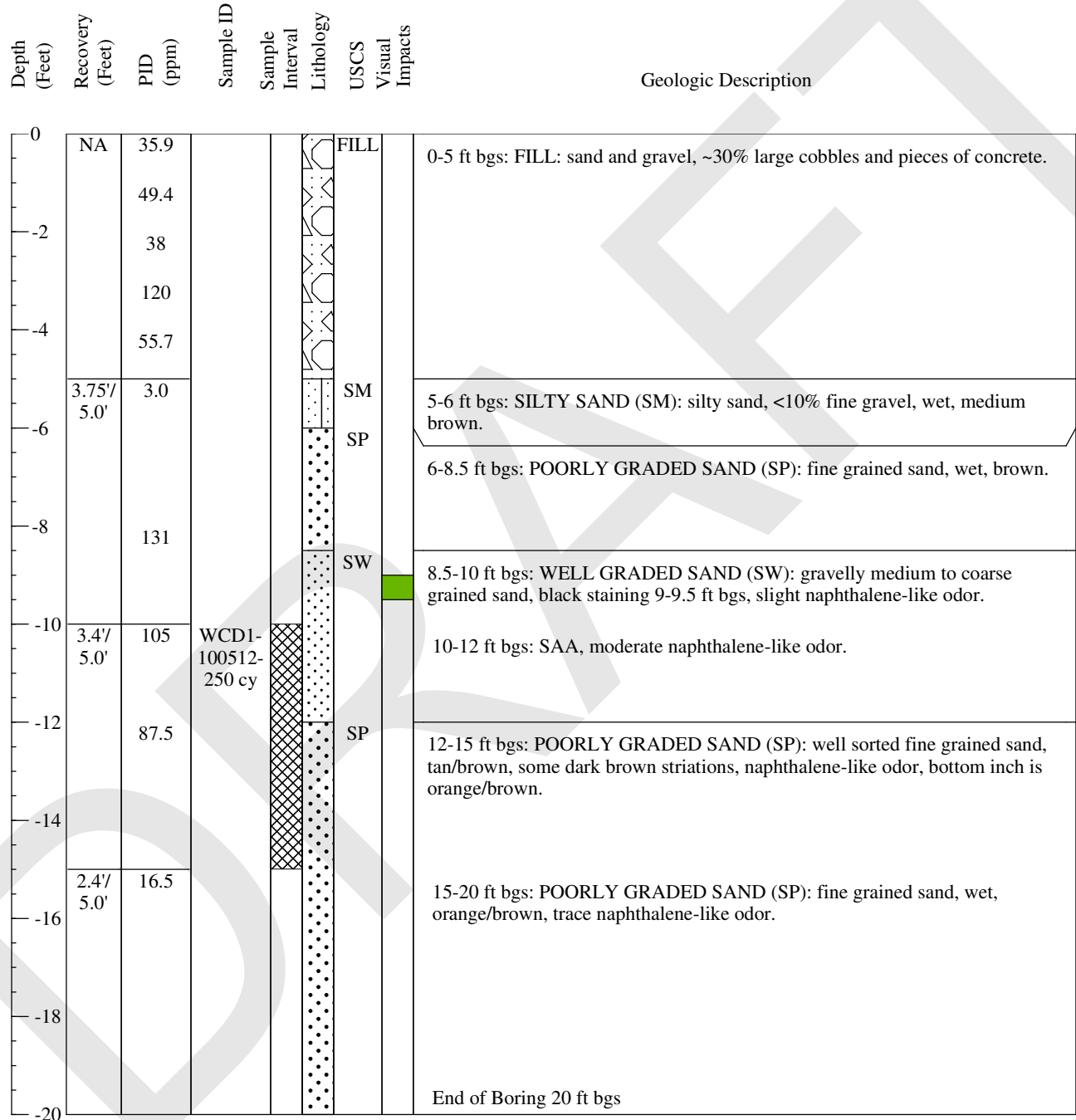
20 Exchange Place
New York, NY 10005

Boring ID: D1

Page 1 of 1

Project Name: Far Rockaway Former MGP
Project Number: 60137357
Date Started/Completed: 10/05/2012
Boring Location: 1224 Brunswick Ave
Drilling Company: Zebra Environmental

Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Ground Elevation (ft/msl): TBD
Total Depth: 20 ft bgs
Logged By: Joshua Millard



Comments: 10/5/2012 - Hand cleared to 5 ft bgs.

