

34-22 35TH STREET

QUEENS, NEW YORK

**Remedial Action Work Plan
& STIP List (5/11/2015)**

NYC VCP Number: 15CVCP109Q

OER Project Number: 10RHAZ062Q

Prepared for:

34-22 Astoria Partners, LLC

4400 Second Avenue

(718) 832-2444

Prepared by:

GEI Consultants Inc., P.C.

110 Walt Whitman Road

Huntington Station, New York 11746

(631) 760-9300

APRIL 2015



Geotechnical
Environmental
Water Resources
Ecological

May 11, 2015
Project 141228-0

VIA EMAIL: ShaminderC@dep.nyc.gov

New York City Office of Environmental Remediation
City Voluntary Cleanup Program
c/o Shaminder Chawla
100 Gold Street, 2nd Floor
New York, NY 10038

Dear Mr. Chawlar:

**Re: VCP # 15CVCP109Q
E-Designation # 10RHAZ062Q
Remedial Action Work Plan (RAWP) Stipulation List
34-22 35th Street, Astoria, New York 11106**

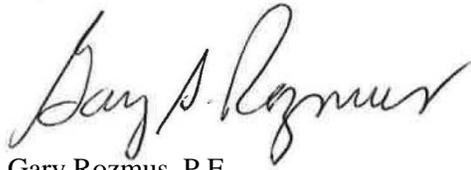
GEI Consultants, Inc., P.C. hereby submits a Remedial Action Work Plan (RAWP) Stipulation List for the Site to the New York City Office of Environmental Remediation (OER) on behalf of 34-22 Astoria Partners, LLC. This letter serves as an addendum to the RAWP to stipulate additional content, requirements, and procedures that will be followed during the site remediation. The contents of this list are added to the RAWP and will supersede the content in the RAWP where there is a conflict in purpose or intent. The additional requirements/procedures include the following Stipulation List below:

1. The criterion attached in **Appendix 1** will be utilized if additional petroleum containing tank or vessel is identified during the remedial action or subsequent redevelopment excavation activities. All petroleum spills will be reported to the NYSDEC hotline as required by applicable laws and regulations. This contingency plan is designed for heating oil tanks and other small or moderately sized storage vessels. If larger tanks, such as gasoline storage tanks are identified, OER will be notified before this criterion is utilized.
2. A pre-construction meeting is required prior to start of remedial excavation work at the site. A pre-construction meeting will be held at the site and will be attended by OER, the developer or developer representative, the consultant, excavation/general contractor, and if applicable, the soil broker.
3. A pre-approval letter from all disposal facilities will be provided to OER prior to any soil/fill material removal from the site. Documentation specified in the RAWP – Appendix 3 - Section 1.6 “Materials Disposal Off-Site” will be provided to OER. If a different disposal facility for the soil/fill material is selected, OER will be notified immediately.

4. Signage for the project will include a sturdy placard mounted in a publically accessible right of way to building and other permits signage will consist of the NYC VCP Information Sheet (attached **Appendix 2**) announcing the remedial action. The Information sheet will be laminated and permanently affixed to the placard.
5. This NYC VCP project may involve the removal and transportation of hazardous waste, and if it does, it will be subject to the Special Assessment on hazardous waste (ECL 27-0923) which charges a fee of up to \$27 per ton of hazardous waste generated that is due to the State Department of Taxation and Finance 30 days after the end of the quarter in which the waste was generated. See DEC's website for more information: <http://www.dec.ny.gov/chemical/9099.html>.
6. Collection and analysis of six end-point samples from the bottom of the excavation will be collected to evaluate the performance of the remedy with respect to attainment of Track 1 SCOs. A map indicating end-point sampling locations is attached in **Appendix 3**. Samples will be analyzed for contaminants of concern VOCs, SVOCs, Metals, PCBs, and Pesticides.
7. OER requires parties seeking City Brownfield Incentive Grants to carry insurance. For a cleanup grant, both the excavator and the trucking firm(s) that handle removal of soil must carry or be covered under a commercial general liability (CGL) policy that provides \$1 million per claim in coverage. OER recommends that excavators and truckers also carry contractors pollution liability (CPL) coverage, also providing \$1 million per claim in coverage. The CGL policy, and the CPL policy if obtained, must name the City of New York, the NYC Economic Development Corporation, and Brownfield Redevelopment Solutions as additional insured. For an investigation grant, an environmental consultant must be a qualified vendor in the BIG program and carry \$1 million of professional liability (PL) coverage. A fact sheet regarding insurance is attached as **Appendix 4**.
8. Daily reports will be provided during active excavation work. If no work is performed for extended time period, daily report frequency will be reduced to weekly basis. Daily report template is attached in **Appendix 5**.
9. A 20-mil vapor barrier will be installed beneath the structure's slab and along foundation sidewalls. The barrier chosen for this project is VaporBlock 20 Plus, which is a seven layer co-extruded barrier made from polyethylene and EVOH resins, manufactured by Raven Industries.
10. An engineered composite site cover will be placed over the entire footprint of the Site. The composite cover system will be comprised of concrete foundation/slabs. Drawings of the composite site cover are provided as **Appendix 6**.
11. A truck route map is included in **Appendix 7**.
12. The stamped/signed RAWP certification page is included in **Appendix 8**.

Sincerely,

GEI CONSULTANTS, INC., P. C.



Gary Rozmus, P.E.
Senior Consultant



Sean T. DiBartolo, P.E., LEED AP
Project Manager

STD

Enclosures: Appendix 1 - Generic Procedures for Management of Underground Storage Tanks Identified under the NYC VCP
Appendix 2 - NYC VCP Signage
Appendix 3 - End-Point Sampling Map
Appendix 4 - BIG Program Insurance Fact Sheet
Appendix 5 - Daily Report Template
Appendix 6 - Composite Cover System
Appendix 7 - Truck Route Map
Appendix 8 - Stamped/Signed RAWP Certification Page

c: Sarah Pong, NYCOER
Peter Volandes, 34-22 Astoria Partners, LLC
Theodore Kakoyiannis, 34-22 Astoria Partners, LLC
Albert Jaroszewski, GEI

Appendix 1
Generic Procedures for Management of Underground Storage Tanks
Identified under the NYC VCP

Prior to Tank removal, the following procedures should be followed:

- Remove all fluid to its lowest draw-off point.
- Drain and flush piping into the tank.
- Vacuum out the “tank bottom” consisting of water product and sludge.
- Dig down to the top of the tank and expose the upper half.
- Remove the fill tube and disconnect the fill, gauge, product, vent lines and pumps. Cap and plug open ends of lines.
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location.
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank.
- Clean tank or remove to storage yard for cleaning.
- If the tank is to be moved, it must be transported by licensed waste transporter. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport.
- After cleaning, the tank must be made acceptable for disposal at a scrap yard, cleaning the tanks interior with a high pressure rinse and cutting the tank in several pieces.

During the tank and pipe line removal, the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.).
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with a calibrated photoionization detector (PID).

Impacted Soil Excavation Methods

The excavation of the impacted soil will be performed following the removal of the existing tanks. Soil excavation will be performed in accordance with the procedures described under Section 5.5 of Draft DER-10 as follows:

- A description and photographic documentation of the excavation.
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with calibrated photoionization detector (PID).

Final excavation depth, length, and width will be determined in the field, and will depend on the horizontal and vertical extent of contaminated soils as identified through physical examination (PID response, odor, staining, etc.). Collection of verification samples will be performed to evaluate the success of the removal action as specified in this document.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

- Wear appropriate health and safety equipment as outlined in the Health and Safety Plan.
- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated.

- Using a rubber-tired backhoe or track mounted excavator, remove overburden soils and stockpile, or dispose of, separate from the impacted soil.
- If additional UST's are discovered, the NYSDEC will be notified and the best course of action to remove the structure should be determined in the field. This may involve the continued trenching around the perimeter to minimize its disturbance.
- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc.) an attempt will be made to remove it, to the extent not limited by the site boundaries or the bedrock surface. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separated dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present.
- Excavated soils which are temporarily stockpiled on-site will be covered with tarp material while disposal options are determined. Tarp will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property.

Once the site representative and regulatory personnel are satisfied with the removal effort, verification of confirmatory samples will be collected from the excavation in accordance with DER-10.

Appendix 2
NYC VCP Signage



NYC Voluntary Cleanup Program

34-22 35th Street
Site #: 15CVCP109Q

This property is enrolled in the New York City Voluntary Cleanup Program for environmental remediation. This is a voluntary program administered by the NYC Office of Environmental Remediation.

Or scan with smart phone:

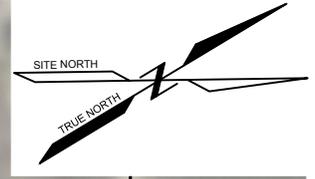
For more information,
log on to: www.nyc.gov/oer



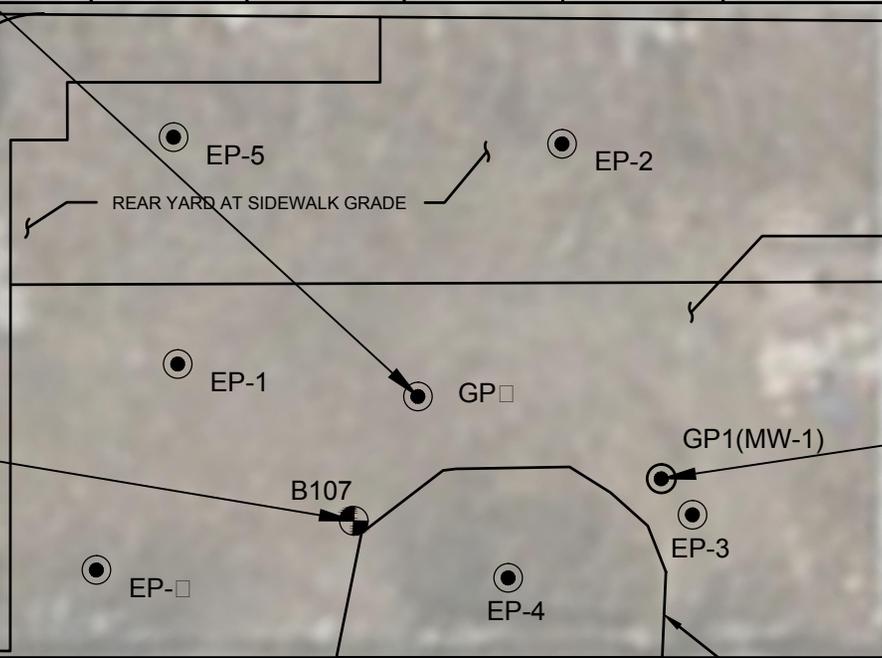
If you have questions or would like more information,
please contact:

Shaminder Chawla at (212) 442-3007
or email us at brownfields@cityhall.nyc.gov

Appendix 3
End-Point Sampling Map



Sample Id	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	GP9 (0-2 FT)	
Collection Date			11/12/2014	
Matrix			Solid	
Compound	Units	Result	RL	
Semivolatiles By SW 8270				
Benz(a)anthracene	ug/Kg	1,000	1,000	1,900 260
Benzo(a)pyrene	ug/Kg	1,000	1,000	1,900 260
Benzo(b)fluoranthene	ug/Kg	1,000	1,000	2,800 260
Benzo(k)fluoranthene	ug/Kg	3,900	800	860 260
Chrysene	ug/Kg	3,900	1,000	1,800 260
Indeno(1,2,3-cd)pyrene	ug/Kg	500	500	740 260
Metals, Total				
Lead	mg/Kg	400	63	113 0.38
Zinc	mg/Kg	10,000	109	150 0.38



Sample Id	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	GP1 (16-18 FT)	
Collection Date			11/12/2014	
Matrix			Solid	
Compound	Units	Result	RL	
Semivolatiles By SW 8270				
Benz(a)anthracene	ug/Kg	1,000	1,000	3,800 260
Benzo(a)pyrene	ug/Kg	1,000	1,000	3,500 260
Benzo(k)fluoranthene	ug/Kg	3,900	800	1,600 260
Chrysene	ug/Kg	3,900	1,000	3,600 260
Dibenz(a,h)anthracene	ug/Kg	330	330	460 260
Indeno(1,2,3-cd)pyrene	ug/Kg	500	500	1,500 260
Metals, Total				
Lead	mg/Kg	400	63	126 0.34

Sample Id	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	B107 (2-3 FT)	
Collection Date			11/13/2014	
Matrix			Solid	
Compound	Units	Result	RL	
Semivolatiles By SW 8270				
Benz(a)anthracene	ug/Kg	1,000	1,000	9,100 1,300
Benzo(a)pyrene	ug/Kg	1,000	1,000	7,500 1,300
Benzo(b)fluoranthene	ug/Kg	1,000	1,000	8,900 1,300
Benzo(k)fluoranthene	ug/Kg	3,900	800	2,400 260
Chrysene	ug/Kg	3,900	1,000	9,500 1,300
Dibenz(a,h)anthracene	ug/Kg	330	330	700 260
Indeno(1,2,3-cd)pyrene	ug/Kg	500	500	2,200 260
Metals, Total				
Zinc	mg/Kg	10,000	109	308 3.7

LEGEND:

- B-2A HISTORICAL TEST BORING PERFORMED BY OTHERS
- B107 GEI TEST BORING FOR SHALLOW SAMPLES
- EP-1 PROPOSED END POINT SAMPLING LOCATIONS

35TH STREET

NOTES:

1. Bolding within tables indicates a detected concentration.
2. Shading within tables indicates result exceeds unrestricted use SCO.
3. Coloring within tables result exceeds both SCOs to which it was compared.



SCALE: 1" = 30'

34-22 35th Street Mixed Use Development
Astoria, Queens, New York

34-22 Astoria Partners, LLC
Brooklyn, New York



Project 141228-0

SOIL EXCEEDANCES AND END POINT SAMPLING LOCATIONS MAP

May 2015

Fig. 3.1

Appendix 4
BIG Program Insurance Fact Sheet

FACT SHEET – BIG PROGRAM INSURANCE REQUIREMENTS

Investigation Grants – for a developer or site owner to be eligible for a BIG investigation grant, its environmental consultant(s) must be:

- a Qualified Vendor in the BIG Program; and
- maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

Cleanup Grants – for a developer or site owner to be eligible for a BIG cleanup grant:

- Its general contractor or excavation/foundation contractor hired to perform remedial work must maintain Commercial General Liability (CGL) insurance of at least \$1M per occurrence and \$2M in the general aggregate. It is recommended that the general contractor or excavation/foundation contractor also maintain a Contractors Pollution Liability policy (CPL) of at least \$1M per occurrence.
- Its subcontractors who are hired by the general contractor etc. to perform remedial work at a site, including soil brokers and truckers, must also maintain a CGL policy in the amount and with the terms set forth above. It is recommended that subcontractors also maintain a CPL policy in the amount and with the terms set forth above.

The CGL policy, and the CPL policy if in force, must list the city, EDC and BRS as additional insureds, include completed operations coverage and be primary and non-contributory to any other insurance the additional insureds may have.

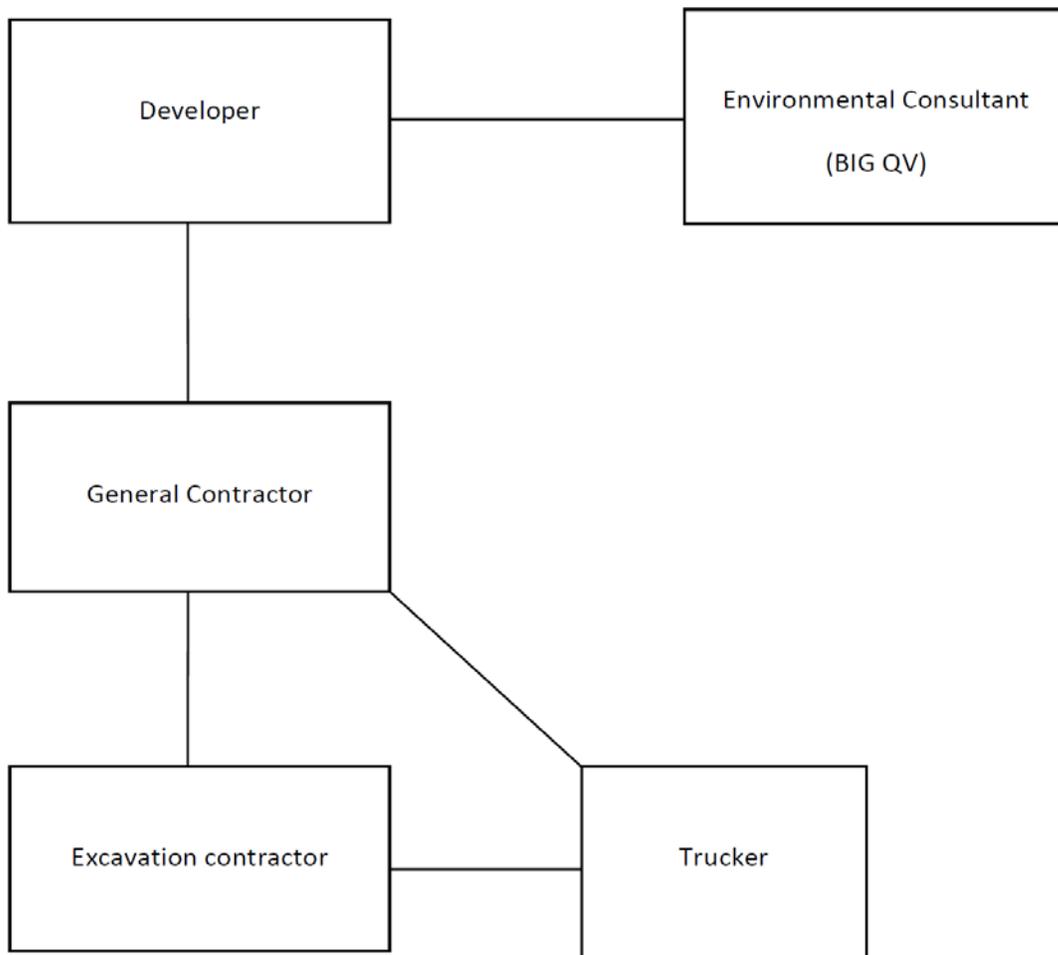
- Its environmental consultant(s) hired to oversee the cleanup must be:
 - a. a BIG Qualified Vendor; and
 - b. maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

If, in the alternative, the developer hires its environmental consultant to perform the cleanup, the environmental consultant must maintain CGL insurance in the amount and with the terms set forth above. It is recommended that the environmental consultant also maintain CPL coverage in the amount and with the terms set forth in the first two bulleted items listed above.

A schematic presenting the contractual relationships described above appears on page 2. Parties who must be named as Additional Insureds on Cleanup Grant insurance policies (CGL and CPL) are presented on page 3.

Example of Contractual Relationships for Cleanup Work

The Office of Environmental Remediation’s Voluntary Cleanup Plan program requires applicants to identify the parties who are engaged in active remediation of their sites including: the General Contractor hired to remediate and/or the excavation contractor hired to excavate soil from the site and the trucking firm(s) that remove soil from the site for disposal at approved facilit(ies).



The chart above shows contractual relationships that typically exist for projects that are enrolled in the Voluntary Cleanup Program.

