

Remedial Action Work Plan

**1345, 1351, 1357 Rogers Avenue and
562 East 28th Street
Brooklyn, New York
Block 5229, Lot(s) 11, 15, 17 and 54**

**OER Project Number: 13EH-A401K
OER VCP Number: 14CVCP164K**

**CEQR Number 09DCP058K
Flatbush Rezoning**

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REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AST	Aboveground Storage Tank
AS/SVE	Air Sparging/Soil Vapor Extraction
BCA	Brownfield Cleanup Agreement
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction & Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CO	Certificate of Occupancy
COC	Certificate of Completion
CPC	City Planning Commission
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
DSNY	Department of Sanitation
“E”	E-Designation
EAS	Environmental Assessment Statement
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
EC/IC	Engineering Control and Institutional Control
ELAP	Environmental Laboratory Accreditation Program
FDNY	New York City Fire Department
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IDW	Investigation Derived Waste

Acronym	Definition
IRM	Interim Remedial Measure
MNA	Monitored Natural Attenuation
Notice - NNO	Notice of No Objection
Notice - NOC	Notice of Completion
Notice - NTP	Notice To Proceed
Notice - NOS	Notice Of Satisfaction
Notice - FNOS	Final Notice of Satisfaction
NYCBCP	New York City Brownfield Cleanup Program
NYCBSA	New York City Board of Standards and Appeals
NYCDCP	New York City Department of City Planning
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCDOF	New York City Department of Finance
NYCDOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC HPD	New York City Housing Preservation and Development
NYC OER	New York City Office of Environmental Remediation
NYSDEC	New York State Department of Environmental Conservation
NYSDEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYSDEC PBS	New York State Department of Environmental Conservation Petroleum Bulk Storage
NYS DOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
PM	Particulate Matter

Acronym	Definition
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RA	Register Architect
RAOs	Remedial Action Objectives
RAP	Remedial Action Plan
RAR	Remedial Action Report
RCA	Recycled Concrete Aggregate
RCR	Remedial Closure Report
RD	Restrictive Declaration
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOCs	Semi-Volatile Organic Compounds
USCS	Unified Soil Classification System
USGS	United States Geological Survey
UST	Underground Storage Tank
TAL	Target Analyte List
TCL	Target Compound List
TCO	Temporary Certificate of Occupancy
VB	Vapor Barrier
VOCs	Volatile Organic Compounds

CERTIFICATION

I, Charles McGuckin, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 1345-1357 Rogers Avenue, VCP Site #14CVCP164K and OER project #13EH-A401K .

I, Joseph Duminuco am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 1345-1357 Rogers Avenue VCP Site #14CVCP164K and OER project #13EH-A401K.

I certify that this Remedial Action Plan (RAP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill, and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Charles J. McGuckin, P.E.
NYS Professional Engineer #069509

October 15, 2013
Date



Joseph Duminuco
Qualified Environmental Professional Name

October 15, 2013
Date

Joseph Dum
Signature

EXECUTIVE SUMMARY

The Doe Fund, Inc. (The Doe Fund) is performing work for a hazardous materials E-Designation and has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 0.56-acre Site located at 1345, 1351, 1357 Rogers Ave and 562 East 28th Street in the Flatbush neighborhood of Brooklyn, New York (Site). A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms to applicable laws and regulations.

Site Location and Current Usage

The Site is located at 1345, 1351, and 1357 Rogers Avenue and 562 East 28th Street in the Flatbush section of Brooklyn, New York and is identified as Block 5229 Lots 11, 15, 17, and 54 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 24,600-square feet and is bounded by residential buildings to the north, residential buildings and a fire station to the south, East 28th Street to the east, and Rogers Avenue to the west. Currently, the Site is used for parking and a two-family residence and contains one two-family building, vacant parking structures, and open parking areas on grade.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will consist of the new construction of an affordable residential multifamily building containing approximately 80,000 square feet (sf) of floor area in an eight-story building. The new building will have coverage of about 11,600 sf on a Site of 24,600 sf. The balance of the Site will be used for parking on grade (8,000 sf) and recreation (5,000 sf). The planned structure will have a roof height of about 80 feet with partial setbacks at the 5th, 6th, and 7th floors. The first floor will be directly accessible from sidewalk grade and a 4,115 square foot partial cellar is planned. Layout of the proposed Site redevelopment is presented in Figure 2. The cellar and localized foundation elements will be excavated to a depth of 12 feet below land surface (bls). It is expected that most of this cut will be removed from the Site, and that a significant portion of the material will be construction debris from previous

structures. The total volume of material to be removed is approximately 2,200 cubic yards (CY). As part of development, the referenced lots are expected to be merged into a single tentative lot to be assigned. The current zoning designations are R5B and R7A Residential. The proposed use is consistent with existing zoning for the property. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

Summary of the Remedy

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP citizen participation activities according to an approved CPP included in RAWP.
2. Performance a Community Air Monitoring Program for particulates and volatile organic compounds during excavation.
3. Establishment of Site Specific Track 4 SCOs.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding Track 4 SCOs. Excavation for development purposes would take place to a depth of approximately 12 feet bls in the cellar footprint, with localized excavation for foundation elements for the remaining area of the Site.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
7. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.

8. Transportation and off-site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-site.
9. Collection and analysis of end-point samples from localized hot spots to determine the performance of the remedy with respect to attainment of SCOs.
10. Demarcation of residual soil/fill.
11. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
12. Installation of a vapor barrier system beneath the building slab and outside foundation sidewalls below grade. A minimum of 20-mil Grace Bituthene (or equivalent) vapor barrier system will be installed for the subgrade walls according to manufacturer specifications and depending on foundation construction methods.
13. Construction and maintenance of an engineered composite cover consisting of concrete building slab, asphalt pavement, patio pavement, and two foot-thick clean soil cover for landscaped areas to prevent human exposure to residual soil/fill remaining under the Site.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
16. Submission of an approved Site Management Plan (SMP) in the Remedial Action Report (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
17. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
18. The property will continue to be registered with an E-Designation by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

COMMUNITY PROTECTION STATEMENT

The Office of Environmental Remediation created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities, and also includes many other elements that address common community concerns, such as community air monitoring, odor, dust, and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

Remedial Investigation and Cleanup Plan. Under the NYC VCP, a thorough cleanup study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

Identification of Sensitive Land Uses. Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community.

Qualitative Human Health Exposure Assessment. An important part of the cleanup planning for the Site is the performance of a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

Health and Safety Plan. This cleanup plan includes a Construction Health and Safety Plan (CHASP) that is designed to protect community residents and on-Site workers. The elements of this plan are in compliance with safety requirements of the United States Occupational Safety and Health Administration (OSHA). This plan includes many protective elements including those discussed below.

Site Safety Coordinator. This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Joe Duminuco and can be reached at 631-232-2600.

Worker Training. Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

Community Air Monitoring Plan. Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation (OER). This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a ‘Contingency Plan’).

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and include steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager Joe Duminuco at 631-232-2600, or NYC Office of Environmental Remediation Project Manager Rebecca Bub at 212-341-2073.

Quality Assurance. This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be

summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

Storm-Water Management. To limit the potential for soil erosion and discharge, this cleanup plan has provisions for storm-water management. The main elements of the storm water management include physical barriers such as tarp covers and erosion fencing, and a program for frequent inspection.

Hours of Operation. The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 7:00 a.m. to 6:00 p.m. Monday through Friday and/or as established by the New York City Department of Buildings.

Signage. While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program, provides project contact names and numbers, and locations of project documents can be viewed.

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Joe Duminuco at 631-232-2600, the NYC Office of Environmental Remediation Project Manager Rebecca Bub at 212-341-2073, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

Utility Mark-outs. To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

Soil and Liquid Disposal. All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State and Federal regulations and required permits will be obtained.

Soil Chemical Testing and Screening. All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held

instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

Stockpile Management. Soil stockpiles will be kept covered with tarps to prevent dust, odors and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

Trucks and Covers. Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with all laws and regulations.

Imported Material. All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-Site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

Equipment Decontamination. All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

Housekeeping. Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

Truck Routing. Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at Cortelyou Library.

Long-Term Site Management. If long-term protection is required after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are defined in the property's deed or established through a city environmental designation. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

REMEDIAL ACTION PLAN

1.0 SITE BACKGROUND

The Doe Fund, Inc. (The Doe Fund) is performing work to satisfy the requirements of a NYC OER hazardous materials E-Designation and has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 0.56-acre site located at 1345, 1351, 1357 Rogers Ave and 562 East 28th Street in the Flatbush section of Brooklyn, New York (Site). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP is in conformance with the NYC VCP and will also satisfy the requirements of the existing hazardous materials E-Designation for the Site. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Current Usage

The Site is located at 1345, 1351, and 1357 Rogers Avenue and 562 East 28th Street in the Flatbush section of Brooklyn, New York and is identified as Block 5229 Lots 11, 15, 17, and 54 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 24,600 square feet (sf) and is bounded by residential buildings to the north, residential buildings and a fire station to the south, East 28th Street to the east, and Rogers Avenue to the west. Currently, the Site is used for parking and a two-family residence and contains one two-family building, vacant parking structures, and open parking areas on grade.

1.2 Proposed Redevelopment Plan

The proposed future use of the Site will consist of the new construction of an affordable residential multifamily building containing approximately 80,000 sf of floor area in an eight-story building. The new building will have coverage of about 11,600 sf on a Site of 24,600 sf. The balance of the Site will be used for parking on grade (8,000 sf) and recreation (5,000 sf).

The planned structure will have a roof height of about 80 feet with partial setbacks at the 5th, 6th and 7th floors. The first floor will be directly accessible from sidewalk grade and a 4,115-square foot partial cellar is planned with a depth of 12 feet below land surface (bls). Layout of the proposed Site redevelopment is presented in Figure 2. The cellar and localized foundation elements will be excavated to a depth of 12 feet bls. It is expected that most of this cut will be removed from the Site, and that a significant portion of the material will be construction debris from previous structures. The total volume of material to be removed is approximately 2,200 cubic yards (CY). As part of development, the referenced lots are expected to be merged into a single tentative lot to be assigned. The current zoning designations are R5B and R7A Residential. The proposed use is consistent with existing zoning for the property. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

1.3 Description of Surrounding Property

To the west, the property is bounded by Rogers Avenue. Further west across Rogers Avenue is the Flatbush YMCA Nursery and Pre-school. To the east, the property is bounded by residential buildings and East 28th Street. Further east, on Nostrand Avenue, are the Future Kids Learning Center day care facility and Public School 269 (approximately 0.10 miles away). To the north, the property is bounded by residential buildings. To the south, the property is bounded by residential buildings and a Fire Department of New York (FDNY) fire house. The nearest school is Public School 269, approximately 0.10 miles to the east. Figure 3 shows the surrounding land usage.

1.4 Environmental Investigation Reports

The following environmental work plans and reports were developed for the Site:

A remedial investigation was performed by Roux Associates, Inc. and the results are documented in a companion document called “*Remedial Investigation Report, The Doe Fund – Rogers Avenue*”, dated May 2013 (RIR).

Summary of Past Uses of Site and Areas of Concern

Based on a review of the Sanborn Fire Insurance Maps presented in the January 2013 Phase I Environmental Site Assessment (ESA) performed by CA RICH Consultants, Inc., the Site was

developed in 1907 with one-story and two-story dwellings and one-story and two-story carpenter shops. By 1930, the Site contained 20 one-story automobile garages, two two-story dwellings, a one-story store, and a one-story carpenter shop. On the 1930 Sanborn Fire Insurance Map, there is a gasoline underground storage tank (UST) listed at 1345 Rogers Avenue. From 1968 through the present, there are 16 detached one-story automobile garages, one two-story dwelling, and one one-story store.

The AOCs identified for this site include:

- An E-Designation for Block 5229 Lots 11,15, and 17;
- A gasoline UST identified on Sanborn Fire Insurance Maps from 1930 through 2007 on Block 5229 Lot 17(with no closure documentation); and
- The identification of the Site as an auto repair facility on the 1934 City Directory.

No underground anomalies indicating potential USTs were identified during the RI activities.

Summary of the Work Performed Under the Remedial Investigation

Roux Associates performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);
2. Installed nine soil borings across the Site, and collected 18 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed four temporary groundwater monitoring wells throughout the Site to establish groundwater flow and collected four groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed six soil vapor probes within the proposed building footprint and collected six samples for chemical analysis.

Findings of Environmental Investigation

Summary of Environmental Findings

1. Elevation of the property ranges from 24.39 to 22.78 feet above mean sea level.
2. Depth to groundwater ranges from 22.44 to 21.37 feet at the Site.
3. Groundwater flow is generally from southeast to northwest beneath the Site.

4. Depth to bedrock is unknown, as bedrock was not encountered during the RI.
5. The stratigraphy of the Site, from the surface down to the maximum soil boring depth of 15 feet, consists of fill material containing medium to fine sand with some gravel, brick, asphalt, and concrete fragments.
6. A total of eighteen soil samples were collected during the RI. Soil laboratory analytical data was compared to 6NYCRR Part 375-6.8 Unrestricted SCOs (USCOs) and Restricted-Residential Soil Cleanup Objectives (RRSCOs). Soil/fill samples collected during the RI showed no detectable concentrations of VOCs and PCBs. Multiple SVOCs, including benzo(a)anthracene (2,000 µg/kg), benzo(a)pyrene (1,800 µg/kg), benzo(b)fluoranthene (2,500 µg/kg), and indeno(1,2,3-cd)pyrene (1,200 µg/kg) were detected above Restricted-Residential SCOs in one shallow soil sample (SB-1101). Benzo(k)fluoranthene and Chrysene also exceeded Unrestricted Use SCOs. All of the SVOCs that were detected above Restricted-Residential SCOs are a subset of SVOCs known as polycyclic aromatic hydrocarbons (PAHs). Metals including Arsenic (max of 28 mg/kg), barium (max of 490 mg/kg), Chromium (max of 61 mg/kg), copper (max of 280 mg/kg), lead (max of 3,200 mg/kg), mercury (max of 0.3 mg/kg), nickel (max of 160 mg/kg) and zinc (max of 280 mg/kg) exceeded Unrestricted Use SCOs. Of these metals, arsenic, barium and lead also exceeded Restricted-Residential SCOs. Pesticides including 4,4'-DDD (5.11 µg/kg), 4,4'-DDE (3.7 µg/kg) and 4,4'-DDT (max of 17.8 µg/kg) were detected above Unrestricted Use SCOs in two shallow samples.
7. A total of four groundwater samples were collected during the RI. Groundwater laboratory analytical data was compared to the New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). No VOCs, SVOCs, PCBs or Pesticides were detected above laboratory reporting limits in any of the groundwater samples collected. The dissolved concentration of the metals iron, sodium and manganese were detected above GQS.
8. Low concentrations of both petroleum-related VOCs and chlorinated VOCs were detected in all six soil vapor samples. Most compounds were detected at concentrations less than 10 µg/m³ except for ethanol (85 µg/m³), heptane (46 µg/m³), xylene (69 µg/m³),

and toluene (396 $\mu\text{g}/\text{m}^3$). Tetrachloroethene (PCE) was detected in four of the six soil vapor samples at concentrations ranging from 4.54 $\mu\text{g}/\text{m}^3$ to 9.29 $\mu\text{g}/\text{m}^3$. Trichloroethene (TCE), carbon tetrachloride, and 1,1,1-trichloroethane (1,1,1-TCA), were not detected in any soil vapor samples during this RI. Based on the detected soil vapor concentrations, no remedial actions are necessary.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not suspected at this Site.

2.0 DESCRIPTION OF REMEDIATION

2.1 Objectives

The Site remediation and mitigation objectives are:

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this Site:

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.
- Prevent migration of contaminants that would result in groundwater contamination.

Groundwater

Groundwater contamination was not identified during the RI and no RAOs were identified.

Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other occupied structures.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment taking into consideration the current, intended, and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria, and guidance values (SCGs). A remedy is then developed based on the following ten criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community acceptance;
- Land use; and
- Sustainability.

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. As required, a minimum of two remedial alternatives (Alternative 1 and Alternative 2) are considered for alternatives analysis for this Site:

Alternative 1 involves:

- Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 SCOs throughout the Site and confirmation that Track 1 SCOs have been achieved with post-excavation endpoint sampling in the excavation areas. Based on the results of the remedial investigation, it is expected that this alternative would require excavation across the entire Site to a depth of more than 15 feet to remove all historic fill.

- No engineering or institutional controls are required in a Track 1 cleanup, but as part of new construction, a vapor barrier beneath the foundation slab and behind foundation walls up to grade would be installed to prevent exposures from off-site soil vapor or groundwater.
- Placement of a final cover consisting of building slab and pavement over the entire Site as part of new construction.

Alternative 2 involves:

- Establishment of Track 4 Site Specific Soil Cleanup Objectives (SCOs).
- Removal of all soils exceeding Track 4 SCOs identified in the RIR (i.e., localized hot spots) and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation endpoint sampling. Excavation for development purposes would take place to a depth of approximately 12 feet bls in the cellar footprint, with localized excavation for foundation elements for the remaining area of the Site. Based on samples collected in the RIR, it is anticipated that additional localized hot spot excavation beyond the development excavations would be sufficient to achieve Track 4 SCOs.
- Installation of a vapor barrier beneath the foundation slab and along foundation side walls up to grade to prevent future exposures from off-Site soil vapor.
- Placement of a final cover, including building slab, asphalt pavement, patio pavement and landscaped areas, over the entire Site to eliminate exposure to remaining soil/fill.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on other sensitive Site uses, such as farming or vegetable gardening, to eliminate future exposure pathways; and prohibition of a higher level of land use without OER approval.
- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these engineering and institutional controls, including the performance of periodic inspections and certification that the controls are performing as they were intended. SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP.
- The property will continue to be registered with an E-Designation at the NYC Buildings Department.

3.1 Threshold Criteria

Protection of Public Health and the Environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, and

implementation of Engineering Controls or Institutional Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be protective of human health and the environment by removing all historic fill at the Site, thus eliminating the potential for human and environmental exposure to contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater. There is minimal potential for contact with contaminated groundwater as it is not used for potable purposes. Potential exposure from off-site soil vapors would be addressed by installing a vapor barrier beneath the foundation slab of the new building as part of development.

Alternative 2 would achieve comparable protection of human health and the environment by excavating and removing soil/fill with SVOCs and metals above Track 4 SCOs, and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCOs, as well as by employing institutional and engineering controls, including a composite cover system, and a vapor barrier. The composite cover system would prevent direct contact with remaining on-site soil/fill. Implementing institutional controls including a Site Management Plan and continued “E” designation of property would ensure that the composite cover system remains intact and protective. Establishment of Track 4 SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier beneath the new building's basement slab and continuing the vapor barrier around foundation walls.

3.2 Balancing Criteria

Compliance with Standards, Criteria, and Guidance (SCGs)

This evaluation criterion assesses the ability of the alternative to achieve applicable standards, criteria and guidance.

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through establishment of Track 1 Unrestricted Use SCOs. Compliance with SCGs for soil vapor would also be achieved by installation of vapor barrier as part of construction.

Alternative 2 would achieve compliance with remedial goals, chemical-specific SCGs, and RAOs for soil through the removal of soil/fill to Track 4 SCOs and capping the Site with a composite cover. Compliance with SCGs for soil vapor would be achieved by installing a vapor barrier below the new buildings foundation slab. A Site Management Plan would ensure that these engineering controls remain protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) that comply with the applicable SCGs shall be implemented during Site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. These measures would protect on-site workers and the surrounding community from exposure to Site-related contaminants.

Short-term effectiveness and impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on public health and the environment during implementation of the remedial action, including protection of the community, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

Both Alternative 1 and 2 have similar-short term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short term impacts would be higher for Alternative 1 since excavation of greater amounts of historical fill material would be excavated and removed for off-site disposal.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. For Alternative 1, approximately 800, 25-ton capacity truck trips, and for Alternative 2, approximately 130 25-ton trucks would be necessary to transport fill and soil excavated during Site development. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flaggers will be used to protect pedestrians at Site entrances and exits.

Both Alternatives 1 and 2 would both employ appropriate measures to prevent short term impacts, including a CAMP and a SMMP, during all on-site soil disturbance activities and would effectively prevent the release of significant contaminants into the environment. Both alternatives provide short term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-site contaminants. Construction workers operating under appropriate management procedures and a HASP would be protected from on-site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones).

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs/ICs that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of Engineering Controls.