10/5/2012 - Drilled from 5 ft bgs to 20 ft bgs.



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Boring ID: D2

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/2/2012 & 10/5/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

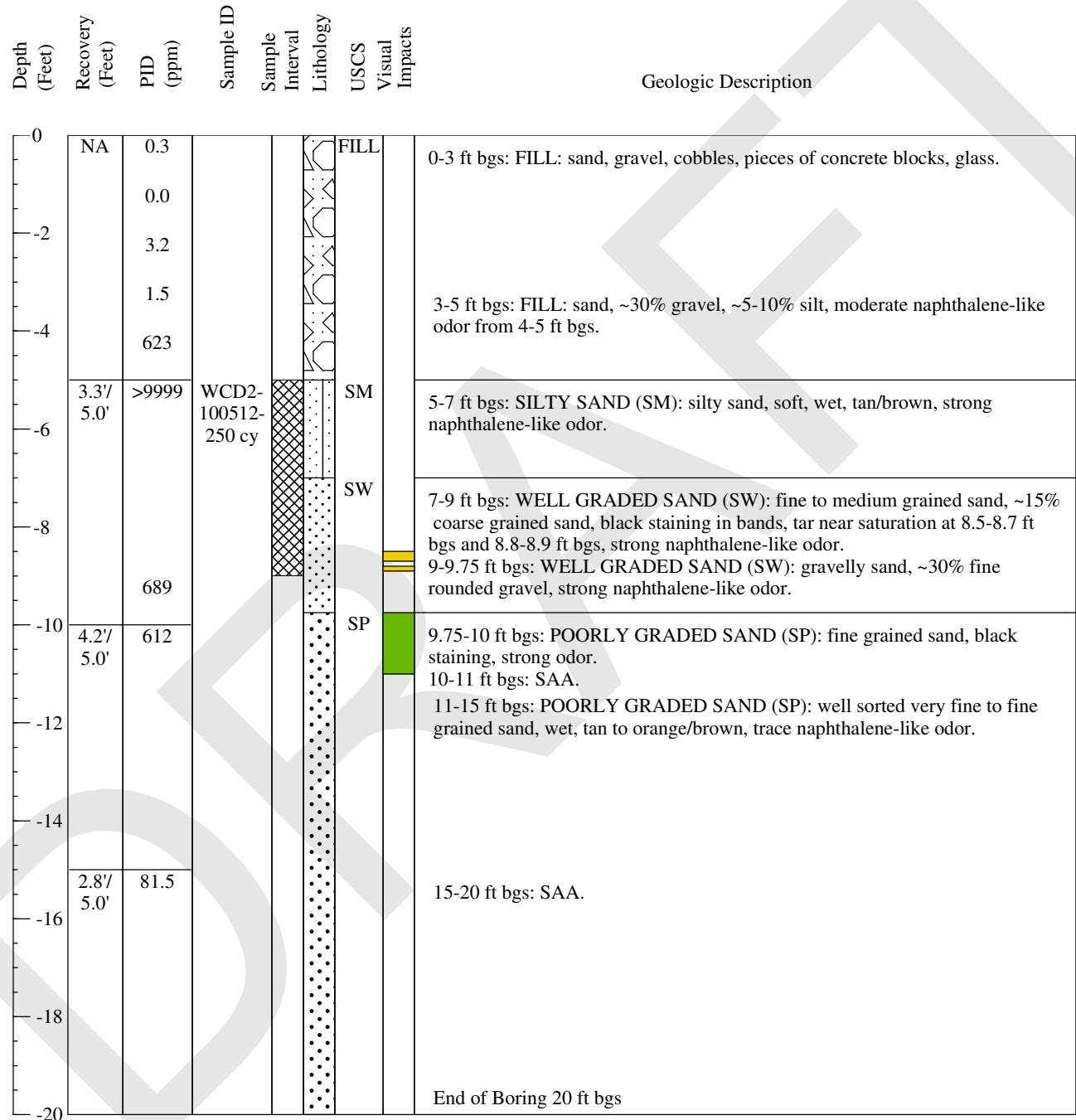
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard



Comments: 10/2/2012 - Hand cleared to 5 ft bgs (D2 alternate).

10/5/2012 - Drilled from 5 ft bgs to 20 ft bgs.

D2 was moved due to a concrete block and boulders at 3.5 ft bgs in proposed location.



