PRINCE LUMBER

MANHATTAN, NEW YORK

Remedial Action Work Plan

NYC OER Project Number: 12EHAN533M
VCP Number: 14CVCP219M
E-Designation E-268
CEQR Number 11DCP068M
West Clinton Rezoning

Prepared for:
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REMEDIAL ACTION WORK PLAN
TABLE OF CONTENTS

TABLE OF CONTENTS ii
FIGURES iv
APPENDICES iv
LIST OF ACRONYMS v
CERTIFICATION 1
EXECUTIVE SUMMARY 2
REMEDIAL ACTION WORK PLAN 12
1.0 SITE BACKGROUND 12
1.1 Site Location and Current usage 12
1.2 Proposed Redevelopment Plan 13
1.3 Description of Surrounding Property 14
1.4 Remedial Investigation 14
2.0 REMEDIAL ACTION OBJECTIVES 19
3.0 REMEDIAL ALTERNATIVES ANALYSIS 20
3.1 Threshold Criteria 22
3.2. Balancing Criteria 23
4.0 REMEDIAL ACTION 30
4.1 Summary of Preferred Remedial Action 30
4.2 Soil Cleanup Objectives and soil/Fill management 33
4.3 Engineering Controls 40
4.4 Institutional Controls 42
4.5 Site Management Plan 43
4.6 Qualitative Human Health Exposure Assessment 44
5.0 REMEDIAL ACTION MANAGEMENT 49
5.1 Project Organization and oversight 49
5.2 Site Security 49
5.3 Work Hours 49
5.4 Construction Health and Safety Plan 49

5.5 Community Air Monitoring Plan 50
5.6 Agency Approvals 52
5.7 Site Preparation 53
5.9 Demobilization 57
5.10 Reporting and Record Keeping 57
5.11 Complaint Management 58
5.12 Deviations from the Remedial Action Work Plan 58
6.0 REMEDIAL ACTION REPORT 60
7.0 SCHEDULE 62
Appendix 1 1
SOIL/MATERIALS MANAGEMENT PLAN 1
1.1 Soil Screening Methods 1
1.2 Stockpile Methods 1
1.3 Characterization of Excavated Materials 1
1.4 Materials Excavation, Load-Out and Departure 2
1.5 Off-Site Materials Transport 2
1.6 Materials Disposal Off-Site 3
1.7 Materials Reuse On-Site 4
1.8 Demarcation 4
1.9 Import of Backfill Soil from Off-Site Sources 5
1.10 Fluids Management 6
1.11 Storm-water Pollution Prevention 7
1.12 Contingency Plan 7
1.13 Odor, Dust and Nuisance Control 8
Appendix 2 1
VAPOR BARRIER, GEOTEXTILE LINER AND BUTYL TAPE SPECIFICATIONS 1
Appendix 3 1
CITIZEN PARTICIPATION PLAN 1
Appendix 4 1
SUSTAINABILITY STATEMENT 1
Appendix 5 1
STV's HEALTH AND SAFETY PLAN 1

FIGURES

Figure 1 Site Location Map
Figure 2 Site Plan
Figure 3 Proposed Layout of Development- Ground Floor Plan
Figure 4 Proposed Layout of Development- Mezzanine Plan
Figure 5 Proposed Layout of Development- Cellar Plan
Figure 6 Excavation and Endpoint Sample Location Plan
Figure 7 Vapor Barrier and SSDS Schematic Remediation Plan

APPENDICES

Appendix 1 Soil/Materials Management Plan
Appendix 2 Vapor Barrier, Geotextile Fabric and Butyl Tape Specifications
Appendix 3 Citizen Participation Plan
Appendix 4 Sustainability Statement
Appendix 5 STV Health and Safety Plan

LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC BCP	New York City Brownfield Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer

PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SSDS	Sub-slab Depressurization System
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Michael Tumulty, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the Prince Lumber Site OER Project # 12EHAN533M.

I, Brian Connolly am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the Prince Lumber Site OER Project # 12EHAN533M.

I certify that this Remedial Action Work Plan (RAWP) 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 RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Michael V. Tumulty, PE

Name

NY61442

NYS PE License Number

Signature

01-13-2014

Date

STATE OF NEW YORK
MICHAEL V. TUMULTY
No. 61442
LICENSED PROFESSIONAL ENGINEER

Brian Connolly

QEP Name

QEP Signature

01-13-2014

Date

EXECUTIVE SUMMARY

This Remedial Action Work Plan (RAWP) has been developed for CNSA, LLC. (CNSA) located at 612-618 West 47th Street in the West Clinton section of Manhattan, New York (the Site). This project has been assigned project number 12EHAN533M by New York City Office of Environmental Remediation (OER). A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this 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 with applicable laws and regulations. This RAWP describes the remediation and/or mitigation activities to be implemented at the Site in coordination with the OER for the purposes of satisfying the requirements of the Hazardous Materials E-Designation Program and obtaining a Notice to Proceed. An E-Designation for Hazardous Materials, Air Quality and Noise (E-268) was placed on the Site by the New York City Department of City Planning (DCP) as part of the West Clinton Rezoning.

Project numbers associated with the Site include CEQR No. 11DCP068M, OER Project No. 12EHAN533M, and NYS DEC Spill No. 1303354.

Site Location and Current Usage

The Site is located at 612-618 West 47th Street in the West Clinton section of Manhattan, New York and is identified as Block 1094 and Lot 44 on the New York City Tax Map. The Site is a small area approximately 10,000-square feet and is bounded by West 47th Street to the north, West 46th Street to the south, 11th Avenue to the east, and 12th Avenue to the west. Currently, the Site consists of three (3) parcels of land:

- 612 West 47th Street: open parking lot formerly utilized by Manhattan Toyota to store vehicles;
- 614 West 47th Street: one-story building formerly utilized by Manhattan Toyota for car storage; and
- 618 West 47th Street: one-story building formerly utilized as an auto repair/body shop.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will consist of the demolition of two (2) existing on-site buildings on parcels 614 and 618 West 47th Street and construction of a one-story building with mezzanine and basement which will encompass the entire Site, approximately 10,000-square feet. The new building will act as a transfer center for Prince Lumber presently located at 404 West 15th Street, New York, New York 10011.

Structurally, the new one- story 10,000-square feet building will be 23 feet in height and take up the entire Site. The ground level will consist of a loading/storage area, a 2,700-sqaure feet retail shop (i.e. hardware) and a 3,100-square feet mezzanine of which 868-square feet will serve as office space for approximately five (5) people. As part of the redevelopment, a 2,726-square feet basement will be constructed. The basement concrete slab floor is anticipated to be approximately 12 feet below ground surface (ft bgs.) and serve as an unoccupied space containing utility rooms and additional storage space. To facilitate the installation of the basement, underlying soils are being excavated, moved and properly disposed in accordance with Federal, State and City regulations. Excavation depths for the basement are anticipated to be approximately 13 ft bgs. (subject to change). The remainder of the excavation will be conducted on the 1st floor for foundation walls and utility installation. Approximately 1,800 tons (1,200 cubic yards) of soil is anticipated to be removed during this phase of the development. The current zoning designation is M2-4 ('Manufacturing District') in the New York City Planning Commission Zoning Map 8C (effective date of rezoning: 02/06/2013) and is part of the West Clinton Rezoning. The proposed use is consistent with existing zoning for the property.

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 Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 4 Site Specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
6. Decommission of three (3) on-site monitoring wells by a state licensed driller prior to demolition of on-site buildings and asphalt/concrete slab.
7. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. The basement area of the property (25% site) will be excavated to the depths of 13 feet below grade. The remainder of the property will be excavated for foundation walls, footings and utilities. Approximately 1,800 tons (1,200 cubic yards) of soil is anticipated to be removed during this phase of the development.
8. Excavation and removal of petroleum-contaminated material under the direction of the NYSDEC to the extent practicable (based on structural stability), and non-hazardous material (i.e. historic fill).
9. 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.
10. 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.

11. 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.

12. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.

13. Demarcation of residual soil/fill.

14. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

15. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

16. Installation and operation of an active sub-slab depressurization system (SSDS) in the gravel layer beneath the building slab.

17. Installation of a vapor barrier system beneath the building slab, basement slab and as well as behind outside foundation sidewalls to bottom of footings. The vapor barrier will consist of Raven Industries VaporBlock 20 Plus, which is a seven layer co-extruded barrier made from polyethylene and EVOH resins.

18. Construction and maintenance of an engineered composite cover consisting of 5-inches (minimum) of re-enforced concrete with underlying specified vapor barrier over the entire Site and subase of certified clean soil/fill cover to prevent human exposure to residual soil/fill remaining under the Site.

19. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations including NYSDEC requirements for closure of Spill Case No. 1303354.

20. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP.

21. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

22. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls 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

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. 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 Site Safety Coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site Safety Coordinator is Mr. Brian Connolly of STV Incorporated. Mr. Connolly can be reached at (212) 505-4926. The Contractor will designate a Site safety coordinator to implement the CHASP. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is name _____ (to be provided by the Contractor) and can be reached at phone number (to be provided by the Contractor).

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. 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 includes 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 Mr. Brian Connolly at 1 (212) 505-4926 or NYC Office of Environmental Remediation Project Manager Ms. Katherine Glass at 1 (212) 788-8348.

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 7am to 5pm and Monday to Friday.

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 Site is under remediation, 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 on-site remediation Project Manager Mr. Brian Connolly at 1 (212) 505-4926, the NYC Office of Environmental Remediation Project Manager Katherine Glass at 1 (212) 788-8348, 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 NYCOER and NYSDEC.

Long-Term Site Management. To provide long-term protection 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 WORK PLAN

1.0 SITE BACKGROUND

This Remedial Action Work Plan (RAWP) has been developed for CNSA, LLC. (CNSA) located at 612-618 West 47th Street in the West Clinton section of Manhattan, New York (the Site). This project has been assigned project number 12EHAN533M and 14CVCP219M by New York City Office of Environmental Remediation (OER). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this RAWP in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. 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 to be implemented at the Site in coordination with the OER for the purposes of satisfying the requirements of the Hazardous Materials E-Designation Program and obtaining a Notice to Proceed. An E-Designation for Hazardous Materials, Air Quality and Noise (E-268) was placed on the Site by the New York City Department of City Planning (DCP) as part of the West Clinton Rezoning. 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.

Project numbers associated with the Site include CEQR No. 11DCP068M, OER Project No. 12EHAN533M, and NYS DEC Spill No. 1303354.

1.1 Site Location and Current usage

The Site is located at 612-618 West 47th Street in the West Clinton section in Manhattan, New York and is identified as Block 1094 and Lot 44 on the New York City Tax Map. Figure 1 shows the Site location. The Site is approximately 10,000-square feet and is bounded by West 47th Street to the north, West 46th Street to the south, 11th Avenue to the east, and 12th Avenue to the west. A map of the site boundary is shown in Figure 2. Currently, the Site consists of three (3) parcels of land:

- 612 West 47th Street: open parking lot formerly utilized by Manhattan Toyota to store vehicles;

- 614 West 47th Street: one-story building formerly utilized by Manhattan Toyota for car storage; and
- 618 West 47th Street: one-story building formerly utilized as an auto repair/body shop.

1.2 Proposed Redevelopment Plan

The proposed future use of the Site will consist of the demolition of two (2) existing on-site buildings on parcels 614 and 618 West 47th Street and construction of a one-story building with mezzanine and basement which will encompass the entire Site, approximately 10,000-square feet. The new building will act as a transfer center for Prince Lumber presently located at 404 West 15th Street, New York, New York 10011.

Structurally, the new one- story 10,000-square feet building will be 23 feet in height and take up the entire Site. The ground level will consist of a loading/storage area, a 2,700-sqaure feet retail shop (i.e. hardware) and a 3,100-square feet mezzanine of which 868-square feet will serve as office space for approximately five (5) people. As part of the redevelopment, a 2,726-square feet basement will be constructed. The basement concrete slab floor is anticipated to be approximately 12 feet below ground surface (ft bgs.) and serve as an unoccupied space containing utility rooms and additional storage space. To facilitate the installation of the basement, underlying soils are being excavated, moved and properly disposed in accordance with Federal, State and City regulations. Excavation depths for the basement are anticipated to be approximately 13 ft bgs. (subject to change). The remainder of the excavation will be conducted on the 1st floor for foundation walls and utility installation. Approximately 1,800 tons (1,200 cubic yards) of soil is anticipated to be removed during this phase of the development. Layout of the proposed site development is presented in Figure 3-5. The current zoning designation is M2-4 ('Manufacturing District') in the New York City Planning Commission Zoning Map 8C (effective date of rezoning: 02/06/2013) and is part of the West Clinton Rezoning. 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

The surrounding area is characterized by commercial buildings comprising of auto repair/body shops, gas station, storage, Verizon facilities, auto dealerships. The following properties adjoin the Site:

- 610 West 47th Street (Block 1094, Lot 40): One-story auto repair shop approximately 2,624-square feet and zoning designation M2-4 on Zoning Map 8c.
- 609 West 46th Street (Block 1094, Lot 25): Walton Hauling and Warehouse Corp. Four-story building, approximately 4,775-square feet and zoning designation M2-4 on Zoning Map 8c.
- 613 West 46th Street (Block 1094, Lot 24): Open parking lot, approximately 2,450-square feet and zoning designation M2-4 on Zoning Map 8c.
- 615 West 46th Street (Block 1094, Lot 23): Parking garage. One-story building, approximately 2,550-square feet and zoning designation M2-4 on Zoning Map 8c.
- 617 West 46th Street (Block 1094, Lot 21): Sherwin-Williams Paints. Two-story building, approximately 5,000-square feet and zoning designation M2-4 on Zoning Map 8c.
- 620 West 47th Street (Block 1094, Lot 45): Two (2) buildings, 4 and 8 floors, approximately 6,050-square feet and zoning designation M2-4 on Zoning Map 8c.

Figure 2 shows the surrounding land usage.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called "*Remedial Investigation Report, Prince Lumber*", dated January, 2014 (RIR).

Summary of Past Uses of Site and Areas of Concern

The Site consists of three (3) parcels of land. Portions of the Site have been used as a commercial – automotive repair/ parking lot/ garage since at least 1930. Prior to August 2013, the parcels were used as:

- 612 West 47th Street: asphalted open parking lot utilized by Manhattan Toyota to store vehicles;
- 614 West 47th Street: 20 ft high one-story building constructed of cinder block. It was utilized by Manhattan Toyota for car storage; and
- 618 West 47th Street: 20 ft high one-story building constructed of brick and was utilized as an auto repair/body shop.

The AOCs identified in Executive Environmental Group Inc.'s Phase I for this Site include:

1. Past activities and the automotive repair operation on one parcel of the Site at the time of the assessment;
2. Ten (10) 55 gallon storage drums; and
3. The identification of transmissions, engines and disassembled cars parts on the Site.

The AOCs identified in GCI's Phase II for this Site include:

1. The identification of a suspected fill port, feed and return lines and a potential underground storage tank; and
2. Petroleum impacts were identified in five (5) of the twelve (12) soil borings.

Summary of the Work Performed under the Remedial Investigation

STV performed the following scope of work from July 1 to October 30, 2013:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.) on July 1, 2013;
2. Provided oversight of BEI's test pit investigation to evaluate the presence of a former UST and associated piping/fill port on parcel 612 West 47th Street on July 1, 2013. BEI's report was submitted digitally to OER on July 10, 2013;
3. A geophysical survey at the project Site was conducted on August 23, 2013;
4. Installed ten (10) soil borings across the entire project Site, and collected twenty-two (22) soil samples and one (1) duplicate for chemical analysis from the soil borings to

evaluate soil quality from August 26 to August 27, 2013. Due to shallow bedrock across the Site groundwater was not encountered in this phase of the investigation;

5. Installed three (3) groundwater monitoring wells in bedrock throughout the Site to establish groundwater flow and collected three (3) groundwater samples and one (1) duplicate for chemical analysis to evaluate groundwater quality on October 30, 2013; and

6. Installed five (5) soil vapor probes around Site perimeter and collected five (5) samples for chemical analysis on August 28, 2013.

Summary of Environmental Findings

A summary of the findings of the RI regarding hydrogeology and the nature and extent of contamination at the Site are as follows:

1. Elevation of the property ranges from approximately 15 to 20 feet (Elevations refer to official datum of the Topographical Bureau, Borough of Manhattan which is 2.75 ft above the U.S.C. & G. Datum at Sandy Hook).

2. Depth to groundwater ranges from approximately 11.91 to 12.75 feet below ground surface (ft bgs.) at the Site.

3. Groundwater flow is generally from east to west across the Site towards the Hudson River.

4. Depth to bedrock ranges from approximately 1 to 15 ft bgs. at the Site.

5. The stratigraphy of the site, from the surface down, consists of 0.5 to 7 feet of historic fill underlain by 2.5 to 11 feet of silty to clayey fine sand underlain by competent bedrock (mica schist, granite and pegmatite).

6. Soil/fill samples collected during the investigation showed no detectable concentrations of PCBs or pesticides. VOCs including isopropylbenzene (max. of 2,900 µg/Kg); 1,2-dichloroethane (at 170 µg/Kg); benzene (at 1,300 µg/Kg); ethylbenzene (max. of 3,000 µg/Kg); toulene (at 6,200 µg/Kg); and xylenes (max. of 3,000 µg/Kg) exceeded Track 1 Unrestricted Use SCOs in two soil sampling locations. SVOCs including

benzo[a]anthracene (max. of 82,000 µg/Kg); benzo[a]pyrene (69,000 µg/Kg); benzo[b]fluoranthene (96,000 µg/Kg); chrysene (max. of 97,000 µg/Kg); dibenzo(a,h)anthracene (max. of 9,200 µg/Kg); indeno(1, 2, 3-cd)pyrene (max. of 49,000 µg/Kg) exceeded Track 2 Restricted Commercial SCOs in three soil samples. In addition, benzo[k]fluoranthene (46,000 µg/Kg), dibenzofuran (max. of 35,000 µg/Kg), fluoranthene (220,000 µg/Kg), fluorene (36,000 µg/Kg), naphthalene (13,000 µg/Kg), phenanthrene (280,000 µg/Kg) and pyrene (180,000 µg/Kg) also exceeded Track 1 Unrestricted Use SCO. Highest total SVOCs ranged from 97 µg/Kg to 1,334,100 µg/Kg (indicating a hotspot area). Metals including arsenic (16.1 mg/Kg), barium (357 mg/Kg), copper (max. of 62.3 mg/Kg), lead (max. of 538 mg/Kg), manganese (at 1,700 mg/Kg), mercury (1.5 mg/Kg) and zinc (max. of 382 mg/Kg) exceeded Track 1 Unrestricted Use SCOs in one or more soil samples. Of these metals, arsenic also exceeded Track 2 Restricted Commercial Use SCO in one sample. Overall, except for one hotspot location (Boring SB-104), the findings were consistent with observations for shallow historical fill sites in areas throughout NYC.