BIG Program Additional Insureds

The full names and addresses of the additional insureds required under the Required CGL Policy and recommended CPL Policy are as follows:

“City and its officials and employees”

New York City Mayor’s Office of Environmental Remediation
253 Broadway, 14th Floor
New York, NY 10007

“NYC EDC and its officials and employees”

New York City Economic Development Corporation
110 William Street
New York, NY 10038

“BIG Grant Administrator and its officials and employees”

Brownfield Redevelopment Solutions, Inc.
739 Stokes Road, Units A & B
Medford, NJ 08055

Appendix 5
Daily Report Template

Generic Template for Daily Status Report

Instructions

The Daily Status Report submitted to OER should adhere to the following conventions:

- Remove this cover sheet prior to editing.
- Remove all the **red text** and replace with site-specific information.
- Submit the final version as a Word or PDF file.

Daily Status Reports

Daily status 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.

DAILY STATUS REPORT

Prepared By: **Enter Your Name Here**

WEATHER	Snow	Rain	Overcast	Partly Cloudy	X	Bright Sun
TEMP.	< 32	32-50	50-70	X	70-85	>85

VCP Project No.:	14CVCP000M	E-Number Project No.:	14EHAN000M	Date:	01/01/2014
Project Name:	Name or Address				

Consultant: Person(s) Name and Company Name	Safety Officer: Person(s) Name and Company Name
General Contractor: Person(s) Name and Company Name	Site Manager/ Supervisor: Person(s) Name and Company Name

Work Activities Performed (Since Last Report):
Provide details about the work activities performed.

Working In Grid #: **A1, B1, C1**

Samples Collected (Since Last Report):
No samples collected or provide details

Air Monitoring (Since Last Report):
No air monitoring performed or provide details

Problems Encountered:
No problems encountered or provide details

Planned Activities for the Next Day/ Week:
Provide details about the work activities planned for the next day/ week.

Facility # Name/ Location Type of Waste Solid <u>Or</u> Liquid	Facility # Name Location Type of Waste Solid <u>Or</u> Liquid		##### Clean Earth Carteret, NJ petroleum soils Solid							
	Trucks	Cu. Yds. <u>Or</u> Gallons	Trucks	Cu. Yds.						
Today									5	120
Total									25	600

NYC Clean Soil Bank		Receiving Facility: Name/ Address (Approved by OER)			
Tracking No.:	13CCSB000				
Today	Trucks 5	Cu. Yds. 25	Total	Trucks 120	Cu. Yds. 600

Photo Log

<p>Photo 1 – provide a caption</p>	<p>Insert Photo Here – Photo of the entire site</p>
<p>Photo 2 – provide a caption</p>	<p>Insert Photo Here – Photo of the work activities performed</p>
<p>Photo 3 – provide a caption</p>	<p>Insert Photo Here – Photo of the work activities performed</p>

Appendix 6
Composite Cover System



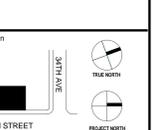
ARCHITECTS
 434 BROADWAY
 NEW YORK, NY 10013
 TEL: 212.431.8552
 FAX: 212.431.5663
 WWW.KUTNICKI-BERNSTEIN.COM

Issuance Schedule

No.	Date	Description
01.16.15	01.16.15	ISSUE FOR FILING
03.12.15	03.12.15	80% CD SET
04.03.15	04.03.15	REISSUE 80% CD
04.10.15	04.10.15	85% CD SET
04.17.15	04.17.15	REISSUE FOR DOB

Revision Schedule

No.	Date	Description
1	04/15/15	Revision 1



For Department of Buildings Use

Drawing Title
LONGITUDINAL BUILDING SECTION

Sign & Seal

Author No.
A-310.00

date
 01/16/15

drawn by
 Author

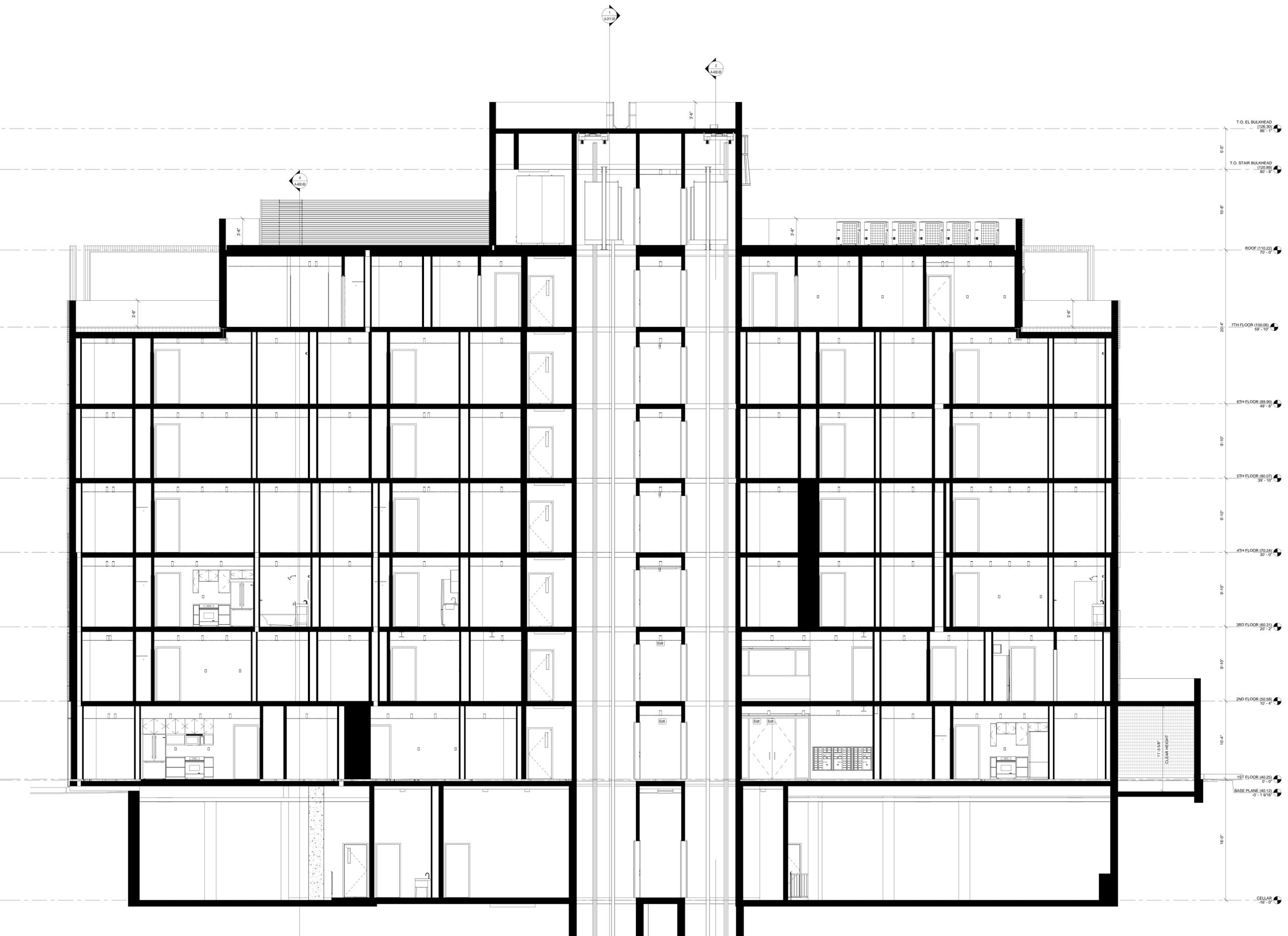
job no.
 2014-099

sheet scale
 1/4" = 1'-0"

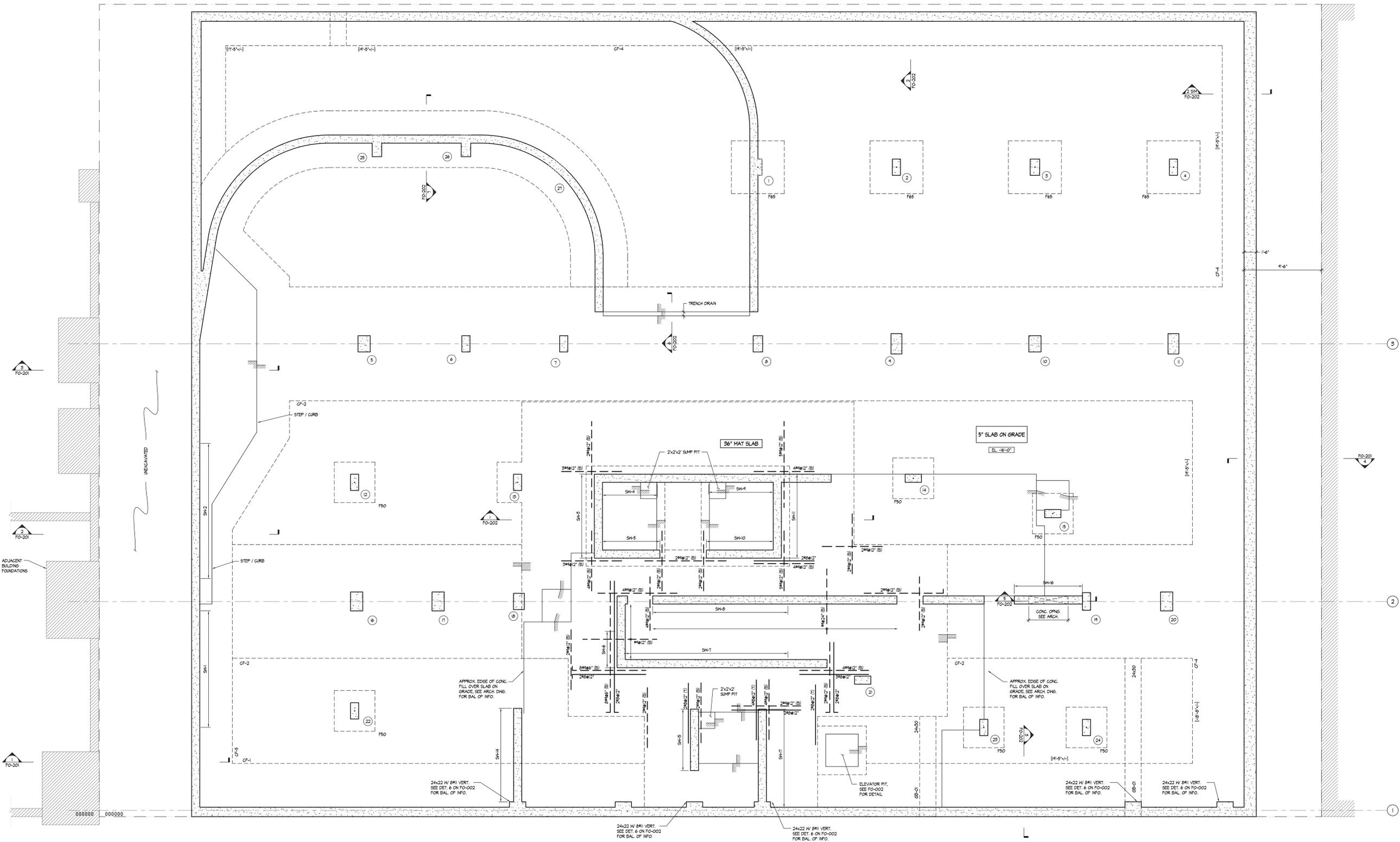
checked by
 Checker

DOB sheet
 26 OF 32

DOB NUMBER



LONGITUDINAL SECTION
 1/4" = 1'-0"



FOUNDATION AND CELLAR FRAMING PLAN

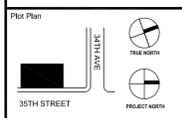
- 1/4" = 1'-0"
- NOTES:**
- TOP OF CELLAR SLAB ELEVATION SHOWN AS [EL. XXXXX] WITH RESPECT TO PROJECT EL. 0'-0".
 - BOTTOM OF FOOTING ELEVATIONS AND DENOTED AS [X'-X"] WITH RESPECT TO PROJECT EL. 0'-0".
 - FOR GRADE BEAMS REINFORCEMENT, SEE SCHEDULE.
 - TOP AND BOTTOM REINFORCING BARS SHOWN ON PLAN TO BE PLACED IN ADDITION TO TYPICAL CONTINUOUS REINFORCEMENT.
 - 36" MAT
#8@2' C.C. BOTTOM EACH WAY
#8@2' C.C. TOP EACH WAY
 - PLACEMENT NORTHSOUTH REINFORCING IN THE OUTERMOST LAYER
 - DENOTES ADDITIONAL TOP BARS
DENOTES ADDITIONAL BOTTOM BARS
 - BOTTOM BARS SHOWN ON PLAN DENOTED BY A (B) ARE TO BE PLACED IN ADDITION TO STANDARD TOP & BOTTOM REINFORCEMENT OF #8@2' C.C. SLAB EACH WAY CONTINUOUS. ALL OTHER BARS SHOWN ON PLAN ARE ADDITIONAL REINFORCEMENT BARS. REINFORCING BARS SHOWN ON PLAN TO BE PLACED IN ACCORDANCE WITH TYPICAL FLAT PLATE DETAILS ON DRAWING S-002 AND IN ADDITION TO ANY STANDARD REINFORCEMENT CALLED OUT FOR IN THOSE DETAILS.
 - CF-X DENOTES CONTINUOUS FOOTING, SEE SCHEDULE ON S-301 FOR REINF. INFO.

Issuance Schedule

No.	Date	Description
01.15.15		ISSUE FOR FILING
01.23.15		ISSUE FOR FILING
03.12.15		ISSUE FOR PRICING
04.10.15		80% CD

Revision Schedule

No.	Date	Description
-----	------	-------------



For Department of Buildings Use

Drawing Title
FOUNDATION AND CELLAR FRAMING PLAN

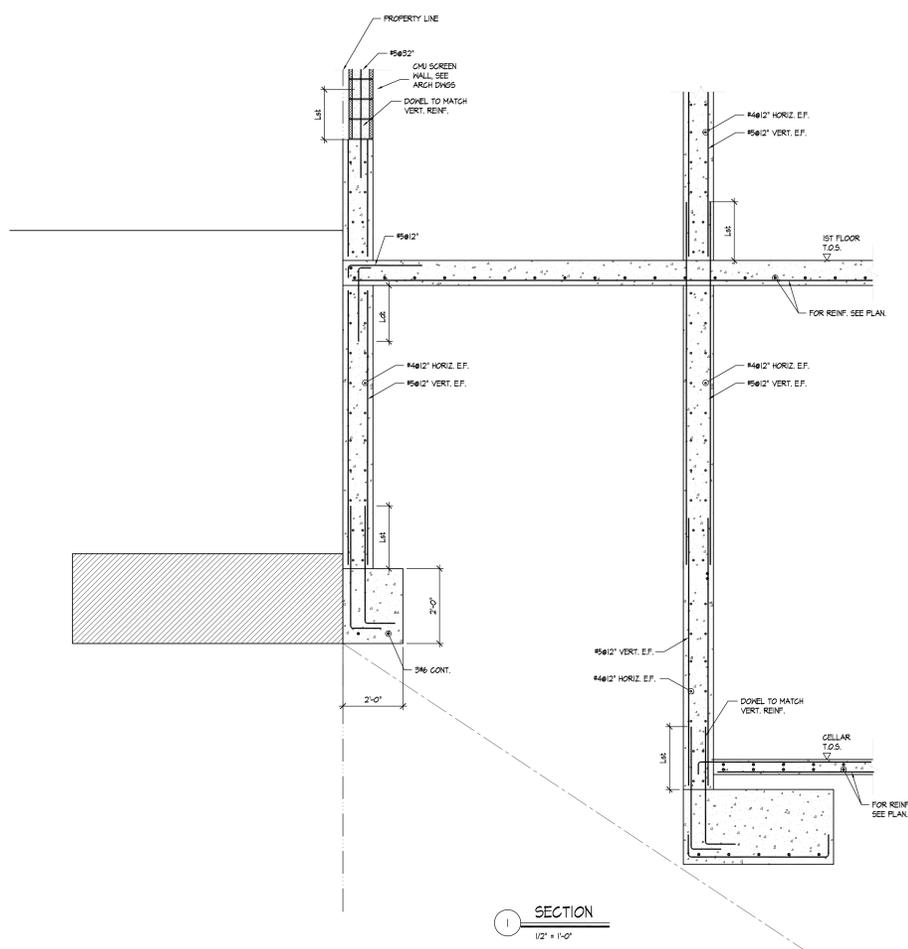
Sign & Seal Drawing No.
FO-101.00

Date	Drawn by	Job No.
01/23/15	SY, YS	B4210.00
Sheet Scale	Checked by	DOB Sheet
AS NOTED	CB	04 OF 21
DOB NUMBER		

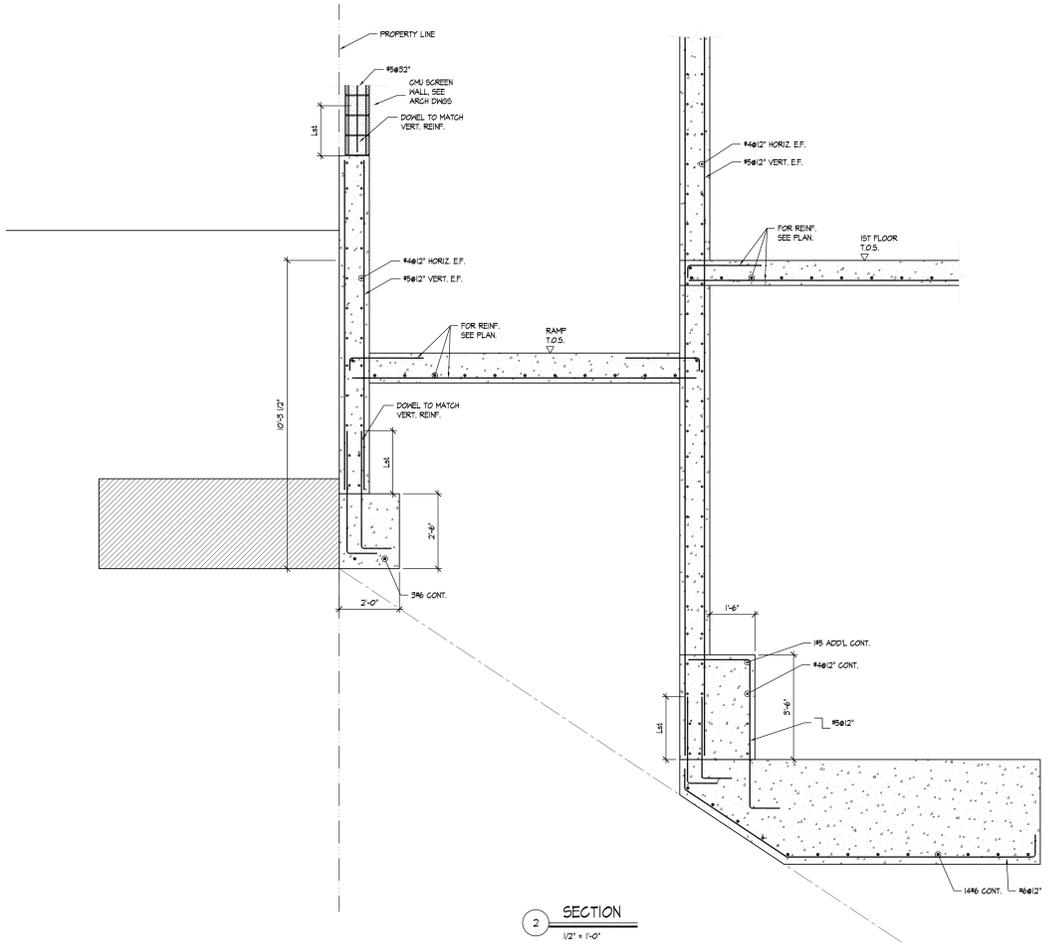
KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10003 P: 212-415-5552 F: 212-415-5663