20 Exchange Place
New York, NY 10005

Boring ID: D3

Page 1 of 1

Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/1/2012 & 10/5/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

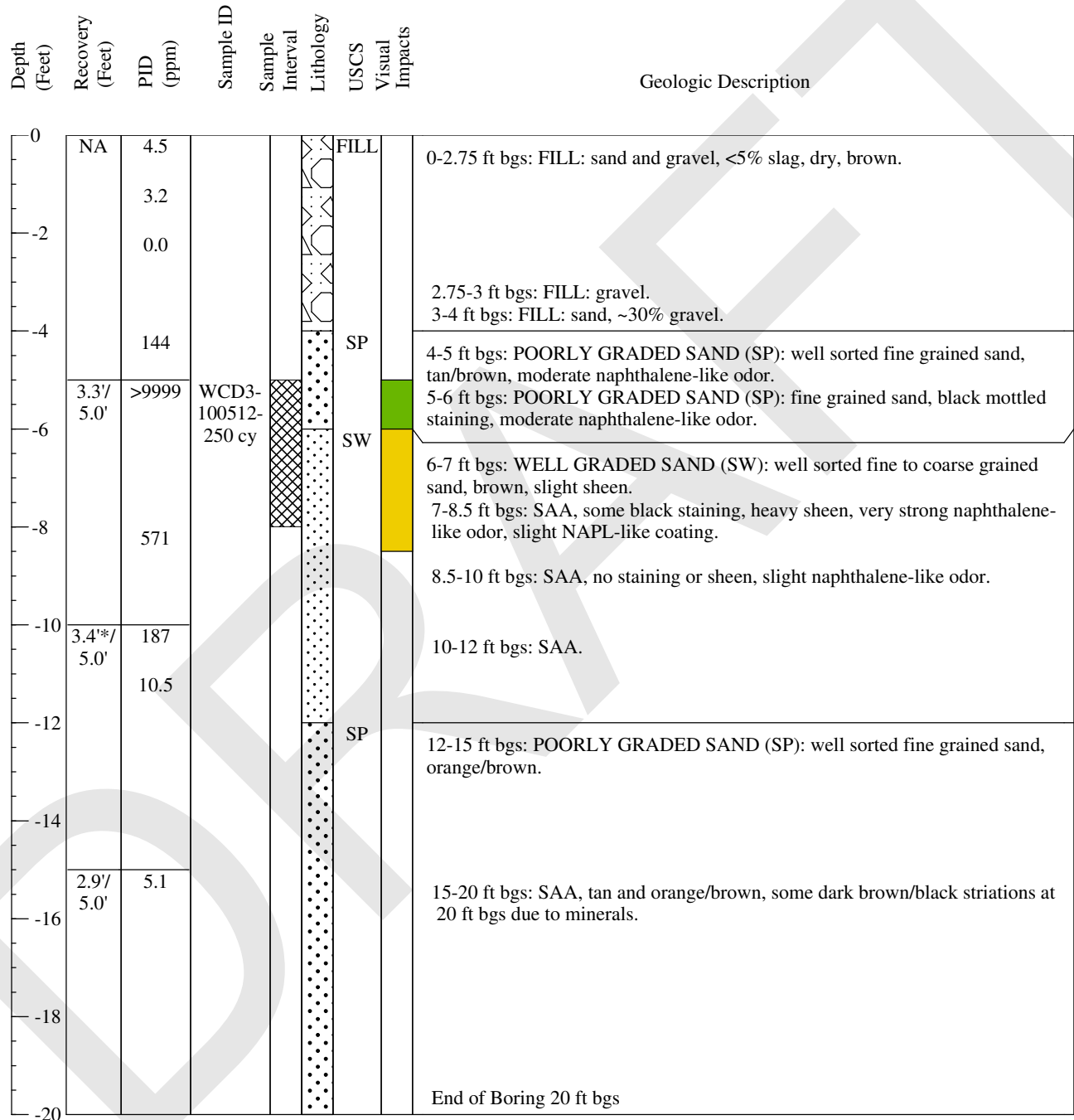
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard



Comments: 10/1/2012 - Hand cleared to 5 ft bgs.

10/5/2012 - Drilled from 5 ft bgs to 20 ft bgs.