7. Groundwater samples collected during the RI showed no detectable concentrations of any VOCs. SVOCs including benzo[a]anthracene (0.12J µg/L); benzo[a]pyrene (0.053 µg/L); benzo[b]fluoranthene (0.36 µg/L); benzo[k]fluoranthene (0.29 µg/L); chrysene (0.33 µg/L); and indeno(1, 2, 3-cd)pyrene (0.31 µg/L) exceeded the New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Several metals were identified but only manganese and sodium exceeded their respective GQS in dissolved groundwater. Pesticides and PCBs were not detected in groundwater.

8. Soil vapor samples collected during the RI showed thirteen (13) volatile organic compounds (VOCs) were detected at concentrations greater than one or more of the background databases provided in the "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006. Soil vapor samples detected petroleum related and chlorinated VOCs at high concentrations. Petroleum-related VOCs (BTEX) ranged from 52 $\mu g/m^3$ to 2007 $\mu g/m^3$. Overall the highest reported concentrations were for acetone (maximum of 910 $\mu g/m^3$), cyclohexane (maximum of 15,000 $\mu g/m^3$) and hexane (maximum of 15,000 $\mu g/m^3$). Chlorinated VOC,

tetrachloroethylene (PCE) was identified in all five soil vapor samples and ranged in concentration from 51 to 2700 $\mu g/m^3$. Trichloroethylene (TCE) was detected at a maximum concentration of 6.3 $\mu g/m^3$. Carbon tetrachloride was detected at a concentration of 7.3 $\mu g/m^3$ and TCA was detected at a maximum concentration of 13 $\mu g/m^3$. The PCE concentrations in soil vapor samples are above the monitoring level ranges established within the State DOH soil vapor guidance matrix. In addition, concentrations of methylene chloride (dichloromethane) in one (1) sample exceeded the NYSDOH Air Guidance Values (AGV).

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 REMEDIAL ACTION OBJECTIVES

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

Groundwater

- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

Soil

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

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 under 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 exceedence 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 (including a Track 1 scenario) are evaluated, as follows:

Alternative 1 involves:

- Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs has been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would require excavation across the entire Site to a depth from 1 to 7 feet to remove all historic fill. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all

soil required for construction of the new building's cellar level is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

- No Engineering or Institutional Controls are required for a Track 1 cleanup, but installation of a sub-slab depressurization system (SSDS) beneath the foundation and a vapor barrier system would be installed beneath the basement foundation and behind foundation sidewalls of the new building as a part of development to prevent any potential future exposures from on-site and off-Site soil vapor.
- Placement of a final cover over the entire Site as part of construction.

Alternative 2 involves:

- Establishment of Track 4 Site-Specific SCOs.
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation endpoint sampling. Excavation for construction of the new building's partial cellar level would take place to a depth of approximately 13 feet and the remainder of the site for foundation walls and footings. Therefore, if soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building is complete, additional excavation will be performed to meet Track 4 Site-Specific SCOs.
- Placement of a final concrete cover over the entire Site to prevent exposure to remaining soil/fill;
- Installation and operation of an active sub-slab depressurization system beneath the foundation and beneath the basement area;
- Installation of a soil vapor barrier system beneath the building slab and along foundation side walls to prevent any potential future exposures from off-Site soil vapor;
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of sensitive Site uses, such as farming or vegetable gardening, to prevent 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; and
- The property will continue to be registered with an E-Designation by 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 contaminated soil/fill exceeding Track 1 Unrestricted Use SCOs and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by excavating the contaminated fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCOs, as well as by placement of Institutional and Engineering controls, including a SSDS, vapor barrier and a composite cover system. The composite cover system would prevent direct contact with any 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 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater.

Both alternatives would be protective of human health and the environment by removing petroleum impacted soils from the Site thus eliminating potential for direct contact with contaminated soil/ fill once construction is complete and eliminating the risking further of leaching into groundwater. 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 migration of soil vapors into the new building would be prevented by installing an active SSDS, a vapor barrier and concrete building slab as part of new construction, creating an effective and permanent long-term solution. Remedial activities will be completed in accordance with Health and Safety procedures designed to eliminate mobilization of Site contaminants and prevent exposure to the Site workers and general public through ingestion/direct contact with contaminated soil and prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

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 removal to 6 NYCRR Part 375 Table 375-6.8(a) Unrestricted Use SCO (Track 1). Compliance with SCGs for soil vapor will also be achieved by installation of an SSDS, vapor barrier system and a concrete building slab constructed over the entirety of the Site as part of construction.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal to Track 4 (i.e. 6 NYCRR Part 375 Table 375-6.8(b) Restricted Commercial Use SCO modified to include total SVOCs of 500 ppm). Compliance with SCGs for soil vapor would also be achieved by installation of vapor barrier system, active SSDS and a concrete building slab constructed over the entirety of the Site as part of the construction. A Site Management Plan would ensure that these controls remained 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 will 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 alternatives 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 could potentially be higher for Alternative 1 if excavation of greater amounts of historical fill material is encountered below the excavation depth of the proposed building. However, focused attention to means and methods during the remedial action during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities. Excavation and removal of petroleum contaminated soil will be immediately effective for reducing contaminant levels in soil.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Approximately 75, 25-ton capacity truck trips 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 would employ appropriate measures to prevent short term impacts, including a Construction Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of 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 Construction Health and Safety Plan (CHASP) will 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.

Removal of petroleum contaminated soils to bedrock; and the installation of a vapor barrier, an SSDS and concrete slab cap across the entire Site will effectively cap this area, and prevent migration of residual contamination, therefore, creating an effective and permanent long-term solution.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill above Track 1 Unrestricted Use SCOs. Removal of on-Site contaminant sources will prevent future groundwater contamination.

Alternative 2 would provide long-term effectiveness by removing most on-Site contamination and attaining Track 4 Site-Specific SCOs; an SSDS and a composite cover system across the Site, maintaining use restrictions, establishing an SMP to ensure long-term management of Institutional Controls (ICs), Engineering Controls (ECs), and maintaining continued registration as an E-designated property to memorialize these controls for the long term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic

inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with respect to a remedy for contaminated soil, which will eliminate any migration to groundwater. Potential sources of soil vapor and groundwater contamination will also be eliminated as part of the remedy.

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 meeting Track 1 Unrestricted Use SCOs.

Alternative 2 would permanently eliminate the toxicity, mobility, and volume of contaminants by removing the contaminated soil present on the Site and any remaining soil/fill beneath the new building to meet Track 4 SCOs.

Removal of approximately 1,800 tons of petroleum contaminated soils to bedrock; and the installation of a vapor barrier, an active SSDS system; and concrete slab cap across the entire Site will effectively cap this area and would permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soils. Additionally, it will eliminate future groundwater contamination.

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.

The proposed remedial activities for the Site will use reliable methods and standard construction technologies and practices. Standard construction equipment utilized for the overall earthwork will be used. The techniques, materials and equipment to implement remedial activities are readily available and have been proven effective in remediating and/or mitigating the contaminants associated with the Site. OSHA trained personnel will complete all activities that include excavation and handling of petroleum-contaminated and historical fill materials. No special permits other than an earthwork permit will be required. The reliability of each alternative is high and no difficulties are envisioned.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, 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 will be higher than Alternative 2 due to the potential removal of a greater volume of soil although soil borings adjacent to the impacted area revealed no VOC and SVOC exceedences of Track 1 and/Track 4 SCOs. Long-term costs are anticipated to be higher for Alternative 2 than Alternative 1 based on the need to implement a Site Management Plan as part of Alternative 2. In both cases, appropriate public health and environmental protections are achieved.

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 permitting associated with the proposed site development, no adverse community opinion is anticipated for either alternative. 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 remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Attachment B. 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 remedial action for the Site is appropriate with respect to the proposed use and to current land uses (i.e. commercial) in the vicinity of the Site. The proposed redevelopment of the Site is compatible with the existing zoning designation for the property, the current surroundings and the retail enterprise will serve as a benefit to the area.

Improvements in the current environmental condition of the Site and closing of the open Spill Case Number are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse.

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.

The remedial plan would take into consideration the shortest trucking routes during off-Site disposal of petroleum contaminated, historic fill and other soils; trucks will be asked to avoid engine idling while on-Site awaiting loading of materials which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development.

4.0 REMEDIAL ACTION

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is Alternative 1, the Track 1 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 Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 4 Site Specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
6. Decommission of three (3) on-site monitoring wells by a state licensed driller prior to demolition of on-site buildings and asphalt/concrete slab.
7. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. The basement area of the property (25% site) will be excavated to the depths of 13 feet below grade. The remainder of the property will be excavated for foundation walls,

footings and utilities. Approximately 1,800 tons (1,200 cubic yards) of soil is anticipated to be removed during this phase of the development.

8. Excavation and removal of petroleum-contaminated material under the direction of the NYSDEC to the extent practicable (based on structural stability), and non-hazardous material (i.e. historic fill).

9. 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.

10. 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.

11. 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.

12. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.

13. Demarcation of residual soil/fill.

14. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

15. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

16. Installation and operation of an active sub-slab depressurization system (SSDS) in the gravel layer beneath the building slab.

17. Installation of a vapor barrier system beneath the building slab, basement slab and as well as behind outside foundation sidewalls to bottom of footings. The vapor barrier

will consist of Raven Industries' VaporBlock 20 Plus, which is a seven layer co-extruded barrier made from polyethylene and EVOH resins.

18. Construction and maintenance of an engineered composite cover consisting of minimum of 5-inches (minimum) of re-enforced concrete with underlying specified vapor barrier over the entire Site and subase of certified clean soil/fill cover to prevent human exposure to residual soil/fill remaining under the Site.

19. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations including NYSDEC requirements for closure of Spill Case No. 1303354.

20. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP.

21. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

22. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls 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

The Soil Cleanup Objectives (SCOs) proposed for this project is Track 4 utilizing the generic SCOs as referenced in Table 375-6.8(b): Commercial Use Soil Cleanup Objectivities, Protection of Public Heath-Commercial of 6NYCRR Part 375 as modified by the following Site-specific Soil Cleanup Objective: Total SVOCs 500 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 1. The location of planned excavations is shown in Figure 6.

Additionally, discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This 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 1,800 tons. The proposed disposal locations for Site-derived impacted soils are listed below. Additional disposal locations established at a later date will be reported promptly to the OER Project Manager.

Disposal facilities for non-hazardous petroleum contaminated purge groundwater and non-contaminated purge groundwater will be reported to OER when they are identified and prior to the start of remedial action.

Disposal Facility	Waste Type	Estimated Quantities
Hazleton Properties, LLC (HCP) Hazleton, PA	historic fill	800 tons
Hazleton Properties, LLC (HCP) Hazleton, PA	petroleum contaminated soil	1,000 tons
Clean Water Staten Island, New York	petroleum contaminated soil/ historic fill (soil cuttings)	1.2 tons (3 x 55 gallon drums)
Clean Water Staten Island, New York	non-haz. petroleum contaminated water (including purge water)	165 gallons (3 x 55 gallon drums)
Clean Water Staten Island, New York	non-contaminated purge water	110 gallons (2 x 55 gallon drums)

End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Six (6) side-wall confirmation samples (one from every 30 linear feet of sidewall) will be collected from the base of the excavation at locations to be determined by OER. No excavation bottom samples are anticipated in basement area as the remedial action calls for excavation to bedrock. For comparison to Track 1 SCOs, analytes will include VOCs, SVOC, pesticides, PCBs and metals according to analytical methods described below. Endpoint sample locations are presented in Figure 6.

Hot-spot removal actions, whether established under this RAWP or 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 pursuant to bullets 1-3 above.

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 confirmation and 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 confirmation and end-point sample results and will include all data including non-detects and applicable standards and/or

guidance values. End-point samples will be Confirmation samples will be analyzed for compounds and elements as described above utilizing the following methodology:

Soil analytical methods will include:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

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

This section describes the quality assurance/quality control (QA/QC) protocols, practices, and procedures that are to be followed during the remedial activities at the Site.

Sample Collection Precision (Duplicates)

Sampling precision will be measured by the collection of at least one (1) duplicate sample per every twenty (20) soil samples, or if less than 20 samples, one duplicate per sampling event.. The sample will be analyzed for all specified analytical parameters utilizing the same procedures, equipment, in the same type of containers and preserved in the same manner. The sample will be assigned a fictitious sample number that will be recorded in the field notebook.

Trip Blanks

Trip blanks of ultrapure, deionized water, which are demonstrated to be analyte free, will be contained in each shipment, where samples will be analyzed for volatile organic compounds. The blanks will be prepared by the lab and shipped to the site in sample-pack coolers. These blanks will accompany the samples during the sampling process and will be returned to the lab with the sample shipment. They will serve as a quality control check on container cleanliness, external contamination, and the analytical method. For soil samples, one trip blank will be submitted for with sample shipment and analyzed for VOCs only.

Field (equipment) Blanks

Dedicated disposal sampling will be used to collect samples therefore no field (equipment) blanks will be required.

Data Comparability

The methodologies used for the collection and analysis of samples as documented in this Work Plan are expected to provide comparable data. STV will use standardized methods as per NYSDEC protocols of field analysis, sample collection, holding times, and preservation. In addition, field conditions will be documented and considered when evaluating data to determine the effects on sample characteristics or analytical results. Whenever possible, the same sampling team will obtain all samples on consecutive days to reduce inconsistencies which may be caused by technique and time variables. All soil sample analyses will be reported in ug/kg or parts per billion (ppb), or mg/kg or ppm on a dry weight basis.

Documentation and Chain of Custody

The primary objective of the sample chain of custody procedure is to create an accurate written record which can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, to their disposal. Field notes pertaining to the samples and sample custody records will be maintained by the field person collecting them. The field personnel are responsible for documenting each sample transfer and maintaining custody until they are shipped to the laboratory.

Sample labels will show the following information:

- Sample ID number;
- Sample location and depth interval (if applicable);
- Name of sampling organization;
- Date and time sampled; and
- Analyses requested.

Sample labels will be completed with waterproof ink. Sample containers will be placed in sealed clear plastic zip-lock bags and placed in a cooler for storage and shipment. The cooler will be sealed with custody tape and at least two bags of ice, sealed in double plastic bags or other similar packaging material to ensure that all samples remain between 0 and 4 degrees Celsius (^{o}C).

A chain-of-custody form will be maintained for each sample collected. The chain-of-custody procedure will provide an accurate written record, which can be used to trace the possession and holding of samples from the time of collection through data analyses and reporting.

The following information will be specified for each sample on the chain-of-custody form:

- Sample number;
- matrix and type (i.e. composite or grab);
- sample date and time;
- sample location and depth interval (if applicable);
- analysis requested;
- whether the sample is preserved or unpreserved;
- signature of the sampler;
- signature of person relinquishing samples with date and time; and
- signature of person receiving samples with date and time.

One chain-of-custody form will be used for each sample day or cooler shipped for analysis. It will be signed by each participant that handles the sample cooler. The forms will be placed in a watertight plastic bag and taped to the underside of the lid of the cooler containing the samples designated on the form. The lid of the cooler will be securely taped shut. Sample coolers will be shipped the same day to the analytical laboratory.

Field Log Book

The dedicated site logbook is the controlled document that records all on-site activities during the site investigation. It will be a bound notebook with consecutively numbered pages that cannot be removed and will be initiated at the start of the first on-site activity.

The site logbook cover will contain:

- Project name and number;
- Field operations personnel;
- Sequential book number; and
- Start and end dates.

On-site activities performed will be recorded every day. At the beginning of each day, the following information will be recorded:

- Date;
- Start time;
- Weather conditions;
- List of all personnel present; and
- List of all visitors present.

Laboratory Documentation

Upon arrival at the laboratory, samples will be checked in by the laboratory representative. All samples contained in the shipment will be compared to the chain-of-custody form to ensure that all samples designated have been received. Sample custody within the laboratory includes:

Field Equipment Calibration

Documented and approved procedures are used for calibrating, measuring and testing equipment such as those provided by the equipment manufacturer. The equipment will be calibrated at prescribed intervals and/or as part of the operational use. Frequency is based on the

type of equipment, inherent stability, manufacturer's recommendations, values given in a national standard, intended use and experience.

Import and Reuse of Soils

Import of soils onto the property will be performed in conformance with the Soil/Materials Management Plan in Appendix 1. The estimated quantity of soil to be imported into the Site for backfill and cover soil is approximately 700 tons. No on-site soil/fill is expected to be reused/relocated on Site.

4.3 Engineering Controls

The excavation required for the proposed Site development will achieve Track 4 Site Specific Use SCOs. Engineering Controls are required as part of Track 1 remedial action alternatives. The following elements will be incorporated into the foundation design: composite cover system, active SSDS and soil vapor barrier. These elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

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:

- Concrete building slabs and certified clean fill (only for sub-base preparation prior to pouring of concrete slabs).

Figure 7 shows the typical design of remedial cover type and location of each cover for the used on this Site.

The composite cover system is 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. 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. The bottom of the new building's foundation is to be installed to an equivalent grade as the adjacent buildings (to be determined) and basement will be constructed approximately 10-12 ft bgs.

The vapor barrier will be a minimum of 20 mils thick polyethylene formulated for organic vapors. The vapor barrier will extend vertically down the sidewalls of the excavation to the footing depth or bottom of the excavation and be placed horizontally over the top of the completed backfill prior to placement of the new concrete slab on grade. In the case of the basement, the vapor will extend down the sidewalls and extend beneath the basement slab. The vapor barrier to be installed at the site will be VaporBlock 20 Plus(VB 20) manufactured by Raven Industries or equivalent. The extent of the vapor barrier and cross-sections of installation are presented in Figure 7. The manufacturer's specifications for the vapor barrier and vapor barrier tape are presented in Appendix 2.

Sub-Slab Depressurization System

Migration of soil vapor will be mitigated with the construction of an active sub-slab depressurization system. Figure 7 shows the location of the SSDS across the site.

The SSDS would be designed to maintain negative pressure beneath the entire area of the building slab addressed by this RAWP. The final remedial closure report will include photographs of the installation of ssds laterals as well as if any deviations have occurred due to construction scope changes. The final remedial closure report will include P.E./RA certified as-built plans depicting SSDS lateral, blower, riser pipe and fan configuration and locations, as well as documentation proving that the SSDS was appropriately designed to maintain negative pressure beneath the entire area of the building slab.

Once operational the system will be sampled for soil vapor quality and compared to the "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006. If no exceedences are recorded the fan will be deactivated with approval from OER and SSDS will be employed as a passive rather than active system. Active SSDS can be monitored

for five years to determine if soil vapor levels have reduced and Track 1 will be assessed at that time.

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.

Institutional Controls for this remedial action are:

- The Site will continue to be registered with an E-Designation 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;
- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. 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 at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- 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 commercial use and will not be used for a higher level of use without prior approval by OER.
- A round of soil vapor and indoor air quality samples will be taken and If no exceedences are recorded the fan will be deactivated and SSDS will be employed as a passive rather than active system.