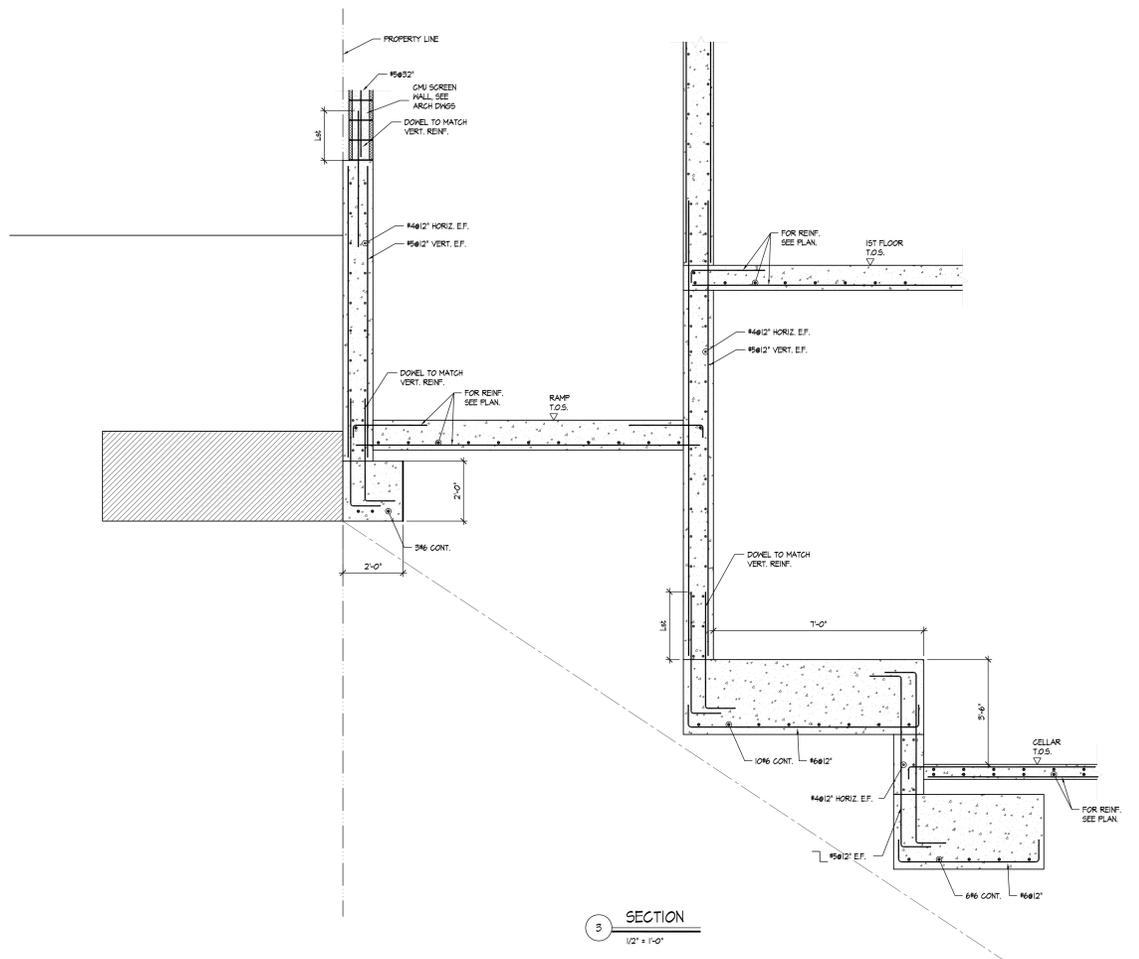
ARCHITECTS
 434 BROADWAY NEW YORK CITY 10003 P: 212-415-5552 F: 212-415-5663
 ENGINEERS
 434 BROADWAY NEW YORK CITY 10003 P: 212-415-5552 F: 212-415-5663
 CONTRACTORS
 434 BROADWAY NEW YORK CITY 10003 P: 212-415-5552 F: 212-415-5663



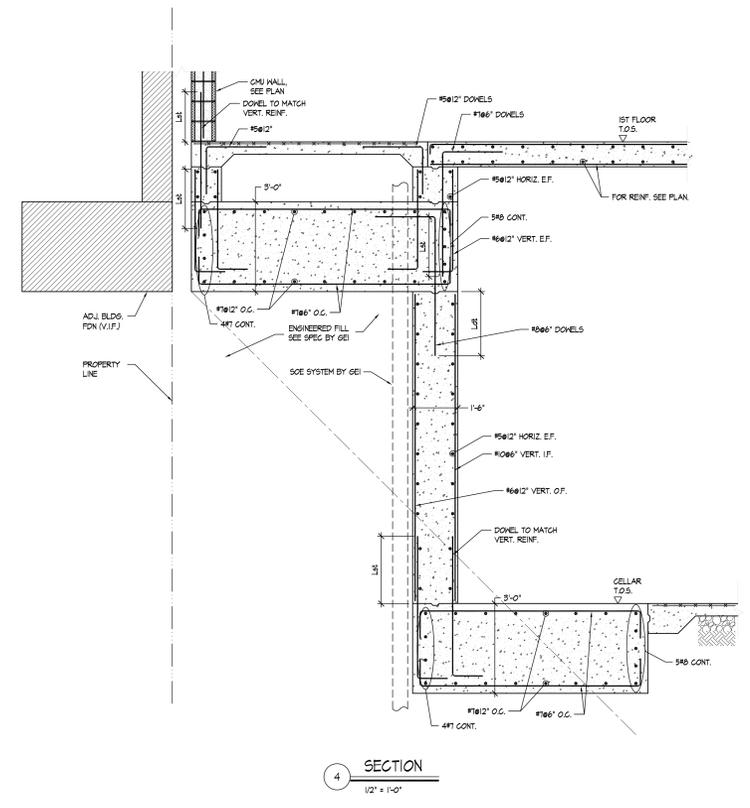
SECTION 1
 1/2" = 1'-0"



SECTION 2
 1/2" = 1'-0"



SECTION 3
 1/2" = 1'-0"



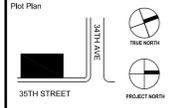
SECTION 4
 1/2" = 1'-0"

Issuance Schedule

No.	Date	Description
01.15.15	01.15.15	ISSUE FOR FILING
01.23.15	01.23.15	ISSUE FOR FILING
03.12.15	03.12.15	ISSUE FOR PRICING
04.10.15	04.10.15	80% CD

Revision Schedule

No.	Date	Description



For Department of Buildings Use

Drawing Title

FOUNDATION SECTIONS 1

Sign & Seal

Drawing No.
FO-201.00

Date
 01/23/15

Drawn by
 SY, YS

Job no.
 B4210.00

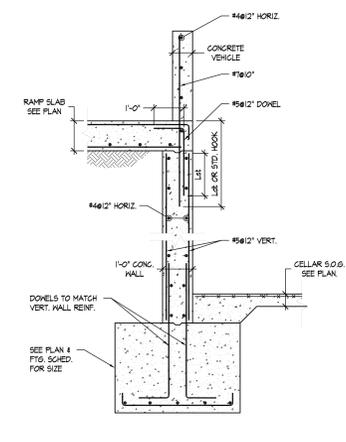
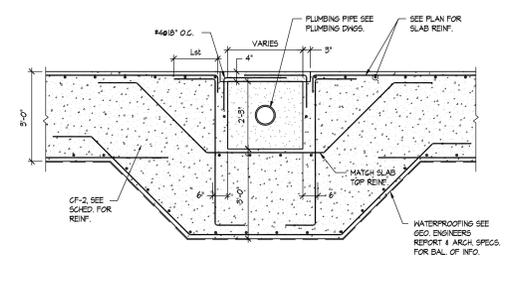
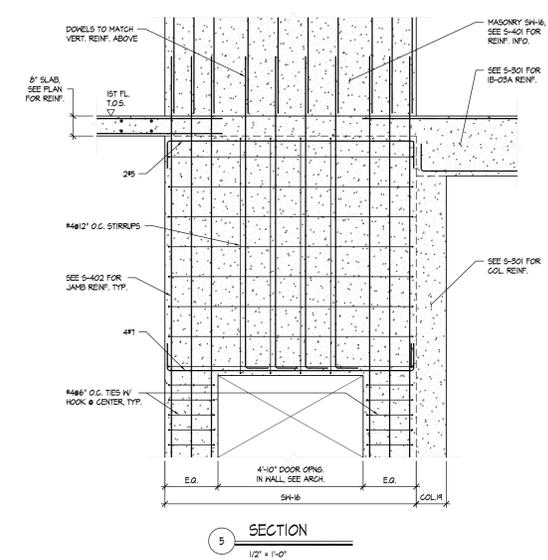
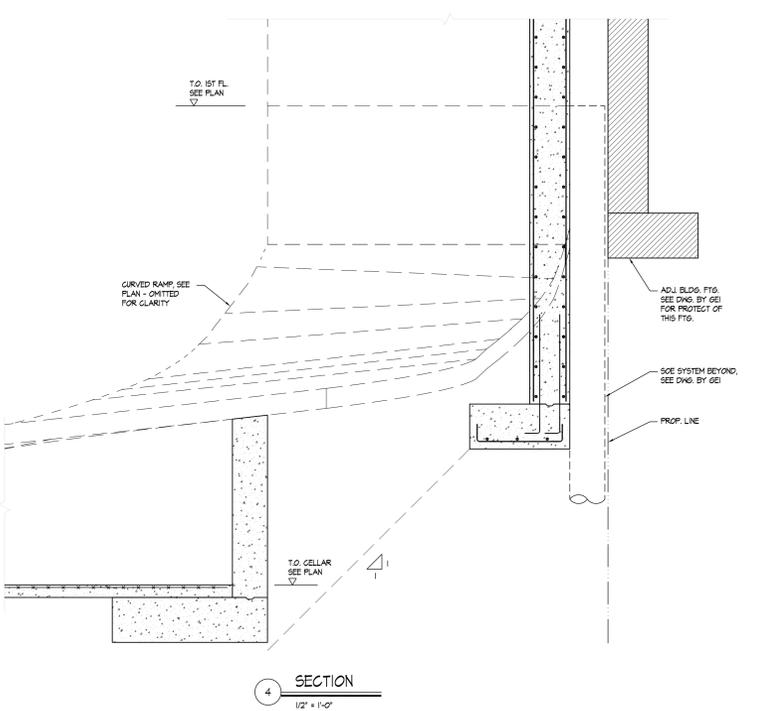
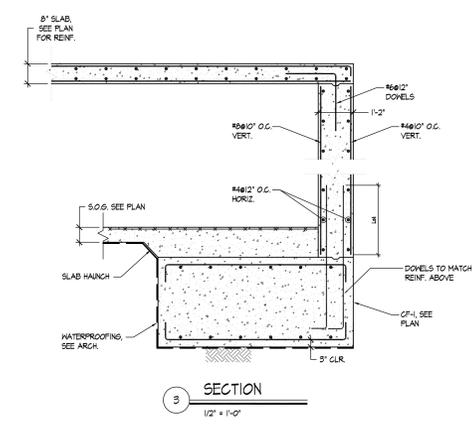
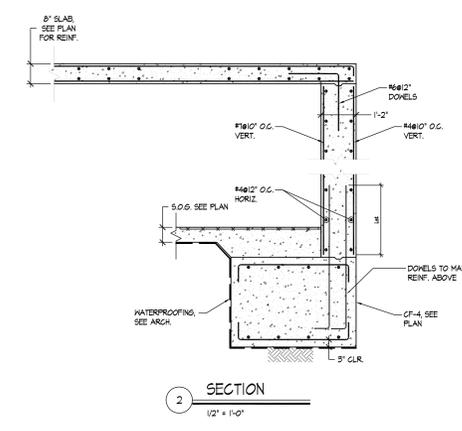
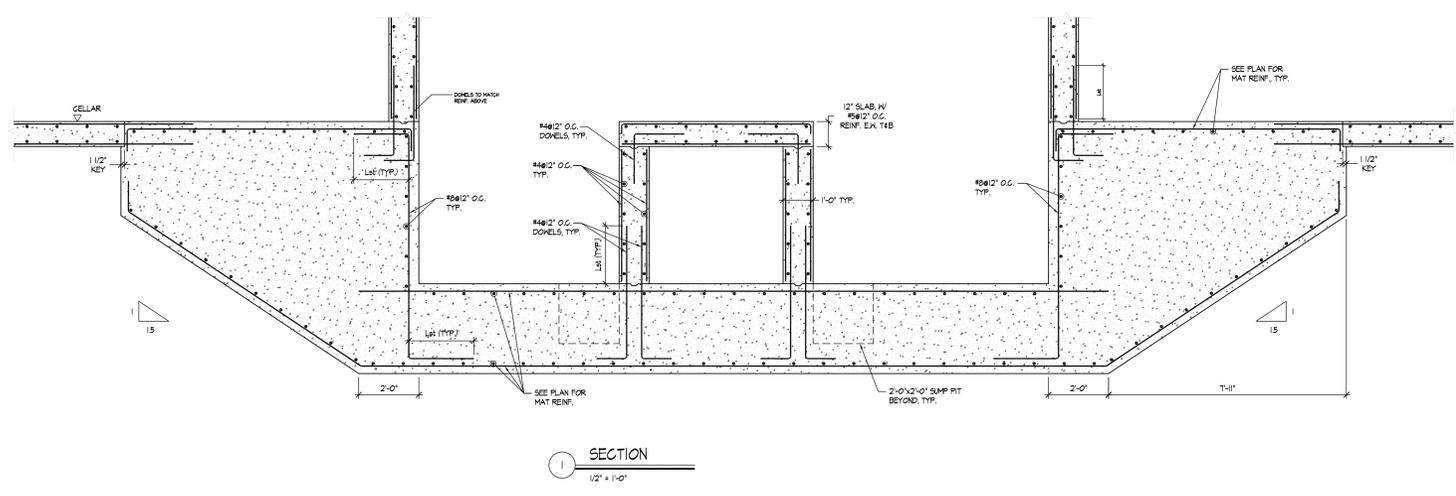
Sheet scale
 AS NOTED

Checked by
 CB

DOB sheet
 06 OF 21

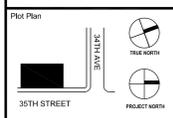
DOB NUMBER

KUTNICKI BERNSTEIN ARCHITECTS
 434 BROADWAY NEW YORK CITY 10003 P: 212-431-5552 F: 212-431-5663
 OWNER: KUTNICKI BERNSTEIN ARCHITECTS
 PROJECT NO.: 34-22 35TH STREET
 DATE: 01/23/15
 DRAWN BY: SY, YS
 CHECKED BY: CB
 PROJECT NO.: 10003



Issuance Schedule		
No.	Date	Description
01.15.15		ISSUE FOR FILING
01.23.15		ISSUE FOR FILING
03.12.15		ISSUE FOR PRICING
04.10.15		80% CD

Revision Schedule		
No.	Date	Description



For Department of Buildings Use

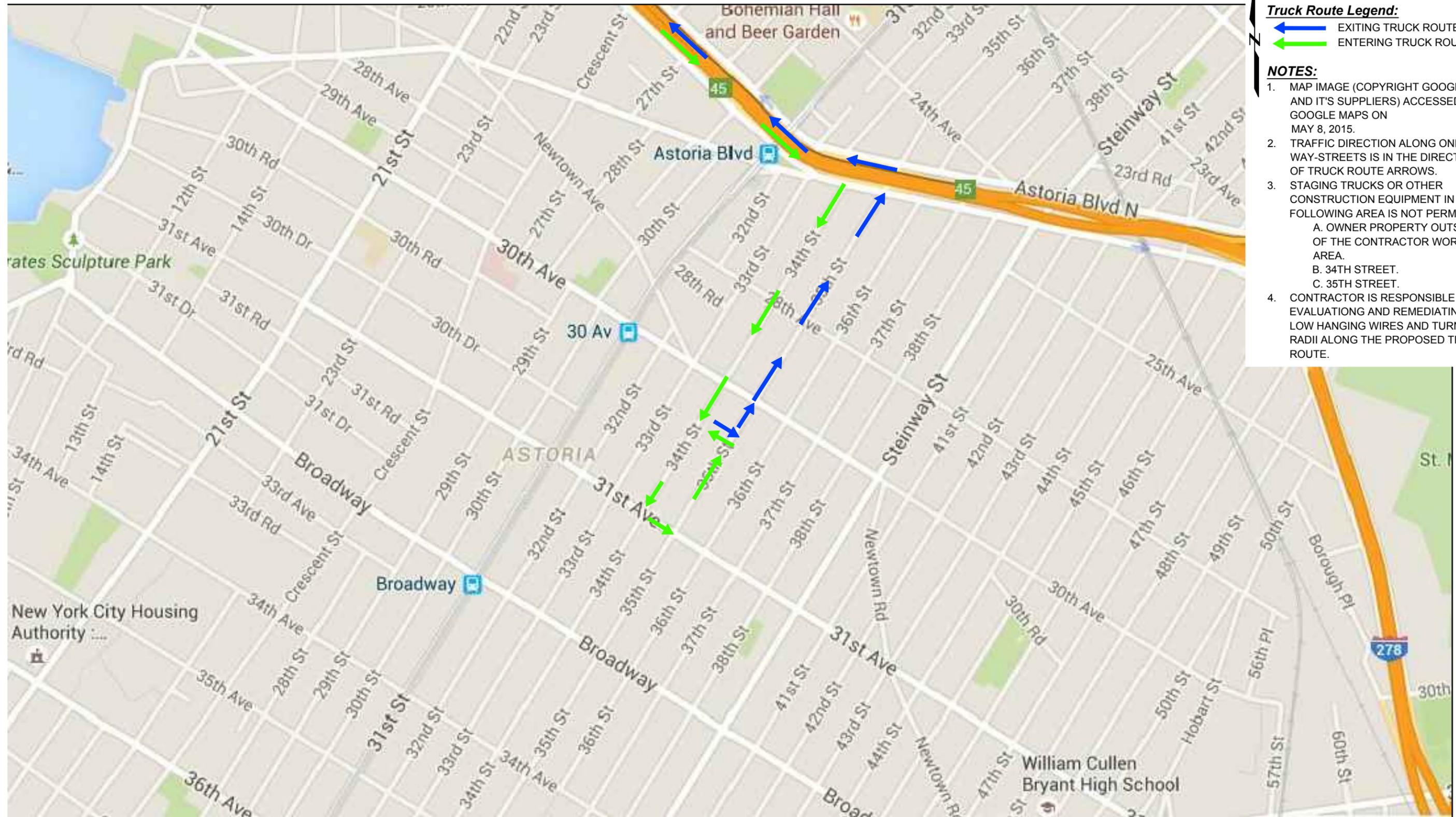
Drawing Title
FOUNDATION SECTIONS 2

Sign & Seal
 Drawing No.
FO-202.00

Date	Drawn by	Job No.
01/23/15	SY, YS	B4210.00
Sheet Scale	Checked by	DOB Sheet
AS NOTED	CB	07 OF 21

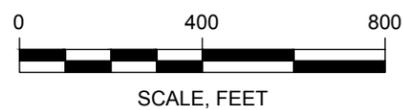
DOB NUMBER

Appendix 7
Truck Route Map



Truck Route Legend:
 EXITING TRUCK ROUTE
 ENTERING TRUCK ROUTE

- NOTES:**
1. MAP IMAGE (COPYRIGHT GOOGLE AND IT'S SUPPLIERS) ACCESSED VIA GOOGLE MAPS ON MAY 8, 2015.
 2. TRAFFIC DIRECTION ALONG ONE WAY-STREETS IS IN THE DIRECTION OF TRUCK ROUTE ARROWS.
 3. STAGING TRUCKS OR OTHER CONSTRUCTION EQUIPMENT IN THE FOLLOWING AREA IS NOT PERMITTED:
 - A. OWNER PROPERTY OUTSIDE OF THE CONTRACTOR WORK AREA.
 - B. 34TH STREET.
 - C. 35TH STREET.
 4. CONTRACTOR IS RESPONSIBLE FOR EVALUATING AND REMEDIATING LOW HANGING WIRES AND TURNING RADII ALONG THE PROPOSED TRUCK ROUTE.