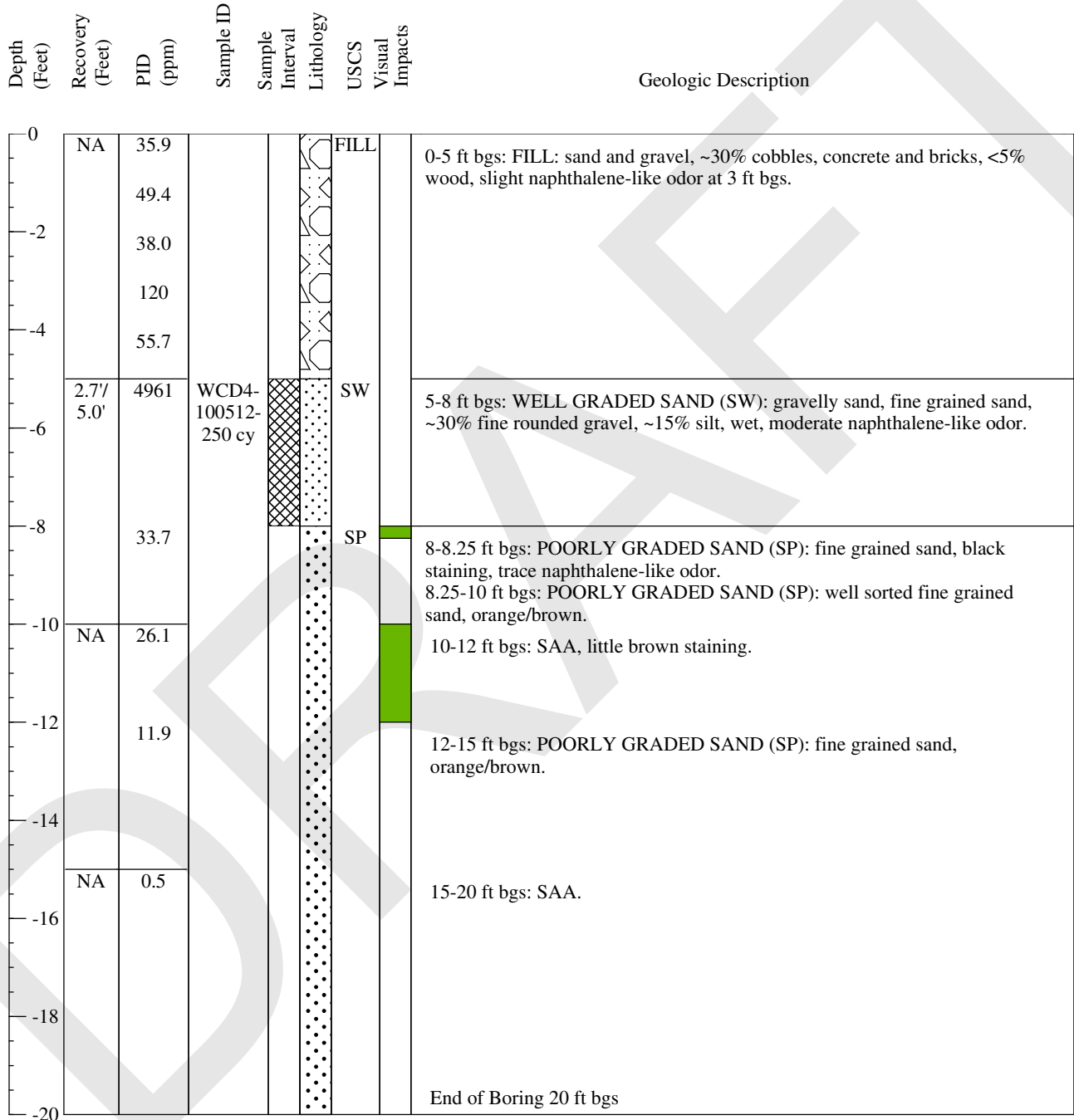
20 Exchange Place
New York, NY 10005

Boring ID: D4

Page 1 of 1

Project Name: Far Rockaway Former MGP
Project Number: 60137357
Date Started/Completed: 10/05/2012
Boring Location: 1224 Brunswick Ave
Drilling Company: Zebra Environmental

Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Ground Elevation (ft/msl): TBD
Total Depth: 20 ft bgs
Logged By: Joshua Millard



Comments: 10/5/2012 - Hand cleared to 5 ft bgs.

10/5/2012 - Drilled from 5 ft bgs to 20 ft bgs.