4.5 Site Management Plan

Site Management will be 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 DCR and the Site Management Plan 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 Brownfield 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 March 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). 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

Site inspections and subsurface investigations (including Phase I ESAs, Phase II Site Investigations, and a Remedial Investigation) have been performed at the Site to identify Areas of Concern (AOCs). The AOCs identified by investigations conducted at the Site include:

1. Site historical usage commercial- automotive repair/ parking lot/ garage since the 1930s.
2. Soil beneath the Site generally was a mixture of sand and silt with variable amounts of gravel, fly ash, brick, metal, concrete, ceramic, glass, and cobbles. The fill varied from about 1 to 7 ft thick in the soil borings.
3. Petroleum-contaminated impacted soil was identified in the middle portion of the Site and elevated groundwater contaminants were identified down gradient of the Spill.

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

Soil:

- VOCs including isopropylbenzene, 1,2-dichloroethane, benzene, ethylbenzene, toluene and xylenes exceeding the Track 1 Unrestricted Use SCO, but were well below commercial SCOs;
- SVOCs: including benzo[a]pyrene, benzo[a]anthracene, benzo[b]fluoranthene, dibenzo(a,h)anthracene and indeno(1, 2, 3-cd)pyrene exceeded their Track 2 Restricted Commercial USe SCOs. SVOCs exceedences were most shallow soils, 2-4 ft bgs.; and
- Several metals were identified but only arsenic exceeded Track 2 Restricted Commercial Use SCOs.

Groundwater:

- SVOCs including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene and indeno(1, 2, 3-cd)pyrene were both detected in groundwater exceeding their GQS; and
- Metals (manganese, sodium) exceeding the GQS.

Soil Gas:

- Elevated levels of petroleum related VOCs; and
- Chlorinated VOCs: PCE detected at concentrations exceeding NYSDOH Soil Vapor Intrusion Guidance Air Guideline Values.

Nature, Extent, Fate and Transport of Contaminants

Elevated levels of SVOCs and metals are present in the petroleum impacted area (hotspot area). Pesticides were detected in one shallow sample. The RI revealed low level exceedence for one (1) SVOC (indeno(1, 2, 3-cd)pyrene) and some metals outside the petroleum impacted zone. Several SVOCs and metals (manganese and sodium) were also detected in groundwater above GQS. 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 source of the on-site contamination will be removed through excavation, composite cover system, vapor barrier and an active SSDS therefore removing the three (3) primary routes that exist:

- Ingestion of water and/or soils;
- Inhalation of vapors and particulates; and
- Dermal contact with soil and/or soil.

Additionally, on-site groundwater is not a source of drinking water.

The remedial action plan will ensure that routes of exposure are prevented during the development of the Site.

Existence of Human Health Exposure

Current Conditions: Existing conditions represent minimal potential migration pathways for absorption, ingestion, and inhalation for soil, and absorption and ingesting for groundwater since the Site is unoccupied and soil is covered with asphalt in the open lot and by the concrete building slab in both on-site buildings. The open lot is secured with locked chain-link fence and the building roll down doors are locked. 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. Accumulation of soil vapor is not a concern because structures are unoccupied.

Construction/ Remediation Activities: As a part of the remedial action, work performed at the Site will include excavation, loading and transportation of soil, abandonment of on-site wells and general construction activities. The construction and remediation work at the Site could expose the on-site workers and neighboring population to the contaminants in a variety of ways, including direct contact with the soil and inhalation/ingestion of soil (by means of fugitive dust) and soil vapors to short term exposures. No groundwater is anticipated to be encountered during dewatering the remedial activities. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan,

dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 4 SCOs will be removed. The Site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and a vapor barrier system and an active SSDS will prevent any exposure to potential off-site soil vapors in the future. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply. There are no plausible off-Site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site under future conditions.

Receptor Populations

On-Site Receptors – The Site is currently capped and fenced in. Access to Site is restricted by an chained and locked, perimeter fence. Onsite receptors are limited to trespassers and site representatives and visitors granted access to the property. During redevelopment of the Site, the on-site potential receptors will include construction workers, site representatives, and visitors. Once the Site is redeveloped, the on-site potential sensitive receptors will include adult and child building residents, workers 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 (up to 0.25 mile) – existing and future
2. Residential Buildings (up to 0.25 mile) – existing and future
3. Building Construction/Renovation (up to 0.25 mile) – existing and future
4. Pedestrians, Trespassers, Cyclists (up to .25 mile) – existing and future
5. Schools (up to .25 mile) – 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 commercial structure, site-wide impervious surface cover cap, and a subsurface vapor barrier system as well as an active SSDS 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.

Based upon this analysis, complete on-site exposure pathways appear to be present only during the current unremediated phase and the remedial action phase. During remedial construction, on-site and off-site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. After the remedial action is complete, there will be no remaining exposure pathways to on-site soil/fill, as all soil above Unrestricted Use SCOs will have been removed and an SSDS and a vapor barrier system will have been installed as part of development.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and oversight

Principal personnel who will participate in the remedial action include Brian Connolly to supervise and coordinate the remedial activities. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are:

- Brian Connolly, STV Senior Project Scientist
- Michael Tumuly, P.E., STV Senior Associate
- Peter Burger, P.E., STV Associate

5.2 Site Security

Site access will be controlled by the Contractor. Barriers will be installed as needed to delineate and restrict access to the work area. For work areas of limited size, barrier tape will be sufficient to delineate and restrict access. For larger worker areas, temporary fencing will be provided.

5.3 Work Hours

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

5.4 Construction Health and Safety Plan

STV's Health and Safety Plan is included in Appendix 3. The Contractor will be responsible for providing his own CHASP. The Site Safety Coordinator will be assigned by the Contractor. 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 hazardous waste operator training and annual 8-hour refresher training. 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 volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. 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 for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. 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 mcg/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/m^3 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/m^3 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 incompliance 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

No dewatering is anticipated at the Site as a part of the remedial action.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

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; lose 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, haybales; 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 NYS DEC 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 by 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 offsite areas may require characterization based on site conditions, at the

discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped it this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

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 onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; 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 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 be provided by Contractor.

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 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 ACTION 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 by the NYC Department of Buildings.

- Reports and supporting material will be submitted in digital form.

Remedial Action 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, _____, 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 Prince Lumber Site, OER Project # 12EHAN533M.

I, _____, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the Prince Lumber Site, OER Project # 12EHAN533M.

I certify that the OER-approved Remedial Action Work Plan dated month day year 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 January 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	3	2
Remedial Excavation	5	2
Demobilization	7	2
Submit Remedial Action Report	TBD	TBD

Appendix 1

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 RAR. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

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 RAWP;
- 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 to be submitted by Contractor. 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 Enrollee 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 Borough of Manhattan, 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 Enrollee. 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 RAR.

The Remedial Action Report 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 RAR.

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 RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

1.7 Materials Reuse On-Site

No on-site soil and/or fill are expected to be used on Site. If this changes during development, only soil and/or fill that is derived from the Site that meets the SCOs established in this RAWP may be reused on-site. '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 the NYC VCP agreement subject to Engineering and Institutional 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 RAWP are followed.

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 SMP; 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 RAR.

This demarcation will constitute the top of the site management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

As the remedial plan calls for excavation to bedrock, bedrock will serve as the demarcation.

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 estimated quantity of backfill brought onto Site will be approximately 700 tons. The locations and quantities brought onto Site will be documented.

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 RAWP. The RAR 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 RAR. 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 RAWP (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 toe 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 TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, 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 Remedial Action Report.

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 Action 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.

Appendix 2

VAPOR BARRIER, GEOTEXTILE LINER AND BUTYL TAPE SPECIFICATIONS

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier

RAVEN INDUSTRIES

Product Description

VaporBlock® Plus™ 20 is a seven-layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission. VaporBlock® Plus™ 20 is a highly resilient underslab / vertical wall barrier designed to restrict naturally occurring gases such as radon and/or methane from migrating through the ground and concrete slab. VaporBlock® Plus™ 20 is more than 100 times less permeable than typical high-performance polyethylene vapor retarders against Methane, Radon and other harmful VOCs.

VaporBlock® Plus™ 20 is one of the most effective underslab gas barriers in the building industry today far exceeding ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements. Available in a 20 (Class A) mil thicknesses designed to meet the most stringent requirements. VaporBlock® Plus™ 20 is produced within the strict guidelines of our ISO 9001:2008 Certified Management System.

Product Use

VaporBlock® Plus™ 20 resists gas and moisture migration into the building envelop when properly installed to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building including floors, walls and crawl spaces. When installed as a passive system it is recommended to also include a ventilated system with sump(s) that could be converted to an active control system with properly designed ventilation fans.

VaporBlock® Plus™ 20 works to protect your flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold and degradation.

Size & Packaging

VaporBlock® Plus™ 20 is available in 10' x 150' rolls to maximize coverage. All rolls are folded on heavy-duty cores for ease in handling and installation. Other custom sizes with factory welded seams are available based on minimum volume requirements. Installation instructions and ASTM E-1745 classifications accompany each roll.

Under-Slab Vapor/Gas Retarder

Product	Part #
VaporBlock Plus 20	VBP 20

APPLICATIONS

- Radon Barrier
- Methane Barrier
- VOC Barrier
- Under-Slab Vapor Retarder
- Foundation Wall Vapor Retarder

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

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VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier

ISO 9001:2008
CERTIFIED MANAGEMENT SYSTEM

		VAPORBLOCK PLUS 20	
PROPERTIES	**TEST METHOD**	**IMPERIAL**	**METRIC**
APPEARANCE		White/Gold	
THICKNESS, NOMINAL		20 mil	0.51 mm
WEIGHT		102 lbs/MSF	498 g/m²
CLASSIFICATION	ASTM E 1745	CLASS A, B & C	
TENSILE STRENGTH LBF/IN (N/CM) AVERAGE MD & TD (NEW MATERIAL)	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
IMPACT RESISTANCE	ASTM D 1709	2600 g	
MAXIMUM USE TEMPERATURE		180° F	82° C
MINIMUM USE TEMPERATURE		-70° F	-57° C
PERMEANCE (NEW MATERIAL)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.0098 Perms grains/(ft²·hr·in·Hg)	0.0064 Perms g/(24hr·m²·mm Hg)
(AFTER CONDITIONING) PERMS (SAME MEASUREMENT AS ABOVE PERMEANCE)	ASTM E 154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.0079 0.0079 0.0097 0.0113	0.0052 0.0052 0.0064 0.0074
WVTR	ASTM E 96 Procedure B	0.0040 grains/hr-ft²	0.0028 gm/hr-m²
RADON DIFFUSION COEFFIECIENT	K124/02/95	< 1.1 x 10^{-13} m²/s	
METHANE PERMEANCE	ASTM D 1434	< 1.7 x 10^{-10} m²/d• atm 0.32 GTR (Gas Transmission Rate) ml/m²•D•ATM	

VaporBlock® Plus™ Placement

All instructions on architectural or structural drawings should be reviewed and followed.
Detailed installation instructions accompany each roll of VaporBlock® Plus™ and can also be located on our website.
ASTM E-1643 also provides general installation information for vapor retarders.

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

VaporBlock® Plus™ is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.RavenEFD.com

RAVEN INDUSTRIES

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Scan QR Code to download current technical data sheets via the Raven website.

MATERIAL SAFETY DATA SHEET

QUICK IDENTIFIER (In Plant Common Name)	
VaporBlock Plus 20	VBP20

Manufacturer's Name	RAVEN INDUSTRIES INC.	***Emergency Telephone Numbers***	800-635-3456 605-335-0174
Address	P.O. Box 5107 Sioux Falls, SD 57117	***Other Information***	1813 "E" Avenue Sioux Falls, SD 57104
Signature of Person Responsible for Preparation	Don Smith	***Date Prepared***	**February 25, 2008**

Section 1 - IDENTITY

Common Name: (Used on Label) (Trade Name & Synonyms)	VBP20	***CAS Number(s)***	26221-73-8 26221-27-2	13463-67-7 9002-88-4	12001-26-2 1317-63-3
Chemical Name	**Ethylene Vinyl Alcohol Copolymer** **Copolymer of Ethylene and Octene-1**	***Chemical Family***	Polyolefin	EVOH	
Formula	(CH2 - CH2) n				

Section 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Component(s) - Chemical and Common Nam	***%***	***Threshold Limit Value (units)***
None		

Section 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosion Data)

Boiling Point	Not Applicable (N/A)			***Specific Gravity***	0.93	***Vapor Pressure, mmHg***	N/A
Percent Volatile by Volume (%)	0	***Vapor Density***	N/A	***Evaporation Rate***	N/A		
Solubility in Water	Insoluble in Water			***Reactivity in Water***	Not Reactive in Water		
Appearance and Odor	White/Gold, odorless plastic film.						
Flash Point	N/A	***Flammability Limits in Air, by Volume (%)***	***Lower*** N/A	***Upper*** N/A	***Auto Ignition Temperature***	> 650 F (estimated)	
Extinguisher Media	Use water spray, dry chemical, foam or carbon dioxide						
Special Fire Fighting Proced.	Fire fighters should wear a self-contained breathing apparatus when there is a possibility of exposure to smoke, fumes or hazardous decomposition products. If possible, water should be applied as a spray from a fogging nozzle since this material is a surface burning material.						
Unusual Fire and Explosion Hazards	None						

Section 4 - PHYSICAL HAZARDS

Stability	***Unstable***		***Conditions to Avoid*** Temperatures over 560 F will release combustible gases.
	Stable	X	
Incompatibility (Materials to Avoid)	None		
Hazardous Decomposition Products	The following combustion products may be generated: Carbon dioxide, carbon monoxide, water vapor, and trace volatile organic compounds.		
Hazardous Polymerization	***May Occur***		***Conditions to Avoid*** N/A
	Will not Occur	X	

Section 5 - HEALTH HAZARDS

Threshold Limit Value	N/A

Signs and Symptoms of Exposure

1. Acute Overexposure	Not Determined	***2. Chronic Overexposure***	Not Determined

Medical Conditions Generally Aggravated by Exposure	There are no known medical conditions aggravated by exposure to this product.

Chemical Listed as Carcinogen or Potential Carcinogen	***National Toxicology Program***	Not Listed	***L.A.R.C. Monographs***	Not Listed	***OSHA***	Not Listed

OSHA Permissible Exposure Limit	None	***ACGIH Threshold Limit Value***	None	***Other Expos. Limit Used***	None

Emergency and First Aid Procedures	Most problems will result from exposure to molten materials.
1. Inhalation	Immediately remove victim from area to fresh air. Seek medical attention.
2. Eyes	If contacted by molten material, immediately flush eyes with plenty of cool water for at least 15 minutes. Do not permit victim to rub eyes. Immediately seek medical attention.
3. Skin	If contact by molten material, cool immediately with cool water. Do not attempt to remove any solidified material. Immediately seek medical attention.
4. Ingestion	If material is ingested, contact a physician or Poison Control Center as appropriate whenever any foreign object is swallowed.

Section 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type)	N/A

Ventilation	***Local Exhaust***	***Mechanical (General)***	***Special***	***Other***
N/A	N/A	N/A	N/A	N/A

Protective Gloves	Wear protective gloves during thermal processing.	***Eye Protection***	Wear eye protection during thermal processing.

Other Protective Clothing or Equipment	Wear protective sleeves when processing material at elevated temperatures to minimize the possibility of thermal burns.

Section 7 - SPECIAL PRECAUTIONS AND SPILL / LEAK PROCEDURES

Precautions to be Taken in Handling and Storage	This product should be stored in a manner that it is not exposed to heat and sources of ignition. A static charge may be present on finished products.
Other Precautions	None
Steps to be Taken in Case Material is Released or Spilled	Spilled material should be swept up and discarded. Comply with applicable federal, state or local regulations.
Waste Disposal Methods	Dispose in accordance with local regulations

IMPORTANT - Do not leave blank spaces. If information is unavailable, unknown or does not apply, so indicate

MIRAFI® 500X/600X

Woven Geotextiles for Soil Separation, and Road Base Stabilization and Reinforcement

ROADWAY CONSTRUCTION AND REPAIR

PRODUCT DESCRIPTION

Mirafi® 500X is a high modulus, woven geotextile that delivers outstanding performance under a wide range of traffic loadings and subgrade conditions. A tough, versatile geotextile, **500X** solves separation and stabilization problems where light to medium traffic loads are expected.

Mirafi 600X is a high modulus, woven geotextile that delivers outstanding performance for more demanding road base stabilization and soil reinforcement applications. The high tensile strength of **600X** offers a practical solution to more critical soil reinforcement applications when heavy traffic loads are expected. **600X** is also effective for building embankments over soft ground. The high puncture and burst strength of **600X** provides additional safety against installation damage.

APPLICATIONS

Typical **Mirafi 500X** applications include parking lots, residential streets, and roadways. **Mirafi 500X** is used over good to moderate strength subgrades for separation and confinement of base materials. It is also utilized over moderate to poor subgrades for separation, confinement, and stabilization of base material.

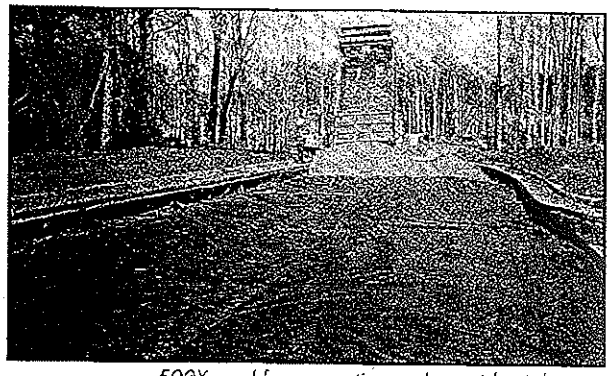
Mirafi 600X is used for separation and stabilization over weak subgrades; and separation, confinement, and reinforcement for critical roadways and site construction where coarse, angular, and abrasive base material is required. **Mirafi 600X** provides stabilization and reinforcement when heavy loads are expected; and is effective in the construction of low embankments over weak subgrades, eliminating the need for costly excavation and replacement with expensive fill.

ADVANTAGES

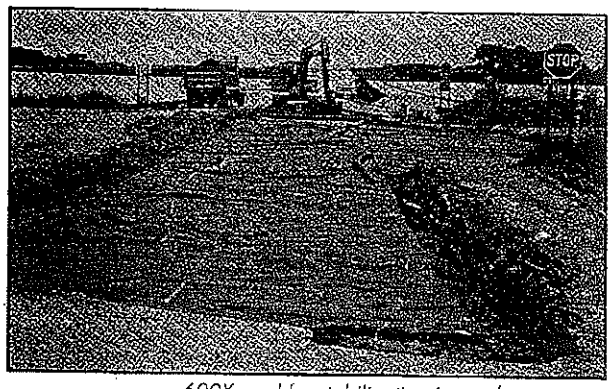
Mirafi 500X/600X geotextiles were developed to improve the economics and performance of roadway systems in four primary ways:

- Lower the initial cost of the project by reducing the amount of aggregate required by 30-45%.
- Increase the design life and reduce maintenance cost of the roadway system by maintaining the aggregate thickness over the lifetime of the structure.
- Prevent periodic overstressing of the subgrade which could result in pavement deterioration.
- Eliminate costly project delays by allowing all-weather construction.