Alternative 1 would achieve long-term effectiveness and permanence related to on-site contamination by permanently removing all impacted soils and enabling unrestricted usage of the property.

Alternative 2 would provide long-term effectiveness by removing localized contamination identified during the RI and attaining Track 4 SCOs, establishing engineering controls including a vapor barrier and a composite cover system across the entire Site, establishing institutional controls to ensure long-term management including use restrictions, a Site Management Plan,

and placement of a deed restriction to memorialize these controls for the long term. The Site Management Plan would ensure long-term effectiveness of all engineering controls and institutional controls by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended to and assuring that protections designed in the remedy would provide continued high levels of protection, in perpetuity.

Reduction of toxicity, mobility, or volume of contaminated material

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by removing all soil in excess of Unrestricted Use SCOs.

Alternative 2 would permanently eliminate most of the toxicity, mobility, and volume of contaminants from on-site soil by removing soil in excess of Track 4 SCOs, and remaining soil/fill would meet Track 4 Site specific SCOs. The remainder of the Site will be capped to permanently eliminate exposures and associated toxicity.

Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g., obtaining permits for remedial activities), and availability of services and materials.

Both Alternatives are feasible and implementable. The techniques, materials, and equipment to implement Alternative 1 and 2 are readily available and have been proven effective in remediating the contaminants associated with the Site. They use standard materials, services, and well-established technology. The reliability of these remedies is also high. There are no specific difficulties associated with any of the activities proposed, which utilize standard/industry methods.

Cost Effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, disposal costs and, engineering expenses) and Site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Initial costs associated with Alternative 1 are considerably higher than Alternative 2 based on excavation and off-site disposal of a greater volume of soil. In order to reach Alternative 1 SCOs, the entire Site to the depth of native soil would be excavated and disposed of off-site. Assuming a Site-wide excavation depth of 15 feet bls, this would be a volume of approximately 13,900 CY. Approximately 8,700 CY of clean fill would be required to backfill the historic fill removed, at an additional cost. Alternative 2 would be addressed by the current redevelopment plan, which requires excavation and off-site disposal of approximately 2,200 CY of contaminated soil. This amounts to approximately 20% of the excavation required to reach Alternative 1.

Long-term costs for Alternative 2 are likely higher than Alternative 1 based on costs for long term implementation of a Site Management Plan.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

Based on the overall goals of the remedial program and initial observations by the project team, both of the alternatives are expected to be acceptable to the community. This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. This public comment

related to Site remediation will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix A. Observations here will be supplemented by public comment received on the RAWP.

Land Use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the Site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the Site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the Site.

The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. Following remediation, the Site would meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are appropriate for its planned residential use. Improvements in the current environmental condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources

Sustainability of the Remedial Action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency;

and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The remedial plan would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. New York City Clean Soil Bank program may be utilized for reuse of native soils. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development. A complete list of green remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as Appendix B.

4.0 REMEDIAL ACTION

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is Alternative 2, the Track 4 Alternative. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity, and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP citizen participation activities according to an approved CPP included in RAWP.
2. Performance a Community Air Monitoring Program for particulates and volatile organic compounds during excavation.
3. Establishment of Site Specific Track 4 SCOs.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding Track 4 SCOs. Excavation for development purposes would take place to a depth of approximately 12 feet bls in the cellar footprint, with localized excavation for foundation elements for the remaining area of the Site.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
7. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.
8. Transportation and off-site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-site.

9. Collection and analysis of end-point samples from localized hot spots to determine the performance of the remedy with respect to attainment of SCOs.
10. Demarcation of residual soil/fill.
11. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
12. Installation of a vapor barrier system beneath the building slab and outside foundation sidewalls below grade. A minimum of 20-mil Grace Bituthene (or equivalent) vapor barrier system will be installed for the subgrade walls according to manufacturer specifications and depending on foundation construction methods.
13. Construction and maintenance of an engineered composite cover consisting of concrete building slab, asphalt pavement, patio pavement, and two foot-thick clean soil cover for landscaped areas to prevent human exposure to residual soil/fill remaining under the Site.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
16. Submission of an approved Site Management Plan (SMP) in the Remedial Action Report (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
17. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
18. The property will continue to be registered with an E-Designation by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and Soil/Fill Management

Site Specific Track 4 Soil Cleanup Objectives (SCOs) are proposed for this project. The following Track 4 SCOs will be used:

Contaminant	Track 4 SCOs
Total SVOCs	250 ppm
Arsenic	16 ppm
Barium	750 ppm
Lead	800 ppm

Soil and materials management on-site and off-site, including excavation, handling, and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix C.

Discrete contaminant sources (such as localized hotspots) identified during the remedial action will be properly managed and delineated and the information will be provided in the Remedial Action Report.

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-site is approximately 3,300 tons.

Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action.

End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Five confirmation soil samples will be collected from the base of the main cellar excavation at locations to be determined by OER. For comparison to Track 4 SCOs, analytes will only include trigger compounds and elements established on the Track 4 SCO list.

Hot spot removal actions identified during the remedial program will be performed in conjunction with post remedial end-point samples to ensure that hot-spots are fully removed. Analytes for end-point sampling will be those parameters that are driving the hot-spot removal

action and will be approved by OER. Frequency for hot-spot end-point sample collection is as follows:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
 - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
 - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken.

Post-remediation end-point sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

New York State ELAP certified labs will be used for all end-point sample analyses. Labs performing confirmation and end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for trigger analytes (those for which SCO exceedance are identified) utilizing the following methodology:

Soil analytical methods will include:

- Semi-volatile organic compounds by EPA Method 8270; and

- Selected metals by EPA Method 6020.

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e., spills hotline) will be performed.

Quality Assurance/Quality Control

QA/QC procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for this investigation. Field QA/QC procedures will be used to document that samples are representative of actual conditions at the Site and identify possible cross-contamination from field activities or sample transit. Laboratory QA/QC procedures and analyses will be used to demonstrate whether analytical results have been biased either by interfering compounds in the sample matrix, or by laboratory techniques that may have introduced systematic or random errors to the analytical process. QA/QC samples including field blanks, and trip blanks, and duplicates, will be collected and analyzed at rates in accordance with DER-10.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already on-site will be performed in conformance with the Soil/Materials Management Plan in Appendix C. The estimated quantity of on-site soil/fill expected to be reused/relocated on-site is 150 tons. If on-site soil cannot be reused, the estimated quantity of soil to be imported onto the Site for backfill and cover soil is 150 tons.

4.3 Engineering Controls

Engineering Controls will be employed in the remedial action to address residual contamination remaining at the Site. The Site has two primary Engineering Control (EC) Systems. These are:

- Composite cover system consisting of asphalt covered parking areas, paving stone covered patios, concrete building slabs, and clean fill cover of two feet in unpaved landscaped areas; and
- Soil vapor barrier.

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system is comprised of approximately:

- 11,600 square feet of concrete building slab;
- 8,000 square feet of asphalt paved parking space;
- 1,600 square feet of landscaped area; and
- 3,400 square feet of paving stone covered patios.

Figure 2 shows the location of each cover type planned for the Site. The composite cover system would be a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. All materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

Vapor Barrier

Migration of soil vapor will be mitigated with a combination of building slab and vapor barrier and will become a permanent engineering control.

The subslab vapor barrier will be a minimum 20-mil vapor barrier that is American Society of Testing and Materials (ASTM) E 1745 Class A, B, and C compliant, resistant to puncturing and has high tensile strength. The permeance of the vapor barrier is compliant with ASTM E 154 Sections 8, 11, 12, and 13. The vapor barrier will not deteriorate, decompose, or degrade below concrete slabs when buried and has an indefinite life expectancy. A Grace Bituthene (or equivalent) vapor barrier system will be installed for the subgrade walls according to manufacturer specifications and depending on foundation construction methods. The proposed vapor barrier specifications are provided in Appendix D. The RAR will include photographs (maximum of two photos per page) of the installation process, PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty.

4.4 Institutional Controls

Institutional Controls (IC) have been incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment.

Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a Site-specific Site Management Plan (SMP) that will be included in the RAR. The property will continue to be registered with an E-Designation by the NYC Buildings Department.

Institutional Controls for this remedial action are:

- Continued registration with an E-Designation for the property at the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the Site Management Plan which will note that the property owner and property owner's successors and assigns must comply with the approved SMP.
- Site Management Plan approved by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting, and certification of ECs and ICs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted annually and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited.
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use.
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP.
- The Site will be used for residential use and will not be used for a higher level of use without prior approval by OER.

4.5 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by the DCR and this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that

allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the SMP are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of EC's; (4) inspection and certification of EC's; and (5) reporting.

Site management activities, reporting, and EC/IC certification will be scheduled by OER on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 31 of the year following the reporting period.

4.6 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Investigations reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA). As part of the VCP process, a QHHEA was performed to determine whether the Site poses existing or future health hazards to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Sources

Historic fill is present at the Site from grade to approximately 4 to 12 feet below grade.

Based on the results of the RIR, the contaminants of concern are:

Soil:

- Metals, specifically arsenic, barium, and lead, were detected above 6NYCRR Part 375-6.8 Restricted-Residential SCOs;
- SVOCs (PAH compounds) including benzo(a)anthracene, benzo(a)pyrene, benzo(b)-fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeding Track 2 Restricted Residential SCOs.
- Pesticides, including 4,4'-DDD, 4,4'-DDE and 4,4'-DDT, were identified but did not exceed Restricted Residential SCOs;

Groundwater:

- No groundwater contaminants of concern were detected above GQS;

Soil Vapor:

- Low levels of VOCs including tetrachloroethene (PCE) were detected in soil vapor.

Nature, Extent, Fate and Transport of Contaminants

SVOCs and metals are present in the historic fill materials throughout the Site. Pesticides were detected in two shallow samples. These compounds were not detected in groundwater above their respective GQSs, indicating that this contamination is not mobilizing into on-site or off-site groundwater. The metal contaminants that were detected above GQSs in groundwater throughout the Site during the RI (iron, manganese, and sodium) are considered naturally occurring, rather than from any on-site source. The chlorinated VOCs in soil vapor were not detected or were well below guidance issued by New York State DOH and were not found in any of the on-Site soil or groundwater samples collected.

Potential Routes of Exposure

The five elements of an exposure pathway are: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more

of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill, or soil;
- Inhalation of vapors and particulates; and
- Dermal contact with water, fill, soil, or building materials.

Existence of Human Health Exposure

Current Conditions:

The Site is currently paved with asphalt and covered by existing buildings, limiting potential points of contact with soil/fill. Groundwater is marginally contaminated but is not exposed at the Site, and because the Site is served by the public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site and there is no potential for exposure. Potential exposure pathways include ingestion and dermal contact with soil/fill. There is potential for contaminated soil vapors to accumulate in the existing structures on the Site.

Construction/Remediation Activities:

Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils and groundwater, as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with any exposed impacted soil, and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. During the remedial action, on-site and off-site exposure pathways will be minimized by preventing access to the Site, through implementation of soil/materials management, dust controls, and through the implementation of the Community Air-Monitoring Program and a CHASP.

Proposed Future Conditions:

Once the remedial actions and redevelopment of the Site has been completed, there will be no potential on-site or off-site exposure pathways. All remaining soil will meet Track 4 SCOs, groundwater will not be exposed or used, and any exposures to vapors will be prevented by

installation of a vapor barrier and building slab. The Site is served by a public water supply. There are no plausible off-site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site.

Receptor Populations

On-Site Receptors:

Onsite receptors are limited to trespassers and site representatives and visitors granted access to the property. During construction, on-site receptors will include construction workers, site representatives, and visitors. After construction, on-site receptors will include child and adult residents and visitors.

Off-Site Receptors:

Potential off-site receptors within a 0.25-mile radius of the Site include: adult and child residents, and commercial and construction workers, pedestrians, trespassers, and cyclists, based on the following:

1. Commercial Businesses – existing and future
2. Residential Buildings – existing and future
3. Building Construction/Renovation – existing and future
4. Pedestrians, Trespassers, Cyclists – existing and future
5. Schools – existing and future.

Overall Human Health Exposure Assessment

There are potential complete exposure pathways for the current site condition. There is a potential complete exposure pathway that requires mitigation during implementation of the remedy. There is no complete exposure pathway under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide impervious surface cover cap, and a subsurface vapor barrier system for the building. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened. During the remedial action, on-site exposure pathways will be limited by preventing access to the Site through implementation of soil/materials management and dust

controls, community air monitoring, stormwater management controls and health and safety implementation.

After the remedial action is complete, there will be no remaining exposure pathways. The removal of soil in excess of Track 4 SCOs and, as part of development, installation of a vapor barrier and composite cover will interrupt any remaining exposure pathways.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Jessica Taylor, Roux Associates' project manager. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are:

- Charles McGuckin, P.E. – Professional Engineer
- Joseph D. Duminuco – Qualified Environmental Professional

5.2 Site Security

Site access will be controlled by DOB approved construction fence. For work areas of limited size, barrier tape will be sufficient to delineate and restrict access.

5.3 Work Hours

The hours for operation of remedial construction will be from 7:00 AM to 5:00 PM. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 Construction Health and Safety Plan

The HASP is included in Appendix E. The Site Safety Coordinator will be Roux Associates personnel determined prior to the start of construction. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, including 40-hour HAZWOPER training and annual 8-hour refresher training. The Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to field

personnel. Additional safety training may be added depending on the tasks performed.

Emergency telephone numbers will be posted at the Site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the HASP. That document will define the specific project contacts for use in case of emergency.

5.5 Community Air Monitoring Plan

Real-time air monitoring for particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for during the handling of contaminated or potentially contaminated media excavated from the Site. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring will be performed during non-intrusive activities such as the collection of soil samples. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment

appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for OER personnel to review.

5.6 Agency Approvals

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

5.7 Site Preparation

Pre-Construction Meeting

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the

anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-site and off-site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAWP.

Dewatering

Dewatering is not expected at the Site.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. The location of proposed equipment and material staging areas, truck inspection station, stockpile areas, and other pertinent remedial management features will be decided on and managed by the construction manager for the Site.

Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the Site will not track soil, fill, or debris off-site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

Truck Inspection Station

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the NYC VCP Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels, and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

Extreme Storm Preparedness and Response Contingency Plan

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of Site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous Site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for Site preparedness prior to the event and response after the event.

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the Site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, hay-bales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A Site inspection report will be submitted to OER at the completion of Site inspection and after the Site security is assessed. Site conditions will be compared to the inventory of Site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures, or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYSDEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be

reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off-site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of Site access by the property owner. Impacted off-site areas may require characterization based on Site conditions, at the discretion of OER. If on-site petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYSDEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYSDEC.

Storm Response Reporting

A Site inspection report will be submitted to OER at the completion of Site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of Site conditions and material performed prior to the storm event and significant differences will be noted. The Site inspection report will be sent to the OER project manager and will include the Site name, address, tax block and lot, Site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the Site was dislocated and whether any of the soil left the Site; estimates of the volume of soil that left the Site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of on-site or off-site exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting

to NYSDEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 Traffic Control

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the Site is to proceed north on Rogers Avenue for one block and turn left onto Foster Avenue for three blocks. Make a right to proceed north on Flatbush Avenue.

5.9 Demobilization

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination, and;
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

5.10 Reporting and Record Keeping Daily Reports

Daily Reports

Daily reports providing a general summary of activities for each day of *active remedial work* will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of work performed;

- Quantities of material imported and exported from the Site;
- Status of on-site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions, if any;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

Record Keeping and Photo-Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e., jpeg files).

5.11 Complaint Management

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

5.12 Deviations from the Remedial Action Work Plan

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and reported in the Remedial Action Report. The process to be

followed if there are any deviations from the RAWP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

6.0 REMEDIAL CLOSURE REPORT

A Remedial Action Report (RAR) will be submitted to OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action and DUSR;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;
- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with an E-Designation at the NYC Department of Buildings; and
- Reports and supporting material will be submitted in digital form.

Remedial Closure Report Certification

The following certification will appear in front of the Executive Summary of the Remedial Action Report. The certification will include the following statements:

I, Charles McGuckin, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 1345-1357 Rogers Avenue Site / 14CVCP164K.

I, Joseph Duminuco, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 1345-1357 Rogers Avenue Site / 14CVCP164K. (Optional)

I certify that the OER-approved Remedial Action Work Plan dated October 2013 and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a two month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	0	1
Remedial Action	1	8
Demobilization	9	1
Submit Remedial Action Report	12	-

1. Site Location Map
2. Proposed Redevelopment Plan
3. Surrounding Land Use



LEGEND

11 TAX LOT WITH E-DESIGNATION

54 TAX LOT WITH NO E-DESIGNATION



Title:

SITE LOCATION MAP

1345,1351,1357 ROGERS AVENUE AND 562 E. 28TH STREET
BROOKLYN, NEW YORK

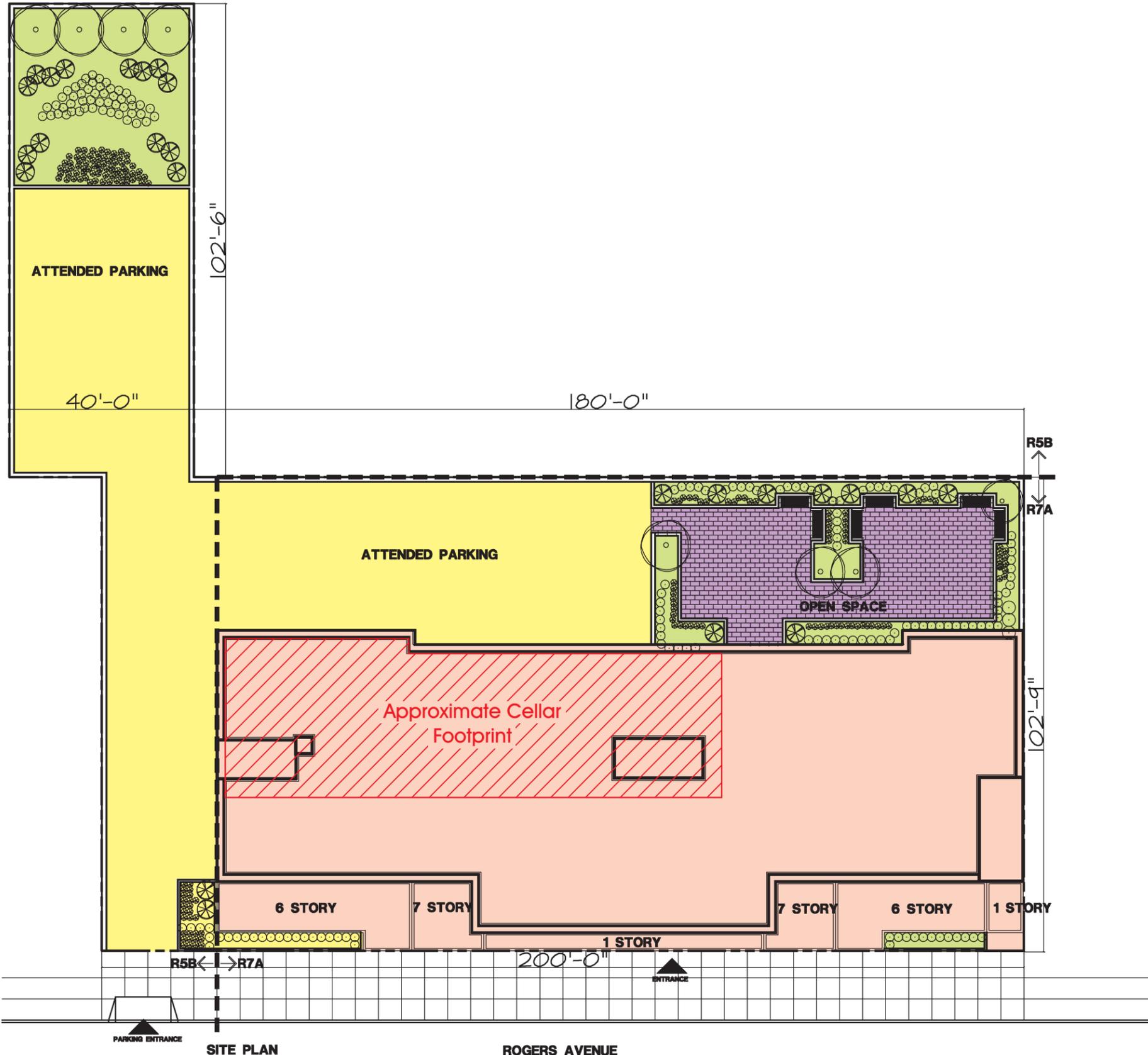
Prepared for:

THE DOE FUND

ROUX ROUX ASSOCIATES, INC. <i>Environmental Consulting & Management</i>	Compiled by: J.T.	Date: 21JUN13	FIGURE 1
	Prepared by: B.H.C.	Scale: AS SHOWN	
	Project Mgr.: J.T.	Project No.: 2283.0001Y000	
	File: 2283.0001Y105.01.CDR		

12283Y0001Y105/2283.0001Y105.01.CDR

EAST 28TH STREET



LEGEND

- CONCRETE BUILDING SLAB (INCLUDING CELLAR)
- ASPHALT PAVED PARKING
- LANDSCAPED AREAS
- PAVING STONE COVERED PATIO

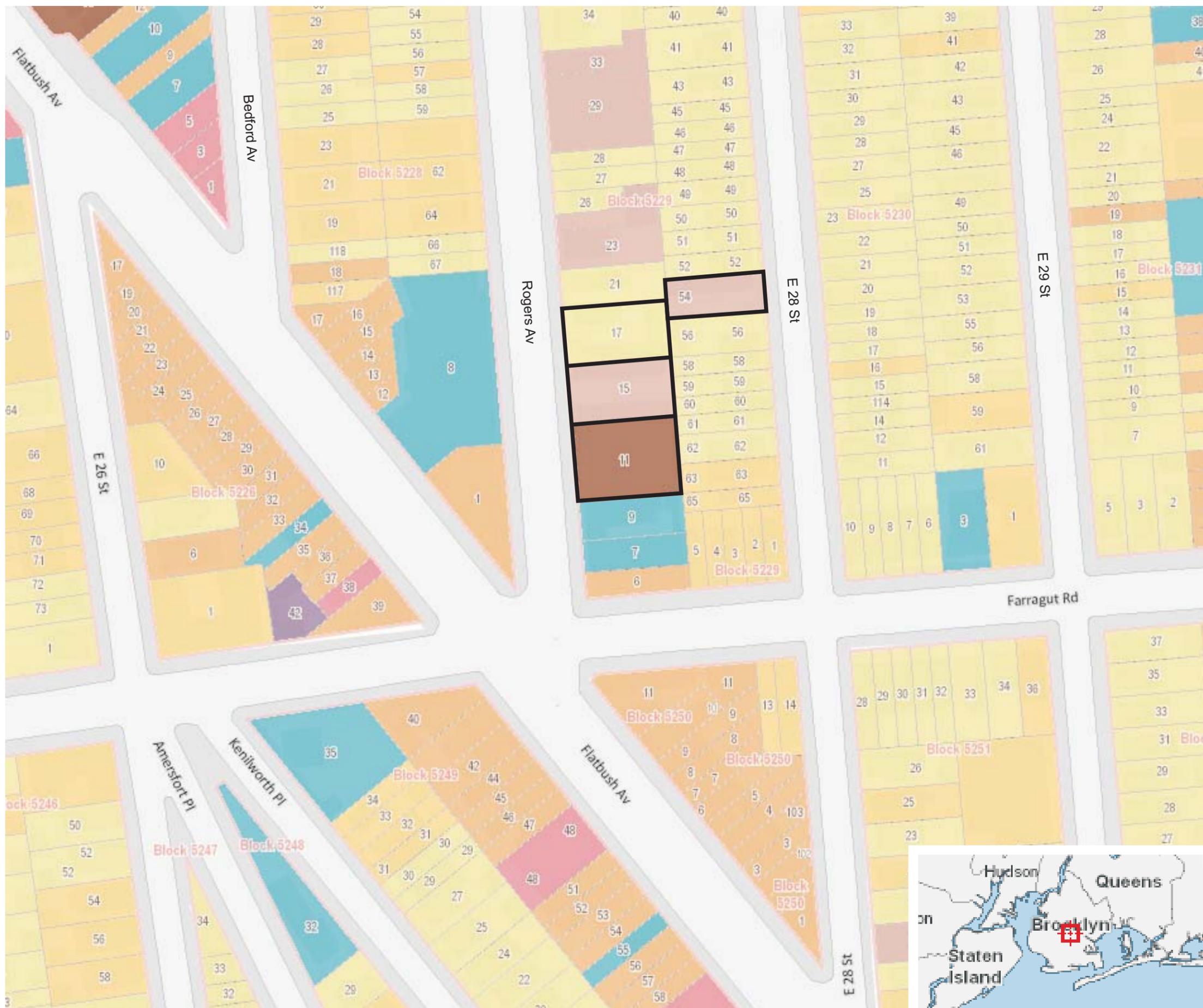
SOURCE:
 DELACOUR & FERRARA ARCHITECTS,
 SITE PLAN, JUNE 5, 2013

PROPOSED REDEVELOPMENT PLAN			
1345, 1351, 1357 ROGERS AVENUE AND 562 E. 28TH STREET BROOKLYN, NEW YORK			
Prepared for: THE DOE FUND			
ROUX ROUX ASSOCIATES, INC. <i>Environmental Consulting & Management</i>	Compiled by: J.T. Prepared by: B.H.C. Project Mgr.: J.T. File: 2283.0001Y105.02.CDR	Date: 21JUN13 Scale: AS SHOWN Project No.: 2283.0001Y000	FIGURE 2

12283Y0001Y105.02.283.0001Y105.02.CDR

SITE PLAN
NOT TO SCALE

ROGERS AVENUE



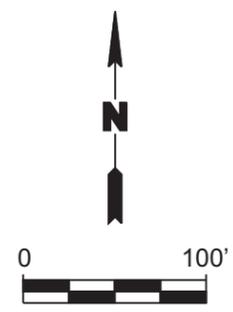
LEGEND

SITE PROPERTY

LAND USAGE

- 1 & 2 FAMILY RESIDENTIAL
- MULTI-FAMILY RESIDENTIAL
- MIXED USE
- OPEN SPACE & OUTDOOR RECREATION
- COMMERCIAL
- INSTITUTIONS
- INDUSTRIAL
- PARKING
- TRANSPORTATION / UTILITIES
- VACANT LOTS

NOTE:
 BASE MAP ADAPTED FROM NYC OPEN ACCESSIBLE SPACE INFORMATION SYSTEM (OASIS), WWW.OASISNYC.NET, MARCH2013.



SURROUNDING LAND USE		
1345,1351,1357 ROGERS AVENUE AND 562 E. 28TH STREET BROOKLYN, NEW YORK		
Prepared for: THE DOE FUND		
 ROUX ASSOCIATES, INC. <small>Environmental Consulting & Management</small>	Compiled by: J.T.	Date: 25JUN13
	Prepared by: B.H.C.	Scale: AS SHOWN
	Project Mgr.: J.T.	Project No.: 2283.0001Y000
	File: 2283.0001Y102.03.CDR	
		FIGURE 3

2283Y0001Y102.03.CDR

- A. Citizen Participation Plan
- B. Sustainability Statement
- C. Soil/Materials Management Plan
- D. Proposed Vapor Barrier Specifications
- E. Health and Safety Plan

Citizen Participation Plan

APPENDIX A

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and The Doe Fund have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, The Doe Fund will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Rebecca Bub, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 341-2073.

Project Contact List. OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

Repositories. A document repository is maintained in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The Doe Fund will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Cortelyou Library
1305 Cortelyou Road
Brooklyn, New York 11226
718-693-7763

Repository Hours of Operation are:

Monday and Tuesday 10:00 AM to 6:00 PM
Wednesday 10:00 AM to 8:00 PM
Thursday and Friday 10:00 AM to 6:00 PM
Saturday 10:00 AM to 5:00 PM
Sunday Closed

Digital Documentation. NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by The Doe Fund, reviewed and approved by OER prior to distribution and mailed by The Doe Fund. Public comment is solicited in public notices for all work plans developed under the NYC Brownfield Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

Citizen Participation Milestones. Public notice and public comment activities occur at several steps during a typical NYC VCP project. See flow chart on the following page, which identifies when during the NYC VCP public notices are issued: These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

- **Public Notice announcing the approval of the RAWP and the start of remediation.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.

Sustainability Statement

APPENDIX B

SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

Reuse of Clean, Recyclable Materials. Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

Redevelopment of the Site includes reuse of clean, non-virgin materials including the reuse and recycling of concrete aggregate, stone and masonry derived from the Site excavations and screened and tested for suitability as backfill or surface cover. Any necessary imports of backfill or cover materials will be from the nearest local sources available commercially, or from other sources with OER assistance. To the degree possible, exports will be minimized. Where excavated material is found to be suitable for reuse, it will be relocated out of contact with residents in areas of the site beneath the composite cover system.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

Reduce Consumption of Virgin and Non-Renewable Resources. Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

To accomplish the Site cover required under this remediation, the intent is to use suitable cover material either screened or borrowed onsite. This process will require additional testing and supervision, but will reduce the requirements for import of virgin materials and for export of excavated material. Topsoil may need to be imported for planted areas, but to meet that need we will work with local sources, either commercially available or identified with the assistance of OER staff. To the degree topsoil is found onsite in former rear yards, it will be stripped and stored for testing its suitability for reuse.

An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency. Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

Screening, testing and storage of suitable backfill and cover materials onsite is an effective strategy to minimize transport and energy consumption. Although it will add some time to the remediation activities, avoiding imports and exports to the degree possible should also be cost effective. Where this strategy appears to be infeasible due to the unsuitability of the available material, it is intended to use OER staff to locate the most efficient options for necessary imports and exports. In working out these arrangements we will include efficiency of equipment in contracting for services.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

Conversion to Clean Fuels. Use of clean fuel improves NYC's air quality by reducing harmful emissions.

To increase the use of clean fuels in the selected remedial action and redevelopment, we will include the preference for equipment powered by clean diesel and low sulfur fuels in our service agreements and solicitations.

An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future

redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

Although there are no known off-site sources of contamination, recontamination control measures for the Site include the installation of an 11,600 square foot concrete building slab and vapor barrier that can eliminate the risk of potential future migration of soil vapor contamination from off-site.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

Stormwater Retention. Storm-water retention improves water quality by lowering the rate of combined storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

Most of the site not covered by the new building will be to some degree permeable, either as planted area, open paving, or permeable paving. At the completion of construction, permeability and retention will be in excess of NYCDEP requirements for new construction.

An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

Paperless Brownfield Cleanup Program. The Doe Fund is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications, and milestone reports.

Low-Energy Project Management Program. The Doe Fund is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

Soil/Materials Management Plan

APPENDIX C

SOIL/MATERIALS MANAGEMENT PLAN

1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the Remedial Closure Report (RCR). Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Satisfaction.

1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

1.3 Characterization of Excavated Materials

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

1.4 Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

1.5 Off-Site Materials Transport

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes are in Section 3.8 of the RAP. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

1.6 Materials Disposal Off-Site

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or Applicant to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Applicant. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RCR.

The RCR will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the RCR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization

sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RCR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RCR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

1.7 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are listed in the RAP. "Reuse on-Site" means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to Engineering Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAP are followed. The expected location for placement of reused material will be provided to OER.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

1.8 Demarcation

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent

material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the RCR; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RCR. This demarcation will constitute the top of the site management horizon.

1.9 Import of Backfill Soil from Off-Site Sources

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in the RAP.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAP. The RCR will report the source of the fill, evidence

that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RCR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York

City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

1.11 Storm-water Pollution Prevention

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 Contingency Plan

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found

during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for Full List volatiles and semi-volatiles, pesticides/PCBs, and TAL metals, as appropriate.

1.13 Odor, Dust and Nuisance Control

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying the RCR.

Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Closure Report.

Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

1.14 Import of Clean Cover

Approximately 150 tons (100 cubic yards) of soil is anticipated to be imported to the Site for use as clean cover. All imported soil will be uncontaminated, clean soil that meets the lesser of the appropriate NYSDEC 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs and the NYSDEC 6 NYCRR Part 375-6.8 Groundwater Protection SCOs.

The imported uncontaminated, clean soil cover will be from an approved source/facility and will be evaluated by the PE/QEP to ensure:

- 1) That a segregated stockpile for 150 tons (100 cubic yards) is properly maintained at the source and will not be comingled with any other material prior to importing and grading the clean soil material at the Site;
- 2) That the material does not include any solid waste, including construction and demolition material, as it's prohibited;
- 3) That screening for evidence of contamination by visual, olfactory and PID soil screening practices prior to testing at the source as well as upon importing to the Site for grading is completed; and

4) That a maximum five-part composite sample will be collected from the segregated stockpile at the source at a minimum frequency of one sample per 250 cubic yards and analyzed for the following Full List parameters:

- VOCs by EPA Method 8260C (rev. 2006)
- SVOCs by EPA Method 8270D (rev. 2007)
- Pesticides by EPA Method 8081B (rev. 2000)
- PCBs by EPA Method 8082A (rev. 2000)
- TAL Metals by EPA Method 6010C (rev. 2007)

Upon receipt of the segregated stockpile analytical results collected at the source, a Clean Soil Sampling Report will be submitted to OER for review/approval prior to importing. The report will include the following:

- 1) Summary of number of samples collected and analyzed, tabulated data and comparison to the selected Site Use SCOs;
- 2) Analytical data sheets and chain of custody documentation;
- 3) Summary of 150 tons (100 cubic yards);
- 4) Photographs from the segregated stockpile at the source with sample point locations identified;
- 5) An affidavit from the source/facility on company letterhead stating that the segregated stockpile for 150 tons (100 cubic yards) has been properly maintained at the source and complies with the requirements listed above; and
- 6) A copy of source/facility NYSDEC permit;

A highly visible demarcation barrier (i.e. orange geo-synthetic material or equivalent) will be installed beneath the clean soil/fill surface cover. Upon importing and grading the OER approved clean soil cover for 150 tons (100 cubic yards) on top of a highly visible demarcation barrier, the following documentation will be presented in the Final Remedial Closure Report:

1. Copies of purchase invoices;
2. Truck transportation slips from the source to the Site;

3. Confirmation of 150 tons (100 cubic yards) of OER approved clean soil cover material imported and graded at the site on top of highly visible demarcation barrier;
4. Site plan depicting all areas where the OER approved clean soil cover has been placed;
and
5. Photographs documenting the importing and grading of the OER approved clean soil cover across the site with the underlying highly visible demarcation barrier (i.e. orange geo-synthetic material or equivalent).

Proposed Vapor Barrier Specifications

PREPRUFE® 300R & 160R

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Description

Preprufe® 300R & 160R membranes are unique composite sheets comprising a thick HDPE film, an aggressive pressure sensitive adhesive and a weather resistant protective coating.

Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe bond to concrete prevents ingress or migration of water around the structure.

The Preprufe R System includes:

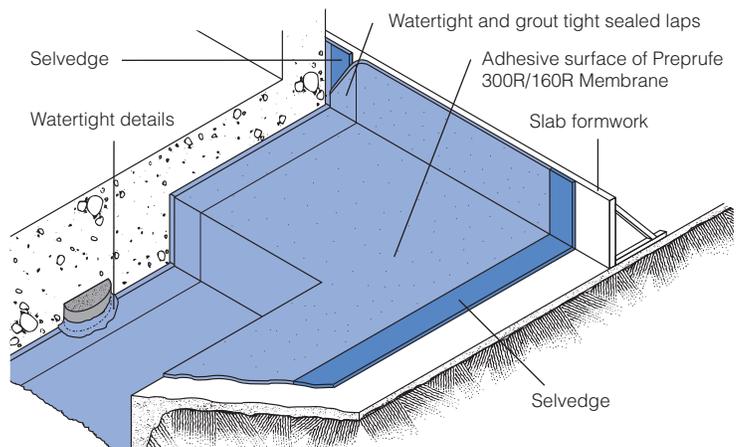
- **Preprufe 300R**—heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- **Preprufe 160R**—thinner grade for blindside, zero property line applications against soil retention systems.
- **Preprufe Tape LT**—for covering cut edges, roll ends, penetrations and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).
- **Preprufe Tape HC**—as above for use in Hot Climates (minimum 50°F (10°C)).
- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.
- **Adcor™ ES**—waterstop for joints in concrete walls and floors
- **Preprufe Tieback Covers**—preformed cover for soil retention wall tieback heads
- **Preprufe Preformed Corners**—preformed inside and outside corners

Preprufe 300R & 160R membranes are applied either horizontally to smooth prepared concrete, carton forms or well rolled and compacted earth or crushed stone substrate; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

Preprufe can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene self-adhesive membrane or Procor® fluid applied membrane to walls after removal of formwork for a fully bonded system to all structural surfaces.

Advantages

- **Forms a unique continuous adhesive bond to concrete poured against it**—prevents water migration and makes it unaffected by ground settlement beneath slabs
- **Fully-adhered watertight laps** and detailing
- **Provides a barrier to water, moisture and gas**—physically isolates the structure from the surrounding ground
- **BBA Certified** for basement Grades 2, 3, & 4 to BS 8102:1990
- **Zero permeance** to moisture
- **Solar reflective**—reduced temperature gain
- **Simple and quick to install**—requiring no priming or fillets
- **Can be applied to permanent formwork**—allows maximum use of confined sites
- **Self protecting**—can be trafficked immediately after application and ready for immediate placing of reinforcement
- **Unaffected by wet conditions**—cannot activate prematurely
- **Inherently waterproof, non-reactive system:**
 - not reliant on confining pressures or hydration
 - unaffected by freeze/thaw, wet/dry cycling
- **Chemical resistant**—effective in most types of soils and waters, protects structure from salt or sulphate attack



Drawings are for illustration purposes only. Please refer to graceconstruction.com for specific application details.

Installation

The most current application instructions, detail drawings and technical letters can be viewed at graceconstruction.com. For other technical information contact your local Grace representative.

Preprufe 300R & 160R membranes are supplied in rolls 4 ft (1.2 m) wide, with a selvage on one side to provide self-adhered laps for continuity between rolls. The rolls of Preprufe Membrane and Preprufe Tape are interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.

Substrate Preparation

All surfaces—It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability (see Figure 1).

Horizontal—The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical—Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

Membrane Installation

Preprufe can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe in cold or marginal weather conditions 55°F (<13°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application. Alternatively, Preprufe Low Temperature (LT) is available for low temperature condition applications. Refer to Preprufe LT data sheet for more information.

Horizontal substrates—Place the membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave plastic release liner in position until overlap procedure is completed (see Figure 2).

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvage. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

Refer to Grace Tech Letter 15 for information on suitable rebar chairs for Preprufe.

Vertical substrates—Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the clear plastic release liner facing towards the concrete pour. The membrane may be installed in any convenient length. Fastening can be made through the selvage using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Immediately remove the plastic release liner.

Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to

overlap. Roll firmly to ensure a watertight seal.

Roll ends and cut edges—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly (see Figure 3). Immediately remove printed plastic release liner from the tape.

Details

Refer to Preprufe Field Application Manual, Section V Application Instructions or visit graceconstruction.com. This manual gives comprehensive guidance and standard details.

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe Tape centered over the damaged area and roll firmly. Remove the release liner from the tape. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape, remove the release liner from the tape and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove printed plastic release liner from tape. Where exposed selvage has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe membrane and tape.

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

Preprufe membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 1500 psi (10 N/mm²) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

Refer to Grace Tech Letter 17 for information on removal of formwork for Preprufe.