D4 location was moved twice from the proposed location due to a rock at 3 ft bgs and 4 ft bgs.



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Boring ID: E1

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/01/2012 & 10/05/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

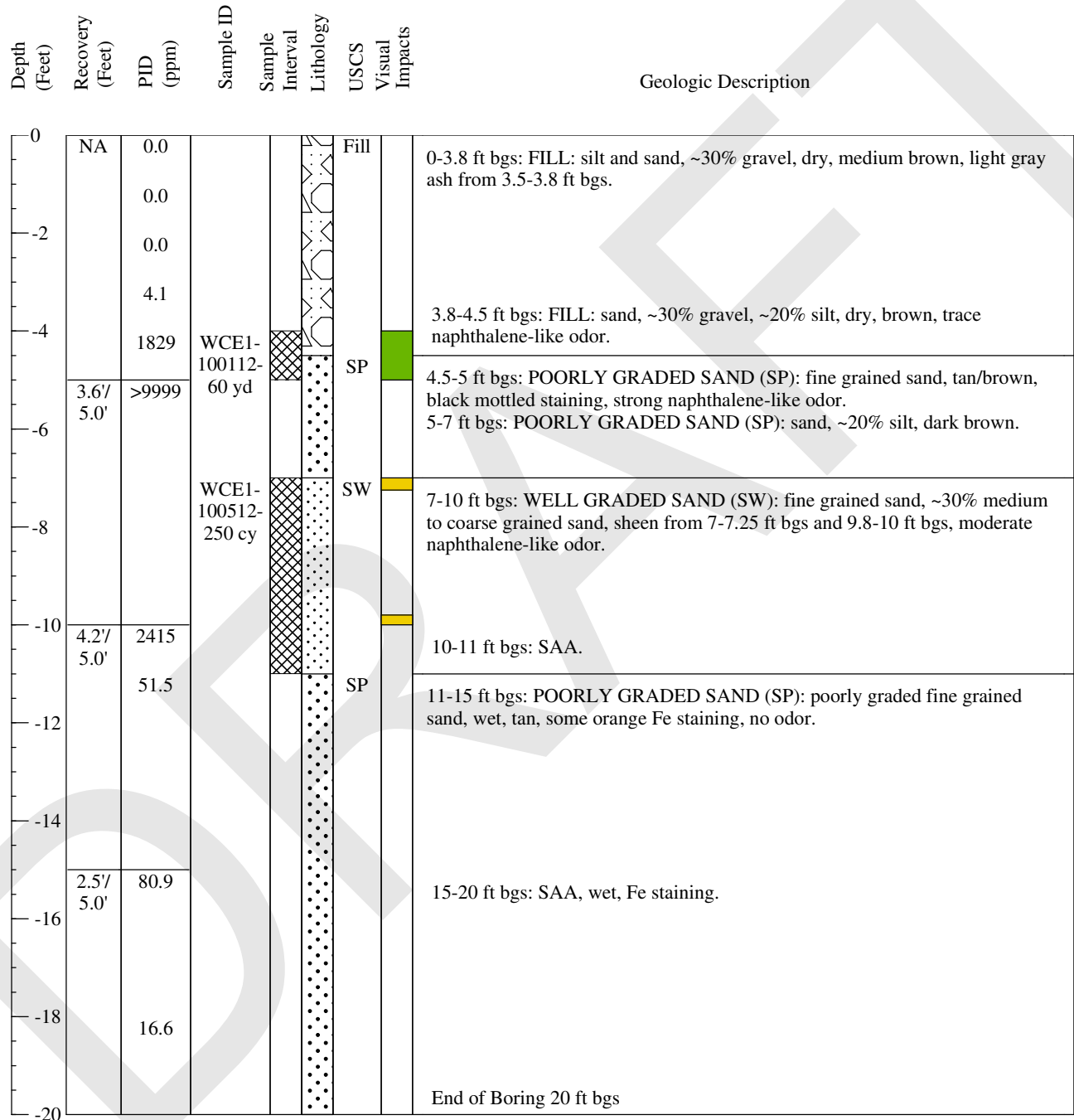
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard



Comments: 10/1/2012 - Hand cleared to 5 ft bgs.

10/5/2012 - Drilled from 5 ft bgs to 20 ft bgs.