These benefits result from the combined geotextile functions of separation, confinement, and load distribution. In ground stabilization uses, **Mirafi 500X** and **600X** excel in performance because of their woven construction. **500X** and **600X** offer excellent survivability due to high burst, tear, and puncture-resistance values usually found in far heavier, more expensive geotextiles. More importantly, the inherent high modulus, or low elongation, of woven **500X** and **600X** means less damage to the roadway system from repetitive wheel loads. This feature is particularly important in unpaved or permanent roads, parking lots, and other unpaved/paved structures where resistance to rutting and other damage is a necessity.



500X used for separation under residential street.



600X used for stabilization in roadway repair.

600X used for reinforcement of an industrial site.

TC Mirafi

Mirafi® 500X/600X Technical Data

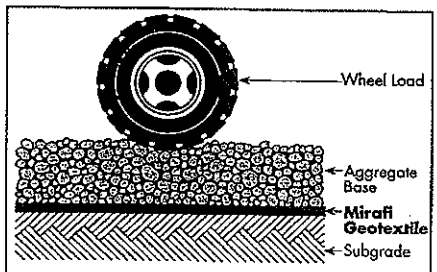
PROPERTY	TEST METHOD	UNIT ENGLISH (METRIC)	MINIMUM AVERAGE ROLL VALUES 500X	600X
Grab Tensile Strength	ASTM D 4632	kN (lbs)	.89 (200)	1.34 (300)
Grab Tensile Elongation	ASTM D 4632	%	15	15
Mullen Burst Strength	ASTM D 3786	kPa (psi)	2756 (400)	4134 (600)
Puncture Resistance	ASTM D 4833	kN (lbs)	.4 (90)	.53 (120)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	.33 (75)	.53 (120)
Permittivity	ASTM D 4491	sec^{-1}	.03	.02
UV Resistance after 500 hrs.	ASTM D 4355	% strength retained	70	70

Mirafi® 500X/600X Packaging

FABRIC	WIDTH m (ft)	LENGTH m (ft)	YARDS m^2 (yd^2)	WEIGHT kg (lbs)
500X	3.8 (12.5)	131.8 (432)	502 (600)	91 (200)
	5.3 (17.5)	94.2 (309)	502 (600)	91 (200)
	7.6 (25.0)	65.9 (216)	502 (600)	91 (200)
600X	3.8 (12.5)	109.8 (360)	418 (500)	102 (225)
	5.3 (17.5)	78.7 (258)	418 (500)	102 (225)
	7.6 (25.0)	54.9 (180)	418 (500)	102 (225)

Mirafi products are conveniently packaged in rolls which can be handled by two men. No special equipment is necessary and installation is fast and easy, even in bad weather. Typical installation procedures consist of unrolling the geotextile directly on the subgrade, backdumping the granular fill, spreading, and then compacting.

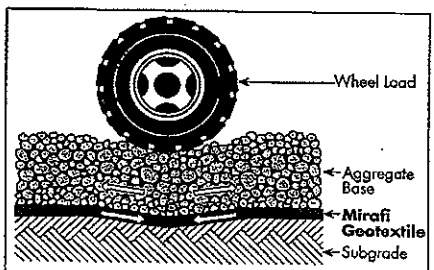
Separation



Subgrade/Aggregate **SEPARATION**
(Using Mirafi geotextiles)

Mirafi geotextiles, with excellent puncture and tear resistant properties, act as a separation barrier between fine grain soils and load-distributing aggregate fill material. As a separator, they eliminate the loss of costly aggregate material into the subgrade and prevents the upward pumping of silt and other contaminating soil fines into the aggregate.

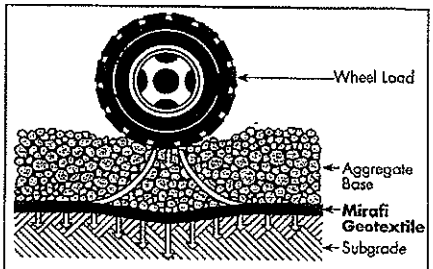
Confinement



Aggregate **CONFINEMENT**
(Using Mirafi geotextiles)

Mirafi geotextiles provide a friction surface between the subgrade and the aggregate layer that helps to keep the aggregate in place. This confining action maintains the thickness and hence the intended load-bearing capacity of the aggregate.

Load Distribution



Subgrade **LOAD DISTRIBUTION**
(Using Mirafi geotextile)

When placed between the subgrade and the aggregate layer, Mirafi geotextiles with their high tensile strength and modulus, act to reduce localized stress by redistributing traffic loads over a wider subgrade area.

DISCLAIMER

The information presented herein will not apply to every installation. Applicability of products will vary as a result of site conditions and installation procedures. Final determination of the suitability of any information or material for the use contemplated, of its manner of use, and whether the use infringes any patents, is the sole responsibility of the user.

Mirafi® is a registered trademark of Nicolon Corporation, a Division of Royal Ten Cate (USA), Inc.

TC Mirafi

TC Mirafi Corporate Office
365 South Holland Drive
Pendergrass, Georgia 30567
(800) 234-0484; (706) 693-2226
Fax (706) 693-4400

ETERNABOND, INC. MATERIAL SAFETY DATA SHEET (TARNSO10)

Provided by: ETERNABOND, INC.
75 E. Division St.
Mundelein, IL 60060
847-837-9400

This form is designed to meet the requirements of the U.S. Labor Department OSHA form no 174.

SECTION I – PRODUCT IDENTIFICATION

Product: **ETERNABOND WEB-SEAL**
24 Hour Emergency Assistance – Infotrac (800)-535-5053

Chemical Name: N/A
Chemical Family: Polyolefin and Synthetic Elastomer
Formula: N/A

HMIS/NFPA HAZARD RATINGS:	
Health Hazard:	0
Flammability Hazard	1
Reactivity Hazard	0

SECTION II – HAZARDOUS COMPONENTS

NONE

SECTION III – PHYSICAL DATA

Boiling Point Range: 420 Degrees Fahrenheit
Vapor Pressure: N/A
Vapor Density: N/A
Solubility in Water: Insoluble
Percent Volatile by Weight: N/A
Evaporation Rate: N/A
Appearance and Odor: Reinforced grey
Specific Gravity: 1.04 (adhesive)

SECTION IV– FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method: 450 Degrees Fahrenheit COC
Flammable Limits: N/A
Extinguishing Media: Carbon dioxide, dry chemical, foam, water fog, and water spray
Special Fire Fighting Procedures: Use water spray to cool fire exposed surfaces and to protect personnel.
Unusual Fire and Explosion Hazards:

SECTION V – HEALTH HAZARD DATA

Permissible Exposure Level: N/A
Effects of Overexposure:

- **Eyes:** N/A
- **Ingestion:** Acute oral LD50 is greater than 10g/kg
- **Inhalation:** N/A
- **Skin:** N/A

Emergency and First Aid Procedures:

- **Eyes:** Flush with water
- **Ingestion:** Contact a physician
- **Inhalation:** N/A
- **Skin:** Remove with waterless hand cleaner. Wash with soap and water.

Medical Conditions generally aggravated by exposure: N/A

Primary Routes of Entry:

- **Eyes:** None
- **Ingestion:** Not a normal exposure
- **Inhalation:** None
- **Skin:** None

Chemicals contained herein listed as carcinogens or potential carcinogens:
NTP: NONE **IARC:** NONE **OSHA:** NONE

SECTION VI – REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Overheating
Incompatibility (Material to Avoid): Avoid contact with strong oxidizing agents
Hazardous Decomposition Products: None
Hazardous Polymerization: Will not occur.

SECTION VII – SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled: Sweep up
Waste disposal method: Dispose of in accordance with Federal, State and local regulations.

SECTION VIII – SPECIAL PROTECTION INFORMATION

Respiratory Protection: N/A
Ventilation: N/A
Eye Protection: Chemical goggles
Protective Gloves: N/A

SECTION IX – SPECIAL PRECAUTIONS

Precautions to be taken in handling and storing: Do not store near flame, heat or strong oxidizing agents.

SECTION X - NOTES

Note: N/A = not applicable
Issure Date: May 30, 1990
Revision Date: September 1, 2009
NE = not established
Issued By: John Bilstein (KK)

Information herein is given in good faith and is, to the best of our knowledge and belief, accurate and reliable. However, since information herein was obtained, in part, from independent suppliers not under the direction and supervision of ETERNABOND, INC., ETERNABOND, INC., makes no warranty or representation, express or implied, tbat that information is accurate, reliable, complete or representative. ETERNABOND, INC., warrants only that it has made no effort to censor other than trade secret information or to conceal deleterious aspects of its products. The data shown above in no way modifies, amends, or enlarges any specificatinos or warranty.

All components of this product are listed in the EPA/TSCA Inventory or Chemical Substances.

ETERNABOND

Product Information

WebSeal

Description

For use on virtually all roofs, **WebSeal** is designed to hold coatings, whether water or solvent based. **WebSeal** makes the roof water-tight prior to application of coating, creating a superior, faster method of waterproofing over conventional 3 course applications, eliminating dependence on the roof coating as a water barrier. **WebSeal** remains flexible to temperatures as low as -70° F making it virtually impossible to thermally shock the seam causing a leak.

WebSeal bonds to a wide range of surfaces including difficult roof materials such as EPDM, TPO, CSPE/Hypalon, most PVC, CPE, SBS, APP modifieds, asphalt BURs, coal tar BURs, plus all metal roofs, tiles, shingle, aluminum, galvanized steel, gypsum board, wood, polyethylene, propylene, polystyrene, fiberglass, brick, concrete, masonry, OSB, etc.

Basic Use

WebSeal tape is used to seal roof joints (seams) and tears, flashings, copings, skylights, gutters, etc. Perfect for repairing and restoring roofs on mobile homes and RVs. Extremely flexible, with no memory, so **WebSeal** conforms to virtually any shape without springing back. **WebSeal** seals to itself so it can be cut and folded around an object. A top coat of roof coating is necessary for UV protection.

Composition

WebSeal utilizes **EternaBond's** advanced **MicroSealant Technology**, a 100% solids formulation of synthetic resins, thermoplastics and non-curing rubber (non butyl) with a built-in primer. It is bonded to a woven polyester backing for maximum conformability. The adhesive coating is protected by a silicone release liner, to be removed prior to application.

Surface Preparation

Surface must be clean and dry. Moisture, dust, dirt or other foreign matter should be removed. Remove oil and grease, etc. with **EternaClean** or a non-residue cleaner such as acetone or lacquer thinner. Remove salt and other contaminants.

Technical Data	
Adhesion	19 lbs/in width
Application temperature	150° F to -20° F ambient
Available widths	Up to 48"
Elongation	>500%
Flexibility temperature range	-70° F - >200° F
Low temperature flexibility	1/2" radius at -30° F
Pliability	No cracks in membrane
Shelf life	Up to 5 years
Standard roll size	2", 4", 6", 8", 12", 24", 36" x 50'
Standard case quantity	100 sq. ft. per case
Total thickness	30 mils (1 mm)
Water vapor test (ASTME 96B)	.005 grms / 100" sq. / 24 hrs. / 100° F

Values are typical performance properties and characteristics based on laboratory testing. This is intended as a guide for comparison purposes and does not constitute a specification or specification range.

Application

Install **WebSeal** over the repair area, removing the release liner gradually to prevent contamination of the adhesive prior to application. Rub or roll with pressure using your hand or steel roller to activate bonding process. This material may be applied to clean dry surfaces from 150° F to -20° F ambient. Treat surface with **EternaPrime** for installations from 40° F to -20° F ambient. A topcoat of roofing coating is necessary for UV protection.

CAUTION: All statements and technical information in this document are based on tests or data that ADCO believes is reliable. However, ADCO does not warrant or guarantee the accuracy or completeness of this information. The user has sole knowledge and control of factors that can affect the performance of ADCO's products in the user's intended application. It is the user's responsibility to conduct tests to determine the compatibility of ADCO's product with the design, structure, and materials of the user's end product and the suitability of ADCO's product for the user's method of application and intended use. The user assumes all risk and liability arising out of such use.

Appendix 3

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation (OER) and CNSA, LLC. have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program (VCP). 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, CNSA, LLC. 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 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, Katherine Glass (212) 788-8348, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process.

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. CNSA, LLC. will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Repository Name: Brooklyn Library - Greenpoint Branch

Repository Address: 107 Norman Avenue, Brooklyn NY 11222

Repository Telephone Number: 718-349-8504

Repository Hours of Operation

Mon	10:00 AM - 6:00 PM
Tue	10:00 PM - 6:00 PM
Wed	10:00 AM - 8:00 PM
Thu	1:00 AM - 8:00 PM
Fri	10:00 AM - 6:00 PM
Sat	10:00 AM - 5:00 PM
Sun	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.

Identify Issues of Public Concern. The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future residents of the property and those on adjacent properties during construction. Detailed plans to

monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of the remedial program. Implementation of these plans will be under the direct oversight of the New York City Department of Environmental Remediation (NYCOER).

These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-Site air monitoring for worker protection,
- Perimeter air monitoring for community protection.

The Health and Safety Plan and the Community Air Monitoring Plan prepared as part of the Remedial Action Work Plan will be available for public review at the document repository.

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 CNSA, LLC., reviewed and approved by OER prior to distribution and mailed by CNSA, LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary 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.

Appendix 4

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.

This project intends to use recycled concrete aggregate wherever possible in grading and backfilling the Site. 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.

The project will reduce the consumption of virgin materials by substituting recycled concrete aggregate for mined gravel and/or sand backfill whenever possible. 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.

Recycled concrete materials and other backfill materials will be locally sourced reducing the energy consumption associated with transporting these materials to the Site. 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.

Paperless Volunteer Cleanup Program. 62 Box Street LLC is participating in OER's Paperless Voluntary 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. 62 Box Street LLC 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.

Appendix 5

STV's HEALTH AND SAFETY PLAN

REMEDIAL ACTION
HEALTH & SAFETY PLAN

FOR

Prince Lumber

612-618 West 47th Street, New York, NY 10036

Block 1094, Lot 44

E-Designation E-268

CEQR Number 11DCP068M

West Clinton Rezoning District

OER Project Number 12EHAN533M

Prepared for:

CNSA, LLC.

404 West 15th Street, New York, NY 10011

Prepared by:

STV Incorporated
225 Park Avenue South
New York,New York 10003
Phone: (212) 777-4400
Fax: (646) 654-1861

PHASE II ENVIRONMENTAL SITE INVESTIGATION
HEALTH & SAFETY PLAN

FOR

Prince Lumber

612-618 West 47th Street, New York, NY 10036

Block 1094, Lot 44

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HEALTH AND SAFETY PLAN

PHASE II ENVIRONMENTAL SITE INVESTIGATION
For

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612-618, New York, NY 10036

Block 1094, Lot 44

TABLE OF CONTENTS

SECTION ***PAGE***

1.0 INTRODUCTION 1

2.0 PLANNED FIELD ACTIVITIES 3

3.0 POTENTIAL CHEMICAL AND PHYSICAL HAZARDS 4

3.0 POTENTIAL CHEMICAL AND PHYSICAL HAZARDS 4

3.1 Potential Chemical Hazards 4
3.2 Physical Hazards 4
3.3 Biological Hazards 5

4.0 HEALTH AND SAFETY PROTOCOL 6

4.1 Site/Work Hazard Evaluation 6
4.2 Project Team Organization 6
4.3 Safety Rules 7
4.4 Personal Hygiene 8
4.5 Levels of Personal Protection 9
4.5.1 Level D 9
4.5.2 Modified Level D 9
4.5.3 Level C 10

5.0 AIR MONITORING EQUIPMENT AND ACTION LEVELS 11

6.0 DECONTAMINATION 12

6.1 Site/Work Area Organization 12
6.2 Personnel Decontamination 12

7.0 EMERGENCY AND CONTINGENCY PLAN 13

TABLE

1 Emergency Contacts and Phone Numbers

FIGURES

1 Site Location Map
2 Site Plan

ATTACHMENTS

I Acknowledgment Form
II Daily Safety Meeting Form
III Heat Stress and Cold Stress
IV PID Calibration Procedure
V Route to Hospital

3.0 POTENTIAL CHEMICAL AND PHYSICAL HAZARDS

3.1 Potential Chemical Hazards

This HASP focuses on the following chemicals of concern:

Identified contaminants include:

- VOCs
- SVOCs
- Weather Petroleum Soils

Suspect contaminants include:

- Pesticides
- Herbicides
- PCBs
- Arsenic
- Lead
- Mercury

The chemical hazards will be minimized by limiting exposure of personnel to hazardous conditions and by the use of personnel protective equipment (PPE). Dust suppression controls may also be used to limit exposure, if warranted.

3.2 Physical Hazards

Physical hazards potentially present at the site include, but not limited to, the following:

- Slip, trip and fall (uneven terrain and slippery surfaces) hazards;
- Vehicular traffic;
- Vehicular operations;
- Environmental (heat) stress;
- Noise hazards;
- Use of heavy equipment;
- Visibility (night work) hazards.

Anticipated site operations do not include the need for specific operations such as, lockout/tag-out, scaffolds or confined spaces, therefore these items are not addressed in this HASP. If site constructed activities require these operations, properly trained, experienced and competent personnel shall be utilized.

3.3 Biological Hazards

General biological hazards present at the site include, but not limited to, the following:

- Bites or stings from insects (particularly ticks) resulting in skin inflammation, disease, or allergic response; and
- Allergens and toxins from plants and animals, producing dermatitis, rhinitis, or asthma.

The exposure limits, physical and chemical properties, recommended protection levels and symptoms of exposure of these chemical compounds will be provided prior to implementing the field sampling program.

A discussion of heat stress and related illnesses is provided in Attachment III.

4.0 HEALTH AND SAFETY PROTOCOL

4.1 Site/Work Hazard Evaluation

Upon review of the previously detected contaminant levels, hazards, exposure routes and the nature of the field tasks, it has been determined that modified Level D protection with continuous air monitoring will be used during drilling activities with a contingency to upgrade to Level C protection if VOC concentrations in the breathing zone consistently exceed 5 parts per million (ppm) (above background). These levels are described in more detail in Section 4.3.

4.2 Project Team Organization

- Michael Tumulty, P.E., Senior Project Manager
- Brian Connolly, Senior Environmental Scientist

The Site HSO or his designee is responsible for the following:

- Monitoring to determine the degree of hazard;
- Determining the protection levels and equipment required to ensure the safety of personnel;
- Evaluating on-site conditions (i.e., weather and chemical hazard information) and recommending to the project manager and/or the field coordinator, modifications to the work plan and personnel protection levels;
- Monitoring performance of all personnel to ensure compliance with the required safety procedures;
- Notifying emergency authorities (police, fire and ambulance) of the team's presence, assignments and emergency procedures (as required);
- Ensuring that all personnel have been trained in proper site safety procedures including the use of personal protective equipment, and have read and signed Acknowledgment Form (Attachment II);

- Conducting daily briefings as necessary;
- Halting work if necessary;
- Ensuring strict adherence to the Site Health and Safety Plan; and
- Reviewing personnel medical monitoring participation and health and safety training.