Figure 1



Figure 2

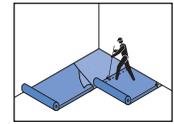
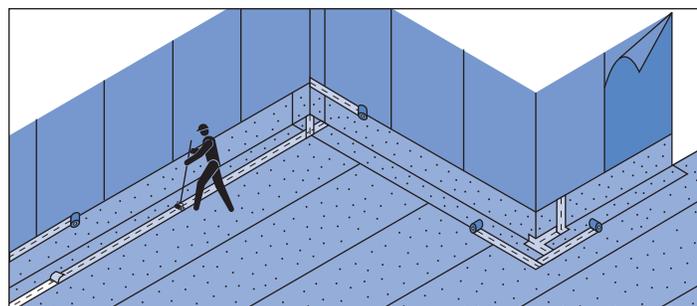
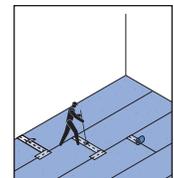


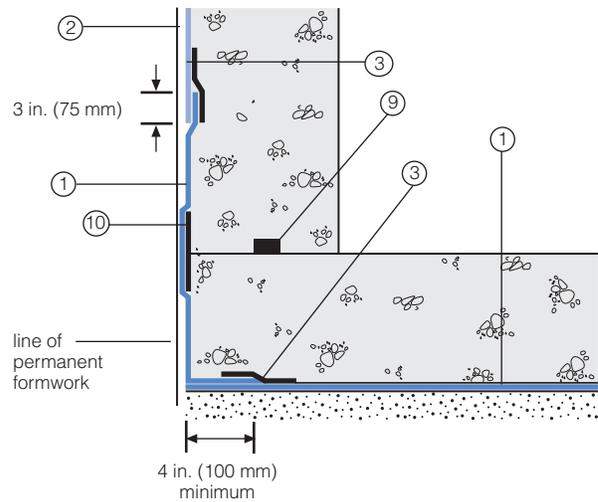
Figure 3



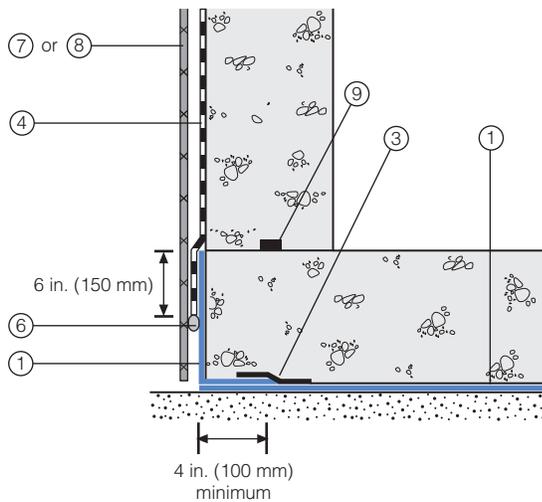
Detail Drawings

Details shown are typical illustrations and not working details. For a list of the most current details, visit us at graceconstruction.com. For technical assistance with detailing and problem solving please call toll free at 866-333-3SBM (3726).

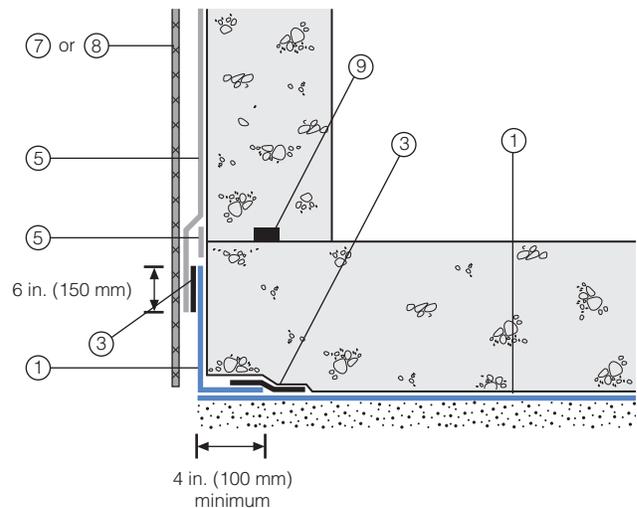
Wall base detail against permanent shutter



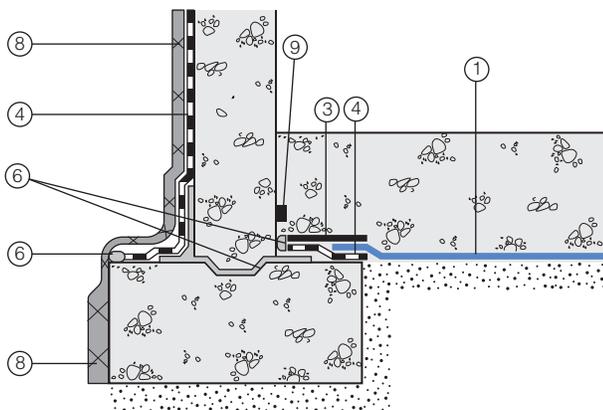
Bituthene wall base detail (Option 1)



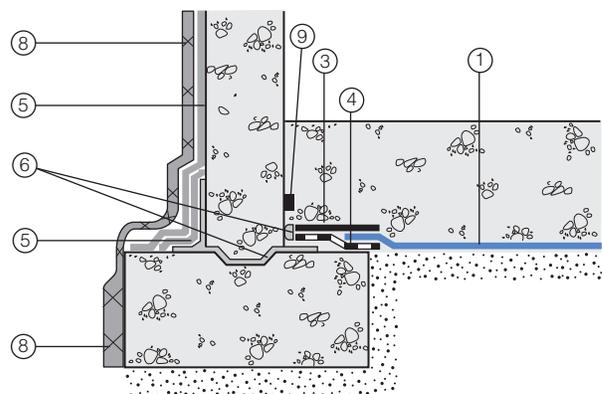
Procor wall base detail (Option 1)



Bituthene wall base detail (Option 2)



Procor wall base detail (Option 2)



- 1 Preprufe 300R
- 2 Preprufe 160R
- 3 Preprufe Tape
- 4 Bituthene

- 5 Procor
- 6 Bituthene Liquid Membrane
- 7 Protection

- 8 Hydroduct®
- 9 Adcor ES
- 10 Preprufe CJ Tape

Supply

Dimensions (Nominal)	Preprufe 300R Membrane	Preprufe 160R Membrane	Preprufe Tape (LT or HC*)
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)	4 in. x 49 ft (100 mm x 15 m)
Roll area	392 ft ² (36 m ²)	460 ft ² (42 m ²)	
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)	4.3 lbs (2 kg)
Minimum side/end laps	3 in. (75 mm)	3 in. (75 mm)	3 in. (75 mm)
* LT denotes Low Temperature (between 25°F (-4°C) and 86°F (+30°C)) HC denotes Hot Climate (50°F (>+10°C))			
Ancillary Products			
Bituthene Liquid Membrane—1.5 US gal (5.7 liter) or 4 US gal (15.1 liter)			

Physical Properties

Property	Typical Value 300R	Typical Value 160R	Test Method
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385, modified ¹
Low temperature flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to hydrostatic head	231 ft (71 m)	231 ft (71 m)	ASTM D5385, modified ²
Elongation	500%	500%	ASTM D412, modified ³
Tensile strength, film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836
Puncture resistance	221 lbs (990 N)	100 lbs (445 N)	ASTM E154
Peel adhesion to concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903, modified ⁴
Lap peel adhesion	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D1876, modified ⁵
Permeance to water vapor transmission	0.01 perms (0.6 ng/(Pa × s × m ²))	0.01 perms (0.6 ng/(Pa × s × m ²))	ASTM E96, method B
Water absorption	0.5%	0.5%	ASTM D570

Footnotes:

- Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
- Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
- Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
- Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
- The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2 in. (50 mm) per minute.

Specification Clauses

Preprufe 300R or 160R shall be applied with its adhesive face presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe 300R/160R. All Preprufe 300R/160R system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

NOTE: Use Preprufe Tape to tie-in Procor with Preprufe.

Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be handled by a minimum of two persons.

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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PF-111H Printed in U.S.A. 07/12

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GRACE

ADCOR™ ES

Engineered swell hydrophilic waterstop strip

Description

Grace Adcor™ ES is a specially engineered, swellable, conformable synthetic waterstop strip that expands when in contact with water. The engineered swell design of Adcor ES minimizes the potential for concrete spalling and cracking versus traditional hydrophilic waterstops. When fully encapsulated by poured concrete, the expansive forces form a seal against concrete faces. The seal resists hydrostatic pressure, stopping water from entering sub-structures. Adcor ES is a unique product that has been specifically developed to provide better performance than bentonite or conventional swellable rubber waterstops. Superior performance arises from:

- controlled, reproducible, volumetric expansion.
- cohesive strength maintained after volumetric expansion and during wet-dry cycling.
- malleable and plastic, enabling easy application to a variety of concrete profiles.

Applications

- Horizontal and vertical construction joints in concrete structures.
- Casting new concrete against existing.
- Pipe penetrations through floors and walls.

System Components

Adcor ES

1.0 in. x ½ in. (25.4 mm x 12.7 mm) waterstop strip, supplied in 16 ft (4.9 m) rolls.

Adcor ES Adhesive

A butyl based adhesive for securing Adcor ES to concrete, steel and plastic substrates. Supplied in 29 fl oz (0.85 L) tubes.

Design

Grace recommends the use of waterstops in all construction joints, subject to hydrostatic pressure. Waterstop networks must be continuous through all joints and penetrations if they are to be effective. Contact Grace regarding specific applications where movement is expected.

Installation

1. Concrete surfaces must be clean and free of all contaminants. Remove all debris and loose concrete.

Product Advantages

- Engineered swell reduces risk of concrete spalling
- Conformable — can be installed onto a variety of irregular substrates
- Controlled expansion reduces the need for product replacement due to premature expansion
- Retains cohesive strength at both original and expanded volume
- No need for protective steel mesh
- Volumetric expansion min 100%
- Simple overlap jointing on site
- Reproducible swell after wet-dry cycling
- Contains no sodium bentonite

2. On irregular concrete faces, apply a ½ in. (12 mm) bead of Adcor ES Adhesive as bedding for Adcor ES. Estimated coverage rate of Adcor ES Adhesive is 30 linear feet per tube on porous concrete or irregular surfaces when applied at a ½ in. (12 mm) bead.
3. Secure Adcor ES using masonry nails 1½–2 in. (40 mm–50 mm) long with a washer ¾ in. (20 mm) in diameter. Hilti EM6-20-12 FP8 shot fired fixings with ¼ in. (6 mm) nuts and ¾ in. (20 mm) diameter washers may also be used. Fixings should be spaced at a maximum of 12 in. (300 mm) centers with a minimum spacing that ensures proper contact to substrate.
4. For pipe penetrations, Adcor ES Adhesive must be applied to dry substrates only. Apply a ½ in. bead of Adcor ES Adhesive and tool with a brush or trowel. Wait until surface is dry to touch, and then press Adcor ES firmly into place. Estimated coverage rate of Adcor ES Adhesive is 60 linear feet per tube on smooth concrete or pipe surfaces when applied at a ½ in. (12 mm) bead.
5. Adcor ES joints should overlap a minimum of 4 in. (100 mm), ensuring full contact between jointed pieces.
6. Adcor ES can be bent around corners; however, on complex geometry, use Adcor ES Adhesive to fill any gaps.
7. Any damaged sections should be removed and repaired with a new section of Adcor ES.
8. Keep Adcor ES dry prior to pouring concrete.

Concrete Placement

1. Normal weight structural concrete should be placed carefully to avoid damage to the waterstop.
2. Adcor ES should be encapsulated with a 3 in. (76.2 mm) concrete cover minimum.

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This product may be covered by patents or patents pending.
ADC-001C Printed in U.S.A. 12/10

Physical Properties

Property	Typical Value
Color	Green
Size	1.0 in. x ½ in. x 16 ft (25.4 mm x 12.7 mm x 4.9 m) rolls
Packaging	6 rolls per case
Hydrostatic Head Resistance	231 ft (70 m)
Adhesion to Concrete using Adcor ES Adhesive	Excellent

Health & Safety

Adcor ES

There is no legal requirement for a Material Safety Data Sheet for Adcor ES. For health and safety questions on this product, please contact Grace.

Adcor ES Adhesive

Read the product label and Material Safety Data Sheet before use. Users must comply with all risk and safety phrases.

Storage & Handling

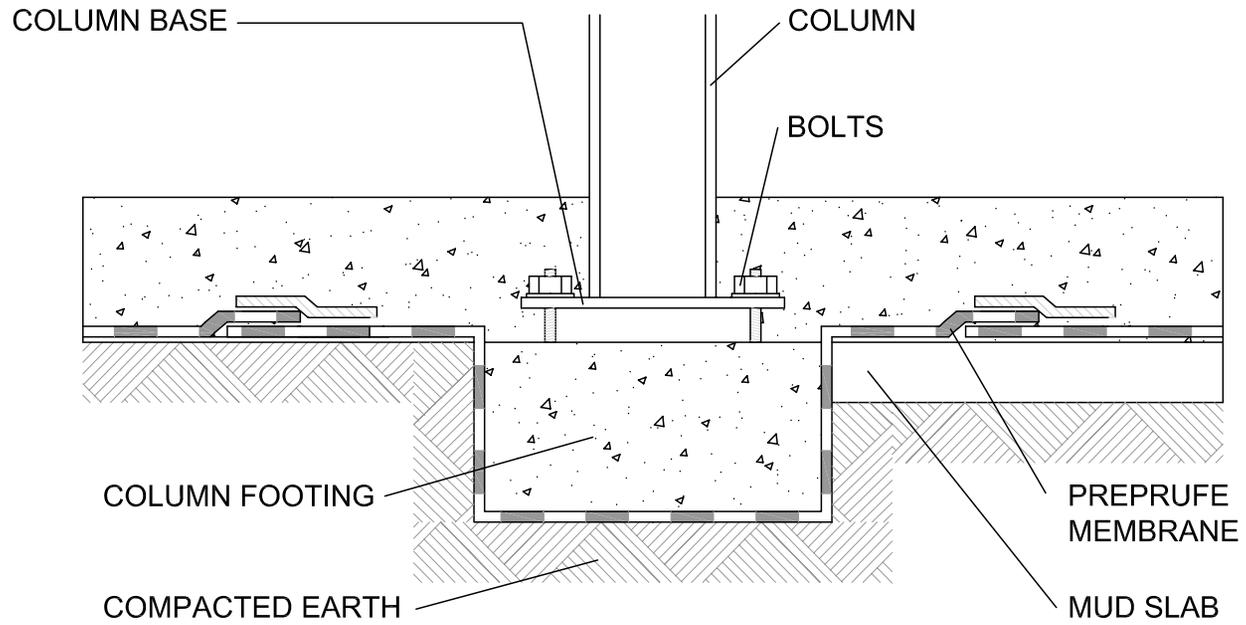
Adcor ES should be stored in its original unopened packaging until ready for installation and kept dry prior to pouring concrete. Dispose of any materials in accordance with the requirements of local authorities having jurisdiction.

Limitations

Not suitable for use in movement joints.

Not suitable for use with pre-cast concrete components.

GRACE



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toll free 866-333-3726

COLUMN (OPTION 2)
PREPRUFE® WATERPROOFING SYSTEM

DRAWING: PRE-038

SCALE: NOT TO SCALE

EFFECTIVE DATE: 03/31/07

SUPERCEDES: 05/05/03

Column (Option 2): PRE-038

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install the membrane following the vertical and horizontal application instructions on the Preprufe data sheet found at graceconstruction.com.
2. Place the Preprufe membrane below the column footing before it is poured.
3. When placing the membrane it is important to leave sufficient length (typically 18 in. [300 mm]) of Preprufe 300R beyond the footing to allow for tie-in to the Preprufe membrane that will be laid to waterproof the general slab area.
4. Leave release liner on this extra length and protect it from damage until the tie-in details are completed.
5. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

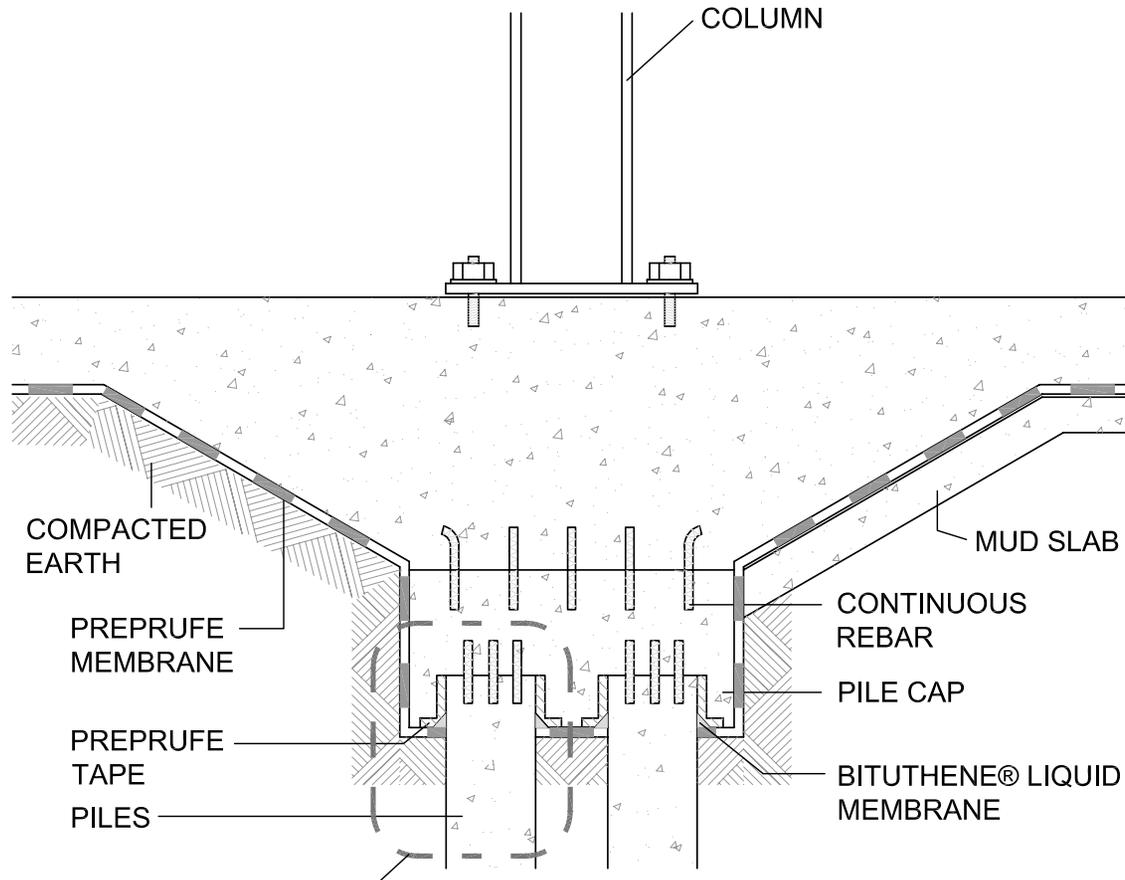
For Technical Assistance call us at 866-333-3SBM (3726)

Visit our website at www.graceconstruction.com

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REFER TO PREPRUFE STRAIGHT EDGE PENETRATION
 DETAIL PRE 035 OR PREPRUFE PIPE PENETRATION DETAIL PRE 034 DEPENDING ON SHAPE OF PILE

GRACE

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GRADE BEAM PILE CAP (OPTION 1)
PREPRUFE® WATERPROOFING SYSTEM

DRAWING: PRE-043

SCALE: NOT TO SCALE

EFFECTIVE DATE: 06/01/10

SUPERCEDES: 03/31/07

Grade Beam Pile Cap (Option 1): PRE-043

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install Preprufe Membrane over the prepared substrate in accord with standard installation instructions.
2. Preprufe Membrane is placed in the area formed for the pile cap before the concrete is poured.
3. When placing the membrane it is important to leave sufficient length (typically 12 in. [300 mm]) of Preprufe beyond the pile cap area to allow for tie-in to the Preprufe Membrane that will be laid to waterproof the general slab area.
4. Cut membrane tight to each pile and complete detail around each pile in accordance with Detail PRE 035 or Detail PRE 034 depending on shape of pile.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

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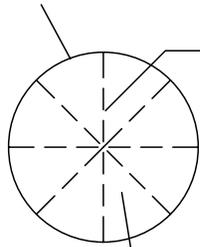
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PENETRATION PROFILE



RELIEF CUTS

PIPE PENETRATION

PREPRUFE TAPE-
POSITION AT BASE OF
PREPRUFE MEMBRANE
DETAIL PATCH

ADCOR™ ES
WATERSTOP

CONCRETE SLAB

BITUTHENE® LIQUID
MEMBRANE (1 in.
FILLET)