34-22 35th Street Mixed Use Development Astoria Queens, New York		TRUCK ROUTE MAP
34-22 Astoria Partners, LLC Brooklyn, New York	Project 141228-0	May 2015 Fig. 7.1

Appendix 8
Stamped/Signed RAWP Certification Page

CERTIFICATION

I, Gary Rozmus, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 34-22 35th Street in the Astoria section of Queens, New York Site, Site number 10RHAZ062Q.

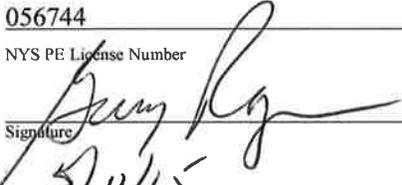
I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site 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.

Gary Rozmus

Name

056744

NYS PE License Number



Signature

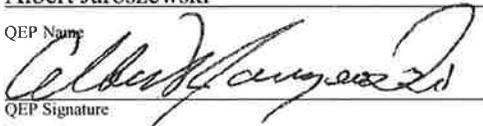
5/11/15

Date



Albert Jaroszewski

QEP Name



QEP Signature

5/11/2015

Date

CERTIFICATION

I, Gary Rozmus, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 34-22 35th Street Site (NYC OER Project Number 10RHAZ062Q and NYC VCP Project Number 15CVCP109Q).

I, Albert Jaroszewski, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 34-22 35th Street Site (NYC OER Project Number 10RHAZ062Q and NYC VCP Project Number 15CVC109Q).

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.

Gary Rozmus

Name

056744

NYS PE License Number

Gary Rozmus
Signature

5/10/15
Date



Albert Jaroszewski

QEP Name

Albert Jaroszewski
QEP Signature

5/11/15
Date

34-22 35TH STREET

QUEENS, NEW YORK

Remedial Action Work Plan

NYC VCP Number: 15CVCP109Q

OER Project Number: 10RHAZ062Q

Prepared for:

34-22 Astoria Partners, LLC

4400 Second Avenue

(718) 832-2444

Prepared by:

GEI Consultants Inc., P.C.

110 Walt Whitman Road

Huntington Station, New York 11746

(631) 760-9300

APRIL 2015

REMEDIAL ACTION WORK PLAN

TABLE OF CONTENTS

TABLE OF CONTENTS.....	ii
FIGURES	iv
TABLES	v
APPENDICES	vi
LIST OF ACRONYMS	vii
CERTIFICATION	1
EXECUTIVE SUMMARY	2
Community Protection Statement.....	8
REMEDIAL ACTION WORK PLAN	13
1.0 SITE BACKGROUND.....	13
1.1 Site Location and Current usage	13
1.2 proposed Redevelopment Plan.....	13
1.3 Description of Surrounding Property.....	14
1.4 Remedial Investigation	15
2.0 REMEDIAL ACTION OBJECTIVES.....	18
Groundwater	18
Soil.....	18
Soil Vapor.....	18
3.0 REMEDIAL ALTERNATIVES ANALYSIS.....	19
3.1 Threshold Criteria.....	21
3.2. Balancing Criteria.....	22
4.0 REMEDIAL ACTION	30
4.1 Summary of Preferred Remedial Action.....	30
4.2 Soil Cleanup Objectives and Soil/Fill Management.....	32
4.3 Engineering Controls	36
4.4 Institutional Controls	38
4.5 Site Management Plan	39
4.6 Qualitative Human Health Exposure Assessment	39

5.0	REMEDIAL ACTION MANAGEMENT.....	45
5.1	Project Organization and oversight.....	45
5.2	Site Security	45
5.3	Work Hours.....	45
5.4	Construction Health and Safety Plan	45
5.5	Community Air Monitoring Plan.....	46
5.6	Agency Approvals	48
5.7	Site Preparation.....	48
5.8	Traffic Control	52
5.9	Demobilization.....	53
5.10	Reporting and Record Keeping.....	53
5.11	Complaint Management.....	54
5.12	Deviations from the Remedial Action Work Plan	54
6.0	REMEDIAL ACTION REPORT	56
7.0	SCHEDULE	58

FIGURES

Figure 1 - Site Map

Figure 2 - Site Location Map

Figure 3- Surrounding Land Usage

Figure 4 - Soil Exceedances and End-point Sample Locations

TABLES

- Table 1 - Analytical Results for Soil
- Table 2 - Analytical Results for Groundwater
- Table 3 - Analytical Results for Soil Vapor
- Table 4 – Track 1 Soil Cleanup Objectives

APPENDICES

Appendix 1 - Citizen Participation Plan

Appendix 2 - Soil/Materials Management Plan

Appendix 3 - Construction Health and Safety Plan

Appendix 4 - Proposed Development Plans

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
VCA	Voluntary Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC VCP	New York City Voluntary 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
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, Gary Rozmus, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 34-22 35th Street Site (NYC OER Project Number 10RHAZ062Q and NYC VCP Project Number 15CVCP109Q).

I, Albert Jaroszewski, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 34-22 35th Street Site (NYC OER Project Number 10RHAZ062Q and NYC VCP Project Number 15CVC109Q).

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.

Gary Rozmus

Name

056744

NYS PE License Number

Signature

Date



Albert Jaroszewski

QEP Name

QEP Signature

Date

EXECUTIVE SUMMARY

34-22 Astoria Partners, LLC has applied to enroll in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate an approximate 15,000 ft² site located at 34-22 35th Street in the Astoria section of Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance, and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 34-22 35th Street in the Astoria section in Queens, New York and is identified as Block 642, Lot 36 on the New York City Tax Map. The property is located on the west side of 35th Street between 34th Avenue and 35th Avenue. The Site is approximately 15,000 ft² and is bounded by an existing 1-story supermarket to the north, a parking lot to the south, a 3-story movie studio across 35th Street to the east, and several 2-story residences to the west. A map depicting the Site location is shown in **Figure 1**. Currently, the Site is vacant land.

Summary of Proposed Redevelopment Plan

The preliminary proposed future use of the Site consists of a 7-story, mixed use (residential and commercial) building consisting of first floor residential, small commercial, and common area amenity space, one level of underground space (cellar), and a rear garden space. The cellar level will be used for parking and for mechanical and common area building space – refuse room, superintendent’s office, etc. The cellar will encompass the majority of the lot footprint of approximately 15,000 ft² (plans provided in **Appendix 4**) with the remainder of the lot footprint consisting of an approximately 10-foot-wide ramp located at the southern end of the Site for access to the cellar from street level. The aboveground portion of the building will occupy a footprint of approximately 8,172 ft² (59 feet by 138.5 feet) set against the north and east lot lines. The remainder of the lot footprint at the first floor level will consist of the vehicle ramp down to

the cellar and a terraced rear yard with some landscaped areas, mechanical systems area, and a patio. Floors 2 through 7 will consist of 64 residential units. The 7th floor will also include approximately 2,100 ft² of terrace space.

The finished floor elevation of the cellar will require excavation to a depth of 18.8 feet below existing grade, and limited excavation for the elevator pit(s) to approximately 22 feet below existing grade. Therefore, an estimated 10,500 yd³ (15,750 tons) of soil will require excavation for the new building's cellar. The planned primary excavation depths are above the groundwater table which is present approximately 21 feet below ground surface (bgs).

The current zoning designation is part of zoning district C4-2A. The proposed use is consistent with existing zoning for the property.

Summary of Environmental Findings

1. Elevation of the property ranges from 37 to 39 feet.
2. Depth to groundwater ranges from 20.7 to 21.7 feet at the Site.
3. Groundwater flow is from east to west beneath the Site.
4. Depth to bedrock at the Site ranges from approximately 50 to 70 feet.
5. The stratigraphy of the Site, from the surface, consists of approximately 1.5 to 5 feet of fine to coarse sand silt and gravel. This unit may represent disturbed material. The majority of the underlying deposits were fine to medium sand with some silt and gravel to at least 25 feet bgs. Bedrock was not encountered in the environmental investigation borings.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill samples showed no VOCs, PCBs, or pesticides in any of the soil samples. Six SVOCs consisting of Polycyclic Aromatic Hydrocarbons (PAHs) including benz(a)anthracene (max of 9,100 µg/kg), benzo(a)pyrene (max of 7,500 µg/kg), benzo(b)fluoranthene (max of 8,900 µg/kg), chrysene (max of 9,500 µg/kg), dibenz(a,h)anthracene (max of 700 µg/kg), and indeno(1,2,3-cd)pyrene (max of

2,200 µg/kg) were found within three samples (1 deep and 2 shallow) exceeding Unrestricted Use SCOs as well as Restricted Residential SCOs. Two metals including lead (max of 126 µg/kg) and zinc (max of 308 µg/kg) exceeded Unrestricted Use SCOs.

7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the investigations showed no VOCs or PCBs in any sample. Trace concentrations of several SVOCs were detected but only benz(a)anthracene (max of 0.03 µg/L) exceeded its GQS. Two pesticides were detected in groundwater but only dieldrin (at 0.007 µg/L) exceeded its GQS. Several metals were identified, but only aluminum (max of 0.22 µg/L), iron (max of 0.345 µg/L), and sodium (max of 30.2 µg/L) exceeded their respective GQS.
8. Soil vapor results collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values derived by the New York State Department of Health (NYSDOH) in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Soil vapor samples collected during the RI showed moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Total concentrations of petroleum-related VOCs (BTEX) ranged from 371.6 µg/m³ to 886.3 µg/m³. Chlorinated VOCs including tetrachloroethene (PCE) (max of 36.1 µg/m³), carbon tetrachloride (max of 15.5 µg/m³), trichloroethene (TCE) (max of 8.43 µg/m³), and 1,1,1-trichloroethane (TCA) (max of 12.3 µg/m³) were detected in all soil vapor samples. Concentrations for TCE, and carbon tetrachloride were above the monitoring level ranges established within the State DOH soil vapor guidance matrix level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

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. Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency specified by disposal facility. A Waste Characterization Report documenting sample procedures, location, analytical results and disposal facility(s) approval letters will be submitted to NYCOER prior to the start of the remedial action.
6. Excavation and removal of soil/fill exceeding Unrestricted Use (Track 1) SCOs. The entire footprint of the Site will be excavated to a depth of approximated 18.8 feet below grade for construction of the new building's basement level. Approximately 10,500 yd³ of soil will be excavated and removed from this Site.
7. 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.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. 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.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and

this plan. Sampling and analysis of excavated media as required by disposal facilities.
Appropriate segregation of excavated media on Site.

11. Collection and analysis of six confirmation samples to determine the performance of the remedy with respect to attainment of Track 1 SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. 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.

If Unrestricted Use Track 1 SCOs are not achieved, the following construction elements implemented as part of new development will constitute Engineering Controls:

16. As part of new development, installation of a 60-mil vapor barrier system (Geo-Seal® Triple-Layer System) beneath the building slab as well as behind foundation sidewalls of the proposed building below grade. The selected barrier is a Raven VaporBlock system. As part of new development, construction and maintenance of an engineered composite cover consisting of an 8-inch concrete building slab, concrete covered walkways, and concrete driveways to prevent human exposure to residual soil/fill remaining under the Site.
17. As part of new development, construction of a ventilated parking garage as per NYC Building Department's codes and requirements.
18. If Track 1 SCOs are not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

19. If Track 1 SCOs are not achieved, the property will continue to be registered with a Restrictive Declaration by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

It is noted that the two underground storage tanks (USTs) were removed from the Site on February 24, 2015. The integrity of the tanks was not compromised and no release of product was evident in the underlying soils based on field observations, as well as laboratory endpoint sample results. A Closure Report is being provided under separate cover.

COMMUNITY PROTECTION STATEMENT

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

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

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

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

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

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

Site Safety Coordinator. This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Robert Franco. His phone number will be provided.

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 on-site Project Manager Gerard Hoffman (917) 417-8035 or NYC Office of Environmental Remediation Project Manager Sarah Pong (212) 442-8342.

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 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 project is in the NYC Voluntary Cleanup Program, provides project contact names and numbers, and locations of project documents can be viewed.

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Gerard Hoffman (917) 417-8035, the NYC Office of Environmental Remediation Project Manager Sarah Pong (212) 442-8342, 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 the Queens Library at Long Island City.

Long-Term Site Management. If long-term protection is needed 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 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

34-22 Astoria Partners, LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 34-22 35th Street in the Astoria section of Queens, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance, and applicable laws and regulations.

1.1 SITE LOCATION AND CURRENT USAGE

The Site is located at 34-22 35th Street in the Astoria section in Queens, New York and is identified as Block 642, Lot 36 on the New York City Tax Map. The property is located on the west side of 35th Street between 34th Avenue and 35th Avenue. The Site is approximately 15,000-square feet and is bounded by an existing 1-story supermarket to the north, a parking lot to the south, a 3-story movie studio across 35th Street to the east, and several 2-story residences to the west. A map depicting the Site location is shown in **Figure 1**. Currently, the Site is vacant land.

1.2 PROPOSED REDEVELOPMENT PLAN

The preliminary proposed future use of the Site consists of a 7-story, mixed use (residential and commercial) building consisting of first floor residential, small commercial, and common area amenity space, one level of underground space (cellar), and a rear garden space. The cellar level will be used for parking and for mechanical and common area building space – refuse room, superintendent’s office, etc. The cellar will encompass the majority of the lot footprint of

approximately 15,000 ft² (plans provided in **Appendix 4**) with the remainder of the lot footprint consisting of an approximately 10-foot-wide ramp located at the southern end of the Site for access to the cellar from street level. The aboveground portion of the building will occupy a footprint of approximately 8,172 ft² (59 feet by 138.5 feet) set against the north and east lot lines. The remainder of the lot footprint at the first floor level will consist of the vehicle ramp down to the cellar and a terraced rear yard with some landscaped areas, mechanical systems area, and a patio. Floors 2 through 7 will consist of 64 residential units. The 7th floor will also include approximately 2,100 ft² of terrace space.

The finished floor elevation of the cellar will require excavation to a depth of 18.8 feet below existing grade and excavation for the elevator pit(s) to approximately 22 feet below existing grade. Therefore, an estimated 10,000 yd³ (15,750 tons) of soil will require excavation for the new building's cellar. The planned excavation depths are above the groundwater table which is present approximately 21 feet below ground surface (bgs).

The current zoning designation is part of zoning district C4-2A. 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 immediate surrounding properties consist of several 2-story residential homes to the west, a 1-story commercial supermarket to the north, a 3-story movie studio for Kaufman Astoria Studios to the east, and vacant land to the south. The surrounding neighborhood is largely residential along with commercial properties and public facilities and institutions. There are two schools, Public School 166 and the Frank Sinatra School of Arts High School, as well as a daycare, A Child's Daycation, located within a 500 foot radius from the Site. No hospitals are located within a 500 foot radius. The surrounding land usage is depicted in **Figure 3**.

1.4 REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 34-22 35th Street*”, dated December 2014 (RIR).

Summary of Past Uses of Site and Areas of Concern

The property was previously owned by Damroc Realty Corp. and before that Dreygo Development Corp. and was reportedly used as a coat factory. In 2008, the Site consisted of two garages and a building that functioned as a commercial/manufacturing business entity.

A Phase I Environmental Site Assessment (ESA) was completed by Joseph D. Martines, P.E., PLLC in March of 2008. According to the report, the Site consisted of a 1-story commercial warehouse for fur and leather storage, along with two garages. Based on historical Sanborn maps, the northern garage potentially contains three gasoline underground storage tanks (USTs), which are shown on the maps until 1950. From an interview with the previous owner, it is believed one UST was removed in 1993.

A GPR investigation, conducted in 2008 and associated with the Phase I Investigation for the site, identified several anomalies. During the week of December 8, 2014, GEI investigated these anomalies, which included a large anomaly located along the eastern portion of the site. This large anomaly is the approximate area that historical Sanborn atlases (1947, 1948, and 1950) also identified three USTs to be present. The backhoe excavation investigation identified various metal materials (e.g. piping) for all of the GPR anomalies except the large one along the eastern portion of the site.

For the large anomaly, one apparent UST was discovered. This anomaly turned out to actually be two USTs which have been appropriately removed from Site on February 24, 2015. The integrity of the tanks was not compromised and no release of product was evident in the underlying soils based on field observations, as well as laboratory endpoint sample results. A Closure Report is being provided under separate cover.

Summary of the Work Performed Under the Remedial Investigation

GEI performed the following scope of work in November of 2014, the scope of which was approved by OER:

1. Conducted a site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.).
2. Installed 6 test borings across the entire project Site, and collected 10 soil samples for chemical analysis from the soil borings to evaluate soil quality.
3. Installed three groundwater monitoring wells throughout the Site to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality.
4. Installed three soil vapor probes around Site perimeter and collected three samples for chemical analysis.

Summary of Environmental Findings

1. Elevation of the property ranges from 37 to 39 feet.
2. Depth to groundwater ranges from 20.7 to 21.7 feet at the Site.
3. Groundwater flow is from east to west beneath the Site.
4. Depth to bedrock at the Site ranges from approximately 50 to 70 feet.
5. The stratigraphy of the Site, from the surface, consists of approximately 1.5 to 5 feet of fine to coarse sand silt and gravel. This unit may represent disturbed material. The majority of the underlying deposits were fine to medium sand with some silt and gravel to at least 25 feet bgs. Bedrock was not encountered in the environmental investigation borings.
6. Soil/fill sample results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill samples showed no VOCs, polychlorinated biphenyls (PCBs), or pesticides in any of the soil samples. Six SVOCs consisting of Polycyclic

Aromatic Hydrocarbons (PAHs) including benz(a)anthracene (max of 9,100 µg/kg), benzo(a)pyrene (max of 7,500 µg/kg), benzo(b)fluoranthene (max of 8,900 µg/kg), chrysene (max of 9,500 µg/kg), dibenz(a,h)anthracene (max of 700 µg/kg), and indeno(1,2,3-cd)pyrene (max of 2,200 µg/kg) were found within three samples (1 deep and 2 shallow) exceeding Unrestricted Use SCOs as well as Restricted Residential SCOs. Two metals including lead (max of 126 µg/kg) and zinc (max of 308 µg/kg) exceeded Unrestricted Use SCOs.