The minimum personal qualifications for each individual participating in field activities are:

- OSHA specific medicals including, but not limited to, audiometric testing under the hearing conservation program and medical approval for the use of respirators;
- Participation in an Occupational Health Monitoring Program;
- Successful completion of the 40-hour OSHA health and safety training for hazardous material sites (29 CFR 1910.120[e][3][i]) and valid/up-to-date 8-hour refresher training (29 CFR 1910.120[e][4]); and
- Additionally, it is strongly recommended that all field personnel be trained in first aid and Cardio-Pulmonary Resuscitation (CPR).

Anticipated site operations do not include the need for specific operations, such as lock-out/tag-out, scaffolds or confined spaces. Therefore, these items are not addressed in this HASP. If site construction activities require these operations, properly trained, experienced and competent personnel shall be utilized.

4.3 Safety Rules

The following general safety rules apply when working:

1. Steel-toed safety work shoes and reflective orange vests must be worn at all times.

2. During work executions, pause every few minutes and assess surrounding traffic conditions. The HSO will serve as a "spotter," to the maximum extent possible, keeping a lookout throughout field activities.
3. Expect movement of cars and buses at any time, along any roadway regardless of traffic signals, stop signs, yield signs, etc.
4. When walking on right-of-ways or road-shoulders, keep a sharp lookout in both directions.
5. Be sure that the appropriate roadway safety equipment is on site including road flares, reflective traffic cones, flags, etc.
6. For personal safety, be cognizant of your surroundings and ensure that equipment is properly secured.
7. Do not remain bent over or sitting along busy roadways - remain visible at all times.

All personnel who participate in field activities will be required to attend a Health and Safety meeting prior to the commencement of field activities.

4.4 Personal Hygiene

Eating, drinking and the use of tobacco products in the work area are prohibited. The use of alcohol or other non-prescription drugs by personnel that could impair the ability to function at the work site is prohibited. The use of some prescription drugs may impair the ability to function and can create safety problems on-site. Field personnel taking prescription medication should alert the HSO in case of an emergency. Beards or facial hair that could interfere with the use of a respirator are not allowed. Dermal contact with groundwater should be avoided. This includes avoiding walking through puddles, pools, mud, sitting or leaning on or against drums, equipment, or on the ground. Field personnel should wash their hands before eating, smoking, using the toilet, etc. Field personnel should wash their hands, face and shower (daily) as soon as possible after leaving the site.

4.5 Levels of Personal Protection

4.5.1 Level D

Level D applies to work in areas where contact with potentially contaminated groundwater and soil has been removed. The protective equipment includes, but not limited to, the following:

- Work clothes or coveralls;
- Safety boots;
- Safety glasses;
- Hard hat;
- Reflective vest;
- Disposable latex gloves;
- First-aid kit;
- Eye wash station or bottles;
- Potable drinking water or equivalent; and
- Air monitoring equipment (PID/FID, oxygen and combustible gas monitor).

4.5.2 Modified Level D

Modified Level D protection will be used for the soil borings, temporary well and soil vapor probe installation; and soil and groundwater sampling and for dermal protection in general. The decision to upgrade the level of personal protection will be made by the Site HSO based on results of the air quality assessment and continuous air monitoring of the breathing zone with a photoionization detector (PID) during site work. Safety equipment for modified Level D will include, but not limited to, the following:

- Nitrile, neoprene or butyl gloves over disposable latex surgeons gloves;
- Safety work boots;
- Air monitoring equipment (PID);
- Hard Hat;
- Orange, reflective safety vest;
- First Aid kit;
- Eye wash station or bottles; and
- Potable drinking water or equivalent.

4.5.3 Level C

Level C protection will include, but not limited to, the following:

- Protective clothing and other equipment required for Level D;
- Full-face air purifying respirator (APR) with high efficiency particulate/organic vapor cartridges (ultra-twin with GMCH cartridges);
- Saranex-coated disposable coveralls with hoods; and
- Boot covers.

5.0 AIR MONITORING EQUIPMENT AND ACTION LEVELS

Air quality monitoring equipment will be used during all work activities to indicate total organic vapors. A PID will be used during on-site activities and will be calibrated daily (Attachment IV- PID Calibration Procedure). A background level will be established as a minimum, on a daily basis. Periodic readings above background require caution. A sustained PID measurement greater than 5 ppm above background in the breathing zone will require upgrading to Level C protection. The PID will be calibrated on a daily basis and recorded in a bound field notebook.

6.0 DECONTAMINATION

6.1 Site/Work Area Organization

A typical site work area will consist of an exclusion zone where the actual field activity will take place, a decontamination zone and a command post located outside the contamination area and exclusion zones.

Levels of personal protection in the exclusion zone could vary depending on air monitoring data, and will be specified by the Site HSO. The only heavy equipment on the site will be the Geoprobe rig, which will be decontaminated by steam cleaning between installing each monitoring well.

6.2 Personnel Decontamination

Decontamination of personnel consists of physically removing soil or contaminants using the correct procedures for washing and removal of PPE.

7.0 EMERGENCY AND CONTINGENCY PLAN

Emergency communications will be maintained during all on-site field activities. The emergency route to Roosevelt Hospital is presented in Attachment V. Emergency contacts and corresponding phone numbers are presented in Table 1.

A first aid kit will be available on-site at all times for any minor on-site injuries. Emergency medical assistance or ambulance can be reached by calling 911 for more severe injuries.

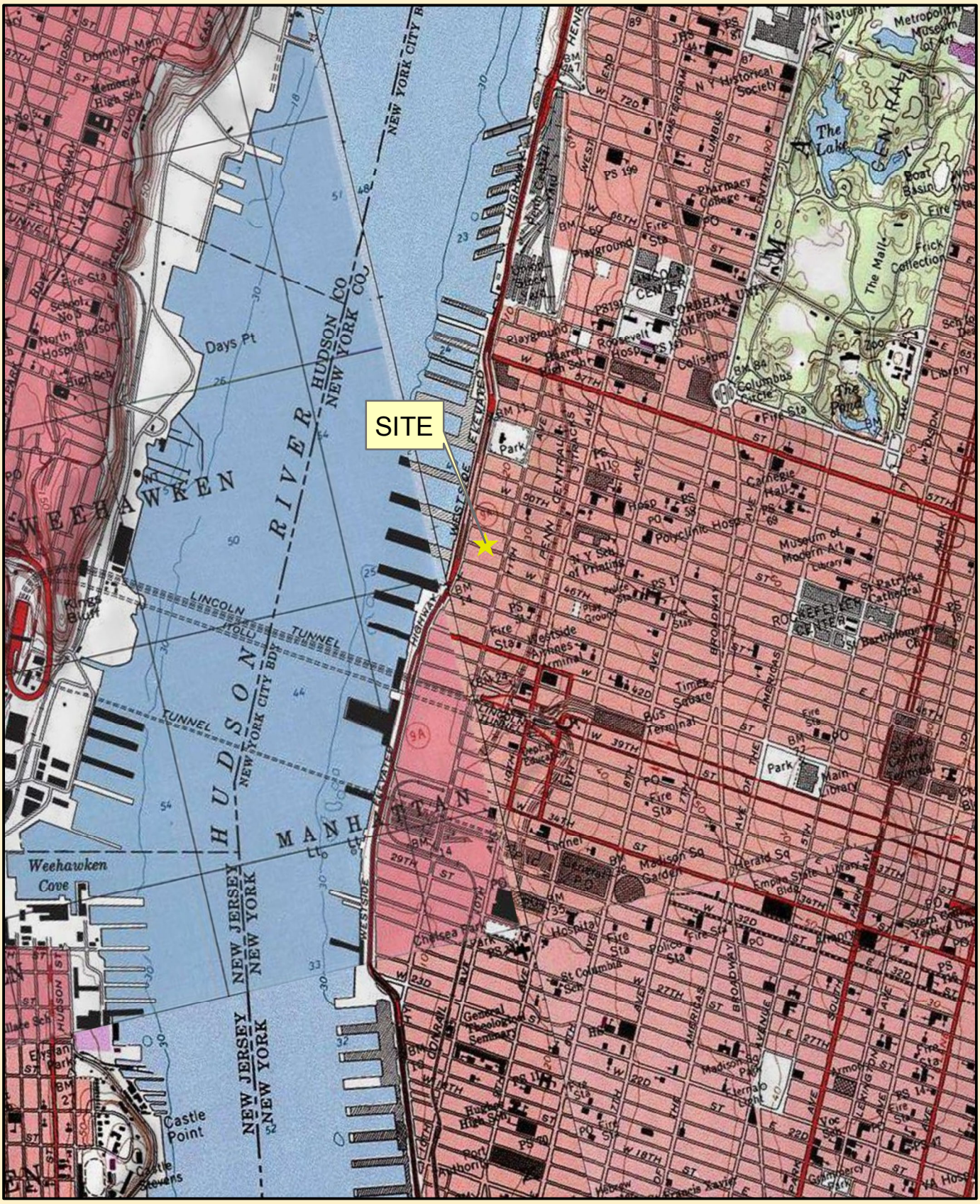
TABLES

TABLE 1

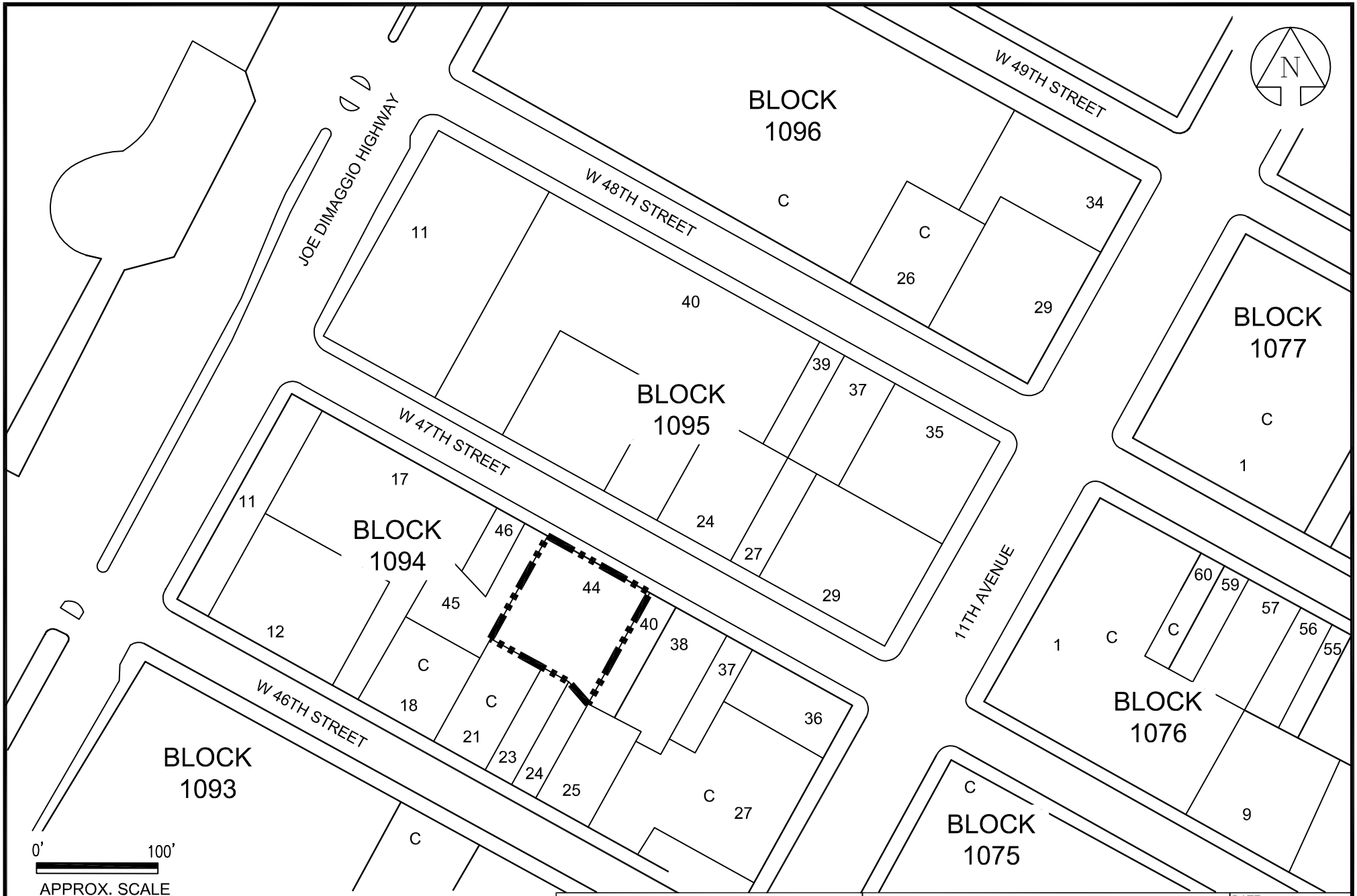
Emergency Contacts and Phone Numbers

CONTACT	PHONE
EMERGENCY	911
HARLEM HOSPITAL CENTER:	
Roosevelt Hospital	(212)523-4000
POISON CONTROL CENTER	(212) 764-7667
POLICE	
Emergency	911
FIRE RESPONSE	
NYC Fire Department	911
CON EDISON	(800) 752-6633
STV INCORPORATED	
225 Park Ave. South	(212) 777-4400
New York, New York 10003	(212) 529-5237 (fax)
STV Project Manager	(212) 614-4926
	(917) 545-9226 (cell)
EMERGENCY SPILL RESPONSE:	
New York State Department of Environmental Conservation (NYSDEC) Emergency Spill Hotline	(800) 457-7362

FIGURES



N W E S	**Figure 1** **Site Location Map**	**Prince Lumber** **612-618 West 47th Street** **New York, NY 10036**	0 500 1,000 2,000 3,000 4,000 Feet **SCALE 1:24,000** **USGS TOPOGRAPHIC MAP, 7.5 MINUTE SERIES** **Prepared by:** **STV Inc.**



LEGEND

- SITE PROPERTY
- R RESIDENTIAL
- C COMMERCIAL
- R/C RESIDENTIAL W/STREET LEVEL COMMERCIAL
- REC RECOGNIZED ENVIRONMENTAL CONCERNS

SOURCE:
SITE SURVEY, BORO LAND SURVEYING, P.C. NOV.2011 AND NYC DEPT OF CITY PLANING

STV Incorporated
225 PARK AVENUE SOUTH, N.Y., N.Y. 10003

PRINCE LUMBER
612-618 WEST 47TH STREET
NEW YORK, NY 10036

FIGURE 2
SITE PLAN

DATE: JULY 2013
SCALE: AS SHOWN
SHEET NO: 1 OF 1

ATTACHMENT I

ACKNOWLEDGMENT FORM (HASP)

The following personnel have read the site-specific HASP and are familiar with its provisions.

Print Name	*Signature*	*Company*	*Function*	*Date*

ATTACHMENT II

STV Incorporated

DAILY SAFETY MEETING FORM (HASP)

The following personnel have discussed the site-specific HASP and are familiar with its provisions.

Print Name	*Signature*	*Company*	*Function*	*Date*

ATTACHMENT III

1.0 HEAT STRESS

Excessive exposure to a hot environment can bring about a variety of heat-induced disorders. The four main types of heat stress related illnesses: heat rash, heat cramps, heat exhaustion, and heat stroke, are discussed below.

1.1 Heat Rash

Heat rash also know as prickly heat, is likely to occur in hot, humid environments where sweat is not readily removed from the surface of the skin by evaporation and the skin remains wet most of the time. The sweat ducts become plugged, and a skin rash soon appears. When the rash is extensive or when it is complicated by an infection, prickly heat can be very uncomfortable and may reduce a worker's performance. The worker can prevent this condition by resting in a cool place part of each day and by regularly bathing and drying the skin.

1.2 Heat Cramps

Heat cramps are painful spasms of the muscles that occur among those who sweat profusely in heat, drink large quantities of water, but do not adequately replace the body's salt loss. Drinking large quantities of water tends to dilute the body's fluids, while the body continues to lose salt. Shortly thereafter, the low salt level in the muscles causes painful cramps. The affected muscles may be part of the arms, legs or abdomen, but tired muscles (those used to perform the work) are usually the ones most susceptible to cramps. Cramps may occur during or after work hours and may be relieved by taking salted liquids by mouth, such as the variety of sports drinks on the market.

CAUTION SHOULD BE EXERCISED BY PEOPLE WITH HEART PROBLEMS OR THOSE ON LOW SODIUM DIETS WHO WORK IN HOT ENVIRONMENTS. THESE PEOPLE SHOULD CONSULT A PHYSICIAN ABOUT WHAT TO DO UNDER THESE CONDITIONS.

1.3 Heat Exhaustion

Heat exhaustion includes several clinical disorders having symptoms that may resemble the early symptoms of heat stroke. Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. A worker suffering from this condition still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal or only slightly elevated.

A summary of the key symptoms of heat exhaustion is as follows:

- Clammy skin
- Confusion
- Dizziness
- Fainting
- Fatigue
- Heat Rash
- Light-headedness
- Nausea
- Profuse sweating
- Slurred Speech
- Weak Pulse

In most cases, treatment involves having the victim rest in a cool place and drink plenty of fluids. Victims with mild cases of heat exhaustion usually recover spontaneously with this treatment. Those with severe cases may require extended care for several days. There are no known permanent effects.

AS WITH HEAT CRAMPS, CERTAIN PERSONS SHOULD CONSULT WITH THEIR PHYSICIAN ABOUT WHAT TO DO UNDER THESE CONDITIONS.

1.5 Preparing for the Heat

Humans, to a large extent, are capable of adjusting to heat. This acclimation to heat, under normal circumstances, usually takes about 5 to 7 days, during which time the body will undergo a series of changes that will make continued exposure to heat more tolerable.

On the first day of exposure, body temperature, pulse rate, and general discomfort will be higher. With each succeeding day of exposure, all of these responses will gradually decrease, while the sweat rate will increase. When the body does become acclimated to the heat, the worker will find it possible to perform work with less strain and distress.

A gradual exposure to heat gives the body time to become accustomed to higher temperatures, such as those encountered in chemical protective clothing.