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Boring ID: E2

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/01/2012 & 10/05/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

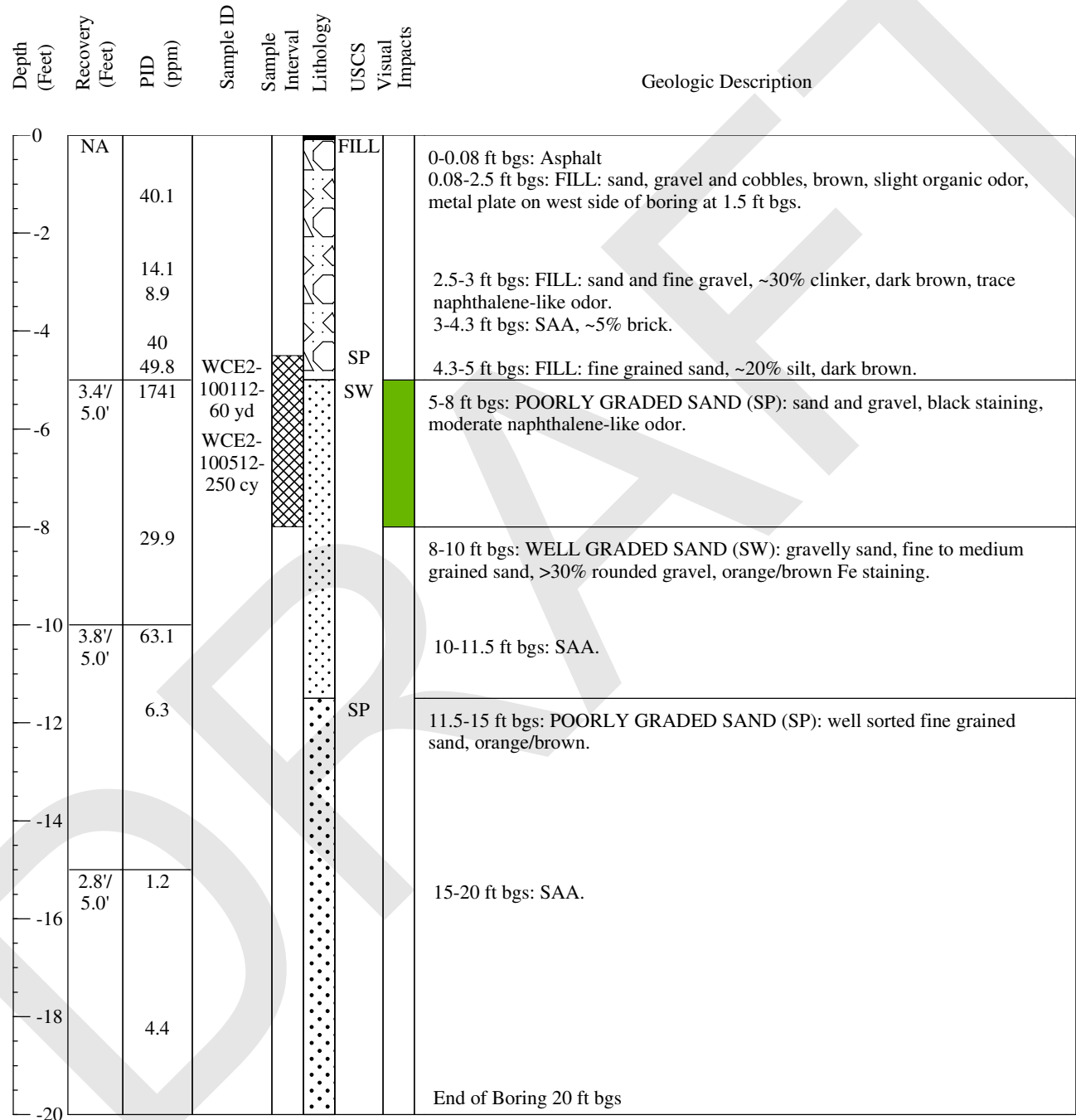
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard



Comments: 10/1/2012 - Hand cleared to 5 ft bgs.

10/5/2012 - Drilled from 5 ft bgs to 20 ft bgs.

WCE2-100112-60 yd was collected from 4.5-5 ft bgs. WCE2-100512-250 cy was collected from 4.5-8 ft bgs.