7. Groundwater sample results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the investigations showed no VOCs or PCBs in any sample. Trace concentrations of several SVOCs were detected but only benz(a)anthracene (max of 0.03 µg/L) exceeded its GQS. Two pesticides were detected in groundwater but only dieldrin (at 0.007 µg/L) exceeded its GQS. Several metals were identified, but only aluminum (max of 0.22 µg/L), iron (max of 0.345 µg/L), and sodium (max of 30.2 µg/L) exceeded their respective GQS.
8. Soil vapor results collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values derived by the New York State Department of Health (NYSDOH) in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Soil vapor samples collected during the RI showed moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Total concentrations of petroleum-related VOCs (BTEX) ranged from 371.6 to 886.3 µg/m³. Chlorinated VOCs including tetrachloroethene (PCE) (max of 36.1 µg/m³), carbon tetrachloride (max of 15.5 µg/m³), trichloroethene (TCE) (max of 8.43 µg/m³), and 1,1,1-trichloroethane (TCA) (max of 12.3 µg/m³) were detected in all soil vapor samples. Concentrations for TCE, and carbon tetrachloride were above the monitoring level ranges established within the State DOH soil vapor guidance matrix level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

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.

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.

Soil Vapor

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

3.0 REMEDIAL ALTERNATIVES ANALYSIS

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

1. Protection of human health and the environment.
2. Compliance with SCGs.
3. Short-term effectiveness and impacts.
4. Long-term effectiveness and permanence.
5. Reduction of toxicity, mobility, or volume of contaminated material.
6. Implementability.
7. Cost effectiveness.
8. Community Acceptance.
9. Land use.
10. 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 is a Track 1 alternative that involves selection of Unrestricted Use (Track 1) soil cleanup objectives (SCOs) and complete removal of all soil/fill material that exceeds the Unrestricted Use (Track 1) SCOs. Alternative 2 is a Track 4 alternative that involves establishment of Site-Specific (Track 4) SCOs and removal of the soil/fill material that exceed Track 4 SCOs. These Alternatives are:

Alternative 1 would involve the following remedial actions:

- Selection of NYSDEC 6NYCRR Part 375-6.8 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 have been achieved with post-excavation confirmatory sampling. If soil/fill containing analytes at concentrations above

Unrestricted Use SCOs is present after removal of 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 a composite cover consisting of the concrete foundation slab, a vapor barrier, and ventilated garage will be installed beneath the new building as a part of development to prevent potential exposures from off-Site soil vapor.
- Placement of a final cover over the entire Site as part of new development.

Alternative 2 would involve the following remedial actions:

- Establishment of Site-Specific (Track 4) SCOs.
- Removal of all soil/fill exceeding the Track 4 Site-Specific SCOs and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation confirmatory sampling at three locations (Figure 4). Excavation for the construction of the new building's cellar level would take place to a depth of 18.8 feet bgs across the entire Site footprint. A small elevator area will be excavated to depths of 22 feet below grade. 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.
- Installation of a soil vapor barrier beneath the new building slab and along foundation sidewalls to prevent potential exposures from soil vapor.
- Placement of a final cover over the entire building footprint to prevent exposure to remaining soil/fill.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive site uses, such as farming or vegetable gardening, to prevent future exposure pathways.
- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of engineering and institutional controls (EC/ICs) including the performance of periodic inspections and certification that the controls are performing as they were intended 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. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP.

- Continued registration with a Restrictive Declaration to memorialize the remedial action and the Engineering and Institutional Controls required by this RAWP.

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 – Alternative 1 would be protective of human health and the environment by removing historic fill and contaminated soil 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. Also, the installation of a vapor barrier system and composite cover as part of new construction would provide protection of public health and environment based on on-Site contamination.

Alternative 2 – Alternative 2 would achieve comparable protections of human health and the environment by removing most of the historic 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 EC/ICs on the site. The composite cover system would prevent direct contact with any remaining soil/fill on-Site. The ventilated parking garage and water-proofing/vapor barrier under the building foundation system will prevent vapor intrusion. Implementing ICs including a SMP and continued RD designation of the property would ensure that the composite cover remain intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan

(CHASP), an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by operation of ventilated garage and by installing a vapor barrier below the new building's basement slab and along the foundation walls.

3.2. BALANCING CRITERIA

Compliance with Standards, Criteria and Guidance (SCGs)

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

Alternative 1 – Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs and Groundwater Protection Standards. Compliance with SCGs for soil vapor would also be achieved by the construction of a ventilated sub-grade parking garage per City Department of Buildings codes, and installation of a water-proofing/vapor barrier beneath the new building's basement slab and extending the vapor barrier vertically behind the foundation walls, as part of development.

Alternative 2 – Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to meet Track 4 Site Specific SCOs. Compliance with SCGs for soil vapor would also be achieved by the construction of a ventilated sub-grade parking garage per City Department of Buildings codes and installation of a water-proofing/vapor barrier beneath the new building's basement slab and extending the vapor barrier vertically behind the foundation walls. An SMP would ensure that these controls remained protective for the long term.

Health and Safety measures contained in the Construction Health and Safety Plan (CHASP) and Community Air Monitoring Program (CAMP) that comply with the applicable SCGs would be implemented during the 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.

United States Occupational Health and Safety Administration (OSHA) requirements for on-site construction safety would also be followed by the site contractors. These measures will protect on-site workers and the surrounding community from exposures 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 have similar short term impacts during their respective implementation, as each requires excavation of historic fill material. Both remedial alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic; however, the duration of excavation during implementation of Alternative 1 would be greater if greater amounts of historical fill material are encountered below the excavation depth of the proposed building. Similarly, truck traffic associated with the transport of fill material to the site would be greater during the implementation of Alternative 1. Truck traffic for both Alternatives would be routed on the most direct course using major thoroughfares where possible and flaggers would be used to protect pedestrians at site entrances and exits. Focused attention to means and methods during the remedial action, including community air monitoring and appropriate truck routing would minimize or negate the overall impact of these activities.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Approximately 630, 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.

The effects of these potential adverse impacts to the community, workers and the environment would be minimized through implementation of corresponding control plans,

including a CHASP, CAMP and 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 CHASP would be protected from on-site contaminants (personal protective equipment would be worn consistent with the documented risk 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 ECs.

Alternative 1 – The Track 1 remedy 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 would also prevent impacts to groundwater. Construction measures, including the construction of a ventilated parking garage and incorporation of a water-proofing/vapor barrier into the building foundation system on the lower level would prevent potential future migration of soil vapors into the new building.

Alternative 2 – The Track 4 remedy would provide long-term effectiveness by removing the majority of on-site contamination and attaining Track 4 Site Specific SCOs; by establishing ECs, including a composite cover system and a waterproofing/vapor barrier into the building foundation system.; and by establishing ICs, including use restrictions, and SMP; and leaving the Restrictive Declaration in place 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 use restrictions continue to be in place and are functioning as they were intended to assure that protections designed into the remedy would provide continued high level of protection in perpetuity.

Both Alternatives would result in removal of soil contamination exceeding their respective 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 – The Track 1 remedy would provide the maximum reduction of toxicity, mobility, and volume of contaminated material through the permanent elimination of the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soil in excess of Track 1 Unrestricted Use SCOs.

Alternative 2 – Alternative 2 would remove most of the impacted soil present on the site and any remaining soil beneath the composite cover would meet Track 4 Site-Specific SCOs. Containment via the composite cover system would be used to eliminate exposure to contaminants that remain at the site.

Alternative 1 would likely eliminate a greater total mass of contaminants on site. The removal of soil to a depth of approximately 18 feet below grade for the new development in both scenarios would probably result in relatively minor differences between these two alternatives.

Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the

selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

Both alternatives would utilize standard methods that are commonly available and routinely applied by the industry. They would use standard materials and services that are well established and administratively and technically feasible. The reliability of each remedy would also be high; however, the permanence of the removal effort in Alternative 1 is greater than Alternative 2, which would rely on institutional and engineering controls. There are no special difficulties associated with any of the activities proposed.

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.

Since historic fill at the Site was found during the RI to only extend to a depth of up to 4 to 6 feet below grade surface, and the new building requires excavation of the entire Site to a depth of about 18.8 feet, the costs associated with both Alternative 1 and Alternative 2 will likely be comparable. Costs associated with Alternative 1 could potentially be higher than Alternative 2 if soil with analytes above Track 1 Unrestricted Use SCOs is encountered below the excavation depth required for development. However, long-term costs for site management are eliminated for Alternative 1 and may be required for Alternative 2. In both cases, appropriate public health and environmental protections are achieved.

The selected remedial plan creates an approach that combines the remedial action with planned development of the site. The remedial plan is also cost effective in that it will take into consideration the selection of the closest and most appropriate disposal facilities to reduce transportation and disposal costs during the excavation of historic fill and other soils during the redevelopment of the Site.

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, 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 public input on the selected remedial actions. Any public comments related to environmental remediation will be considered by NYC OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix 1. 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 current, intended, and reasonably anticipated future land use of the site would be compatible with the selected remedies under both alternatives. The proposed development will include a 7-story, mixed use (residential and commercial) building covering approximately 100 percent of the property. The reasonably anticipated future use of the site and its surroundings will be documented by the applicant in the NYC VCP application.

The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. The areas surrounding the site are urban and consist predominantly of commercial and residential buildings, both single and multi-story in

zoning districts designated for commercial, manufacturing, and residential uses. There are no areas zoned for agricultural use in the proximity of the site. The development would replace the underutilized site with a modern residential building. Improvements in the current brownfield condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse.

The proposed use will not cause or increase a disproportionate burden on the community in which the site is located. In addition, temporary short-term project impacts would be mitigated through site management controls and truck traffic controls during remediation activities. Following remediation, the site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-Specific SCOs, both of which are appropriate for its planned residential use.

The Site is not in close proximity to any water bodies and the associated fish and wildlife. Municipal water supply wells are not present in New York City; therefore, groundwater from the site cannot affect municipal water supply wells or recharge areas. Both alternatives are equally protective of natural resources and cultural resources.

Sustainability of the Remedial Action

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

Alternative 1 would use the most energy and produce the most greenhouse gasses, as it would have the largest volume of material to truck off site. While Alternative 2 would result in lower energy use based on reducing the volume of material transported off site, both alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The overall sustainability of both Alternatives is low/moderate. The excavated material would likely be landfilled (no recycling and reuse of non-virgin materials). There would also be significant

energy consumption and greenhouse gas emissions associated with truck trips needed for transport of excavated soil. The remedial plan would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. New York City Clean Soil Bank program may be utilized for reuse of native soils. To the extent practicable, energy efficient building materials, appliances, and equipment will be used 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. Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency specified by disposal facility. A Waste Characterization Report documenting sample procedures, location, analytical results and disposal facility(s) approval letters will be submitted to NYCOER prior to the start of the remedial action.
6. Excavation and removal of soil/fill exceeding Unrestricted Use (Track 1) SCOs. The entire footprint of the Site will be excavated to a depth of approximated 18.5 feet below grade for construction of the new building's basement level. Approximately 10,500 yd³ of soil will be excavated and removed from this Site.

7. 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.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. 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.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
11. Collection and analysis of six confirmation samples to determine the performance of the remedy with respect to attainment of Track 1 SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. 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.

If Unrestricted Use Track 1 SCOs are not achieved, the following construction elements implemented as part of new development will constitute Engineering Controls:

16. As part of new development, installation of a 60-mil vapor barrier system (Geo-Seal® Triple-Layer System) beneath the building slab as well as behind foundation sidewalls of the proposed building below grade. The selected barrier is Raven VaporBlock.

17. As part of new development, construction and maintenance of an engineered composite cover consisting of a 8-inch concrete building slab, concrete covered walkways, concrete driveways to prevent human exposure to residual soil/fill remaining under the Site.
18. As part of new development, construction of a ventilated parking garage as per NYC Building Department's codes and requirements.
19. If Track 1 SCOs are not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
20. If Track 1 SCOs are not achieved, the property will continue to be registered with a Restrictive Declaration by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 SOIL CLEANUP OBJECTIVES AND SOIL/FILL MANAGEMENT

Track 1 Unrestricted Use Soil Cleanup Objectives (SCOs) are proposed for this project. The SCOs for this Site are listed in Table 4 - Track 1 SCOs. If Track 1 Unrestricted Use SCOs are not achieved, the 6NYCRR Part 375, Table 6.8(b) Track 2 Restricted Residential SCOs will be used as amended by the following Site-Specific Track 4 SCOs:

Contaminant	Track 4 Site-Specific SCOs
Total SVOCs	250 mg/kg
Lead	800 mg/kg

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 2. The entire Site is planned to be excavated to a depth of 18.8 feet bgs.

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 15,750 tons.

The proposed disposal locations for Site-derived impacted materials are listed below. Additional disposal locations established at a later date will be reported promptly to the OER Project Manager.

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

End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Three confirmation samples will be collected from the base of the excavation shown in Figure 4. For comparison to Track 1 Unrestricted Use SCOs, samples will be analyzed for VOCs, SVOCs, pesticides, PCBs, and metals according to analytical methods described below. For comparison to Track 4 Site-Specific SCOs, analytes will only include trigger compounds and elements established on the Track 4 Site-Specific SCO list above.

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 ft² 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 ft² 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 6 to 12 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 to 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 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.
- 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 (QA/QC)

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision, and completeness requirements will be addressed by the laboratory for all data generated.

One duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters. One trip blank will be submitted to the laboratory with each shipment of soil samples.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or “cold-paks” to maintain a temperature of 4°C.

Dedicated disposable sampling materials will be used for the collection endpoint samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of one for every eight samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil.
- Rinse with tap water.
- Wash withalconox® detergent solution and scrub.
- Rinse with tap water.

- Rinse with distilled or deionized water.

Prepare field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. Trip blanks will not be used for samples to be analyzed for metals, SVOCs or pesticides. One blind duplicate sample will be prepared and submitted for analysis every 20 samples.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already on-site will be performed in conformance with the Soil/Materials Management Plan in **Appendix 2**. No off-site imported soil is expected to be used as a Site cap. No on-site soil/fill expected to be reused/relocated on Site. The entire site footprint will be covered with an engineered composite cover consisting of an 8-inch concrete building slab, concrete covered walkways, and concrete driveways.

4.3 ENGINEERING CONTROLS

The excavation required for the proposed Site development will achieve Unrestricted Use Track 1 SCOs. Track 1 remedial actions do not require Engineering Controls. However, the construction elements below will be incorporated into the foundation design as part of development. If Track 1 is not achieved, 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 consisting of an 8-inch concrete building slab, concrete covered walkways, and concrete driveways.
- Vapor barrier system.

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 covered walkways, 8-inch concrete building slab, and concrete roadways. The entire site is planned for excavation. The development plans are included as Appendix 4.

The composite cover system will be a permanent Engineering Control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan included in the Site Management Plan 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

As part of development, migration of potential soil vapor from on-Site or off-Site sources in the future will be mitigated with a combination of concrete building slab and vapor barrier. In order to prevent subsurface vapors from impacting the interior air of the buildings, a vapor barrier system (VBS) consisting of Geo-Seal® Triple-Layer System (2 chemical resistant layers and 1 spray applied core layer) will be installed beneath the building slab and behind the foundation walls. The system is a Raven VaporBlock vapor barrier system. A geo-seal base is rolled out geotextile facing down to allow geo-seal core to be applied directly to the high density polyethylene. Then, the core is applied at a 60-mil thickness, which is sprayed over the base layer, around penetrations, and the overlapping base layer seams. Finally, the Geo-Seal bond, proprietary protection layer, is placed over the core layer to enhance the curing of the membrane and to increase puncture resistance. The installation of the VBS will be described in the RAR. The RAR will include photographs of the installation process, PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty.

The project's Professional Engineer licensed by the State of New York will have primary direct responsibility for overseeing the implementation of the vapor barrier. Details of the vapor barrier system and, specifications and Materials Safety Data Sheet are provided in Appendix 4.

Ventilated Garage

A sub grade ventilated garage will be installed and operated per requirements of the New York City Department of Buildings codes and regulations.

4.4 INSTITUTIONAL CONTROLS

Track 1 remedial actions do not require Engineering Controls. If Track 1 Unrestricted Use SCOs are not achieved, Institutional Controls (IC) will be utilized 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 established and will be implemented under a site-specific SMP that will be included in the RAR. The property will continue to be registered with a Restrictive Declaration at the NYC Buildings Department.

If Track 1 SCOs are not achieved, Institutional Controls for this remedial action are:

- The property will continue to be registered with a Restrictive Declaration by 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(1)(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 mixed commercial and residential use and will not be used for a higher level of use without prior approval by OER.

4.5 SITE MANAGEMENT PLAN

Site Management is not required for Track 1 remedial actions. However, if Track 1 SCOs are not achieved, 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 this RAWP. The SMP is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the SMP are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the 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 July 31 of the year following the reporting period.

4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the

COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

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

Known and Potential Sources

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

Soil

- Metals, including lead and zinc exceeding their respective Unrestricted Use SCOs.
- SVOCs (PAHs) benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeding their respective Restricted Residential Use SCOs.

Groundwater

- Metals including aluminum, iron and sodium were detected above their respective Groundwater Quality Standards.
- One SVOC, benz(a)anthracene detected above its GQS.
- One pesticide, dieldrin, detected above its GQS.

Soil vapor

- Chlorinated VOCs including tetrachloroethene, trichloroethene, and carbon tetrachloride were detected above the mitigation threshold range established by NYS DOH Final Guidance on Soil Vapor Intrusion.

Nature, Extent, Fate and Transport of Contaminants

Low levels of SVOCs and metals are present in soil across the Site. Concentrations of several SVOCs, located across the Site were above the Restricted Residential Use SCOs. One SVOC, one pesticide and several metals were identified above the GQS in groundwater samples collected at the Site. PCE, TCE, and carbon tetrachloride were detected in soil vapor above the NYSDOH monitoring thresholds in two samples on the western portion of the site.

Potential Routes of Exposure

The five elements of an exposure pathway are: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. An exposure route is the mechanism by which a receptor comes into contact with a chemical. Three potential primary routes exist by which chemicals can enter the body:

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

Existence of Human Health Exposure

An exposure pathway begins with a source and mechanism of contaminant release resulting in the contamination of a receiving matrix (environmental medium). A complete exposure pathway also requires a point of potential contact with the contaminated matrix (i.e., exposure point), an exposure route (i.e., inhalation, ingestion, or dermal contact), and a receptor population. If an exposure pathway is not complete because it does not include a contaminated matrix, a point of potential contact, an exposure route, or a receptor, then no risk exists.

Current

Exposure to fill is possible as the soil is not covered with significant vegetation; however, the surface impacts are marginal and localized. Groundwater is not physically exposed at the surface of the site and, because the site is served by the public water supply and groundwater use for potable supply is prohibited, there is no potential for exposure. The only concern is the potential for exposure of soil vapors.

Construction/ Remediation Activities

Once remedial activities begin, construction workers will come into direct contact with surface and subsurface soils as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with soil, fill, and groundwater. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. During construction, on-Site and off-Site exposures to contaminated dust from on Site will be addressed through the implementation of the Soil/Materials Management Plan, storm-water pollution prevention, dust controls, and through the implementation of the CAMP and a CHASP.