1.6 Protecting Against Heat Stress

There are several methods that can be used to reduce heat stress:

- Limit duration of work periods
- Use protective clothing with cooling devices
- Enforce the use of the "Buddy System"
- Consume electrolyte solutions prior to suiting up
- Monitor workers for pulse recovery rates, body fluid loss, body weight loss, and excess fatigue
- Screen for heat stress susceptible candidates in your medical surveillance program
- Have all personnel know the signs and symptoms of heat stress

2.0 COLD STRESS

Persons working outdoors in temperatures at or below freezing may be frostbitten. Extreme cold for a short time may cause severe injury to the surface of the body, or result in profound generalized cooling, causing death. Areas of the body that have high surface-area-to-volume ratio such as fingers, toes, and ears, are the most susceptible. Two factors influence the development of a cold injury, ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10 degrees Fahrenheit with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at minus 18 degrees Fahrenheit.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is perspiration soaked.

2.1 Frostbite

Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite of the extremities can be categorized into:

- Frost Nip or Initial Frostbite: characterized by suddenly blanching or whitening of skin.
- Superficial Frostbite: skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- Deep Frostbite: tissues are cold, pale, and solid; extremely serious injury.

2.2 Hypothermia

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperature. Its symptoms are usually exhibited in five stages:

- Shivering
- Apathy, listlessness, sleepiness, and (sometimes rapid cooling of the body to less than 95°F)
- Unconsciousness, glassy stage, slow pulse, and slow respiratory rate
- Freezing of the extremities
- Death

Thermal socks, long cotton or thermal underwear, hard hat liners and other cold weather gear can aid in the prevention of hypothermia. Blankets and warm drinks (other than caffeinated coffee) are also recommended.

Measures shall be taken to keep workers from getting wet, such as issuance of rain gear. Workers whose cloths become wet shall be given the opportunity to dry off and change clothes.

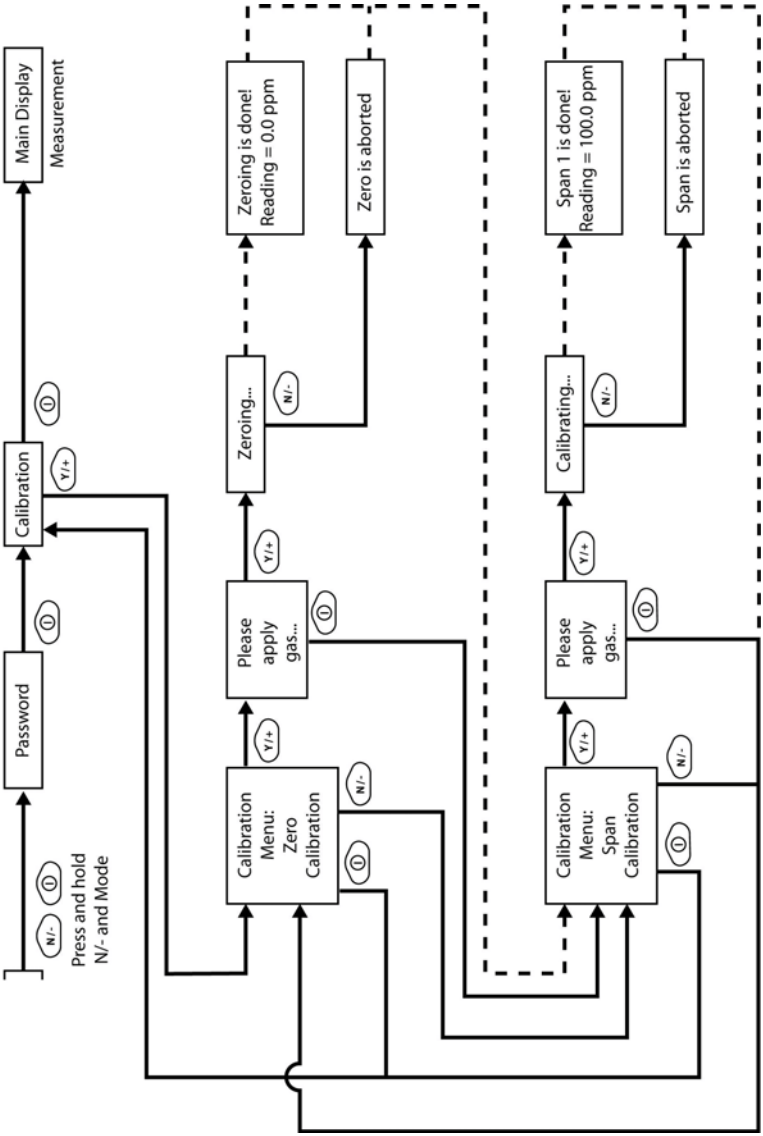
ATTACHMENT IV

MiniRAE 3000
User's Guide

Rev. A
November 2007
P/N 059-4020-000

Standard Two-Point Calibration (Zero & Span)

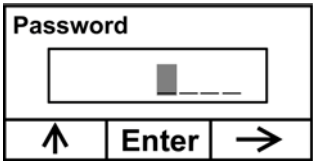
The following diagram shows the instrument's calibrations in Basic/Hygiene mode.



Note: Dashed line indicates automatic progression.

Entering Calibration

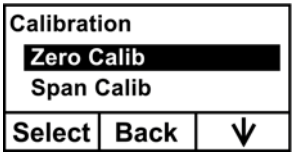
1. Press and hold [MODE] and [N/-] until you see the Password screen.



2. In Basic User Level, you do not need a password to perform calibrations. Instead of inputting a password, enter calibration by pressing [MODE].

   Note: If you inadvertently press [Y/+] and change any of the numbers, simply press [MODE] and you will be directed to the calibration menu.

The Calibration screen is now visible with Zero Calibration highlighted.



These are your options:

- Press [Y/+] to select the highlighted calibration (Zero Calib or Span Calib).
- Press [MODE] to exit calibration and return to the main display and resume measurement.
- Press [N/-] to toggle the highlighted calibration type.

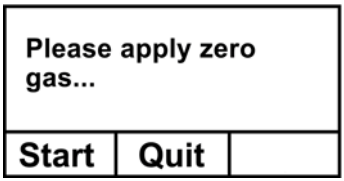
Zero (Fresh Air) Calibration

This procedure determines the zero point of the sensor calibration curve. To perform a fresh air calibration, use the calibration adapter to connect the instrument to a "fresh" air source such as from a cylinder or Tedlar bag (optional accessory). The "fresh" air is clean, dry air without organic impurities and an oxygen value of 20.9%. If such an air cylinder is not available, any clean ambient air without detectable contaminants or a charcoal filter can be used.

At the Zero Calibration menu, you can proceed to perform a Zero calibration or bypass Zero calibration and perform a Span calibration. You may also go back to the initial Calibration menu if you want to exit calibration.

- Press [Y/+] to start calibration.
- Press [MODE] to quit and return to the main calibration display.

If you have pressed [Y/+] to enter Zero calibration, then you will see this message:



1. Turn on your Zero calibration gas.
2. Press [Y/+] to start calibration.

   Note: At this point, you may press [MODE] if you decide that you do not want to initiate calibration. This will take you directly to the Calibration menu, highlighted for Span calibration.

3. Zero calibration starts a 30-second countdown and displays this message:

   Zeroing...

During the zeroing process, the instrument performs the Zero calibration automatically and does not require any action on your part.

Note: To abort the zeroing process at any time and proceed to Span calibration, press [N/-] at any time while zeroing is being performed. You will see a confirmation message that says "Zero aborted!" and then the Span calibration menu appears.

When Zero calibration is complete, you see this message:

Zeroing is done!
Reading = 0.0 ppm

The instrument will then show the Calibration menu on its display, with Span Calib highlighted.

Span Calibration

This procedure determines the second point of the sensor calibration curve for the sensor. A cylinder of standard reference gas (span gas) fitted with a 500 cc/min. flow-limiting regulator or a flow-matching regulator is the simplest way to perform this procedure. Choose the 500 cc/min. regulator only if the flow rate matches or slightly exceeds the flow rate of the instrument pump. Alternatively, the span gas can first be filled into a Tedlar bag or delivered through a demand-flow regulator. Connect the calibration adapter to the inlet port of the instrument, and connect the tubing to the regulator or Tedlar bag.

Another alternative is to use a regulator with >500 cc/min flow but allow the excess flow to escape through a T or an open tube. In the latter method, the span gas flows out through an open tube slightly wider than the probe, and the probe is inserted into the calibration tube.

At the Span Calibration menu, you perform a Span calibration. You may also go back to the Zero calibration menu or to the initial Calibration menu if you want to exit calibration.

- Press [Y/+] to enter Span calibration.
- Press [N/-] to skip Span calibration and return to Zero calibration.
- Press [MODE] to exit Span calibration and return to the top calibration menu.

If you have pressed [Y/+] to enter Span calibration, then you will see the name of your Span gas (the default is isobutylene) and the span value in parts per million (ppm). You will also see this message that prompts you:

C. Gas = Isobutene Span = 100 ppm Please apply gas 1...		
Start	Quit	

1. Turn on your span calibration gas.

2. Press [Y/+] to initiate calibration.

   Note: You may press [MODE] if you decide that you do not want to initiate calibration. This will abort the span calibration and take you directly to the Calibration menu for Zero calibration.

3. Span calibration starts and displays this message:

   Calibrating...

During the Span calibration process, there is a 30-second countdown and the instrument performs the Span calibration automatically. It requires no actions on your part.

Note: If you want to abort the Span calibration process, press [N/-] at any time during the process. You will see a confirmation message that says "Span is aborted!" and then the Zero calibration menu appears. You can then proceed to perform a Zero calibration, perform a Span calibration, or exit to the topmost Calibration menu.

When Span calibration is complete, you see a message similar to this (the value is an example only):

Span 1 is done!
Reading = 100.0 ppm

The instrument then exits Span calibration and shows the Zero calibration menu on its display.

Note: The reading should be very close to the span gas value.

Exiting Two-Point Calibration In Basic User Level

When you are done performing calibrations, press [MODE], which corresponds with "Back" on the display. You will see the following message:

Updating settings…

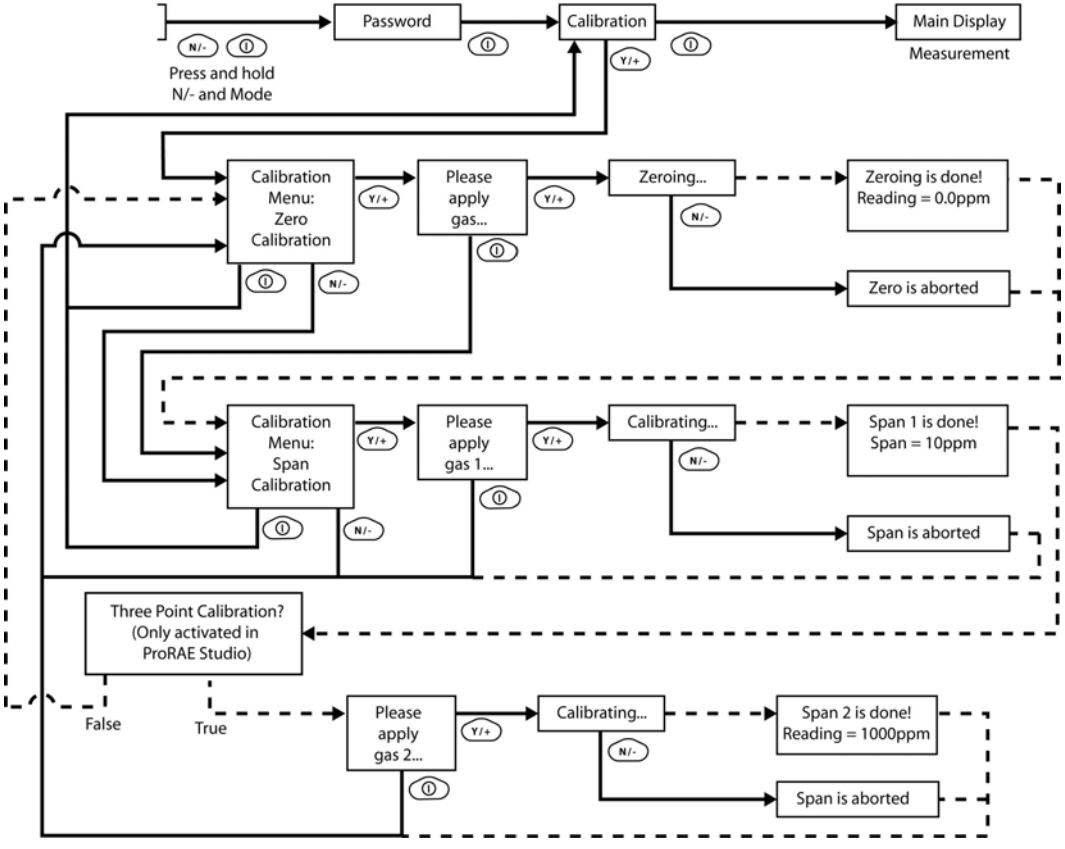
The instrument updates its settings and then returns to the main display. It begins or resumes monitoring.

Three-Point Calibration

For enhanced accuracy, it is possible to perform a second Span calibration in addition to the Zero and Span calibrations outlined in the previous section. Your instrument first must be set to allow this third calibration. This requires using ProRAE Studio software and a PC, as well as a higher concentration of calibration gas.

Note: Once the third calibration is set, you do not need to use ProRAE Studio to allow future 3-point calibrations. Also, you can only disable 3-point calibration capability by using ProRAE Studio again.

Perform the Zero and Span calibrations. After the first Span calibration (Span 1) is completed, the display a second Span calibration (Span 2) can be performed. The process is identical to the first calibration. As in the Span 1 calibration, you may exit and return to the Zero calibration screen if you choose not to perform this calibration or to abort it.



Note: Dashed line indicates automatic progression.

Span 2 Calibration

A cylinder of standard reference gas (span gas) fitted with a 500 cc/min. flow-limiting regulator or a flow-matching regulator is the simplest way to perform this procedure.

Note: This gas should be of a higher concentration than the gas used for Span 1 calibration.

Choose the 500 cc/min. regulator only if the flow rate matches or slightly exceeds the flow rate of the instrument pump. Alternatively, the span gas can first be filled into a Tedlar bag or delivered through a demand-flow regulator. Connect the calibration adapter to the inlet port of the instrument, and connect the tubing to the regulator or Tedlar bag.

Another alternative is to use a regulator with >500 cc/min flow but allow the excess flow to escape through a T or an open tube. In the latter method, the span gas flows out through an open tube slightly wider than the probe, and the probe is inserted into the calibration tube.

At the Span Calibration menu, you perform a Span calibration. You may also go back to the Zero calibration menu or to the initial Calibration menu if you want to exit calibration.

- Press [Y/+] to enter Span 2 calibration.
- Press [N/-] to skip Span calibration and return to Zero calibration.
- Press [MODE] to exit Span calibration and return to the top calibration menu.

If you have pressed [Y/+] to enter Span calibration, then you will see the name of your Span gas (the default is isobutylene) and the span value in parts per million (ppm). You will also see this message that prompts you:

Please apply gas...

4. Turn on your span calibration gas.

5. Press [Y/+] to initiate calibration.

   Note: You may press [MODE] if you decide that you do not want to initiate calibration. This will take you directly to the Calibration menu for Zero calibration.

6. Span calibration starts a 30-second countdown and displays this message:

   Calibrating...

During the Span calibration process, the instrument performs the Span calibration automatically and does not require any action on your part.

Note: If you want to abort the Span calibration process, press [N/-] at any time during the process. You will see a confirmation message that says "Span is aborted!" and then the Zero calibration menu will appear. You can then proceed to perform a Zero calibration, perform a Span calibration, or exit to the topmost Calibration menu.

When Span calibration is complete, you will see a message similar to this (the value shown here is for example only):

Span 2 is done!
Reading = 1000 ppm

The instrument then exits Span calibration and shows the Zero calibration menu on its display.

Note: The reading should be very close to the span gas value.

Exiting Three-Point Calibration

When you are done performing calibrations, press [MODE], which corresponds with "Back" on the display. You will see the following message:

Updating settings…

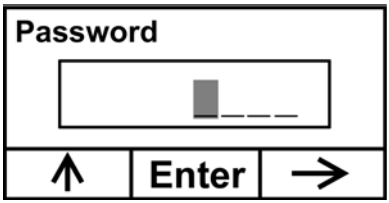
The instrument updates its settings and then returns to the main display. It begins or resumes monitoring.

Programming Mode

Programming Mode can be entered from either Hygiene Mode or Search Mode. If the current user mode is Basic, you must provide a 4-digit password to enter.

Entering Programming Mode

1. Press and hold [MODE] and [N/-] until you see the Password screen.



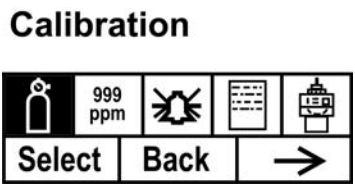
2. Input the 4-digit password:

- Increase the number from 0 through 9 by pressing [Y/+].
- Step from digit to digit using [N/-].
- Press [MODE] when you are done.

If you make a mistake, you can cycle through the digits by pressing [N/-] and then using [Y/+] to change the number in each position.

Note: The default password is 0000.

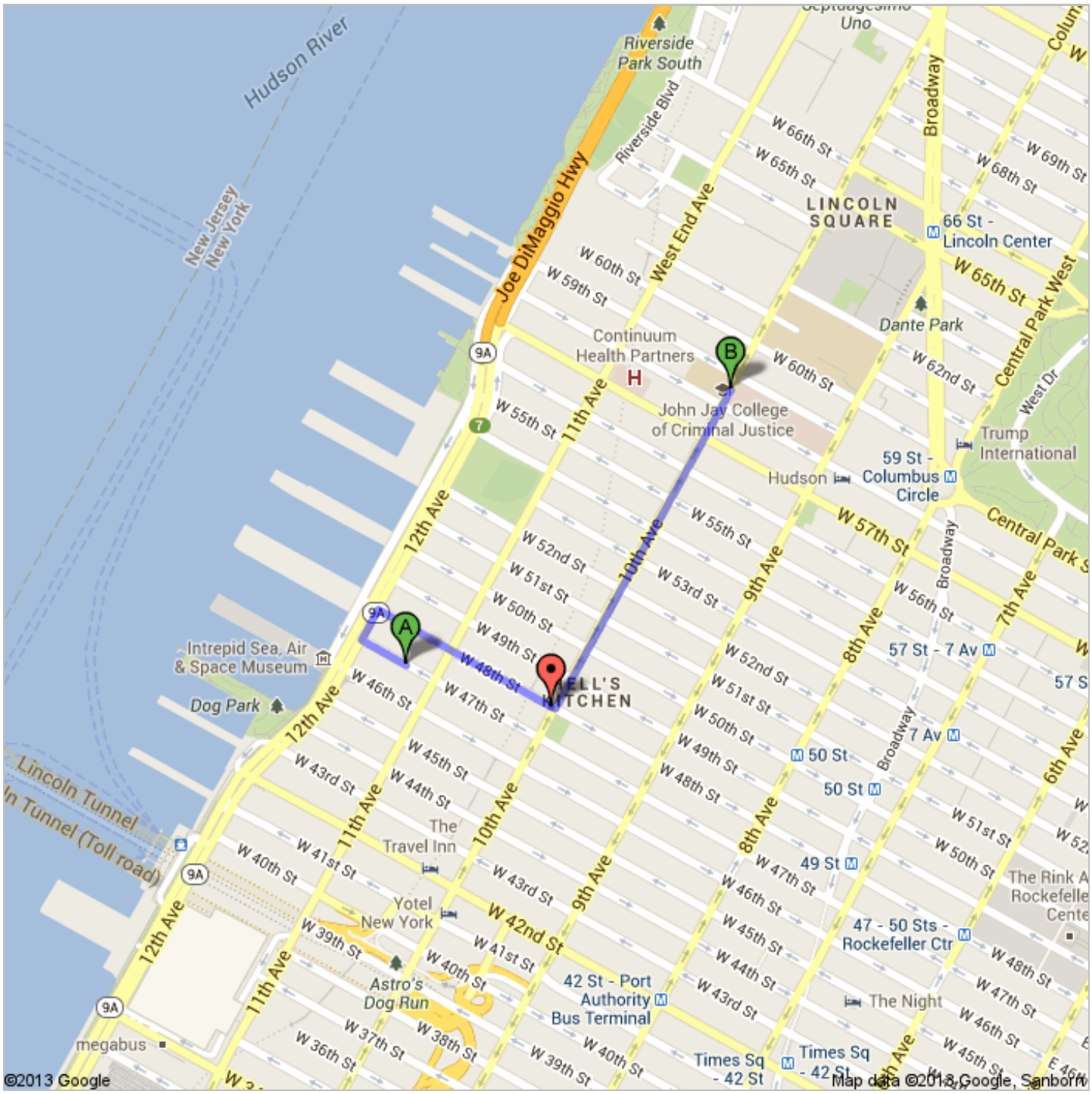
When you have successfully entered Programming Mode, you see this screen:



Note: The password can only be changed by connecting the instrument to a PC running ProRAE Studio software. Follow the instructions in ProRAE Studio to change it.