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New York, NY 10005

Boring ID: E3

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Project Name: Far Rockaway Former MGP

Project Number: 60137357

Date Started/Completed: 10/01/2012 & 10/08/2012

Boring Location: 1224 Brunswick Ave

Drilling Company: Zebra Environmental

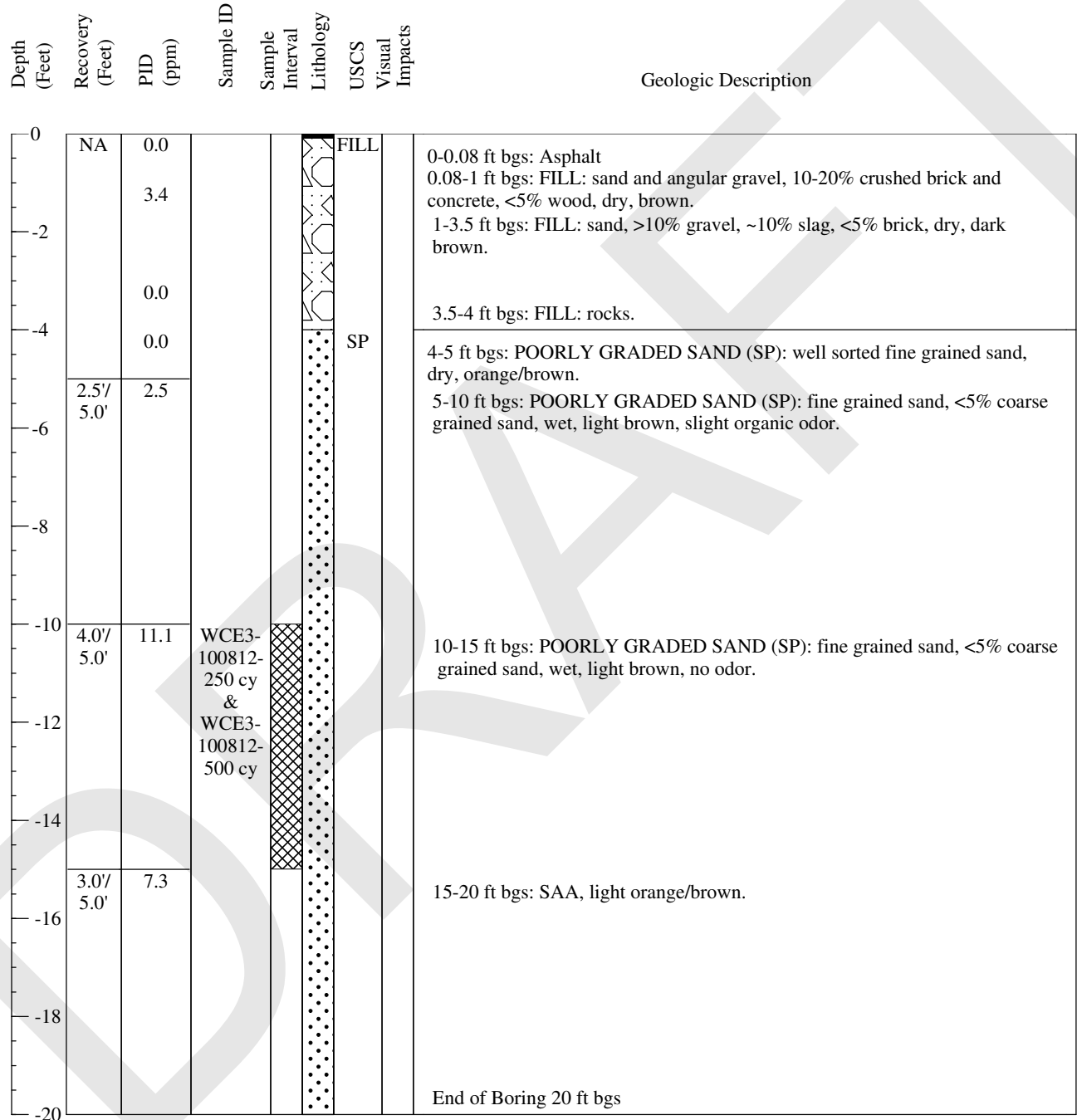
Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Ground Elevation (ft/msl): TBD

Total Depth: 20 ft bgs

Logged By: Joshua Millard / Jessica Ehlen



Comments: 10/3/2012 - Hand cleared to 5 ft bgs.

10/8/2012 - Drilled from 5 ft bgs to 20 ft bgs.