Proposed Future Conditions

Once the remedial actions and redevelopment of the Site has been completed, there will be no potential on-Site or off-Site exposure pathways. Not only will soil/fill exceeding Track 1 or Track 4 - Site-Specific SCOs be removed, but the Site will also be fully capped with either a concrete slab within the footprint of the new building, concrete covered walkways, or concrete driveways, limiting potential direct exposure to soil remaining in place. A ventilated cellar parking garage and a waterproofing/vapor barrier into the building foundation system is also

being installed that 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 vacant. Therefore, the only potential on-Site receptors are Site Representatives and trespassers. 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 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 0.25 mile) – existing and future.
5. Schools (up to 0.25 mile) – existing and future.

Overall Human Health Exposure Assessment

There are no potential complete exposure pathways for soil or soil vapor under the current site condition. Under current conditions, groundwater is not accessible at the site. There is a potential complete, exposure pathway that requires mitigation during implementation of the remedy. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide impervious surface cover cap, and a subsurface vapor barrier system for the building. During remedial construction, on-Site and off-Site exposures to contaminated dust and volatile vapors 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 complete exposure pathways identified to contaminants, as all soil/fill exceeding Track 1 Unrestricted Use SCOs will be removed from the site, the entire site will be excavated to approximately 18.5 feet and fully capped. Additionally, use restrictions (if necessary) will prevent contact with residual soil. The ventilated cellar parking garage and a water-proofing/vapor barrier into the building foundation system as part of development and will prevent potential soil vapor intrusion. The composite cover system will prevent contact with residual soil and continued protection after the remedial action will be achieved by the implementation of site management including periodic inspection and certification of the performance of remedial controls. 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.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include Gary Rozmus and remediation project director. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Gary Rozmus and Albert Jaroszewski, respectively.

5.2 SITE SECURITY

Site access will be controlled through gated entrances to the fenced property.

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

The Construction Health and Safety Plan is included in **Appendix 3**. The Site Safety Coordinator will be Robert Franco. 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 Hazardous Waste Operations and Emergency Response (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 a 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 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 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 $100 \mu/m^3$ 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 $150 \mu/m^3$ 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 $150 \mu/m^3$ 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 $150 \mu/m^3$ 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 in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

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

Dewatering

No dewatering is planned for this project.

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; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from holes, trenches, and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped

stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, hay bales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

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

Petroleum spills will be reported to 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 be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Storm-water control systems and structures will be inspected and maintained as necessary.

If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If on-site petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be

identified, if 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 on-site or off-site 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 NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is will be provided when the disposal facility is identified.

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.
- 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.
- 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 area.
- 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 a Restrictive Declaration 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, Gary Rozmus 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 34-22 35th Street in the Astoria section of Queens, New York, 10RHAZ062Q. I, Albert Jaroszewski am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 34-22 35th Street in the Astoria section of Queens, New York, 10RHAZ062Q.

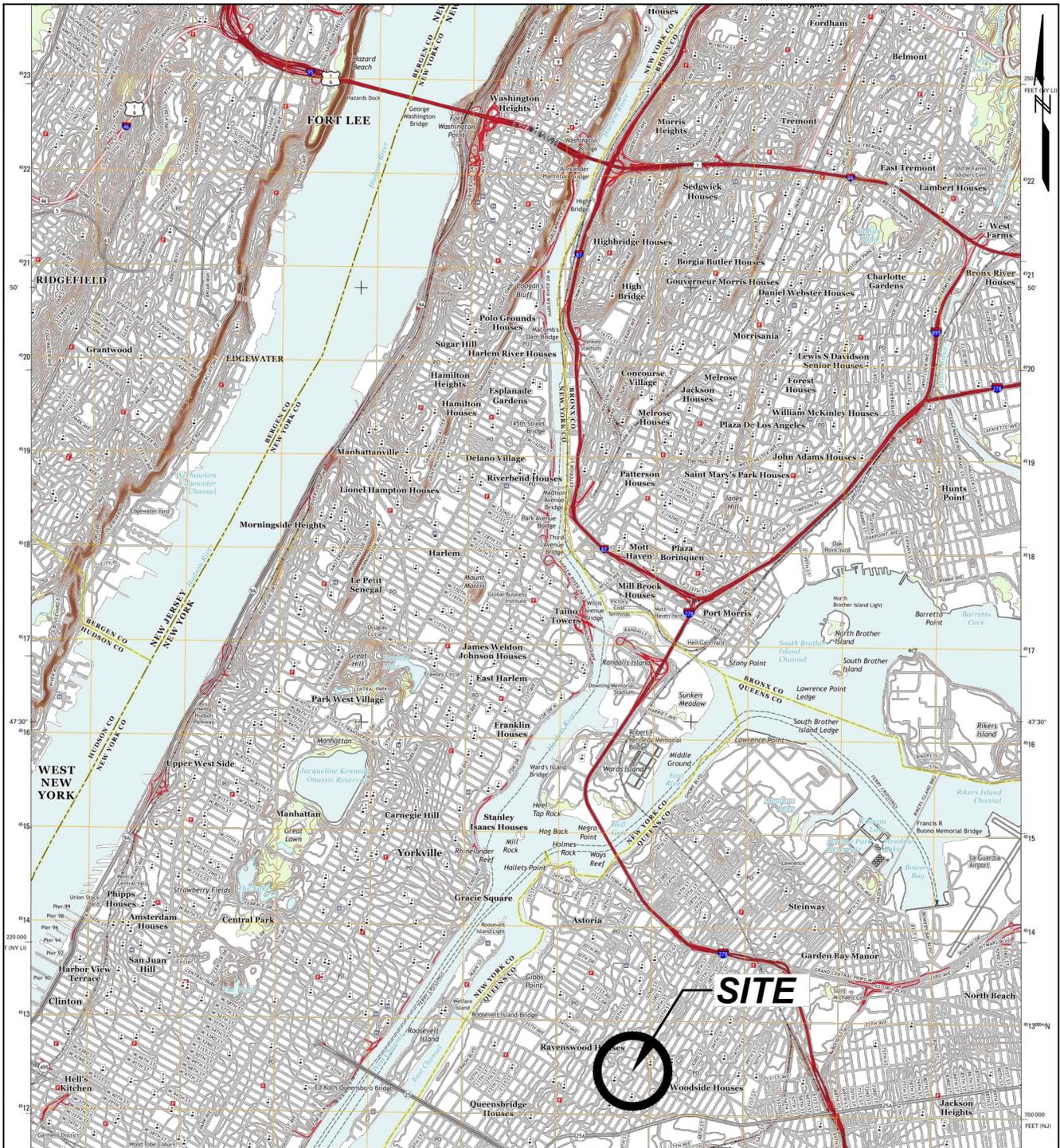
I certify that the OER-approved Remedial Action Work Plan dated month day year and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material 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 3-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	4	
Remedial Excavation	16	
Demobilization	TBD	
Record Declaration of Covenants and Restrictions	TBD	
Submit Remedial Action Report	20	

FIGURES



NOTES:

1. Topographic map from USGS CENTRAL PARK QUADRANGEL NEW YORK-NEW JERSEY 7.5 MINUTE SERIES



34-22 35th Street Mixed Use Development
 Astoria, Queens, New York

Volmar Construction, Inc.
 Brooklyn, New York

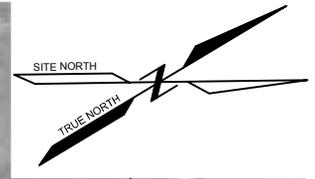
GEI Consultants

Project 1412280

SITE LOCATION MAP

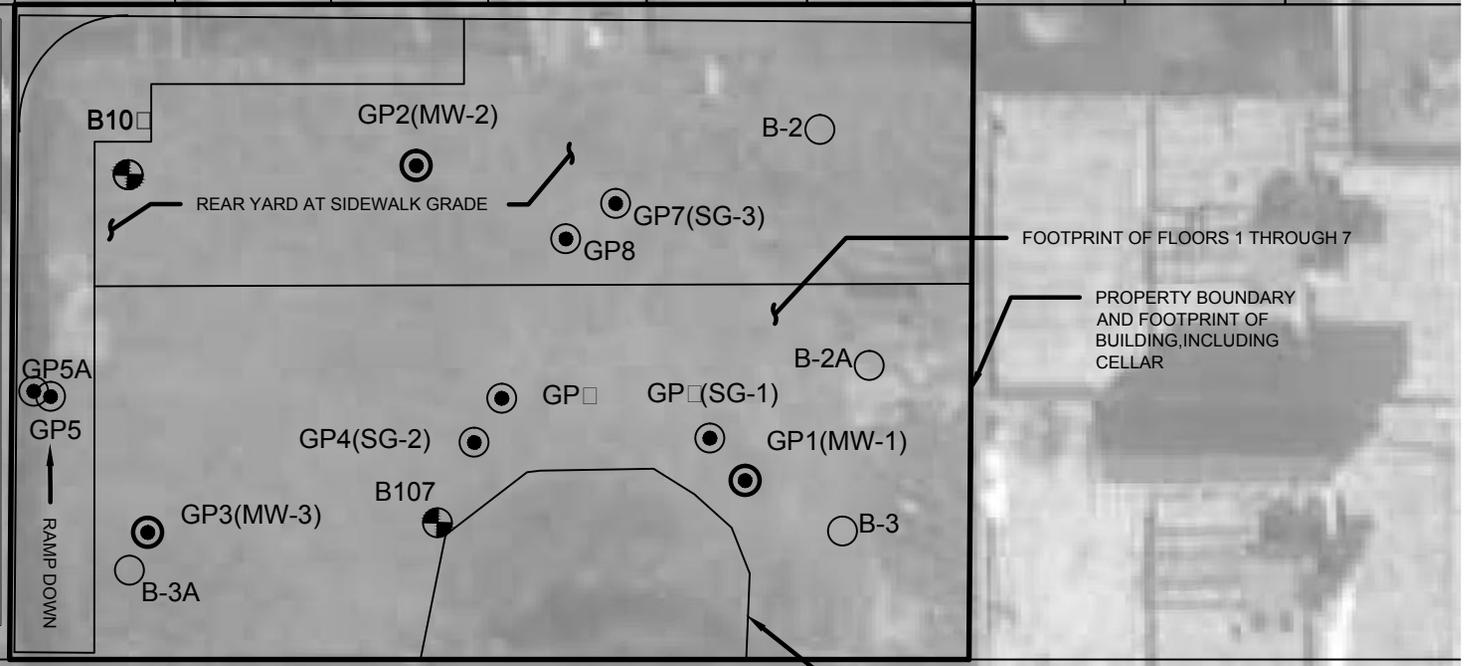
April 2015

Fig. 1



NOTES:

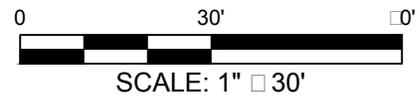
1. LOT LINES PROVIDED BY NYC DEPARTMENT OF CITY PLANNING MAPLUTO, DOWNLOADED OCTOBER 28, 2014.
2. AERIAL IMAGE DATED MARCH 10, 2014 DOWNLOADED FROM GOOGLE EARTH ON OCTOBER 27, 2014.
3. BUILDING FOOTPRINT BASED ON DRAWING SK-002 TITLED "CELLAR PLAN" PREPARED BY KUTNICKI BERNSTEIN ARCHITECTS DATED NOVEMBER 21, 2014.
4. BORING LOCATIONS SHOULD BE CONSIDERED APPROXIMATE AND ACCURATE ONLY TO THE DEGREE BY THE METHOD IMPLIED TO DETERMINE THEM.



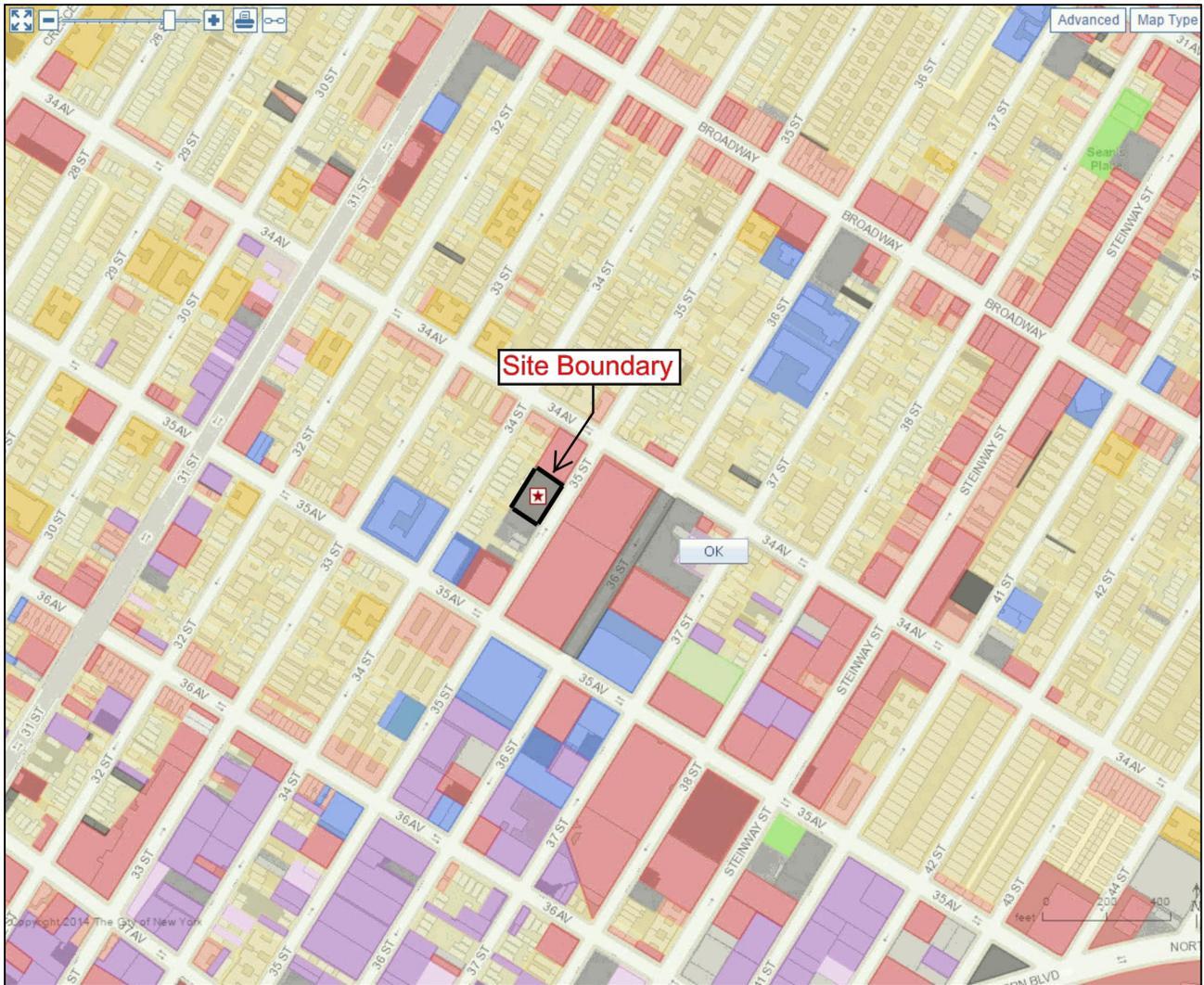
LEGEND:

- B-2A HISTORICAL TEST BORING PERFORMED BY OTHERS
- ⊕ B107 GEI TEST BORING FOR SHALLOW SAMPLES
- GP1(MW) GEI GEOPROBE FOR TEMPORARY MONITORING WELL
- GP2(SG) GEI GEOPROBE FOR SOIL GAS SAMPLING

35TH STREET



7-Story Mixed-Use Development 34-22 35th Street Queens, New York	 GEI Consultants	SAMPLE LOCATION MAP
Volmar Construction Inc, LLC Brooklyn, New York		Project 1412280 April 2015



Primary Land Use

- One & Two Family Residence
- Multi-Family Residence (Walkup)
- Multi-Family Residence (Elevator)
- Mixed Residential & Commercial
- Commercial Use
- Industrial / Manufacturing
- Transportation / Utility
- Public Facilities and Institutions
- Open Space & Recreation
- Parking
- Vacant Land

34-22 35th Street Mixed Use Development
Astoria, Queens, New York

Volmar Construction, Inc.
Brooklyn, New York

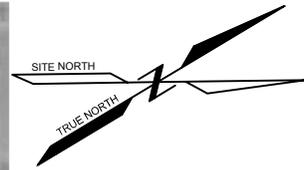


Project 1412280

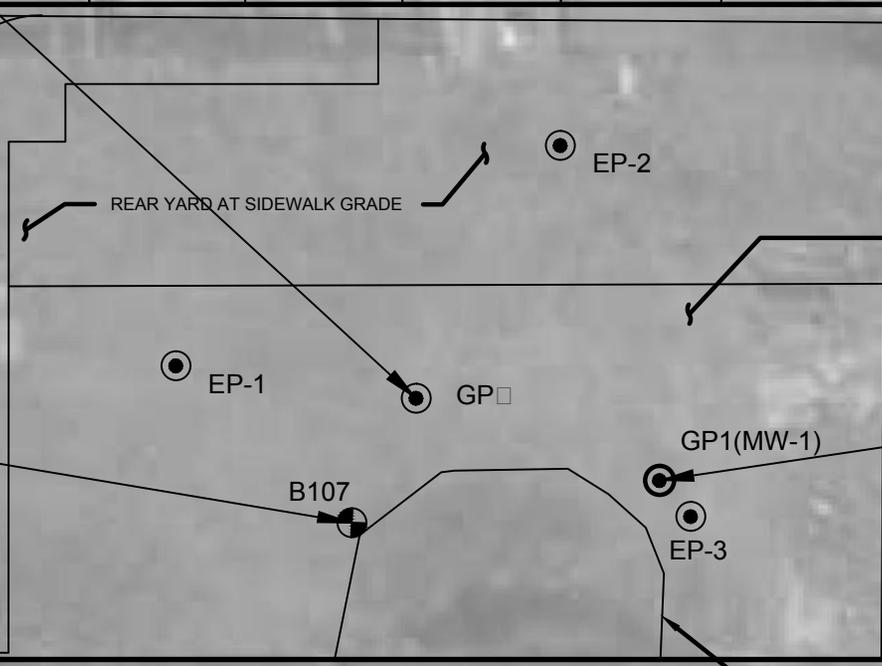
SURROUNDING LAND USAGE

April 2015

Fig. 3



Sample Id	Collection Date	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	GP9 (0-2 FT)	
				Result	RL
Matrix				Solid	
Compound					
Semivolatiles By SW 8270					
Benz(a)anthracene	ug/Kg	1,000	1,000	1,900	260
Benz(a)pyrene	ug/Kg	1,000	1,000	1,900	260
Benz(b)fluoranthene	ug/Kg	1,000	1,000	2,800	260
Benz(k)fluoranthene	ug/Kg	3,900	800	860	260
Chrysene	ug/Kg	3,900	1,000	1,800	260
Indeno(1,2,3-cd)pyrene	ug/Kg	500	500	740	260
Metals, Total					
Lead	mg/Kg	400	63	113	0.38
Zinc	mg/Kg	10,000	109	150	0.38



Sample Id	Collection Date	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	GP1 (16-18 FT)	
				Result	RL
Matrix				Solid	
Compound					
Semivolatiles By SW 8270					
Benz(a)anthracene	ug/Kg	1,000	1,000	3,800	260
Benz(a)pyrene	ug/Kg	1,000	1,000	3,500	260
Benz(o)fluoranthene	ug/Kg	3,900	800	1,600	260
Chrysene	ug/Kg	3,900	1,000	3,600	260
Dibenz(a,h)anthracene	ug/Kg	330	330	460	260
Indeno(1,2,3-cd)pyrene	ug/Kg	500	500	1,500	260
Metals, Total					
Lead	mg/Kg	400	63	126	0.34

Sample Id	Collection Date	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	B107 (2-3 FT)	
				Result	RL
Matrix				Solid	
Compound					
Semivolatiles By SW 8270					
Benz(a)anthracene	ug/Kg	1,000	1,000	9,100	1,300
Benz(a)pyrene	ug/Kg	1,000	1,000	7,500	1,300
Benz(b)fluoranthene	ug/Kg	1,000	1,000	8,900	1,300
Benz(k)fluoranthene	ug/Kg	3,900	800	2,400	260
Chrysene	ug/Kg	3,900	1,000	9,500	1,300
Dibenz(a,h)anthracene	ug/Kg	330	330	700	260
Indeno(1,2,3-cd)pyrene	ug/Kg	500	500	2,200	260
Metals, Total					
Zinc	mg/Kg	10,000	109	308	3.7

LEGEND:

- B-2A HISTORICAL TEST BORING PERFORMED BY OTHERS
- ⊕ B107 GEI TEST BORING FOR SHALLOW SAMPLES
- ⊙ EP-1 PROPOSED END POINT SAMPLING LOCATIONS

35TH STREET

NOTES:

1. Bolding within tables indicates a detected concentration.
2. Shading within tables indicates result exceeds unrestricted use SCO.
3. Coloring within tables result exceeds both SCOs to which it was compared.