ATTACHMENT V

Directions to Roosevelt Hospital
1000 10th Ave, New York, NY 10019
0.9 mi – about **4 mins**



612 W 47th St, New York, NY 10036

	1. Head **northwest** on **W 47th St** toward **12th Ave**	go 394 ft total 394 ft
	2. Turn right onto **12th Ave**	go 266 ft total 0.1 mi
	3. Take the 1st right onto **W 48th St** About 1 min	go 0.3 mi total 0.4 mi
	4. Take the 2nd left onto **10th Ave** Destination will be on the right About 2 mins	go 0.5 mi total 0.9 mi

Roosevelt Hospital
1000 10th Ave, New York, NY 10019

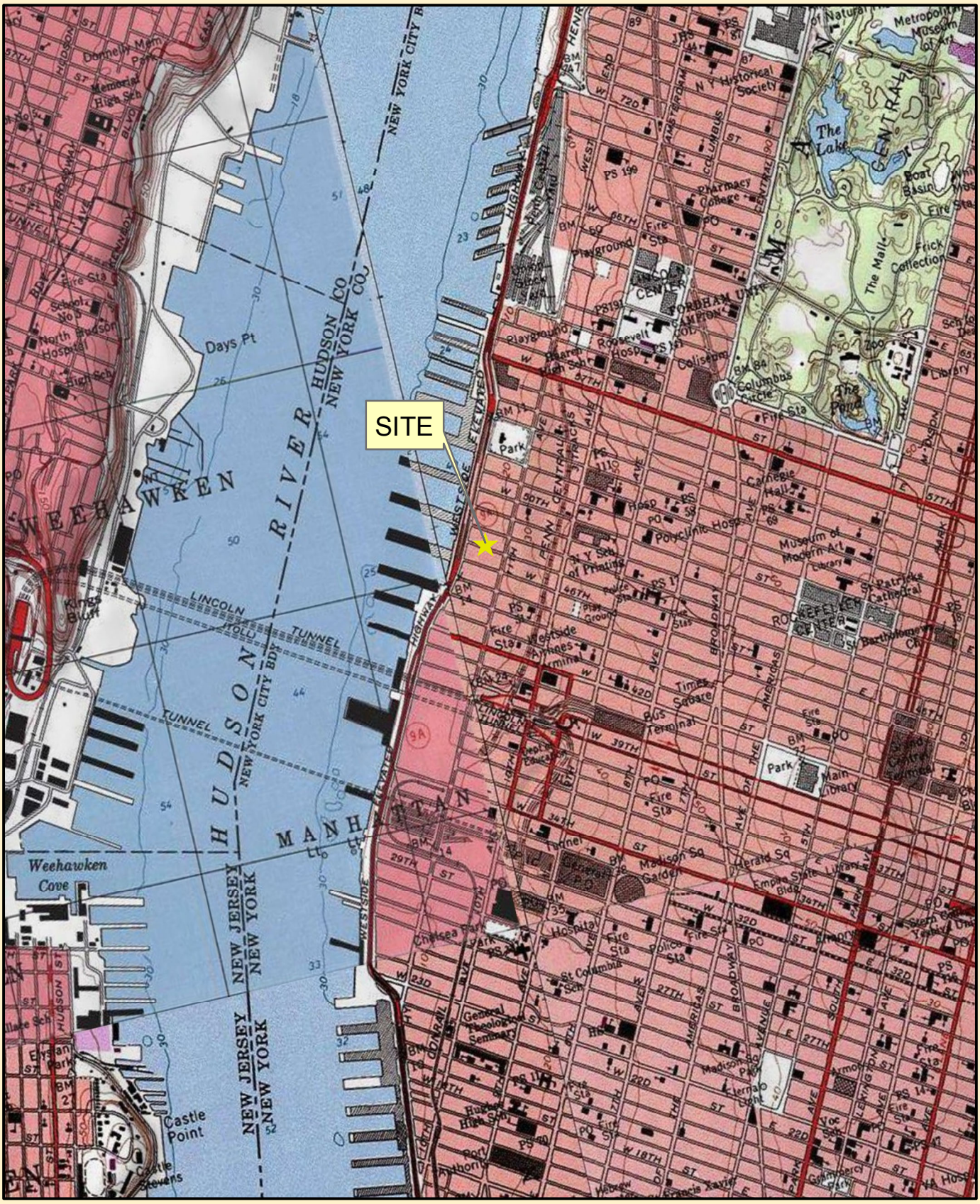
These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2013 Google, Sanborn

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

FIGURE 1

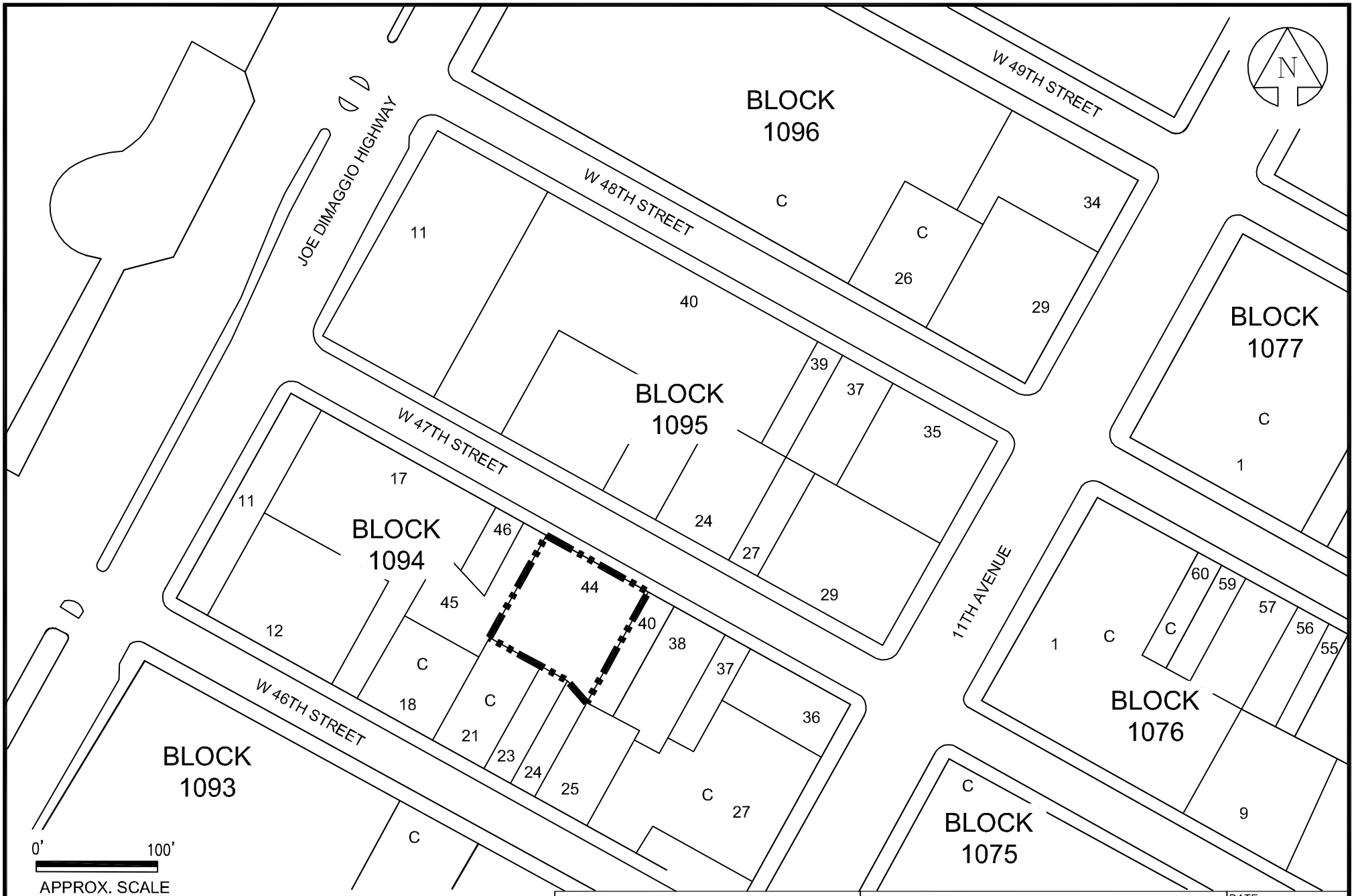
Site Location Map



N W E S	**Figure 1** **Site Location Map**	**Prince Lumber** **612-618 West 47th Street** **New York, NY 10036**	0 500 1,000 2,000 3,000 4,000 Feet **SCALE 1:24,000** **USGS TOPOGRAPHIC MAP, 7.5 MINUTE SERIES** **Prepared by:** **STV Inc.**

FIGURE 2

Site Plan



LEGEND

- SITE PROPERTY
- R RESIDENTIAL
- C COMMERCIAL
- R/C RESIDENTIAL W/STREET LEVEL COMMERCIAL
- REC RECOGNIZED ENVIRONMENTAL CONCERNS

SOURCE:
SITE SURVEY, BORO LAND SURVEYING, P.C. NOV.2011 AND NYC DEPT OF CITY PLANING

STV Incorporated
225 PARK AVENUE SOUTH, N.Y., N.Y. 10003

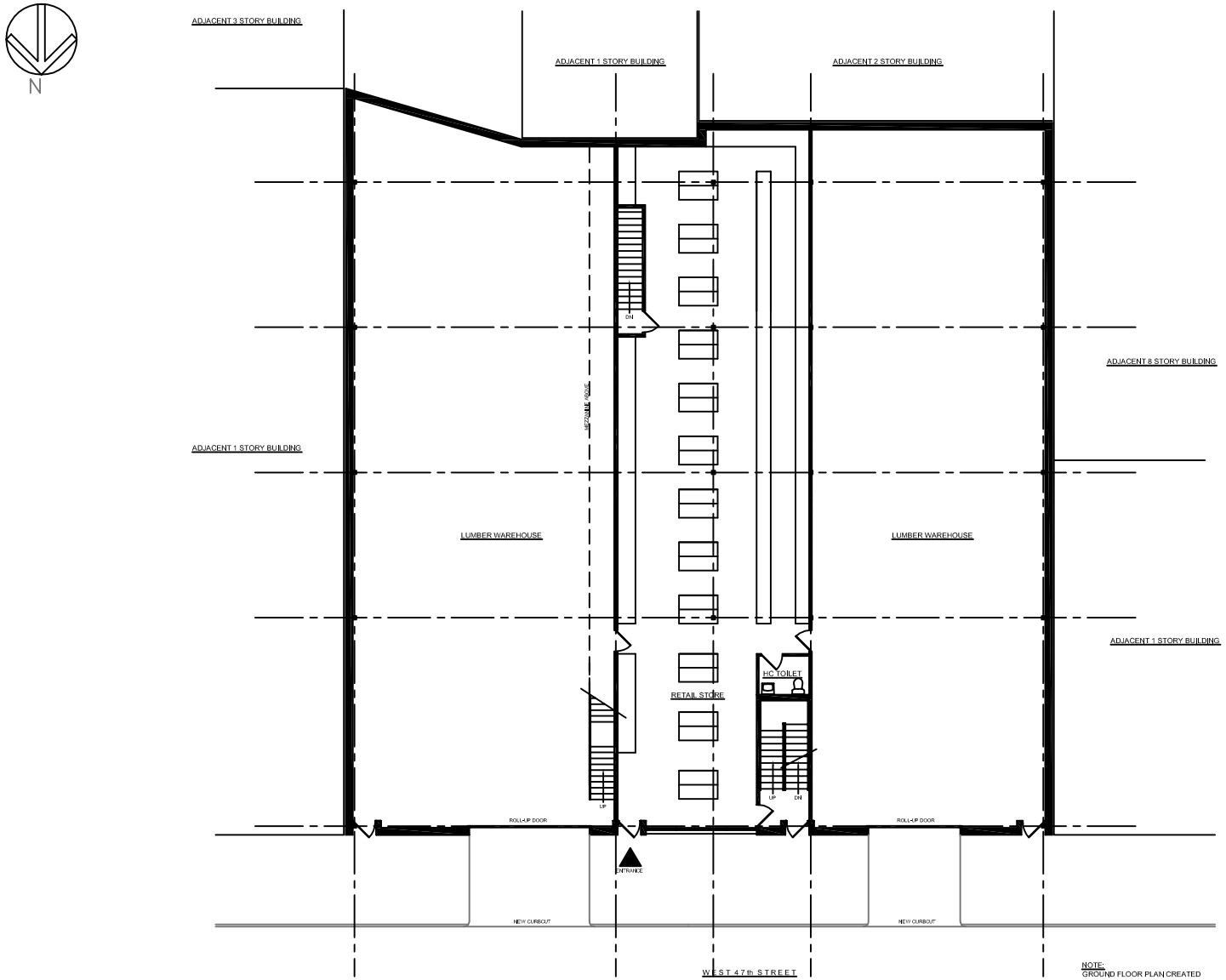
PRINCE LUMBER
612-618 WEST 47TH STREET
NEW YORK, NY 10036

FIGURE 2
SITE PLAN

DATE: DECEMBER 2013
SCALE: AS SHOWN
SHEET NO: 1 OF 1

FIGURE 3

Layout of Proposed Site Development – Ground Floor Plan



NOTE:
GROUND FLOOR PLAN CREATED BY DAVID FELDMAN, AIA

GROUND FLOOR PLAN

SCALE: 1/8" = 1'-0"

STV Incorporated

225 PARK AVENUE SOUTH, N.Y., N.Y. 10003

PRINCE LUMBER
612-618 WEST 47TH STREET
NEW YORK, NY 10036

FIGURE 3 - GROUND FLOOR PLAN

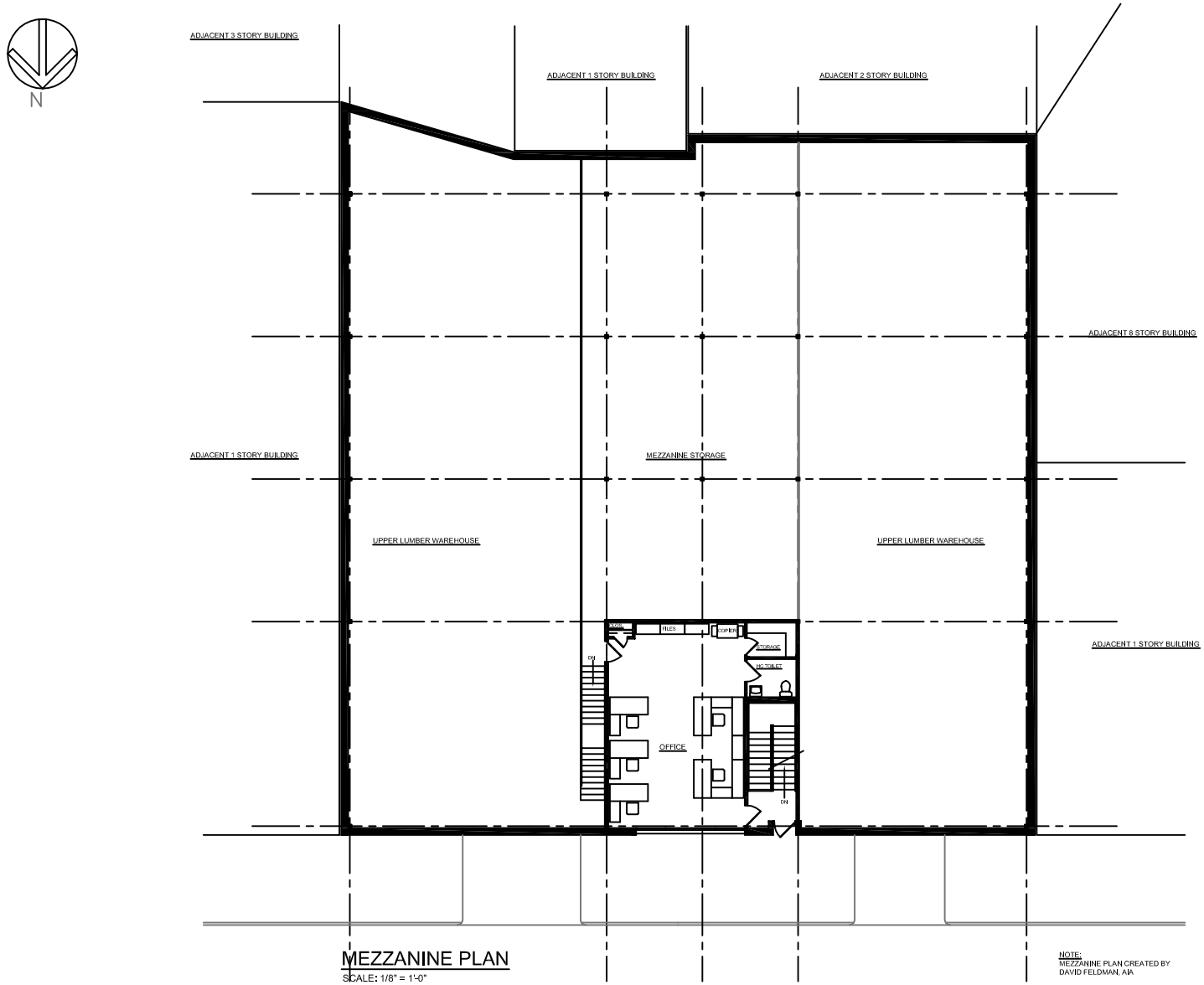
DATE: DEC 2013

SCALE: NTS

SHEET NO:

FIGURE 4

Layout of Proposed Site Development – Mezzanine Plan



MEZZANINE PLAN

SCALE: 1/8" = 1'-0"

NOTE:
MEZZANINE PLAN CREATED BY
DAVID FELDMAN, AIA

STV Incorporated

225 PARK AVENUE SOUTH, N.Y., N.Y. 10003

PRINCE LUMBER
612-618 WEST 47TH STREET
NEW YORK, NY 10036

FIGURE 4 - MEZZANINE PLAN

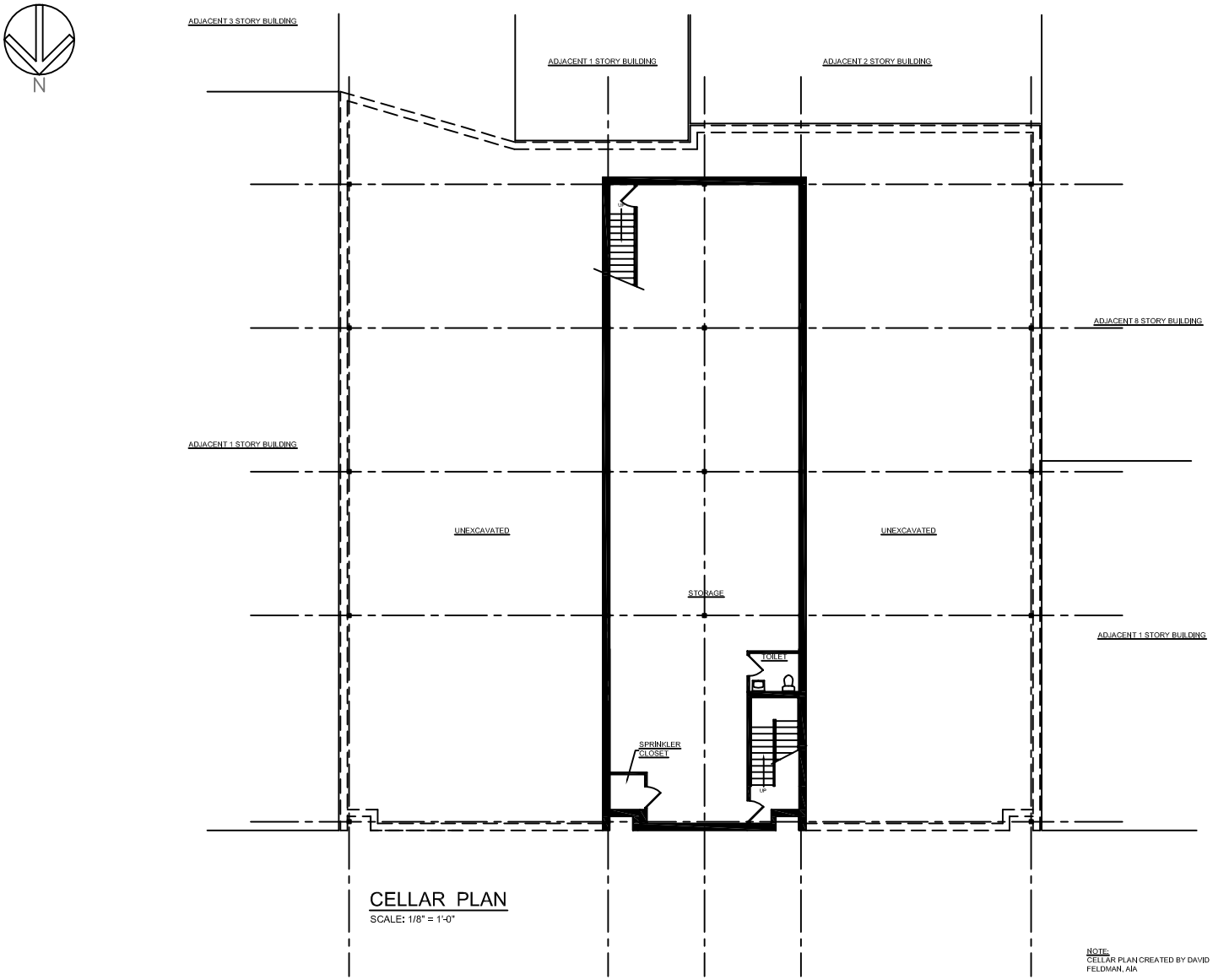
DATE: DEC 2013

SCALE: NTS

SHEET NO:

FIGURE 5

Layout of Proposed Site Development – Cellar Plan



CELLAR PLAN

SCALE: 1/8" = 1'-0"

NOTE:
CELLAR PLAN CREATED BY DAVID FELDMAN, AIA

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FIGURE 5 - CELLAR PLAN

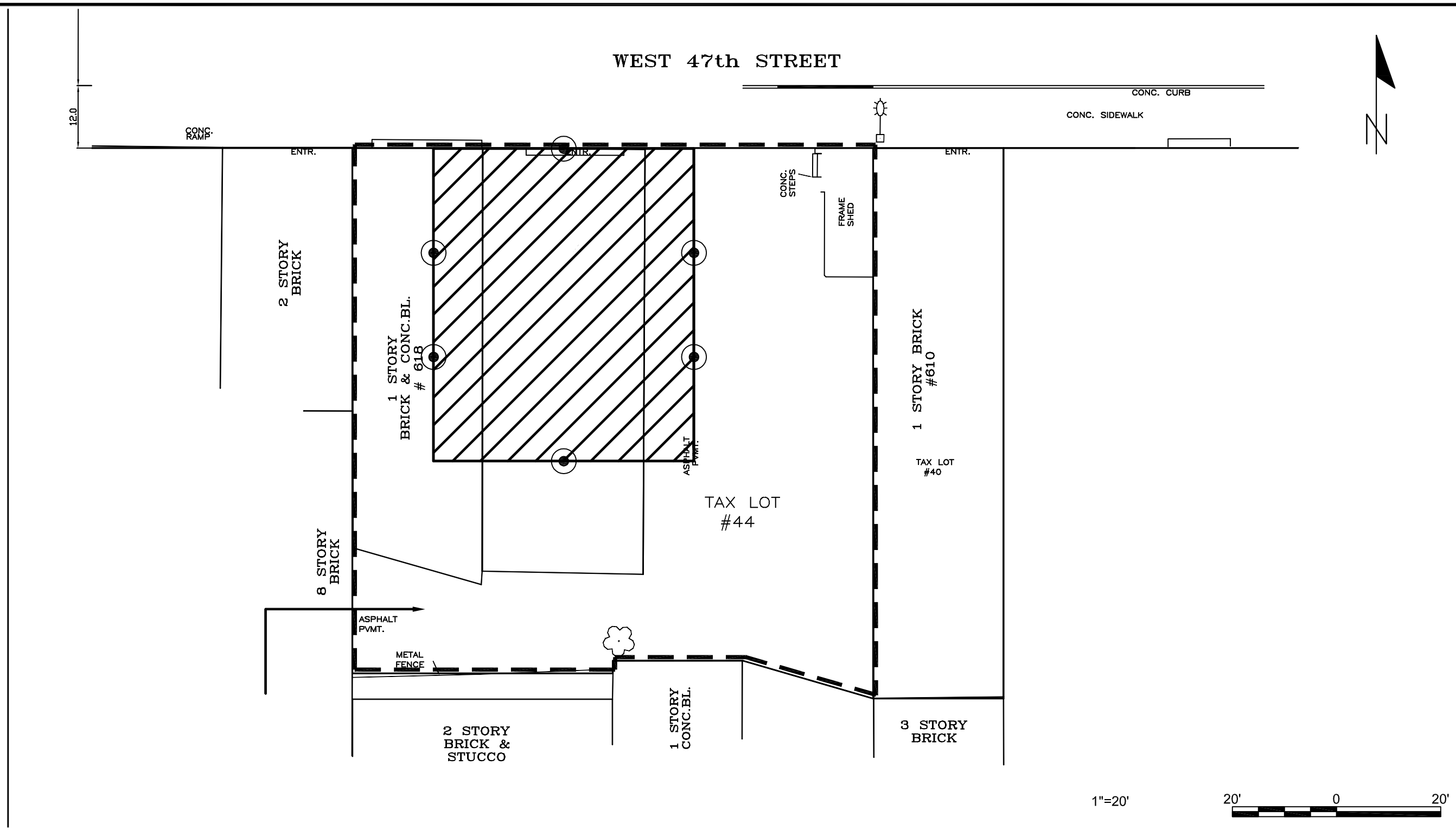
DATE: DEC 2013

SCALE: NTS

SHEET NO:

FIGURE 6

Excavation and Endpoint Sampling Location Plan



LEGEND

AREA OF EXCAVATION

PROPERTY BOUNDARY

POST–EXCAVATION ENDPOINT SAMPLING LOCATION

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FIGURE 6
EXCAVATION AND ENDPOINT SAMPLING LOCATION PLAN

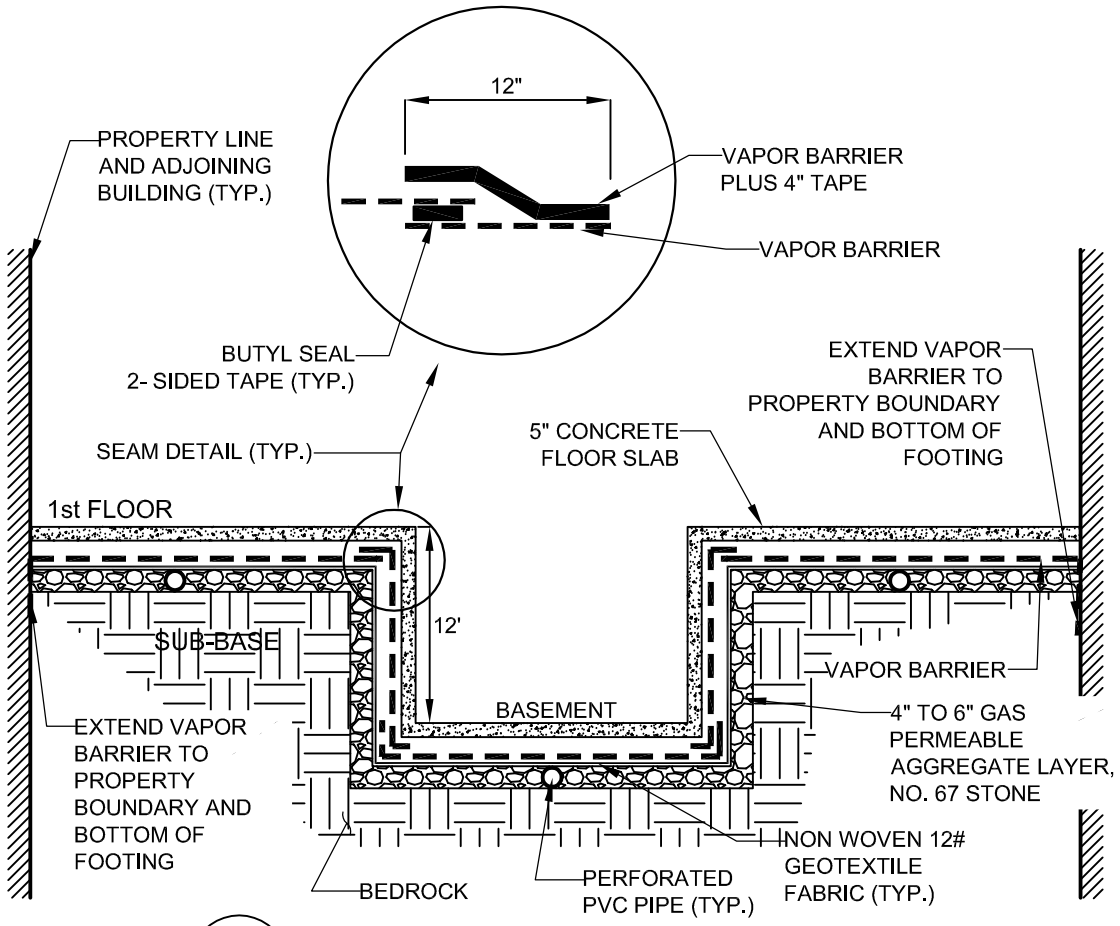
DATE: DECEMBER, 2013

SCALE: 1:20

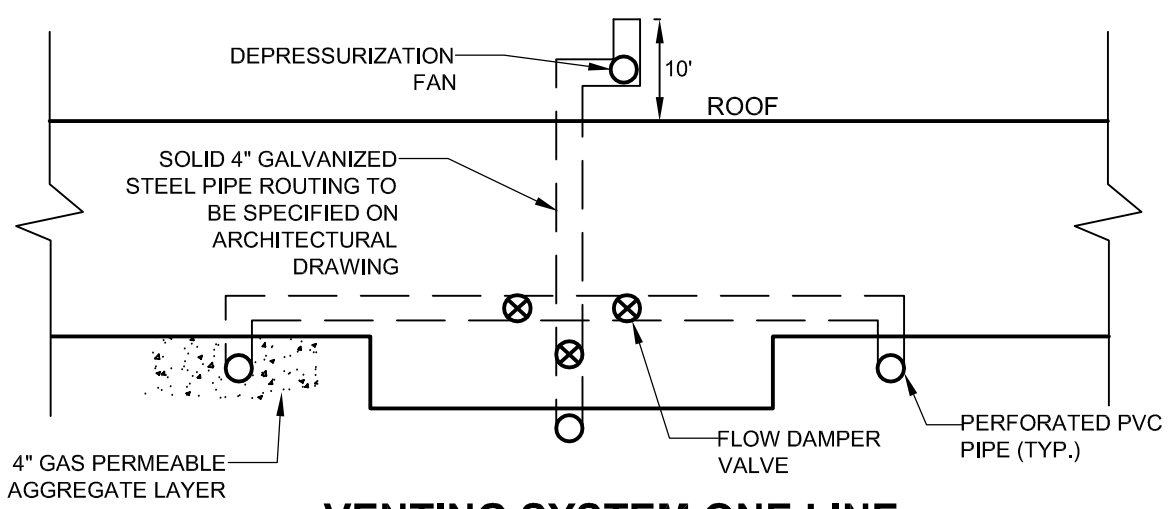
SHEET NO: 1 OF 1

FIGURE 7

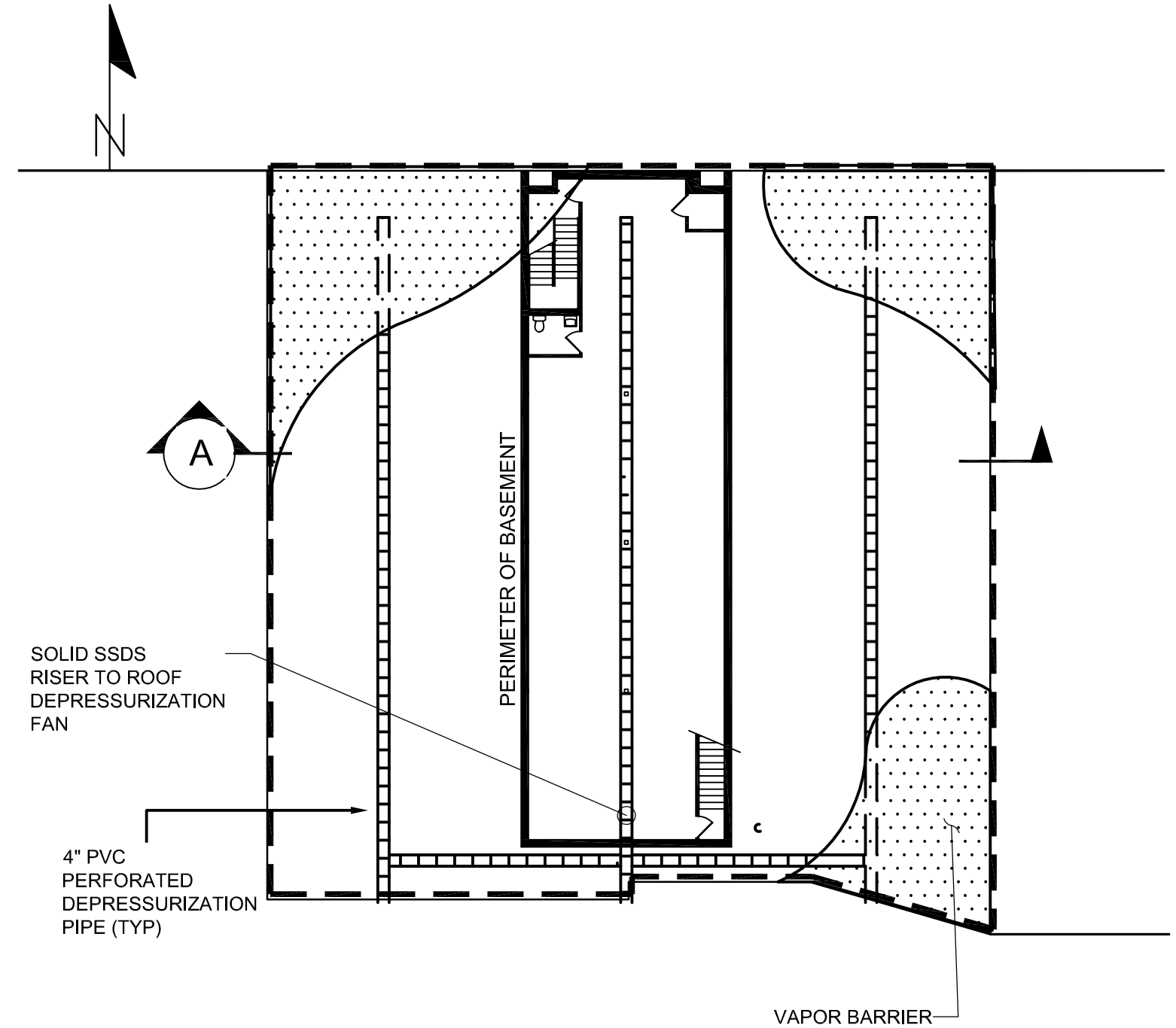
Vapor Barrier and SSDS Schematic Remediation Plan



A **VAPOR BARRIER SECTION**
SCALE: NTS



A **VENTING SYSTEM ONE LINE DIAGRAM SECTION**
SCALE: NTS



LEGEND

VAPOR BARRIER

PROPERTY BOUNDARY

1"=20' 20' 0 20'

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FIGURE 7
VAPOR BARRIER AND SSDS SCHEMATIC REMEDIATION PLAN

DATE: DECEMBER, 2013
SCALE: 1:20
SHEET NO: 1 OF 1