PREPRUFE TAPE

PREPRUFE MEMBRANE
DETAIL PATCH

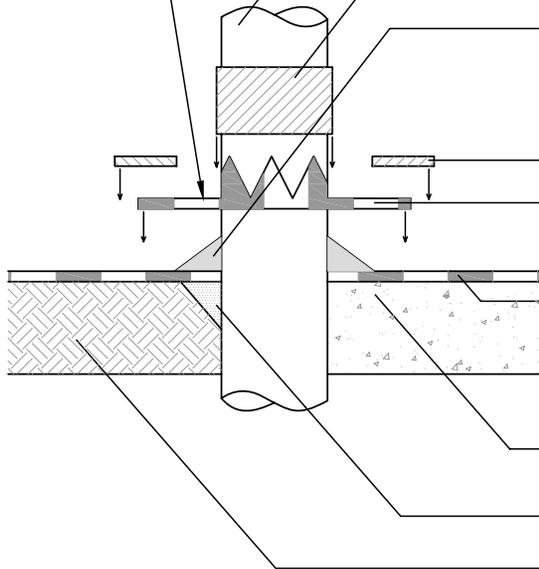
PREPRUFE
MEMBRANE

GROUT SOLID

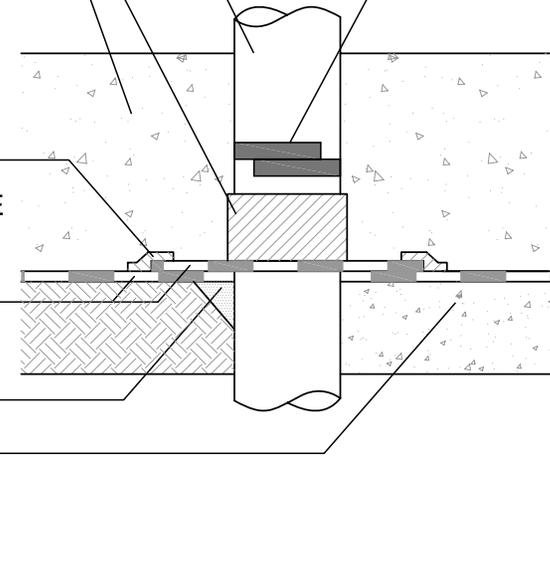
MUD SLAB

GROUT SOLID

COMPACTED EARTH



ASSEMBLY



FINISHED

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PIPE PENETRATION
FOR WALL OR SLAB

PREPRUFE® WATERPROOFING SYSTEM

DRAWING: PRE-034

SCALE: NOT TO SCALE

EFFECTIVE DATE: 06/01/10

SUPERCEDES: 03/01/09

Pipe Penetration

(For Wall or Slab): PRE-034

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm) The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. All penetrations must be firmly secured and stable. Grout around all penetrations that are not stable. For compacted earth, extend grout a minimum of 3 in. (75 mm) in all directions. Clean loose dust or dirt from the penetration surface using a clean, dry cloth or brush.
2. Cut the field membrane tight to the penetration and remove release liner. If membrane is not within 0.5 in. (12 mm) of penetration and not more than 2 in. (50 mm) from penetration, apply Preprufe Tape to cover the gap. Roll firmly into place and remove release liner. If the membrane is greater than 2 in. (50 mm) from penetration, install more Preprufe Membrane to cover the gap repeating these instructions until Preprufe Membrane/Tape is within 0.5 in. (12 mm).
3. Mix and apply Bituthene Liquid Membrane around the penetration. Liquid Membrane should be placed to form a minimum 1 in. (25 mm) continuous fillet between the Preprufe Membrane/Tape and the base of the penetration. Cut “star” within trace of penetration to allow for patch to slide over penetration.
4. Cut a patch of Preprufe Membrane that is a minimum of 12 in. (300 mm) larger than the diameter or width of the penetration so that the patch extends 6 in. (150 mm) beyond the penetration in all directions. Remove the release liner and center the patch over penetration and trace/draw the penetration profile onto the patch. Using sheers or utility knife, make relief cuts through the membrane. Refer to relief cut figures below. Triangles formed by making a relief cut is not to exceed 2 in. (50 mm) in height when placed over penetration, i.e. penetration diameters or widths greater than 4 in. (100 mm) need to be trimmed. Remove and discard release liner.
5. Slide the patch over penetration and press into the partially cured Liquid Membrane. Ensure that the patch is pressed firmly into the Liquid Membrane and is positioned directly onto the Preprufe Field Membrane/Tape below. Using a trowel, smooth out any Liquid Membrane that has flowed out of the relief cut.
6. Apply Preprufe Tape centered over the edges of the patch and roll firmly to form a tight seal to the Preprufe Field Membrane. Remove release liner from tape and discard.
7. Wrap the penetration with Preprufe Tape, positioning the tape at the base of the patch. Remove enough release liner to overlap Tape on to itself and roll/press firmly into place. Remove remaining release liner and discard. Repair small fishmouths by pressing firmly against penetration and repair large fishmouths by patching with Preprufe Tape.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

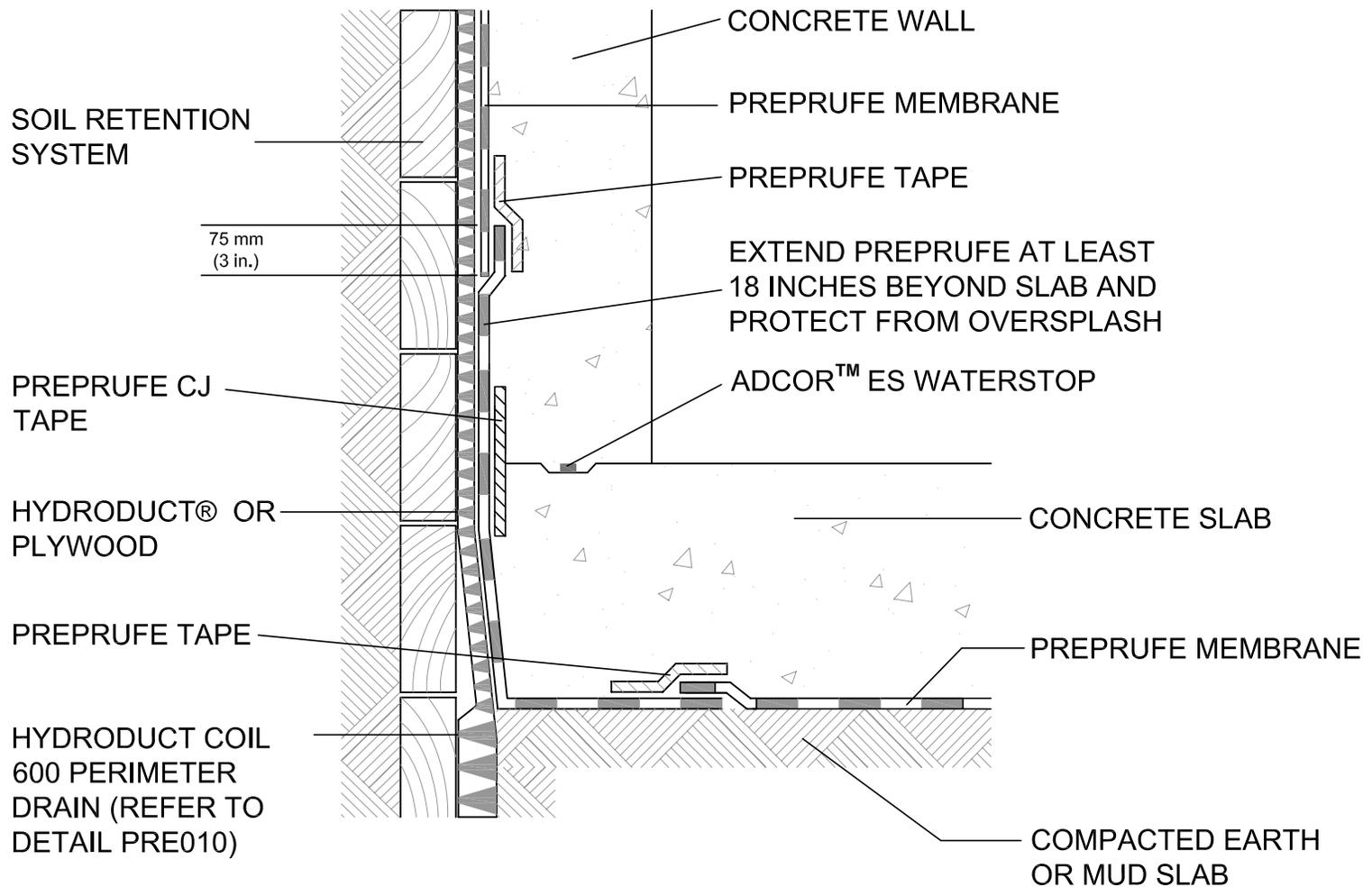
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BLIND SIDE WALL TO SLAB TIE-IN
PREPRUFE® WATERPROOFING SYSTEM

DRAWING: PRE-009

SCALE: NOT TO SCALE

EFFECTIVE DATE: 06/01/10

SUPERCEDES: 03/01/09

Blind Side Wall to Slab Tie-in: PRE-009

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install Preprufe Membrane over the mud slab or compacted earth as detailed in horizontal and vertical applications on the Preprufe Data Sheet.
2. Continue onto the vertical surface of the prepared soil retention system a minimum of 18 in. (450 mm) above the finished elevation of the structural floor slab. It is good practice to extend the Preprufe above the height of the rebar from the slab.
3. Apply Preprufe CJ Tape to the Preprufe membrane centered over the finished elevation of the concrete slab.
4. Secure the top of the membrane to temporarily hold it in place on the vertical substrate. Care should be taken to prevent damage to this exposed membrane from concrete back-splash as well as slag from rebar welding in wall forms, by keeping the release liner on and protected with protection board, plywood or other material.
5. If the exposed membrane above the slab is contaminated with concrete oversplash in the lap area, it must be cleaned down to good material before adhering Preprufe Tape.
6. Install Preprufe Membrane over the prepared vertical soil retention system according to standard application instructions on the Preprufe Data Sheet.
7. Unfasten the vertical length of the Preprufe Membrane that extends above the slab and tuck the Preprufe 160R behind the 18 in. (450 mm) length of Preprufe 300R, ensuring a minimum 3 in. (75 mm) lap.
8. Install Preprufe Tape centered over the lap.
9. Remove release liner and roll tape to ensure good adhesion using steel or vinyl cylindrical and Vee roller.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

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FLORPRUFE® 120

Integrally bonded vapor protection for slabs on grade

Description

Florprufe® 120 is a high performance vapor barrier with Grace's Advanced Bond Technology™ that forms a unique seal to the underside of concrete floor slabs.

Comprising a highly durable polyolefin sheet and a specially developed, non-tacky adhesive coating, Florprufe 120 seals to liquid concrete to provide integrally bonded vapor protection.

Florprufe exceeds ASTM E1745 Class A rating.

Advantages

- Forms a powerful integral seal to the underside of concrete slabs
- Protects valuable floor finishes such as wood, tiles, carpet and resilient flooring from damage by vapor transmission
- Direct contact with the slab complies with the latest industry recommendations
- Remains sealed to the slab even in cases of ground settlement
- Ultra low vapor permeability
- Durable, chemical resistant polyolefin sheet
- Lightweight, easy to apply, kick out rolls
- Simple lap forming with mechanical fixings or tape

Use

Florprufe 120 is engineered for use below slabs on grade with moisture-impermeable or moisture-sensitive floor finishes that require the highest level of vapor protection.

¹ ACI 302.1R-96

Florprufe complies with the latest recommendations of ACI Committees 302 and 360, i.e. for slabs with vapor sensitive coverings, the location of the vapor barrier should always be in direct contact with the slab¹.

The membrane is loose laid onto the prepared subbase, forming overlaps that can be either mechanically secured or taped. The unique bond of Florprufe to concrete provides continuity of vapor protection at laps. Alternatively, if a taped system is preferred, self-adhered Preprufe® Tape can be used to overband the laps.

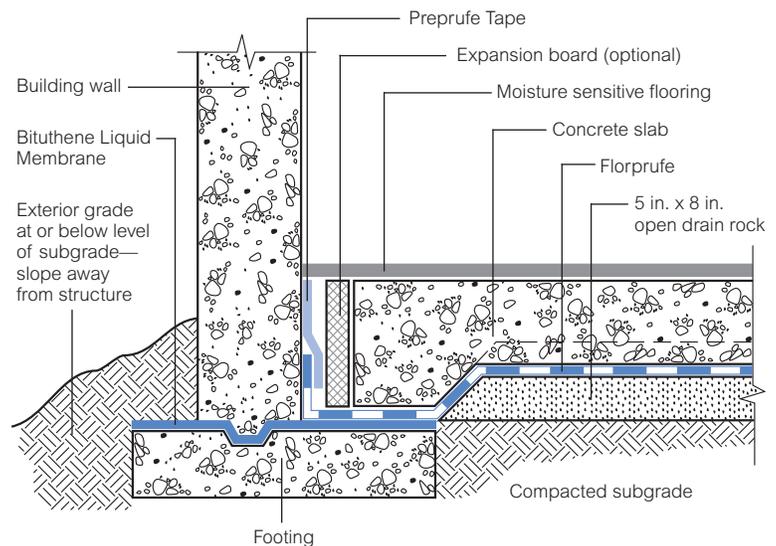
Slab reinforcement and concrete can be placed immediately. Once the concrete is poured, an integral bond develops between the concrete and membrane.

Installation

Health & Safety

Refer to relevant Material Safety Data Sheet. Complete rolls should be handled by 2 persons.

Florprufe 120 can be applied at temperatures of 25°F (-4°C) or above. Membrane installation is unaffected by wet weather. Installation and detailing of Florprufe 120 are generally in accordance with ASTM E1643-98.



Typical Assembly

Drawings are for illustration purposes only. Please refer to www.graceconstruction.com for specific application details.

Product Advantages

- Forms a powerful integral seal
- Protects valuable floor finishes
- Ultra low vapor permeability
- Durable, chemical resistant
- Lightweight and easy to apply

Supply

Florprufe 120	
Supplied in rolls	4 ft x 115 ft (1.2 m x 35 m)
Roll area	460 ft ² (42 m ²)
Roll weight	70 lbs (32 kg) approx.
Ancillary Products	
Preprufe Tape is packaged in cartons containing 4 rolls that are 4 in. x 49 ft (100 mm x 15 m).	
Bituthene Liquid Membrane is supplied in 1.5 gal (5.7 L) pails.	

Physical Properties: Exceeds ASTM E1745 Class A rating

Property	Typical Value	Test Method
Color	White	
Thickness (nominal)	0.021 in. (0.5 mm)	ASTM D3767—method A
Water vapor permeance	0.03 perms	ASTM E96—method B1
Tensile strength	65 lbs/in.	ASTM E1541
Elongation	300%	ASTM D412
Puncture resistance	3300 gms	ASTM D17091
Peel adhesion to concrete	>4 lbs/in.	ASTM D903

1. Test methods that comprise ASTM E1745 standard for vapor retarders

Prepare substrate in accordance with ACI 302.1R Section 4.1. Install Florprufe 120 over the leveled and compacted base. Place the membrane with the smooth side down and the plastic release liner side up facing towards the concrete slab. Remove and discard plastic release liner. End laps should be staggered to avoid a build up of layers. Succeeding sheets should be accurately positioned to overlap the previous sheet 2 in. (50 mm) along the marked lap line.

Laps

1. Mechanical fastening method—

To prevent the membrane from moving and gaps opening, the laps should be fastened together at 39 in. (1.0 m) maximum centers. Fix through the center of the lap area using 0.5 in. (12 mm) long washer-head, self-tapping, galvanized screws (or similar) and allowing the head of the screw to bed into the adhesive compound to self-seal. It is not necessary to fix the membrane to the substrate, only to itself. Ensure the membrane lays flat and no openings occur. (See Figure 1.) Additional fastening may be required at corners, details, etc. Continuity is achieved once the slab is poured and the bond to concrete develops.

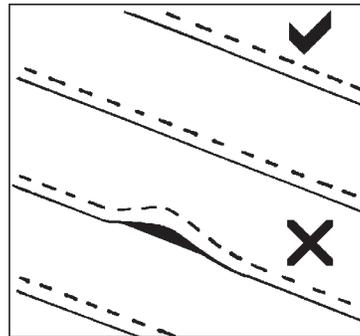


Figure 1

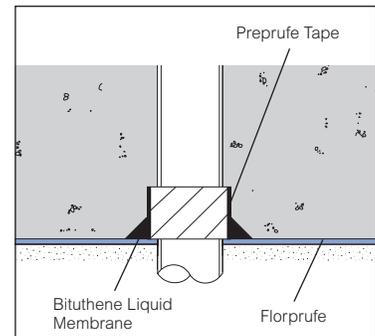


Figure 2

OR

2. Taped lap method—

For additional security use Grace Preprufe Tape to secure and seal the overlaps. Overband the lap with the 4 in. (100 mm) wide Preprufe Tape, using the lap line for alignment. Remove plastic release liner to ensure bond to concrete.

Penetrations

Mix and apply Bituthene Liquid Membrane detailing compound to seal around penetrations such as drainage pipes, etc. (See Figure 2 and refer to the Bituthene Liquid Membrane data sheet, BIT-230.)

Concrete Placement

Place concrete within 30 days. Inspect membrane and repair any damage with patches of Preprufe Tape. Ensure all liner is removed from membrane and tape before concreting.

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.—Conn., 62 Whittemore Avenue, Cambridge, MA 02140. In Canada, Grace Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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GRACE

Health and Safety Plan

April 11, 2013

**SITE-SPECIFIC
HEALTH AND SAFETY PLAN**

**1345, 1351, and 1357 Rogers Avenue
and 562 E. 28th Street
Brooklyn, New York**

Prepared for

**THE DOE FUND
232 East 84th Street
New York, New York 10028**

ROUX ASSOCIATES, INC.

Environmental Consulting & Management



209 Shafter Street, Islandia, New York 11749 ♦ 631-232-2600

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TABLE

1. Site-Specific Hazards – Toxicological, Physical, and Chemical Properties of Compounds

FIGURE

1. Emergency Route to Hospital

APPENDICES

- A. Job Safety and Health Protection (OSHA) Poster
- B. Field Change Request
- C. Heat Stress and Cold Stress Information
- D. Accident Reporting Forms
- E. Medical Data Sheet

1.0 INTRODUCTION

Roux Associates, Inc. prepared this site-specific Health and Safety Plan (HASP) in accordance with the Occupational Safety and Health Administration's (OSHA's) Hazardous Waste Operation and Emergency Response Standard (29 CFR 1910.120 and 1926.65) and other OSHA requirements for job safety and health protection (Appendix A), and our Standard Operating Procedures. In addition, various guidance documents were also consulted in preparing this HASP including the National Institute for Occupational Safety and Health's (NIOSH's) *Occupation Safety and Health Guidance Manual for Hazardous Waste Site Activities*. The HASP addresses health and safety issues associated with Roux Associates, Inc. conducting and managing investigative and/or remediation activities at the properties located at 1345, 1351, and 1357 Rogers Avenue and 562 E. 28th Street in Brooklyn, New York (Site). This HASP will be implemented by the designated Site Health and Safety Officer (SHSO) during site work. The HASP attempts to identify all potential hazards at the site; however, site conditions are dynamic and new hazards may appear constantly. Personnel must remain alert to existing and potential hazards as site conditions change and protect themselves accordingly.

Compliance with this HASP is required for Roux Associates, Inc. personnel who enter this site. Assistance in implementing this HASP can be obtained from the Roux Associates, Inc. Office Health and Safety Manager (OHSM). The content of this HASP may undergo revision based upon additional information made available. Any changes proposed must be reviewed and approved by the Roux Associates, Inc. OHSM or his designee and documented on the Field Change Request form included as Appendix B. Following are key personnel involved with this project.

Responsibility	Name	Telephone Number	Cell Phones
Project Principal	Joe Duminuco	(631) 232-2600	(631) 921-6279
Project Manager	Jessica Taylor	(631) 232-2600	(631) 831-4205
Site Health and Safety Officer	Chris Geraghty	(631) 232-2600	(631) 774-2051
Office Health and Safety Manager	Ray Fitzpatrick	(631) 232-2600	(631) 484-1168

1.1 Scope of Work

The scope of work will involve Roux Associates, Inc. subcontracting drilling companies, disposal companies, utility locating companies, land surveying companies, and/or analytical testing laboratories for the purpose of investigating environmental conditions at the Site. Roux Associates, Inc. will complete some combination, or all, of the scope of work detailed below:

- Initial site inspections;
- Oversight of utility mark-out activities and ground penetrating radar, if warranted;
- Media (e.g., soil, sediment, soil vapor, air, and groundwater) delineation/sampling activities;
- Oversight of soil boring/monitoring well installation and abandonment activities;
- Groundwater monitoring;
- Oversight of land surveying activities; and
- Disposal activities
- .

Roux Associates, Inc. will contract the drilling company to request a utility mark-out through the state One-Call System at least 4 days prior to the scheduled drilling event. If this mark-out is not sufficient to identify the utilities in the area where drilling activities are to occur, Roux Associates, Inc. will contract and oversee an independent utility mark-out service company to identify potential underground utilities in the area of concern.