<p>34-22 35th Street Mixed Use Development Astoria, Queens, New York</p>		<p>SOIL EXCEEDANCES AND END POINT SAMPLING LOCATIONS MAP</p>
<p>Volmar Construction, Inc. Brooklyn, New York</p>	<p>Project 1412280</p>	<p>April 2015</p>
		<p>Fig. 4</p>

TABLES

Table 1. Soil Sample Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id Collection Date Matrix Units	NYSDEC Part 375 Restricted Residential Use Soil Cleanup	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	GP1 (1-3 FT)		GP1 (16-18 FT)		GP5a (1-3 FT)		GP5 (16-18 FT)		GP8 (0-2 FT)		GP8 (16-18 FT)		GP9 (0-2 FT)		GP9 (20-22 FT)		B106 (2-4 FT)		B107 (2-3 FT)		DUP GP5a (1-3 FT)	
				11/12/2014 Solid	Result	RL	11/12/2014 Solid	Result	RL	11/13/2014 Solid	Result	RL	11/13/2014 Solid	Result	RL	11/12/2014 Solid	Result	RL	11/12/2014 Solid	Result	RL	11/13/2014 Solid	Result	RL	11/13/2014 Solid
Volatiles By SW8260																									
1,1,1,2-Tetrachloroethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,1,1-Trichloroethane	ug/Kg	100,000	680	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,1,2,2-Tetrachloroethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,1,2-Trichloroethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,1-Dichloroethane	ug/Kg	26,000	270	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,1-Dichloroethene	ug/Kg	100,000	330	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,1-Dichloropropene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2,3-Trichlorobenzene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2,3-Trichloropropane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2,4-Trichlorobenzene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2,4-Trimethylbenzene	ug/Kg	52,000	3,600	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2-Dibromo-3-chloropropane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2-Dibromoethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2-Dichlorobenzene	ug/Kg	100,000	1,100	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2-Dichloroethane	ug/Kg	3,100	20	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,2-Dichloropropane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,3,5-Trimethylbenzene	ug/Kg	52,000	8,400	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,3-Dichlorobenzene	ug/Kg	49,000	2,400	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,3-Dichloropropane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
1,4-Dichlorobenzene	ug/Kg	13,000	1,800	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
2,2-Dichloropropane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
2-Chlorotoluene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
2-Hexanone	ug/Kg	NE	NE	< 31	31	< 28	28	< 28	28	< 25	25	< 27	27	< 32	32	< 28	28	< 30	30	< 26	26	< 28	28	< 28	28
2-Isopropyltoluene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
4-Chlorotoluene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
4-Methyl-2-pentanone	ug/Kg	NE	NE	< 31	31	< 28	28	< 28	28	< 25	25	< 27	27	< 32	32	< 28	28	< 30	30	< 26	26	< 28	28	< 28	28
Acetone	ug/Kg	100,000	50	< 31	31	< 28	28	< 28	28	< 25	25	< 27	27	< 32	32	< 28	28	< 30	30	< 26	26	< 28	28	< 28	28
Acrylonitrile	ug/Kg	NE	NE	< 12	12	< 11	11	< 11	11	< 10	10	< 11	11	< 13	13	< 11	11	< 12	12	< 11	11	< 11	11	< 11	11
Benzene	ug/Kg	4,800	60	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Bromobenzene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Bromochloromethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Bromodichloromethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Bromoform	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Bromomethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Carbon Disulfide	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Carbon tetrachloride	ug/Kg	2,400	760	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Chlorobenzene	ug/Kg	100,000	1,100	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Chloroethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Chloroform	ug/Kg	49,000	370	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Chloromethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
cis-1,2-Dichloroethene	ug/Kg	100,000	250	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
cis-1,3-Dichloropropene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6
Dibromochloromethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6																	

Table 1. Soil Sample Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id Collection Date Matrix	NYSDEC Part 375 Restricted Residential Use Soil Cleanup	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	GP1 (1-3 FT)		GP1 (16-18 FT)		GP5A (1-3 FT)		GP5 (16-18 FT)		GP8 (0-2 FT)		GP8 (16-18 FT)		GP9 (0-2 FT)		GP9 (20-22 FT)		B106 (2-4 FT)		B107 (2-3 FT)		DUP GP5a (1-3 FT)			
				11/12/2014 Solid		11/12/2014 Solid		11/13/2014 Solid		11/13/2014 Solid		11/12/2014 Solid		11/12/2014 Solid		11/12/2014 Solid		11/12/2014 Solid		11/13/2014 Solid		11/13/2014 Solid		11/13/2014 Solid		11/13/2014 Solid	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
o-Xylene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
p-Isopropyltoluene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
sec-Butylbenzene	ug/Kg	100,000	11,000	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Styrene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
tert-Butylbenzene	ug/Kg	100,000	5,900	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Tetrachloroethene	ug/Kg	19,000	1,300	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Tetrahydrofuran (THF)	ug/Kg	NE	NE	< 12	12	< 11	11	< 11	11	< 10	10	< 11	11	< 13	13	< 11	11	< 12	12	< 11	11	< 11	11	< 11	11		
Toluene	ug/Kg	100,000	700	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Total Xylenes	ug/Kg	100,000	260	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
trans-1,2-Dichloroethene	ug/Kg	100,000	190	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
trans-1,3-Dichloropropene	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
trans-1,4-dichloro-2-butene	ug/Kg	NE	NE	< 12	12	< 11	11	< 11	11	< 10	10	< 11	11	< 13	13	< 11	11	< 12	12	< 11	11	< 11	11	< 11	11		
Trichloroethene	ug/Kg	21,000	470	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Trichlorofluoromethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Trichlorotrifluoroethane	ug/Kg	NE	NE	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Vinyl chloride	ug/Kg	900	20	< 6.2	6.2	< 5.6	5.6	< 5.6	5.6	< 5.1	5.1	< 5.5	5.5	< 6.5	6.5	< 5.7	5.7	< 6.1	6.1	< 5.3	5.3	< 5.6	5.6	< 5.6	5.6		
Semivolatiles By SW 8270																											
1,2,4,5-Tetrachlorobenzene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
1,2,4-Trichlorobenzene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
1,2-Dichlorobenzene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
1,2-Diphenylhydrazine	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
1,3-Dichlorobenzene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
1,4-Dichlorobenzene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2,4,5-Trichlorophenol	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2,4,6-Trichlorophenol	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2,4-Dichlorophenol	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2,4-Dimethylphenol	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2,4-Dinitrophenol	ug/Kg	NE	NE	< 650	650	< 590	590	< 580	580	< 530	530	< 580	580	< 680	680	< 600	600	< 650	650	< 550	550	< 590	590	< 600	600		
2,4-Dinitrotoluene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2,6-Dinitrotoluene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2-Chloronaphthalene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2-Chlorophenol	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2-Methylnaphthalene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2-Methylphenol (o-cresol)	ug/Kg	100,000	330	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
2-Nitroaniline	ug/Kg	NE	NE	< 650	650	< 590	590	< 580	580	< 530	530	< 580	580	< 680	680	< 600	600	< 650	650	< 550	550	< 590	590	< 600	600		
2-Nitrophenol	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
3&4-Methylphenol (m&p-cresol)	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
3,3'-Dichlorobenzidine	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
3-Nitroaniline	ug/Kg	NE	NE	< 650	650	< 590	590	< 580	580	< 530	530	< 580	580	< 680	680	< 600	600	< 650	650	< 550	550	< 590	590	< 600	600		
4,6-Dinitro-2-methylphenol	ug/Kg	NE	NE	< 1200	1,200	< 1100	1,100	< 1000	1,000	< 950	950	< 1000	1,000	< 1200	1,200	< 1100	1,100	< 1200	1,200	< 990	990	< 1100	1,100	< 1100	1,100		
4-Bromophenyl phenyl ether	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
4-Chloro-3-methylphenol	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
4-Chloroaniline	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
4-Chlorophenyl phenyl ether	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
4-Nitroaniline	ug/Kg	NE	NE	< 650	650	< 590	590	< 580	580	< 530	530	< 580	580	< 680	680	< 600	600	< 650	650	< 550	550	< 590	590	< 600	600		
4-Nitrophenol	ug/Kg	NE	NE	< 1200	1,200	< 1100	1,100	< 1000	1,000	< 950	950	< 1000	1,000	< 1200	1,200	< 1100	1,100	< 1200	1,200	< 990	990	< 1100	1,100	< 1100	1,100		
Acenaphthene	ug/Kg	100,000	20,000	< 280	280	350	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	1,300	260	< 260	2		

Table 1. Soil Sample Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id	NYSDEC Part 375	NYSDEC Part 375	GP1 (1-3 FT)		GP1 (16-18 FT)		GP5A (1-3 FT)		GP5 (16-18 FT)		GP8 (0-2 FT)		GP8 (16-18 FT)		GP9 (0-2 FT)		GP9 (20-22 FT)		B106 (2-4 FT)		B107 (2-3 FT)		DUP GP5a (1-3 FT)			
	Collection Date	Restricted Residential Use	Unrestricted Use Soil	11/12/2014		11/13/2014		11/13/2014		11/13/2014		11/12/2014		11/12/2014		11/12/2014		11/12/2014		11/13/2014		11/13/2014		11/13/2014			
	Matrix	Soil Cleanup	Cleanup Objectives	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL		
Benzoic acid	ug/Kg	NE	NE	< 280	1,200	< 1100	1,100	< 1000	1,000	< 950	950	< 1000	1,000	< 1200	1,200	< 1100	1,100	< 1200	1,200	< 990	990	< 1100	1,100	< 1100	1,100		
Benzyl butyl phthalate	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Bis(2-chloroethoxy)methane	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Bis(2-chloroethyl)ether	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
Bis(2-chloroisopropyl)ether	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Bis(2-ethylhexyl)phthalate	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Carbazole	ug/Kg	NE	NE	< 610	610	< 770	770	< 540	540	< 490	490	< 540	540	< 640	640	< 560	560	< 610	610	< 510	510	< 1,700	1,700	< 550	< 560		
Chrysene	ug/Kg	3,900	1,000	< 280	280	3,600	260	< 250	250	< 230	230	< 250	250	< 300	300	1,800	260	< 280	280	< 240	240	9,500	1,300	< 260	260		
Dibenz(a,h)anthracene	ug/Kg	330	330	< 280	280	460	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	700	260	< 260	260		
Dibenzofuran	ug/Kg	NE	7,000	< 280	280	260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	640	260	< 260	260		
Diethyl phthalate	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Dimethylphthalate	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Di-n-butylphthalate	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Di-n-octylphthalate	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Fluoranthene	ug/Kg	100,000	100,000	< 280	280	5,800	510	< 250	250	< 230	230	< 250	250	< 300	300	3,500	260	< 280	280	< 240	240	18,000	1,300	< 260	260		
Fluorene	ug/Kg	100,000	30,000	< 280	280	320	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	1,100	260	< 260	260		
Hexachlorobenzene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Hexachlorobutadiene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Hexachlorocyclopentadiene	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Hexachloroethane	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Indeno(1,2,3-cd)pyrene	ug/Kg	500	500	< 280	280	1,500	260	< 250	250	< 230	230	< 250	250	< 300	300	740	260	< 280	280	< 240	240	2,200	260	< 260	260		
Isophorone	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Naphthalene	ug/Kg	100,000	12,000	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	680	260	< 260	260		
Nitrobenzene	ug/Kg	15,000	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
N-Nitrosodimethylamine	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
N-Nitrosodi-n-propylamine	ug/Kg	NE	NE	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
N-Nitrosodiphenylamine	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
Pentachloronitrobenzene	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
Pentachlorophenol	ug/Kg	6,700	800	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
Phenanthrene	ug/Kg	100,000	100,000	< 280	280	4,500	260	< 250	250	< 230	230	< 250	250	< 300	300	1,100	260	< 280	280	< 240	240	17,000	1,300	< 260	260		
Phenol	ug/Kg	100,000	330	< 280	280	< 260	260	< 250	250	< 230	230	< 250	250	< 300	300	< 260	260	< 280	280	< 240	240	< 260	260	< 260	260		
Pyrene	ug/Kg	100,000	100,000	< 280	280	5,600	510	< 250	250	< 230	230	< 250	250	< 300	300	3,200	260	< 280	280	< 240	240	19,000	1,300	< 260	260		
Pyridine	ug/Kg	NE	NE	< 410	410	< 370	370	< 360	360	< 330	330	< 360	360	< 430	430	< 370	370	< 400	400	< 340	340	< 370	370	< 370	370		
Metals, Total																											
Aluminum	mg/Kg	NE	NE	7,460	62	11,300	51	11,000	53	2,610	46	14,700	50	11,400	59	11,000	57	4,670	56	5,560	51	13,100	56	14,100	60		
Antimony	mg/Kg	NE	NE	< 4.1	4.1	< 3.4	3.4	< 3.5	3.5	< 3.1	3.1	< 3.4	3.4	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 3.4	3.4	< 3.7	3.7	< 4.0	4		
Arsenic	mg/Kg	16	13	< 0.8	0.8	4.3	0.7	1.9	0.7	< 0.6	0.6	2.3	0.7	1.5	0.8	4.5	0.8	< 0.7	0.7	< 0.7	0.7	5.8	0.7	2.6	0.8		
Barium	mg/Kg	400	350	63.3	0.41	70.4	0.34	35.4	0.35	36.9	0.31	64.7	0.34	113	0.4	82.7	0.38	36.5	0.37	21.1	0.34	167	0.37	32.8	0.4		
Beryllium	mg/Kg	72	7.2	< 0.33	0.33	0.4	0.27	0.35	0.28	< 0.25	0.25	0.53	0.27	0.5	0.32	0.41	0.3	< 0.30	0.3	< 0.27	0.27	0.47	0.3	0.44	0.32		
Cadmium	mg/Kg	4.3	2.5	< 0.41	0.41	< 0.34	0.34	< 0.35	0.35	< 0.31	0.31	< 0.34	0.34	< 0.40	0.4	0.53	0.38	< 0.37	0.37	< 0.34	0.34	0.53	0.37	< 0.40	0.4		
Calcium	mg/Kg	NE	NE	21,400	62	6,670	5.1	772	5.3	23,600	46	1,250	5	27,300	59	20,400	57	38,800	56	898	5.1	3,190	5.6	745	6		
Chromium	mg/Kg	NE	NE	17.6	0.41	19.2	0.34	18.5	0.35	4.48	0.31	28.5	0.34	28.4	0.4	21.8	0.37	12.8	0.37	20.1	0.34	20.1	0.37	21.3	0.4		
Cobalt	mg																										

Table 1. Soil Sample Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id Collection Date Matrix	NYSDEC Part 375 Restricted Residential Use Soil Cleanup	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	GP1 (1-3 FT)		GP1 (16-18 FT)		GP5a (1-3 FT)		GP5 (16-18 FT)		GP8 (0-2 FT)		GP8 (16-18 FT)		GP9 (0-2 FT)		GP9 (20-22 FT)		B106 (2-4 FT)		B107 (2-3 FT)		DUP GP5a (1-3 FT)					
				11/12/2014 Solid	Result	RL	11/12/2014 Solid	Result	RL	11/13/2014 Solid	Result	RL	11/13/2014 Solid	Result	RL	11/12/2014 Solid	Result	RL	11/12/2014 Solid	Result	RL	11/12/2014 Solid	Result	RL	11/13/2014 Solid	Result	RL	11/13/2014 Solid	Result
	Units																												
PCBs By SW 8082																													
PCB-1016	ug/Kg	NE	100	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1221	ug/Kg	NE	100	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1232	ug/Kg	NE	100	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1242	ug/Kg	NE	100	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1248	ug/Kg	NE	100	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1254	ug/Kg	NE	100	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1260	ug/Kg	NE	100	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1262	ug/Kg	NE	NE	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
PCB-1268	ug/Kg	NE	NE	< 80	80	< 73	73	< 73	73	< 66	66	< 72	72	< 85	85	< 75	75	< 80	80	< 70	70	< 75	75	< 73	73				
Pesticides - Soil By SW8081																													
4,4' -DDD	ug/Kg	13,000	3.3	< 2.4	2.4	< 2.2	2.2	< 2.2	2.2	< 2.0	2	< 2.2	2.2	< 2.6	2.6	< 2.3	2.3	< 2.4	2.4	< 2.1	2.1	< 2.2	2.2	< 2.2	2.2				
4,4' -DDE	ug/Kg	8,900	3.3	< 2.4	2.4	< 2.2	2.2	< 2.2	2.2	< 2.0	2	< 2.2	2.2	< 2.6	2.6	< 5.5	5.5	< 2.4	2.4	< 2.1	2.1	< 2.2	2.2	< 2.2	2.2				
4,4' -DDT	ug/Kg	7,900	3.3	< 2.4	2.4	< 5.0	5	< 2.2	2.2	< 2.0	2	< 2.2	2.2	< 2.6	2.6	< 5.0	5	< 2.4	2.4	< 2.1	2.1	< 2.2	2.2	< 2.2	2.2				
a-BHC	ug/Kg	480	20	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
a-Chlordane	ug/Kg	4,200	94	< 4.0	4	< 3.7	3.7	< 3.6	3.6	< 3.3	3.3	< 3.6	3.6	< 4.3	4.3	< 3.8	3.8	< 4.0	4	< 3.5	3.5	< 3.7	3.7	< 3.6	3.6				
Aldrin	ug/Kg	97	5	< 4.0	4	< 3.7	3.7	< 3.6	3.6	< 3.3	3.3	< 3.6	3.6	< 4.3	4.3	< 3.8	3.8	< 4.0	4	< 3.5	3.5	< 3.7	3.7	< 3.6	3.6				
b-BHC	ug/Kg	360	36	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Chlordane	ug/Kg	NE	NE	< 4.0	40	< 3.7	37	< 3.6	36	< 3.3	33	< 3.6	36	< 4.3	43	< 3.8	38	< 4.0	40	< 3.5	35	< 3.7	37	< 3.6	36				
d-BHC	ug/Kg	100,000	40	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Dieldrin	ug/Kg	200	5	< 4.0	4	< 3.7	3.7	< 3.6	3.6	< 3.3	3.3	< 3.6	3.6	< 4.3	4.3	< 3.8	3.8	< 4.0	4	< 3.5	3.5	< 3.7	3.7	< 3.6	3.6				
Endosulfan I	ug/Kg	24,000	2,400	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Endosulfan II	ug/Kg	24,000	2,400	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Endosulfan sulfate	ug/Kg	24,000	2,400	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Endrin	ug/Kg	11,000	14	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Endrin aldehyde	ug/Kg	NE	NE	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Endrin ketone	ug/Kg	NE	NE	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
g-BHC	ug/Kg	1,300	100	< 1.6	1.6	< 1.5	1.5	< 1.5	1.5	< 1.3	1.3	< 1.4	1.4	< 1.7	1.7	< 1.5	1.5	< 1.6	1.6	< 1.4	1.4	< 1.5	1.5	< 1.3	1.3				
g-Chlordane	ug/Kg	NE	NE	< 4.0	4	< 3.7	3.7	< 3.6	3.6	< 3.3	3.3	< 3.6	3.6	< 4.3	4.3	< 3.8	3.8	< 4.0	4	< 3.5	3.5	< 3.7	3.7	< 3.6	3.6				
Heptachlor	ug/Kg	2,100	42	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Heptachlor epoxide	ug/Kg	NE	NE	< 8.0	8	< 7.3	7.3	< 7.3	7.3	< 6.6	6.6	< 7.2	7.2	< 8.5	8.5	< 7.5	7.5	< 8.0	8	< 7.0	7	< 7.5	7.5	< 7.3	7.3				
Methoxychlor	ug/Kg	NE	NE	< 4.0	40	< 3.7	37	< 3.6	36	< 3.3	33	< 3.6	36	< 4.3	43	< 3.8	38	< 4.0	40	< 3.5	35	< 3.7	37	< 3.6	36				
Toxaphene	ug/Kg	NE	NE	< 160	160	< 150	150	< 150	150	< 130	130	< 140	140	< 170	170	< 150	150	< 160	160	< 140	140	< 150	150	< 150	150				
Miscellaneous/Inorganics																													
Total Cyanide	mg/Kg	27	27	< 0.56	0.56	0.54	0.51	< 0.51	0.51	< 0.51	0.51	< 0.55	0.55	< 0.65	0.65	< 0.57	0.57	< 0.61	0.61	< 0.48	0.48	< 0.56	0.56	< 0.51	0.51				
Percent Solid	%	NE	NE	81		90		90		99		91		77		88		82		95		89		89					