Roux Associates, Inc. will contract and oversee a licensed drilling company during Site investigation to perform soil borings and install monitoring wells and soil vapor points. These activities will be completed as part of the monitoring, sampling, and remediation process as required by regulatory agencies at the Site. In most cases, the driller will use a track or truck-mounted drilling rig to conduct these drilling activities.

Roux Associates, Inc. will contract a licensed company to load, transport, and dispose of waste materials at approved disposal facilities. Roux Associates will oversee the loading and check all

paperwork for completeness. Roux Associates, Inc. personnel will NEVER sign any disposal and transportation documentation; the insured or insurance carrier will be responsible for signing all disposal and transportation paperwork.

Roux Associates, Inc. will conduct groundwater monitoring, sampling, and remediation activities as required. Roux Associates, Inc. will conduct these activities using Roux Associates, Inc.-owned or vendor-rented field equipment.

Roux Associates, Inc. will contract and oversee land surveying services.

1.2 Emergency Contacts

Type	Name	Telephone Numbers
Police	New York Police Department 63 rd Precinct	(718) 258-4411
Fire	FDNY	911
Hospital	Maimonides Medical Center	(718) 283-7140
State Poison Control Centers	New York	(800) 222-1222
Emergency Response	NYPD/FDNY	911
Ambulance	NYPD/FDNY	911

ENVIRONMENTAL EMERGENCY (e.g., release or spill)

Type	Name	Telephone Numbers	Cell Numbers
Project Principal	Joe Duminuco	(631) 232-2600	(631) 921-6279
Project Manager	Jessica Taylor	(631) 232-2600	(631) 831-4205
Office Health and Safety Manager	Ray Fitzpatrick	(631) 232-2600	(631) 484-1168
Site Health and Safety Officer	Chris Geraghty	(631) 232-2600	(631) 774-2051
National Response Center		(800) 424-8802	

Type	Name	Telephone Numbers	Cell Numbers
<u>Client Contact</u>			
The Doe Fund	Larry Gordon	(646) 672-4467	

Note: All Roux Associates, Inc. site personnel will be equipped with mobile phones.

(Additional emergency information is provided in Section 13.0).

2.0 HEALTH AND SAFETY PERSONNEL RESPONSIBILITIES

2.1 Office Health and Safety Manager

The Office Health and Safety Manager (OHSM) serves in assuring that the policies and procedures of the HASP are implemented by the SHSO. The OHSM provides guidance regarding the appropriate monitoring and safety equipment and other resources necessary in implementing the HASP. The OHSM verifies that all Roux Associates, Inc. personnel designated to work onsite are qualified according to applicable EPA, OSHA, and state requirements.

2.2 Site Health and Safety Officer

The Site Health and Safety Officer (SHSO) will be on-site during intrusive field operations. On a site-specific basis, routine activities such as groundwater sampling and gauging may be performed when the SHSO is not on-site. The SHSO is responsible for health and safety activities and has the authority to make related decisions. The determination of hazard levels will be made by the SHSO. The SHSO has stop-work authorization that he or she will execute upon determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation, such as detrimental weather conditions. Authorization to proceed with work will be issued by the OHSM in consultation with the Project Principal (PP) or his/her designee (e.g., Project Manager [PM]). The SHSO or PP will contact emergency facilities and personnel when appropriate. Alternate SHSOs may be designated by the SHSO, if required, but must be pre-qualified and approved by the OHSM. The SHSO is responsible for verifying that a duplicate office copy of this HASP is placed in the central project files.

2.3 Project Principal

The Project Principal is responsible for defining the overall project objectives (field and office related activities) determining chain-of-command, evaluating program outcome and serves as final technical review of deliverables. For Roux Associates, Inc., the Project Principal is ultimately responsible for overall site activities including health and safety issues. The day-to-day management of health and safety issues is the responsibility of the Project Manager. The SHSO, OHSM, Project Manager, and Project Principal shall consult and make an agreeable determination should site information or unforeseen circumstances indicate a change in field procedures may be warranted. Changes to the HASP must be made by formal addendum and be approved by the

Project Principal, Project Manager, OHSM, and SHSO. The Project Principal is responsible for verifying that all required signatures are in place prior to implementing field work.

2.4 Project Manager

The Project Manager is responsible for day-to-day activities associated with his/her project including health and safety. Because there may be more than one Project Manager for a site (for example, a Remedial Project Manager and a Site Investigation Project Manager), each Project Manager must verify that the HASP addresses the hazards associated with each phase of the project and is appropriate for the current specified scope of work.

2.5 Field Crew Personnel

All field crew personnel are responsible for reporting unsafe or hazardous conditions to the SHSO. All field personnel (including the above listed personnel) are responsible for understanding and complying with this HASP.

3.0 SITE HISTORY AND PHYSICAL DESCRIPTION

- Location of Sites

The Site is located in the neighborhood/section Flatbush section of borough Brooklyn and is identified as Block number 5229 and Lot(s) number(s) 11, 15, 17, and 54. .

- Description of Site

Currently, the Site is used for parking and a two-family residence describe current occupancy and contains one two-family building, vacant parking structures, and open parking areas on grade.

- History

Historically, the Site has been involved in auto repair and has had mixed residential and commercial uses. There are no known spills at the Site.

4.0 SITE-RELATED INCIDENTS, COMPLAINTS AND ACTIONS

There are no known site related incidents, complaints or actions identified at this time.

5.0 WASTE DESCRIPTION AND CHARACTERIZATION

Wastes may be encountered or generated during site activities. These wastes are anticipated to be characterized as follows:

- Waste Types

Liquid	<input checked="" type="checkbox"/>	Solid	<input checked="" type="checkbox"/>	Gas	<input checked="" type="checkbox"/>
Sludge	<input type="checkbox"/>	Semi-Solid	<input type="checkbox"/>	Other (describe):	_____

- Waste Characteristics

Corrosive	<input checked="" type="checkbox"/>	Toxic	<input type="checkbox"/>	Ignitable	<input type="checkbox"/>
Volatile	<input checked="" type="checkbox"/>	Carcinogen	<input type="checkbox"/>	Radioactive	<input type="checkbox"/>
Reactive	<input type="checkbox"/>	Other (describe):	<u>Corrosive with respect to HCl preservative in sample bottleware</u>		

For purposes of this HASP, toxic chemicals are those materials as defined by OSHA in 29 CFR 1910.1200 (Appendix A). In general, toxicity is defined by OSHA on the basis of median lethal dose (LD₅₀) or median lethal concentration (LC₅₀) based upon the effects of the chemical in laboratory studies with animals. A chemical is considered a carcinogen, as defined by OSHA in 29 CFR 1910.1200 (Appendix A), if “(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or (b) It is listed as a carcinogen or a potential carcinogen in the *Annual Report on Carcinogens* published by the National Toxicology Program (NTP) (latest edition); or (c) It is regulated by OSHA as a carcinogen.”

- Waste Containment

Pond	<input type="checkbox"/>	Process Vessel	<input type="checkbox"/>	Tank	<input type="checkbox"/>
Lagoon	<input type="checkbox"/>	Piping	<input type="checkbox"/>	Lab	<input type="checkbox"/>
Lake	<input type="checkbox"/>	Drum	<input checked="" type="checkbox"/>	Other (describe):	
Tank Car	<input type="checkbox"/>	Soil Stockpile	<input type="checkbox"/>	Describe:	_____

- See Table 1 entitled “Site-Specific Hazards – Toxicological, Physical, and Chemical Properties of Compounds” which addresses exposure limits, routes of exposure, toxic properties, target organs, carcinogenicity, and physical and chemical properties.

6.0 HAZARD ASSESSMENT

- Chemical Hazards

- The toxicological, physical, and chemical properties of potential contaminants are presented in Table 1. The compound listed in Table 1 may pose a potential exposure hazard through inhalation, skin absorption, ingestion or a combination of these routes. These exposures will be further controlled through the use of personal protective equipment (PPE), designated action levels based upon on-site air monitoring, and the assignment of experienced field personnel. Chemical hazards are unknown but may include the following petroleum-related compounds: Benzene, Toluene, Ethylbenzene, Xylenes, Diesel Fuel (No.2), Fuel Oil, Gasoline, Kerosene, Slop Oil, Petroleum Hydrocarbons, Mercury Vapor, Lead, and Chromium (VI).

Chemical hazards will be monitored with the following instrument:

- ♦ Photoionization Detector (PID)

Action levels for level of protection upgrades are discussed in Section 8.2.1.

- Ambient Air Hazards

- Potential exposure to impacted airborne particulates.
- Potential exposure to organic vapors.
- All personnel will remain up-wind as the task allows.

- Heat/Cold Stress and Sun Exposure

- Heat and cold stress associated with seasonal temperatures in the Northeast US. Heat stress and cold stress symptoms, prevention, and treatment are described in Appendix C. Protection against sun exposure by wearing a sun screen, hat, and long-sleeved shirts must be implemented when warranted.

- Noise

- Noise, associated with close proximity to operating heavy equipment, power tools, pumps, and generators. Personnel with 8-hour time weighted average (TWA) exposures exceeding 85 dBA must be included in a hearing conservation program in accordance with 29 CFR 1910.95. High noise operations will be evaluated by the SHSO. Noise exposure will be controlled through the use of hearing protection such as ear plugs or ear muffs or by maintaining set-backs from high noise equipment as warranted.

- General Safety Hazards

- Heavy equipment and motor vehicle traffic. Workers shall wear fluorescent vests or high visibility outerwear in high traffic areas and utilize traffic cones, barricades and caution tape to protect work areas, as necessary.

- Slip, trip, fall hazards associated with uneven terrain, obstacles, and slippery or icy surfaces. General housekeeping will be performed to reduce slip, trip and fall hazards.
- Sharp edges, broken glass, exposed nails, rusty metal (wear cut-resistant gloves).
- Pinch points.
- Overhead hazards (wear hard hats as applicable).
- Flying objects and airborne particulate hazards. Wear safety glasses, goggles, or face shields when appropriate.
- Electrical Hazards
 - Portable pumps, generators, and other power tools require proper grounding and/or a ground fault circuit interrupter (GFCI) before operation. Personnel should never attempt to move an operating pump or generator.
 - Overhead and underground utility lines.
- Biological Hazards
 - Biological hazards include the possibility of snake bites, potentially rabid stray or wild animal bites, ticks, or other insect bites and bee and wasp stings. Ticks may carry Lyme disease and/or Rocky Mountain spotted fever. Personnel shall examine themselves for ticks. Insecticides containing DEET may be an effective tick repellent. Personnel allergic to bee and/or wasp stings shall provide medicine and antidotes to treat allergic reactions as prescribed by their personal physician and alert co-workers and the PM of their sensitivity.
 - Other biological hazards include poison ivy, poison oak, and poison sumac. If exposed to these plants, wash skin thoroughly with soap and water.

7.0 TRAINING REQUIREMENTS

7.1 Basic Training

Site personnel who will perform work in areas where there exists the potential for toxic exposure will be health and safety trained prior to performing work onsite per OSHA 29 CFR 1910.120(e). Training records will be maintained by the on-site SHSO and as described in Section 7.2.

7.2 Site-Specific Training

Training will be provided by the SHSO that will specifically address the activities, procedures, monitoring, and equipment for the site operations to site personnel and visitors. The training will include site and facility layout, hazards, emergency services at the site, and will detail provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. Site-specific training will be documented as part of the project records. In addition, any facility health and safety requirements will be followed.

7.3 Safety Briefings

Project personnel will be given briefings by the SHSO on an as-needed basis to further assist them in conducting their activities safely. Safety briefings will be provided at least before the start of work each day and whenever new operations are to be conducted, changes in work practices must be implemented due to new information made available, and before work is begun at each project site. Records of safety briefings will be part of the project records.

7.4 Record Keeping Requirements

Record keeping requirements mandated by OSHA 29 CFR 1910.120 will be strictly followed. Specifically, all personnel training records, accident reporting forms (Appendix D), and medical examination records will be maintained by Roux Associates, Inc. for a period of at least 30 years after the employment termination date of each employee. The SHSO will maintain a daily written log of health and safety monitoring activities and monitoring results will become part of the project records.

8.0 ZONES, PROTECTION AND COMMUNICATIONS

8.1 Site Zones

The level of protection for completion of the scope of work is Level D. Should the level of protection worn by field personnel need to be upgraded to Level C, Roux Associates, Inc. will cease all field activities, evaluate the hazards appropriately, and employ a three-zone approach to site operations to control the potential spread of contamination. If a three-zone approach needs to be implemented, these zones will be restricted to Roux Associates, Inc. personnel and OSHA-trained subcontractors of Roux Associates, Inc. Site occupants, insured, homeowner, or insurance carrier personnel will be requested to view the investigative and/or remediation activities from beyond the Support Zone. Level D operation will not generally require segregated zones. Note, Roux Associates, Inc. does not perform work in Levels A or B. The three zones to be employed when Level C is in use include:

- The Exclusion Zone;
- The Contamination Reduction Zone; and
- The Support Zone.

8.1.1 Exclusion Zone

The area(s) which contain or are suspected to contain hazardous materials will be considered the Exclusion Zone. This zone will be clearly delineated by a “Hotline.” The “Hotline” is a length of colored flag tape completely surrounding the Exclusion Zone. The SHSO may establish more than one restricted area within the Exclusion Zone when different levels of protection may be used or various hazards exist. Personnel are not allowed in the Exclusion Zone without the following:

- A buddy;
- Appropriate personal protective equipment;
- Medical authorization;
- A need to be in the Zone; and
- Training certification.

For purposes of this project, the Exclusion Zone will typically include all areas inside of a 10-foot radius of the release area, subject to site conditions, including proximity of structures and property boundary.

8.1.2 Contamination Reduction Zone

The Contamination Reduction Zone (CRZ) is established between the Exclusion Zone and the Support Zone. The CRZ will contain the Contamination Reduction Corridor (CRC) and will provide for full personnel and portable equipment decontamination. The CRZ is used for general site entry and egress in addition to access for heavy equipment for investigation activities. The CRZ will also contain safety and emergency equipment (see Section 8.2.3). No personnel are allowed in the Contamination Reduction Zone without:

- A buddy;
- The proper personal protective equipment;
- Medical authorization;
- A need to be in the Zone; and
- Training certification.

For purposes of this project, the CRZ will typically include all areas outside the exclusion zone to 20 feet away from the release area, subject to site conditions, including proximity of structures and property boundary.

8.1.3 Support Zone

The Support Zone is considered the uncontaminated area and will be separated from the CRZ by the “Contamination Control Line.” The “Contamination Control Line” will be a different colored flag tape than the “Hotline.” The Support Zone will contain the support facility, which will provide for team communications and emergency response. At least one person will remain in the Support Zone at all times during operations downrange to facilitate communications and emergency response. Appropriate sanitary facilities and safety and support equipment will be located in this zone. The majority of site operations will be controlled from this location as well as site access of authorized persons. The support facility will be located upwind of site operations, if possible, and may be used as a potential evacuation point. No potentially contaminated

personnel or materials are allowed in this zone except appropriately packaged/ decontaminated and labeled samples and drummed wastes.

For purposes of this project, the Support Zone will include all areas outside of the CRZ.

8.2 Personal Protection

8.2.1 General

Appropriate personal protective equipment (PPE) shall be worn by site personnel when there is a potential exposure to chemical hazards or physical hazards (e.g., falling objects, flying particles, sharp edges, electricity, noise) and as otherwise directed by the SHSO. The level of personal protection, type and kind of equipment selected depends on the hazardous conditions and in some cases cost, availability, compatibility with other equipment, and performance. An accurate assessment of all these factors must be made before work can be safely carried out.

Roux Associates, Inc. maintains a comprehensive written PPE program that addresses proper PPE selection, use, maintenance, storage, fit, and inspection. PPE to be used at the site will meet the appropriate American National Standards Institute (ANSI) standards and the following OSHA (General Industry) standards for PPE.

- Head Protection — 29 CFR 1910.132
- Eye and Face Protection — 29 CFR 1910.133
- Respiratory Protection — 29 CFR 1910.134
- Hand Protection — 29 CFR 1910.138
- Foot Protection — 29 CFR 1910.136
- Protective Clothing — Not specifically regulated

The level of protection to be worn by field personnel will be defined and controlled by the SHSO in conjunction with the Project Principal or his/her designee. Where more than one hazard is indicated, further definition will be provided by review of site hazards, conditions, and operational requirements and by monitoring at the particular operation being conducted. Any upgrades or downgrades must be immediately communicated to the Project Principal or his/her designee.

Protection may be upgraded or downgraded by the SHSO in conjunction with the Project Principal on the basis of action levels presented below:

Task	Level of Protection
Initial site inspection	Level D
Media delineation/sampling activities	Level D
Monitoring well installation and abandonment activities	Level D
Contractor oversight activities	Level D

Action Levels for Respiratory Protection (Total Organic Vapors)	
Total Organic Vapors in Breathing Zone (ppm)⁽¹⁾	Action
≤ 5	No Action
> 5 – < 25	Cease Field Operations
≥ 25	Cease Field Operations

⁽¹⁾ Based on relative response (sensitivity of PID to total organic vapors).

PID Action Levels

If photoionization detector measurements are above five ppm-v but below 25 ppm-v above background for five minutes in the breathing zone, employee protection will be upgraded to Level C with the use of a full-face respirator.

If photoionization detector measurements exceed 25 ppm-v above background for five minutes in the breathing zone, work activities will cease until airborne vapor levels can be reduced to less than 25 ppm-v and are quantified or the SHSO determines alternate methods to be followed in order to proceed.

Most activities are conducted outdoors, where breathing of high vapor levels are not likely in aboveground areas. Excavations which are not to be entered are likely to have higher vapor concentrations. Where a spill occurs in a basement or other indoor area, ventilation will not be as good as outdoors and extra care shall be taken in monitoring vapor levels.

8.2.2 Respiratory Protection and Clothing

The type of respiratory protection and clothing to be worn in each level of protection indicated above includes the following:

Level D
Coveralls (as appropriate) Boots/shoes – chemical resistant with steel toes and shanks Safety glasses Hard hat* Gloves Hearing protection (as required)

Level C
Full-face, air-purifying, HEPA cartridge-equipped respirator (MSHA/NIOSH specifically approved for protection from organic vapors and particulates per OSHA 1910.1028) Chemical-resistant clothing (coverall; hooded, two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls) Gloves (outer), chemical-resistant – latex Gloves (inner), chemical-resistant – nitrile Boots (inner), chemical-resistant, steel toe and shank Boots (outer), chemical-resistant (disposable) Hard hat* Hearing protection (as required)

* Hard hat is not required where there is no overhead hazard unless required by the client and if approved by the SHSO.

8.2.3 Safety Equipment

Basic emergency and first-aid equipment will be available at the work site, as appropriate. This may include HASP-specified communications, first-aid kit, emergency eyewash, or emergency shower or drench system, fire extinguisher, and other safety-related equipment. Other safety

equipment will be located at the site of specific operations, e.g., drilling, as appropriate. Traffic cones, barricades, and traffic vests or high visibility outerwear will be used when work is required in high traffic areas.

8.3 Communications

Telephones – for communication with emergency support services/facilities. All Roux Associates, Inc. site personnel will be equipped with a mobile phone.

9.0 MONITORING PROCEDURES FOR SITE OPERATIONS

9.1 Monitoring During Site Operations

The SHSO will monitor wind direction and approximate temperature during all invasive site activities and record the data in a log book. An air monitoring program is important to the safety of on-site and off-site personnel. A preliminary survey, to establish background conditions in the immediate sampling area, may be made prior to the initiation of site work. This survey will be conducted with the appropriate air monitoring instrument(s) as warranted by the field activity. Once this survey has been complete, any change in the type of personal protective equipment will be determined.

Air monitoring may be performed to verify that the proper level of equipment is used and to determine if increased protection or work stoppage is required. A PID may be used by Roux Associates, Inc. on-site to monitor conditions.

Section 8.0 lists the acceptable ranges for each piece of monitoring equipment and the action levels for changes in respiratory protection. Monitoring equipment will be calibrated in accordance with the manufacturer's specifications. Air monitoring during non-invasive site activities will be performed as appropriate as specified in Section 8.2.1. All air monitoring results will become part of the project records.

9.2 Personnel Monitoring Procedures

Personal breathing zone samples, 8-hour, time-weighted average (TWA) sampling, may be conducted if sustained operations in Level C are required and if the sampling is authorized by and under the direct supervision of the Corporate Health and Safety Manager (CHSM). The personal breathing zone samples will be collected according to NIOSH analytical methods and analyzed by an American Industrial Hygiene Association-accredited laboratory.

9.3 Medical Surveillance Requirements

Medical surveillance specifies any special medical monitoring and examination requirements as well as stipulates that all Roux Associates, Inc. personnel and subcontractors are required to pass

the medical surveillance examination or equivalent for hazardous waste work required by 29 CFR 1910.120. As a minimum, the examination will include:

- Complete medical and work histories
- Urinalysis
- Physical Exam
- Vision and Hearing Exam
- Blood Chemistry
- Pulmonary Function Test
- Audiometry

The examination will be annual, at a minimum, and upon termination of employment. Additional medical testing may be required by the OHSM in consultation with the CHSM, company physician and the SHSO if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

10.0 SAFETY CONSIDERATIONS FOR SITE OPERATIONS

10.1 General

Field sampling will be performed under the level of personal protection described in Section 8.0. In this section, non-monitoring safety-related procedures are described.

10.2 Site Walk-Throughs

Safety considerations during site walk-throughs precede all other field operations. The field team will maintain line of sight with each other at all times and regularly maintain communications with the Support Zone. Air monitoring will be performed as indicated in Section 9.0 and will be used to alert the walk-through team if a dangerous situation exists. Air monitoring will assist in prescribing levels of protection for future site operations, designating site layout, and identifying hazard areas, if any.

10.3 Heavy Equipment and Drill Rig Safety

The SHSO will be present on site during invasive operations such as excavation and drilling and will provide health and safety monitoring to verify that appropriate levels of protection and safety procedures are followed by Roux Associates, Inc. personnel. The proximity of chemical, water, sewer, and electrical lines will be identified by a utility mark-out service before any subsurface activity or sampling is attempted. The SHSO and Project Manager shall confirm that the utility mark-out service has been notified at least 72 hours prior to earth disturbing activities and that the mark-out was performed.

Hazardous waste sites use all of the mechanical equipment used on any major construction site. Typical machinery to be found includes pumps, compressors, generators, portable lighting systems, pneumatic tools (drum openers), hydraulic drum crushers, pug mills, forklifts, trucks, dozers, backhoes, and drill rigs. The equipment poses a serious hazard if not operated properly or if personnel near machinery cannot be seen by operators.

Drilling crews are confronted with all of these heavy equipment hazards. They must be responsible for good housekeeping around the rig because of the rods, auger sections, rope, and hand tools used for the operation. Maintenance is a constant requirement. Overhead and buried utilities require special precautions because of electrical and natural gas hazards. Electrical storms

may seek out a standing derrick. The hoist or cathead rope poses specific hazards; always use clean, dry, sound rope. Keep hands away from the test hammer. Hearing loss, while not an immediate danger, is considerable over time. Use hearing protection.

Proper containment and disposal practices will be followed in regard to the potential amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP. The use of hard hats, eye protection, ear protection, and steel-toed boots will be required during heavy equipment operations. Contaminated equipment will be placed on liner material when not in use, or when awaiting and during decontamination. Communications with the Support Zone will be regularly maintained.

10.4 Sampling

Personnel must wear prescribed clothing, especially eye protection and chemical and cut-resistant gloves when sampling (for protection from chemical preservatives and sharp edges/broken glass). Sample bottles may be bagged prior to sampling to ease decontamination procedures. The sampling team must be aware of emergency evacuation procedures described in this HASP and the location of emergency equipment, including spill containment materials, prior to sampling. Contamination avoidance will be practiced at all times. In some situations, additional monitoring by the SHSO may be needed to confirm or establish the proper level of protection before the sampling team can proceed.

10.5 Sample Handling

Personnel responsible for the handling of samples will wear the level of protection described in Section 8.0. Samples will be identified as to their hazard and packaged to prevent spillage or breakage. Any unusual sample conditions will be noted. Lab personnel will be advised of sample hazard level and the potential contaminants present. This can be accomplished by a phone call to the lab coordinator and/or inclusion of a written statement with the samples. It may be necessary for the SHSO to review safety procedures in handling site samples to assist or assure that these practices are appropriate for the type of suspected contaminants in the sample.

10.6 Waste Disposal

Waste disposal operations will be monitored by the SHSO and performed under the appropriate level of personal protection described in Section 8.0. Personnel will wear the prescribed clothing, especially eye protection and chemical resistant gloves, when handling or drumming waste materials. Contamination avoidance will be practiced at all times. Also see Section 12.0.

10.7 Heavy Equipment Decontamination

A steam cleaner or pressure washer could be used to decontaminate the drilling equipment. Personnel will exercise caution when using a steam cleaner. The high pressure steam can cause severe burns. Protective gloves, face shields, hard hats, steel-toed boots, and Tyvek suits or rain gear may need to be worn when using steam cleaners.

10.8 Confined Space Entry

The scope of work does not require Roux Associates, Inc. personnel to enter confined space for this project. Any changes to the field activities that may necessitate confined space entry will be reported to the Project Principal and CHSM. No Roux personnel are permitted to make a confined space entry. Confined space is defined as any space, depression, or enclosure that has limited opening for entry and egress, may have limited ventilation, may contain or produce life-threatening atmospheres due to oxygen deficiency, the presence of toxic, flammable, or corrosive contaminants, and which is not intended for continuous occupancy.

Examples of confined spaces prohibited from entry include, but are not limited to, storage tanks, ventilation and exhaust ducts, stacks, pits, basements, silos, vats, vaults, pipes and any topped open space 4 or more feet deep and not adequately ventilated.

10.9 Control of Hazardous Energy (LockOut/Tagout)

Hazardous energy at the site will be controlled through the use of a lockout/tagout procedure developed in accordance with OSHA's lockout/tagout standard (29 CFR 1910.147). The purpose of lockout/tagout procedures is to minimize exposures to hazards from the unexpected energizing, startup or release of residual or stored energy from equipment, machinery, or processes. Lockout/tagout procedures will be followed during the installation, servicing, and maintenance of machines or equipment that involve hazardous energy sources. Hazardous energy sources include

any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy source that is capable of causing injury to personnel.

Lockout/tagout procedures require the placement of a lock and/or tag on an energy isolating device (a device that physically prevents the transmission or release of energy such as manually operated electrical circuit breakers, disconnect switches, valves and selector switches). After the energy isolation device is placed in the “off” or “safe” position, the lockout/tagout is placed on the energy isolation device to secure it in the “off” or “safe” position. This verifies that the equipment, machinery, or process is not capable of being operated while; installation, servicing, or maintenance is taking place.

If it is determined that lockout/tagout procedures are required for any aspect of site work, the following generic lockout/tagout procedures will be implemented. Note, these procedures will be tailored to the specific application of a lockout/tagout if there is a need for same. Presently, there are no known situations that would require the application of lockout/tagout procedures at this site.

1. Affected personnel and authorized personnel will receive lockout/tagout orientation training to become familiar with procedures to control hazardous energy. Affected personnel is defined as personnel whose job requires that they operate or use equipment, machinery or processes on which servicing or maintenance is being performed under lockout/tagout, or whose job requires them to work in an area in which such servicing or maintenance is being performed. Authorized personnel is defined as a qualified person to whom authority and responsibility to perform a specific lockout and/or tagout assignment has been given by the employer.
2. Before proceeding with the installation, maintenance or servicing of any equipment, machinery, or process at the site for which lockout/tagout procedures apply, a survey will be made to locate and identify associated energy isolation devices.
3. Once the survey is complete, the authorized personnel will notify all affected personnel, including the SHSO that a shutdown of the equipment or machine will occur.
4. Following notification, the equipment, or machine, if operating will be shut down by normal stopping procedure (i.e., depress stop button, open toggle switch, turn light switch off, etc.).
5. Once turned off, the energy isolating device (i.e., circuit breaker, disconnect switch, valve, etc.) will be operated in such a manner that the machine or equipment will be isolated from the energy source (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, etc.).

6. The energy isolating device is then “locked out” by applying the lockout, padlock, and tag to the device. In some cases, a chain must be used (in combination with a padlock) to sufficiently “lockout” a device (i.e., steam valve, hydraulic valve, etc.).
7. The tag will be filled out by the authorized personnel indicating the personnel’s name and the date and time of the lockout.
8. Once the energy isolating device has been locked out and tagged, all potentially hazardous sources or residual energy will be purged or dissipated (i.e., grounding, bleeding, venting, lowering, etc.).
9. After verifying that no personnel are exposed, the authorized personnel will operate (i.e., “try”) the normal operating controls to make certain the equipment will not restart. These operating controls must be returned to the “off” or “neutral” position after the test.
10. Use a volt meter to make sure that work is not energized, if applicable.
11. Attach a “ground stick” of sufficient size to handle any possible fault current to all three phases of the source, if applicable.
12. Maintenance or servicing of the machine or equipment can now be performed.
13. When the maintenance and/or service is completed, the work area is to be inspected to verify that all affected personnel are safely positioned and/or removed. In addition, remove all nonessential items from the equipment.
14. The lockout, padlock, and tag shall then be removed from the energy isolating device by the authorized personnel who applied the lockout devices.
15. Each and every personnel involved with the service or maintenance of the locked out equipment will place their assigned padlock and tag to each and every lockout device and/or chain in such manner that if every other padlock were removed, the personnel would still have a padlock assuring that each and every source of energy is still “locked out.” No personnel may affix the personal lockout/tagout device of another personnel.
16. If work on a piece of equipment or machinery that is locked out carries over to the next shift, the authorized personnel may remove their lockout device, provided that the next authorized personnel applies their lockout device at the same time the previous authorized personnel removes their lockout device.

10.10 Hazard Communication

Personnel working at this site have the right to know about the chemical hazards associated with hazardous materials used and stored onsite. This information will be readily available to all site workers as required by OSHA’s Hazard Communication Standard (29 CFR 1910.1200). This information will be communicated to personnel through the maintenance of a chemical inventory

system, chemical labeling, material safety data sheets (MSDSs), hazard communication training, and a written hazard communication program.

Chemicals imported to the site will bear the original Department of Transportation (DOT) required labeling on the chemical's container. In addition, a new label will be affixed to the original container, if necessary, and to a new container to which the chemical is dispensed providing the chemical name and specific hazard warnings (e.g., flammability, health, reactivity). Hazard warnings will follow either the National Fire Protection Association (NFPA) format or the Hazardous Material Information System (HMIS) format. Both systems are easy to use and rely on numerically ranking hazards on a 0 to 4 scale. Most chemicals used onsite are subject to the Hazard Communication Standard related to sampling activities. These chemicals may include hexane, methanol, acetone, and nitric acid.

10.11 Additional Safe Work Practices

Refer to the SHSO for specific concerns on each individual site task. The safety rules listed below must be strictly followed:

- Use the buddy system when required.
- Practice contamination avoidance, both on and off site.
- Plan activities ahead of time.
- Do not climb over/under obstacles and barricades.
- Be alert to your own physical condition.
- Watch your co-workers for signs of fatigue, exposure, heat or cold stress, etc.
- Report all accidents, no matter how minor to include near losses, immediately to the SHSO.
- Do not eat, drink, chew gum, apply cosmetics, or use tobacco products while working on site (except in the support zone).
- Be aware of traffic, heavy equipment, and other obstacles around you.
- Do not work on-site while under the influence of drugs or alcohol, including prescription and non-prescription drugs that may impair your performance.
- Copies of this HASP shall be readily accessible at all times.

- Note wind direction. Personnel shall remain upwind wherever possible during on-site activities.
- **READ AND SIGN YOUR HEALTH AND SAFETY PLAN BEFORE ENGAGING IN SITE ACTIVITIES.**

A work/rest regimen will be initiated when ambient temperatures and protective clothing cause a stressful situation. Work will not be conducted without adequate light or without supervision. Safety briefings may be held prior to beginning each task.

11.0 DECONTAMINATION PROCEDURES

11.1 Contamination Prevention

One of the most important aspects of decontamination is contamination prevention. Contamination prevention practices will minimize worker exposure and verify valid sample results by precluding cross contamination. Procedures for contamination prevention include the following:

- For Personnel
 - Do not walk through areas of obvious or known contamination;
 - Do not handle or touch contaminated materials directly;
 - Make sure all PPE has no cuts, tears or other signs of deterioration prior to donning;
 - Fasten all closures on suits, covering with tape, if necessary;
 - Take particular care to protect any skin injuries;
 - Stay upwind of airborne contaminants; and
 - Do not carry cigarettes, gum, etc. into contaminated areas.
- Sampling/Monitoring
 - When required by the SHSO, cover instruments with clear plastic, leaving opening for sampling and exhaust ports; and
 - Bag sample containers prior to the placement of sample material.
- Heavy Equipment
 - Care should be taken to limit the amount of contamination that comes in contact with heavy equipment;
 - If contaminated tools are to be placed on non-contaminated equipment for transport to the decontamination pad, plastic should be used to keep the equipment clean; and
 - Excavated soils should be contained and kept out of the way of workers.

11.2 Decontamination

All personnel and equipment exiting the Exclusion Zone will be thoroughly decontaminated. Safety briefings will explain the decontamination procedures for personnel and portable equipment for the various levels of protection indicated in Section 8.0. Heavy equipment will be

decontaminated with a steam cleaner. Rinseates will be collected, handled, and/or drummed as potentially hazardous waste (see Section 12.0).

Equipment Decontamination

Sampling equipment will be decontaminated through the following steps, if necessary:

- fresh water rinse;
- non-phosphate detergent wash;
- fresh water rinse; and
- distilled water rinse.

12.0 DISPOSAL PROCEDURES

Discarded materials, waste materials, or other objects will be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on site. Potentially contaminated materials as determined by the SHSO, e.g., soil, clothing, gloves, etc., will be bagged or drummed, as necessary, and segregated for disposal. Contaminated materials will be disposed in accordance with appropriate regulations. Non-contaminated materials will be collected and bagged for appropriate disposal as normal domestic waste. Waste disposal operations conducted by Roux Associates, Inc. will be monitored by the SHSO and carried out under the appropriate level of personal protection described in Section 8.0.

13.0 EMERGENCY PLAN

As a result of the hazards on-site and the conditions under which operations are conducted, the possibility of an emergency exists. An emergency plan is required by OSHA 29 CFR 1910.120 to be available for use and is included below. A copy of this plan will be posted in the Support zone at each work site.

13.1 Site Emergency Coordinator(s)

The Site Emergency Coordinator is the Site Health and Safety Officer. The Site Emergency Coordinator(s) will contact the local fire, police, and other emergency units prior to beginning work on-site. In these contacts, the Site Emergency Coordinator(s) will inform the emergency units about the nature and duration of work expected on the site and the type of contaminants and possible health or safety effects of emergencies involving these contaminants. Also at this time, the coordinators and the emergency response units will make arrangements to handle any emergencies that might occur.

The Site Emergency Coordinator(s) will implement the emergency plan whenever conditions at the site warrant such action. The coordinator(s) will be responsible for assuring the evacuation, emergency treatment, emergency transport of site personnel as necessary, and notification of emergency response units, and the appropriate management staff.

13.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of particulates, etc., an air horn, automobile horn, or other appropriate device will be sounded by the SHSO or field crew personnel for approximately ten (10) seconds indicating the initiation of evacuation procedures. All persons in both the restricted and non-restricted areas will evacuate and assemble near the Support Zone or other safe area as identified by the Site Emergency Coordinator(s). The Site Emergency Coordinator(s) will have authority to initiate proper action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been sounded. The SHSO must see that access for emergency equipment is provided and that all spark-producing apparatus has been shutdown once the alarm has been sounded. Once the safety of all personnel is established, the fire department

and other emergency response groups will be notified by telephone of the emergency. Then, other personnel listed in Section 13.4 will be notified.

13.3 Potential or Actual Fire or Explosion

If the potential for a fire exists or if an actual fire or explosion occurs, the following procedures will be implemented:

- Immediately evacuate the site as described above (Section 13.2); and
- Notify fire, security, and police departments.

Note that although home heating oil is classified as a combustible (not flammable) material, fuel oil vapors in a poorly ventilated space, such as a residential basement tank spill, may result in a fire or explosion hazard.

Emergency Site Control

In the event of an emergency, the SHSO will discourage any unauthorized personnel from entering the site. If necessary, the SHSO will contact the proper authorities to assist in control.

13.4 Environmental Incident (Release or Spread of Contamination)

If possible, the spread of contamination will be controlled or stopped. The Site Emergency Coordinator(s) will instruct a person on-site to immediately contact police and fire authorities to inform them of the possible or immediate need for nearby evacuation. If a significant release has occurred, the National Response Center and other appropriate groups will be contacted. Those groups will alert National or Regional Response Teams as necessary. Following these emergency calls, the remaining personnel listed in the table below will be notified, as necessary.

Responsibility	Contact	Telephone
Fire Department	FDNY	911
Emergency Response	FDNY	911
Police Department	NYPD	911
Ambulance	NYPD	911
Hospital	Maimonides Medical Center	(718) 283-7140
National Response Center (Release or Spill)		(800) 424-8802

Responsibility	Contact	Telephone
Chemical Transport Emergency Center CHEMTREC)		(800) 424-9300
Site Health and Safety Officer	Chris Geraghty	(631) 232-2600
Project Manager	Jessica Taylor	(631) 232-2600
Project Principal	Joe Duminuco	(631) 232-2600
Client Contact	Larry Gordon	(646) 672-4467

13.5 Personal Injury

If on-site personnel require emergency medical treatment, the following steps will be taken:

- 1) Notify the Fire Department or Ambulance service and request an ambulance or transport the victim to the hospital, as appropriate.
- 2) Decontaminate to the extent possible prior to administration of first aid or movement to emergency facilities.
- 3) First aid will be provided by emergency medical services (EMS) or by on-site personnel trained in first aid, CPR, and bloodborne pathogens, if available.
- 4) The OHSM will supply medical data sheets (Appendix E) on the victim (if a Roux Associates, Inc. employee) to appropriate medical personnel.

13.6 Overt Personnel Exposure

If an overt exposure to toxic materials occurs, the exposed person will be treated on site as follows:

Skin Contact: Remove contaminated clothing. Wash immediately with water. Use soap if available. Contact EMS, if necessary.

Inhalation: Remove from contaminated atmosphere. Contact EMS, if necessary. Transport to hospital.

Ingestion: Never induce vomiting on an unconscious person. Also, never induce vomiting when acids, alkalis, or petroleum products are suspected. Contact the poison control center. Contact EMS, if necessary.

Puncture Wound or Laceration: Decontaminate and transport to emergency medical facility or contact EMS. Do not contact blood or bodily fluids. SHSO or OHSM will provide medical data sheets to medical personnel as requested.

13.7 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO will determine if work can continue without risking the health and safety of on-site workers. Some of the items to be considered prior to determining if work should continue are the following:

- Heavy rainfall;
- Potential for heat stress (see Appendix D);
- Potential for cold stress and cold-related injuries (see Appendix D);
- Limited visibility;
- Potential for electrical storms;
- Potential for malfunction of H&S monitoring equipment or gear;
- Potential for accidents;
- Unsafe driving and working conditions due to snow or ice; and
- High wind.

15.0 APPROVAL PAGE

The Approval Page must be attached and signed by the SHSO, OHSM, Project Manager, and Project Principal.

By their signature, the undersigned certify that this HASP is approved and will be utilized by Roux Associates, Inc. personnel at ACE Group claim sites.

Site Health and Safety Officer

Date

Office Health and Safety Manager

Date

Project Manager

Date

Project Principal

Date

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site

Compound	CAS #	TLV	IDLH	PEL	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Benzene	71-43-2	1.6 mg/m ³ 0.5 ppm	Ca (ND)	1 ppm	Dermal; inhalation ingestion	CNS depression Hematopoietic depression Dermatitis	CNS blood skin eyes resp system bone marrow	Liquid (solid below 42°F) BP: 80.093°C flammable LEL: 1.4% UEL: 8.0%
Chromium (VI)	7440-47-3	0.05 mg/m ³ (water soluble) 0.01 mg/m ³ (insoluble)	(ND)	None	Dermal; inhalation; ingestion	Nasal and lung tumors Sensory irritant	lungs eyes skin	Red, rhombic crystals
Diesel Fuel	68334-30-5	100 mg/m ³	NA	NA	Dermal; inhalation	Resp irritation Dizziness, nausea Skin disorders Liver disorders	lungs CNS skin liver	Light amber liquid Fl.Pt = >100°F LEL = 0.6% UEL = 7.0%
Ethylbenzene	100-41-4	434 mg/m ³ 100 ppm (may lower to 20 ppm)	800 ppm (10% LEL)	435 mg/m ³ 100 ppm	Dermal; inhalation; ingestion	Sensory irritant CNS depressant Narcosis Hematological disorders	eyes skin CNS respiratory system blood	Liquid aromatic odor BP: 277°F Fl.P: 59°F LEL: 1.2% UEL: 7.0%
Fuel Oil	68476-33-5	NA	None	NA	Dermal; inhalation; ingestion	Skin cancer Liver damage Blood disorders	skin liver bone marrow	Dark liquid LEL = 1.0% UEL = 3.0% Fl.Pt = >140°F
Gasoline	8006-61-9	300 ppm 890 mg/m ³ carcinogen	carcinogen	900 mg/m ³ 300 ppm	Dermal; inhalation; ingestion	CNS depression Sensory irritant Dermatitis Pulmonary Edema	CNS eyes skin resp system	Liquid, aromatic Fl.Pt = -50°F
Kerosene	8008-20-6	200 mg/m ³	NA	NA	Dermal; inhalation	Eye/skin irritation Resp. irritation Dizziness, nausea	eyes skin resp. system CNS	yellow to white oily liquid Fl.Pt = >100-162°F LEL = 0.7% UEL = 5.0%

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site

Compound	CAS #	TLV	IDLH	PEL	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Lead	7439-92-1	0.05 mg/m ³	700 100 mg/m ³	0.05 mg/m ³	Dermal; inhalation; ingestion	Abdominal pain CNS depressant Anemia Nephropathy Reproductive effects	GI tract CNS blood kidneys	Metal - soft gray BP: 3164°F
Mercury vapor (Elemental)	7439-97-6	0.025 (skin)	28 mg/m ³	0.05 (skin)	Dermal; inhalation; ingestion	Tremor Insomnia Chest pain GI disturbance Eye irritant Skin irritant	skin resp system CNS kidneys eyes	Silver, white, odorless liquid BP = 674°F
Petroleum hydrocarbons (Petroleum distillates)	8002-05-9	N/A	1,100 ppm	2,000 mg/m ³ 500 ppm	Dermal; inhalation; ingestion	CNS depressant Respiratory irritant Dried/cracked skin	CNS respiratory tract skin	Colorless liquid BP: 86-460°F UEL: 5.9% LEL: 1.1% flammable
Slop Oil	68477-26-9	NA	NA	NA	Dermal	Eye irritation Skin irritation	eyes skin	Dark liquid Fl.Pt = >300°F LEL = 0.6% UEL = 7.0%
Toluene	108-88-3	75 mg/m ³ 20 ppm	500 ppm	200 ppm	Dermal; inhalation; ingestion	CNS depression Liver damage Kidney damage Defatting of skin	CNS liver kidney skin	Liquid benzene odor BP: 110.4°C flammable LEL: 1.2% UEL: 7.1%
Xylene(s)	1330-20-7	434 mg/m ³ 100 ppm	900 ppm	435 mg/m ³ 100 ppm	Dermal; inhalation; ingestion	Sensory irritant Blood dyscrasia Bronchitis CNS depression	CNS eyes skin GI tract blood liver kidneys	Liquid Aromatic odor BP: 138.5° flammable LEL: 1.1% UEL: 7.0%

Notes:

- Ca – Carcinogen
- TLV – Threshold Limit Value, as 8-hr. time-weighted averages (ACGIH)
- IDLH – Immediately Dangerous to Life and Health (OSHA)
- PEL – Permissible Exposure Level (OSHA)
- PPM – Parts per million
- mg/m³ – milligrams per cubic meter
- Fl. Pt. – Flash point
- LEL – Lower Explosive Level
- UEL – Upper Explosive Level
- BP – Boiling Point
- NA – Not Available
- ND – Not Determined

References:

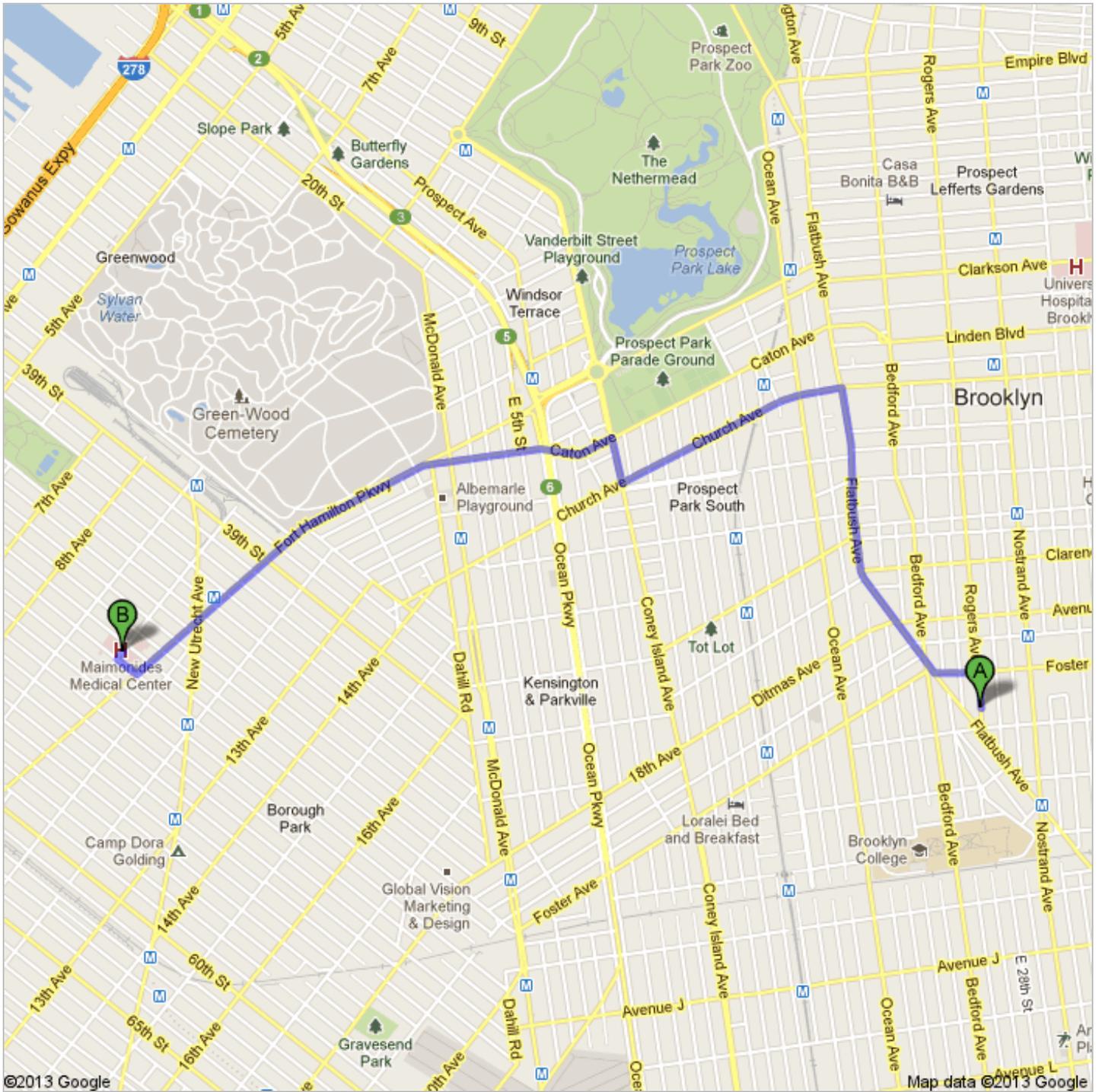
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Directions to Maimonides Medical Center

4802 10th Ave, New York, NY 11219

3.7 mi – about 14 mins



A 1345 Rogers Ave, Brooklyn, NY 11210

1. Head **north** on **Rogers Ave** toward **Foster Ave** go 0.1 mi
total 0.1 mi
-  2. Take the 1st left onto **Foster Ave** go 0.1 mi
About 52 secs total 0.2 mi
-  3. Turn right onto **Flatbush Ave** go 0.9 mi
About 3 mins total 1.1 mi
-  4. Turn left onto **Church Ave** go 0.7 mi
About 3 mins total 1.8 mi
-  5. Turn right onto **Coney Island Ave** go 0.1 mi
total 2.0 mi
-  6. Take the 2nd left onto **Caton Ave** go 0.6 mi
About 3 mins total 2.5 mi
7. Continue onto **Fort Hamilton Pkwy** go 1.0 mi
About 3 mins total 3.6 mi
-  8. Turn right onto **49th St** go 374 ft
total 3.6 mi
-  9. Take the 1st right onto **10th Ave** go 148 ft
Destination will be on the left total 3.7 mi

B **Maimonides Medical Center**
4802 10th Ave, New York, NY 11219

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

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Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

**Job Safety and Health Protection
(OSHA) Poster**

Job Safety and Health

It's the law!



Occupational Safety and Health Administration
U.S. Department of Labor

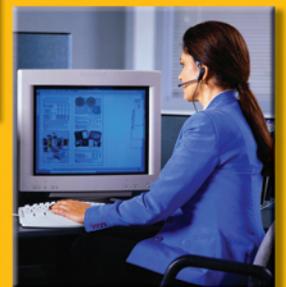
EMPLOYEES:

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the *OSH Act* that apply to your own actions and conduct on the job.

EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

**This free poster available from OSHA –
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Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

1-800-321-OSHA
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OSHA 3165-12-06R

Field Change Request

HEALTH AND SAFETY FIELD CHANGE REQUEST FORM

**SITE SAFETY REVIEW – CHANGES AND OVERALL EVALUATION
(To Be Completed For Each Field Change In Plan)**

Was the Safety Plan followed as presented? _____ Yes _____ No

Describe, in detail, all changes to the Safety Plan:

Reasons for changes:

Follow-Up, Review and Evaluation Prepared by _____ Date _____

Discipline _____

Approved by: Site Manager _____ Date _____

Site Safety Officer _____ Date _____

Approved by: Office Health & Safety Manager _____ Date _____

Evaluation of Site Safety Plan:

Was the Safety Plan adequate? _____ Yes _____ No

What changes would you recommend?

**Heat Stress and
Cold Stress Information**

Heat Stress

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment (PPE) in hot weather environments.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps. The signs and symptoms of heat cramps are as follows:

- severe muscle cramps, usually in the legs and abdomen;
- exhaustion, often to the point of collapse; and
- dizziness or periods of faintness.

First aid treatment includes moving to a shaded area, rest, and fluid intake. Normally, the individual should recover within one-half hour. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to a hospital for medical attention.

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat. The circulatory system of the individual fails as blood collects near the skin in an effort to rid the body of excess heat. The signs and symptoms of heat exhaustion are as follows:

- rapid and shallow breathing;
- weak pulse;
- cold and clammy skin with heavy perspiration;
- skin appears pale;
- fatigue and weakness;
- dizziness; and
- elevated body temperature.

First aid treatment includes cooling the victim, elevating the feet, and replacing fluids and electrolytes. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to the hospital for medical attention.

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a **MEDICAL EMERGENCY**, requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- dry, hot, red skin;
- body temperature approaching or above 105°F;
- large (dilated) pupils; and
- loss of consciousness – the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility.

Heat stress (heat cramps, heat exhaustion, and heat stroke) is a significant hazard if any type of protective equipment (semi-permeable or impermeable) which prevents evaporative cooling is worn in hot weather environments. Local weather conditions may require restricted work schedules in order to adequately protect personnel. The use of work/rest cycles (including working in the cooler periods of the day or evening) and training on the signs and symptoms of heat stress should help prevent heat-related illnesses from occurring. Work/rest cycles will depend on the work load required to perform each task, type of protective equipment, temperature, and humidity. In general, when the temperature exceeds 88°F, a 15 minute rest cycle will be initiated once every two hours. In addition, potable water and fluids containing electrolytes (e.g., Gatorade) will be available to replace lost body fluids.

Cold Stress

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole-body protection. Adequate insulating clothing must be used when the air temperature is below 40°F. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. Training on the signs and symptoms of cold stress should prevent cold-related illnesses from occurring. The signs and symptoms of cold stress include the following:

- severe shivering;
- abnormal behavior;

- slowing of body movement;
- weakness;
- stumbling or repeated falling;
- inability to walk;
- collapse; and/or
- unconsciousness.

First aid requires removing the victim from the cold environment and seeking medical attention immediately. Also, prevent further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks, and encourage activity, such as walking wrapped in a blanket.

Accident Reporting Forms

ACORD™ AUTOMOBILE LOSS NOTICE

DATE

PRODUCER James C. Herrmann & Associates LTD 265 Sunrise Highway, Suite #20 Rockville Centre, NY 11570		PHONE (A/C, No, Ext): 516-678-2626	COMPANY Commerce & Industry	NAIC CODE: 19410	MISCELLANEOUS INFO (Site & location code)		
CODE: AGENCY CUSTOMER ID:		SUB CODE:	EFFECTIVE DATE 06/01/11	EXPIRATION DATE 06/01/12	DATE OF ACCIDENT AND TIME	AM <input type="checkbox"/> PM <input type="checkbox"/>	PREVIOUSLY REPORTED YES <input type="checkbox"/> NO <input type="checkbox"/>
POLICY NUMBER CA-3777920			REFERENCE NUMBER	CAT #			

INSURED NAME AND ADDRESS Roux Associates, Inc. 209 Shafter Street Islandia, NY 11749		SOC SEC # OR FEIN: 11-2579482	CONTACT NAME AND ADDRESS Susan Sullivan, General Counsel Roux Associates, Inc. 209 Shafter Street Islandia, NY 11749		CONTACT INSURED	WHERE TO CONTACT Fax Notice: 631-232-1525
RESIDENCE PHONE (A/C, No) NA	BUSINESS PHONE (A/C, No, Ext) 631-232-2600	RESIDENCE PHONE (A/C, No)	BUSINESS PHONE (A/C, No, Ext) 631-232-2600		WHEN TO CONTACT	

LOSS LOCATION OF ACCIDENT (Include city & state)	AUTHORITY CONTACTED: REPORT #:	VIOLATIONS/CITATIONS
DESCRIPTION OF ACCIDENT (Use separate sheet, if necessary)		

POLICY INFORMATION						
BODILY INJURY (Per Person)	BODILY INJURY (Per Accident)	PROPERTY DAMAGE	SINGLE LIMIT	MEDICAL PAYMENT	OTC DEDUCTIBLE	OTHER COVERAGE & DEDUCTIBLES (UM, no-fault, towing, etc)
LOSS PAYEE					COLLISION DED	
UMBRELLA/ EXCESS	UMBRELLA	EXCESS	CARRIER:	LIMITS:	AGGR	PER CLAIM/OCC
						SIR/ DED

INSURED VEHICLE						
VEH #	YEAR	MAKE: MODEL:	BODY TYPE: V.I.N.:	PLATE NUMBER	STATE	
OWNER'S NAME & ADDRESS			RESIDENCE PHONE (A/C, No): BUSINESS PHONE (A/C, No, Ext):			
DRIVER'S NAME & ADDRESS (Check if same as owner)			RESIDENCE PHONE (A/C, No): BUSINESS PHONE (A/C, No, Ext):			
RELATION TO INSURED (Employee, family, etc.) Employee	DATE OF BIRTH	DRIVER'S LICENSE NUMBER	STATE	PURPOSE OF USE	USED WITH PERMISSION? YES <input type="checkbox"/> NO <input type="checkbox"/>	
DESCRIBE DAMAGE	ESTIMATE AMOUNT	WHERE CAN VEHICLE BE SEEN?	WHEN CAN VEH BE SEEN?	OTHER INSURANCE ON VEHICLE		

PROPERTY DAMAGED			
DESCRIBE PROPERTY (If auto, year, make, model, plate #)	OTHER VEH/PROP INS? YES <input type="checkbox"/> NO <input type="checkbox"/>	COMPANY OR AGENCY NAME: POLICY #:	
OWNER'S NAME & ADDRESS		RESIDENCE PHONE (A/C, No): BUSINESS PHONE (A/C, No, Ext):	
OTHER DRIVER'S NAME & ADDRESS (Check if same as owner)		RESIDENCE PHONE (A/C, No): BUSINESS PHONE (A/C, No, Ext):	
DESCRIBE DAMAGE	ESTIMATE AMOUNT	WHERE CAN DAMAGE BE SEEN?	

INJURED						
NAME & ADDRESS	PHONE (A/C, No)	PED	INS VEH	OTH VEH	AGE	EXTENT OF INJURY
(Empty row for data entry)						

WITNESSES OR PASSENGERS				
NAME & ADDRESS	PHONE (A/C, No)	INS VEH	OTH VEH	OTHER (Specify)
(Empty row for data entry)				

REMARKS (Include adjuster assigned)			
REPORTED BY	REPORTED TO	SIGNATURE OF INSURED	SIGNATURE OF PRODUCER

Applicable in Arizona

For your protection, Arizona law requires the following statement to appear on this form. Any person who knowingly presents a false or fraudulent claim for payment of a loss is subject to criminal and civil penalties.

Applicable in Arkansas, District of Columbia, Kentucky, Louisiana, Maine, Michigan, New Jersey, New Mexico, Pennsylvania and Virginia

Any person who knowingly and with intent to defraud any insurance company or another person, files a statement of claim containing any materially false information, or conceals for the purpose of misleading, information concerning any fact, material thereto, commits a fraudulent insurance act, which is a crime, subject to criminal prosecution and civil penalties. In D.C., LA, ME and VA insurance benefits may also be denied.

Applicable in California

Any person who knowingly files a statement of claim containing any false or misleading information is subject to criminal and civil penalties.

Applicable in Colorado

It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance, and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policy holder or claimant for the purpose of defrauding or attempting to defraud the policy holder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado Division of Insurance within the Department of Regulatory Agencies.

Applicable in Florida and Idaho

Any person who knowingly and with the intent to injure, Defraud, or Deceive any Insurance Company Files a Statement of Claim Containing any False, Incomplete or Misleading information is Guilty of a Felony.*

* In Florida - Third Degree Felony

Applicable in Hawaii

For your protection, Hawaii law requires you to be informed that presenting a fraudulent claim for payment of a loss or benefit is a crime punishable by fines or imprisonment , or both.

Applicable in Indiana

A person who knowingly and with intent to defraud an insurer files a statement of claim containing any false, incomplete, or misleading information commits a felony.

Applicable in Minnesota

A person who files a claim with intent to defraud or helps commit a fraud against an insurer is guilty of a crime.

Applicable in Nevada

Pursuant to NRS 686A.291, any person who knowingly and willfully files a statement of claim that contains any false, incomplete or misleading information concerning a material fact is guilty of a felony.

Applicable in New Hampshire

Any person who, with purpose to injure, defraud or deceive any insurance company, files a statement of claim containing any false, incomplete or misleading information is subject to prosecution and punishment for insurance fraud, as provided in RSA 638:20.

Applicable in New York

Any person who knowingly makes or knowingly assists, abets, solicits or conspires with another to make a false report of the theft, destruction, damage or conversion of any motor vehicle to a law enforcement agency, the Department of Motor Vehicles or an insurance company, commits a fraudulent insurance act, which is a crime, and shall also be subject to a civil penalty not to exceed five thousand dollars and the value of the subject motor vehicle or stated claim for each violation.

Applicable in Ohio

Any person who, with intent to defraud or knowing that he/she is facilitating a fraud against an insurer, submits an application or files a claim containing a false or deceptive statement is guilty of insurance fraud.

Applicable in Oklahoma

WARNING: Any person who knowingly and with intent to injure, defraud or deceive any insurer, makes any claim for the proceeds of an insurance policy containing any false, incomplete or misleading information is guilty of a felony.

Medical Data Sheet

MEDICAL DATA SHEET

This form must be completed by all on-site personnel prior to the commencement of activities, and shall be kept by the Site Health and Safety Officer during site activities. This form must be delivered to any attending physician when medical assistance is needed.

(This form should be typed or printed legibly.)

Site: _____

Name: _____ Home Telephone: _____
(Area Code/Telephone Number)

Address: _____

Date of Birth: _____ Height: _____ Weight: _____

Emergency Contact: _____ Telephone: _____
(Area Code/Telephone Number)

Drug Allergies or Other Allergies: _____

Previous Illnesses or Exposures to Hazardous Substances: _____

Current Medication (Prescription and Non-Prescription): _____

Medical Restrictions: _____

Name, Address and Telephone Number of Person Physician: _____