Notes:
NE: Not established
Bolding indicates a detected concentration
Shading Indicates Result Exceeds Unrestricted Use SCO
Coloring Indicates Result Exceeds Both SCOs

Table 2. Groundwater Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id	NYSDEC TOGS Standards and Guidance Values - GA	GP-1 (MW-1)		GP-2 (MW-2)		GP-3 (MW-3)		GP-FIELD BLANK		TRIP BLANK		DUP GP-1 (MW-1)	
	Collection Date		11/19/2014		11/19/2014		11/19/2014		11/19/2014		11/19/2014		11/19/2014	
	Matrix		Ground Water		Ground Water		Ground Water		Ground Water		Ground Water		Ground Water	
	Units		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Volatiles By SW8260														
1,1,1,2-Tetrachloroethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1,1-Trichloroethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1,2,2-Tetrachloroethane	ug/L	5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5
1,1,2-Trichloroethane	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1-Dichloroethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1-Dichloroethene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1-Dichloropropene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,3-Trichlorobenzene	ug/L	NE	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,3-Trichloropropane	ug/L	0.04	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,4-Trichlorobenzene	ug/L	NE	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,4-Trimethylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dibromo-3-chloropropane	ug/L	0.04	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dibromoethane	ug/L	0.0006	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dichlorobenzene	ug/L	NE	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dichloroethane	ug/L	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6	< 0.60	0.6
1,2-Dichloropropane	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,3,5-Trimethylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,3-Dichlorobenzene	ug/L	3	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,3-Dichloropropane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,4-Dichlorobenzene	ug/L	NE	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
2,2-Dichloropropane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
2-Chlorotoluene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
2-Hexanone	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
2-Isopropyltoluene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
4-Chlorotoluene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
4-Methyl-2-pentanone	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Acetone	ug/L	50	< 25	25	< 25	25	< 25	25	< 25	25	< 25	25	< 25	25
Acrylonitrile	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Benzene	ug/L	1	< 0.70	0.7	< 0.70	0.7	< 0.70	0.7	< 0.70	0.7	< 0.70	0.7	< 0.70	0.7
Bromobenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Bromochloromethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Bromodichloromethane	ug/L	50	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5
Bromoform	ug/L	50	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Bromomethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Carbon Disulfide	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Carbon tetrachloride	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Chlorobenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Chloroethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Chloroform	ug/L	7	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Chloromethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
cis-1,2-Dichloroethene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
cis-1,3-Dichloropropene	ug/L	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4
Dibromochloromethane	ug/L	50	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5	< 0.50	0.5
Dibromomethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Dichlorodifluoromethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Ethylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Hexachlorobutadiene	ug/L	0.5	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4
Isopropylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
m&p-Xylene	ug/L	NE	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Methyl ethyl ketone	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Methyl t-butyl ether (MTBE)	ug/L	NE	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Methylene chloride	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Naphthalene	ug/L	10	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
n-Butylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
n-Propylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
o-Xylene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
p-Isopropyltoluene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
sec-Butylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Styrene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
tert-Butylbenzene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Tetrachloroethene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Tetrahydrofuran (THF)	ug/L	50	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5
Toluene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Total Xylenes	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
trans-1,2-Dichloroethene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
trans-1,3-Dichloropropene	ug/L	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4
trans-1,4-dichloro-2-butene	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Trichloroethene	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Trichlorofluoromethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Trichlorotrifluoroethane	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Vinyl chloride	ug/L	2	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1

Table 2. Groundwater Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id Collection Date Matrix Units	NYSDEC TOGS Standards and Guidance Values - GA	GP-1 (MW-1) 11/19/2014 Ground Water		GP-2 (MW-2) 11/19/2014 Ground Water		GP-3 (MW-3) 11/19/2014 Ground Water		GP-FIELD BLANK 11/19/2014 Ground Water		TRIP BLANK 11/19/2014 Ground Water		DUP GP-1 (MW-1) 11/19/2014 Ground Water	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
			Units		Units		Units		Units		Units		Units	
Semivolatiles By SW8270														
1,2,4,5-Tetrachlorobenzene	ug/L	NE	< 0.50	0.5	< 0.50	0.5	< 0.53	0.53	< 0.53	0.53	NA	NA	< 0.53	0.53
2-Methylnaphthalene	ug/L	NE	< 1.0	1	< 1.0	1	< 1.1	1.1	< 1.1	1.1	NA	NA	< 1.1	1.1
Acenaphthene	ug/L	20	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	NA	NA	< 0.05	0.05
Acenaphthylene	ug/L	NE	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	NA	NA	< 0.05	0.05
Anthracene	ug/L	50	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	NA	NA	< 0.02	0.02
Benz(a)anthracene	ug/L	0.002	< 0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	NA	NA	0.02	0.02
Benzo(a)pyrene	ug/L	NE	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	NA	NA	< 0.02	0.02
Benzo(b)fluoranthene	ug/L	0.002	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	NA	NA	< 0.02	0.02
Benzo(ghi)perylene	ug/L	NE	< 0.50	0.5	< 0.50	0.5	< 0.53	0.53	< 0.53	0.53	NA	NA	< 0.53	0.53
Benzo(k)fluoranthene	ug/L	0.002	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	NA	NA	< 0.02	0.02
Bis(2-ethylhexyl)phthalate	ug/L	5	1.7	0.53	< 0.50	0.5	< 0.53	0.53	< 0.53	0.53	NA	NA	1.1	0.53
Chrysene	ug/L	0.002	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	NA	NA	< 0.02	0.02
Dibenz(a,h)anthracene	ug/L	NE	< 0.01	0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	0.01	NA	NA	< 0.01	0.01
Fluoranthene	ug/L	50	< 0.04	0.04	< 0.04	0.04	< 0.04	0.04	< 0.04	0.04	NA	NA	< 0.04	0.04
Fluorene	ug/L	50	< 0.10	0.1	< 0.10	0.1	< 0.11	0.11	< 0.11	0.11	NA	NA	< 0.11	0.11
Hexachlorobenzene	ug/L	0.04	< 0.04	0.04	< 0.04	0.04	< 0.04	0.04	< 0.04	0.04	NA	NA	< 0.04	0.04
Hexachlorobutadiene	ug/L	0.5	< 0.50	0.5	< 0.50	0.5	< 0.53	0.53	< 0.53	0.53	NA	NA	< 0.53	0.53
Hexachloroethane	ug/L	5	< 0.50	0.5	< 0.50	0.5	< 0.53	0.53	< 0.53	0.53	NA	NA	< 0.53	0.53
Indeno(1,2,3-cd)pyrene	ug/L	0.002	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	NA	NA	< 0.02	0.02
Naphthalene	ug/L	10	0.13	0.11	0.16	0.1	< 0.11	0.11	< 0.11	0.11	NA	NA	0.15	0.11
Nitrobenzene	ug/L	0.4	< 0.10	0.1	< 0.10	0.1	< 0.11	0.11	< 0.11	0.11	NA	NA	< 0.11	0.11
Pentachloronitrobenzene	ug/L	NE	< 0.10	0.1	< 0.10	0.1	< 0.11	0.11	< 0.11	0.11	NA	NA	< 0.11	0.11
Pentachlorophenol	ug/L	1	< 0.80	0.8	< 0.80	0.8	< 0.84	0.84	< 0.85	0.85	NA	NA	< 0.85	0.85
Phenanthrene	ug/L	50	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	NA	NA	< 0.05	0.05
Pyrene	ug/L	50	0.03	0.02	0.03	0.02	< 0.02	0.02	< 0.02	0.02	NA	NA	< 0.02	0.02
Pyridine	ug/L	50	< 0.50	0.5	< 0.50	0.5	< 0.53	0.53	< 0.53	0.53	NA	NA	< 0.53	0.53
1,2,4-Trichlorobenzene	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
1,2-Dichlorobenzene	ug/L	NE	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	NA	NA	< 2.5	2.5
1,2-Diphenylhydrazine	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
1,3-Dichlorobenzene	ug/L	3	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	NA	NA	< 2.5	2.5
1,4-Dichlorobenzene	ug/L	NE	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	< 2.5	2.5	NA	NA	< 2.5	2.5
2,4,5-Trichlorophenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
2,4,6-Trichlorophenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
2,4-Dichlorophenol	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
2,4-Dimethylphenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
2,4-Dinitrophenol	ug/L	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
2,4-Dinitrotoluene	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
2,6-Dinitrotoluene	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
2-Chloronaphthalene	ug/L	10	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
2-Chlorophenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
2-Methylphenol (o-cresol)	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
2-Nitroaniline	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
2-Nitrophenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
3&4-Methylphenol (m&p-cresol)	ug/L	NE	< 10	10	< 10	10	< 10	10	< 10	10	NA	NA	< 10	10
3,3'-Dichlorobenzidine	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
3-Nitroaniline	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
4,6-Dinitro-2-methylphenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
4-Bromophenyl phenyl ether	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
4-Chloro-3-methylphenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
4-Chloroaniline	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
4-Chlorophenyl phenyl ether	ug/L	NE	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
4-Nitroaniline	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
4-Nitrophenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
Acetophenone	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Aniline	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Benzidine	ug/L	5	< 5	5	< 5	5	< 5	5	< 5	5	NA	NA	< 5	5
Benzoic acid	ug/L	NE	< 50	50	< 50	50	< 50	50	< 50	50	NA	NA	< 50	50
Benzyl butyl phthalate	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Bis(2-chloroethoxy)methane	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Bis(2-chloroethyl)ether	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1
Bis(2-chloroisopropyl)ether	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Carbazole	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Dibenzofuran	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Diethyl phthalate	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Dimethylphthalate	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Di-n-butylphthalate	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Di-n-octylphthalate	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Hexachlorocyclopentadiene	ug/L	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Isophorone	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
N-Nitrosodimethylamine	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
N-Nitrosodi-n-propylamine	ug/L	NE	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
N-Nitrosodiphenylamine	ug/L	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	NA	NA	< 5.0	5
Phenol	ug/L	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	NA	NA	< 1.0	1

Table 2. Groundwater Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id Collection Date Matrix	NYSDEC TOGS Standards and Guidance Values - GA	GP-1 (MW-1) 11/19/2014 Ground Water		GP-2 (MW-2) 11/19/2014 Ground Water		GP-3 (MW-3) 11/19/2014 Ground Water		GP-FIELD BLANK 11/19/2014 Ground Water		TRIP BLANK 11/19/2014 Ground Water		DUP GP-1 (MW-1) 11/19/2014 Ground Water	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
	Units													
Metals, Total														
Aluminum	mg/L	0.1	1.95	0.01	11.3	0.01	0.665	0.01	< 0.010	0.01	NA	NA	1.45	0.01
Antimony	mg/L	0.003	< 0.005	0.005	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	NA	NA	< 0.003	0.003
Arsenic	mg/L	0.025	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	NA	NA	< 0.004	0.004
Barium	mg/L	1	0.071	0.002	0.147	0.002	0.054	0.002	< 0.002	0.002	NA	NA	0.067	0.002
Beryllium	mg/L	0.003	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	NA	NA	< 0.001	0.001
Cadmium	mg/L	0.005	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	NA	NA	< 0.001	0.001
Calcium	mg/L	NE	93.6	0.01	133	0.01	78.9	0.01	9.48	0.01	NA	NA	92.3	0.01
Chromium	mg/L	0.05	0.007	0.001	0.021	0.001	0.003	0.001	< 0.001	0.001	NA	NA	0.006	0.001
Cobalt	mg/L	NE	0.004	0.002	0.01	0.002	0.002	0.002	< 0.002	0.002	NA	NA	0.004	0.002
Copper	mg/L	0.2	0.005	0.005	0.022	0.005	< 0.005	0.005	< 0.005	0.005	NA	NA	0.005	0.005
Iron	mg/L	0.3	3.35	0.01	15.2	0.01	1.21	0.01	< 0.010	0.01	NA	NA	2.67	0.01
Lead	mg/L	0.025	< 0.002	0.002	0.003	0.002	< 0.002	0.002	< 0.002	0.002	NA	NA	< 0.002	0.002
Magnesium	mg/L	35	36.5	0.01	52.9	0.01	27.6	0.01	1.52	0.01	NA	NA	35.8	0.01
Manganese	mg/L	0.3	0.151	0.001	0.46	0.001	0.095	0.001	< 0.001	0.001	NA	NA	0.144	0.001
Mercury	mg/L	0.0007	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	NA	NA	< 0.0002	0.0002
Nickel	mg/L	0.1	0.005	0.001	0.017	0.001	0.003	0.001	< 0.001	0.001	NA	NA	0.005	0.001
Potassium	mg/L	NE	6.1	0.1	7.4	0.1	5.2	0.1	1	0.1	NA	NA	5.9	0.1
Selenium	mg/L	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	NA	NA	< 0.010	0.01
Silver	mg/L	0.05	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	NA	NA	< 0.001	0.001
Sodium	mg/L	20	30.8	0.1	14.9	0.1	21.7	0.1	11.7	0.1	NA	NA	30.2	0.1
Thallium	mg/L	0.0005	< 0.002	0.002	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	NA	NA	< 0.0005	0.0005
Vanadium	mg/L	NE	0.009	0.002	0.03	0.002	0.004	0.002	< 0.002	0.002	NA	NA	0.007	0.002
Zinc	mg/L	5	0.015	0.002	0.052	0.002	0.009	0.002	0.006	0.002	NA	NA	0.015	0.002
Metals, Dissolved														
Aluminum (Dissolved)	mg/L	0.1	0.09	0.01	0.22	0.01	0.06	0.01	< 0.01	0.01	NA	NA	0.04	0.01
Antimony (Dissolved)	mg/L	0.003	< 0.005	0.005	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	NA	NA	< 0.003	0.003
Arsenic (Dissolved)	mg/L	0.025	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	NA	NA	< 0.004	0.004
Barium (Dissolved)	mg/L	1	0.056	0.002	0.056	0.002	0.048	0.002	< 0.002	0.002	NA	NA	0.056	0.002
Beryllium (Dissolved)	mg/L	0.003	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	NA	NA	< 0.001	0.001
Cadmium (Dissolved)	mg/L	0.005	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	NA	NA	< 0.001	0.001
Calcium (Dissolved)	mg/L	NE	73.5	0.01	53.1	0.01	74.6	0.01	9.35	0.01	NA	NA	73.1	0.01
Chromium (Dissolved)	mg/L	0.05	< 0.001	0.001	0.001	0.001	< 0.001	0.001	< 0.001	0.001	NA	NA	< 0.001	0.001
Cobalt (Dissolved)	mg/L	NE	0.002	0.001	< 0.001	0.001	0.001	0.001	< 0.001	0.001	NA	NA	0.002	0.001
Copper (Dissolved)	mg/L	0.2	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	NA	NA	< 0.005	0.005
Iron (Dissolved)	mg/L	0.3	0.135	0.011	0.345	0.011	0.12	0.011	< 0.011	0.011	NA	NA	0.054	0.011
Lead (Dissolved)	mg/L	0.025	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	NA	NA	< 0.002	0.002
Magnesium (Dissolved)	mg/L	35	26.7	0.01	17	0.01	25.3	0.01	1.5	0.01	NA	NA	26.4	0.01
Manganese (Dissolved)	mg/L	0.3	0.074	0.001	0.045	0.001	0.075	0.001	0.001	0.001	NA	NA	0.072	0.001
Mercury (Dissolved)	mg/L	0.0007	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	NA	NA	< 0.0002	0.0002
Nickel (Dissolved)	mg/L	0.1	0.002	0.001	0.002	0.001	0.003	0.001	0.002	0.001	NA	NA	0.002	0.001
Potassium (Dissolved)	mg/L	NE	6	0.1	4.9	0.1	5.4	0.1	2.5	0.1	NA	NA	5.8	0.1
Selenium (Dissolved)	mg/L	0.01	< 0.002	0.002	< 0.01	0.01	< 0.01	0.01	< 0.01	0.01	NA	NA	< 0.01	0.01
Silver (Dissolved)	mg/L	0.05	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	NA	NA	< 0.001	0.001
Sodium (Dissolved)	mg/L	20	30.2	0.11	12.8	0.11	21.4	0.11	12	0.11	NA	NA	30.2	0.11
Thallium (Dissolved)	mg/L	0.0005	< 0.002	0.002	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	NA	NA	< 0.0005	0.0005
Vanadium (Dissolved)	mg/L	NE	0.002	0.002	0.003	0.002	0.002	0.002	< 0.002	0.002	NA	NA	< 0.002	0.002
Zinc (Dissolved)	mg/L	5	0.004	0.002	0.005	0.002	0.006	0.002	0.007	0.002	NA	NA	0.004	0.002

Table 2. Groundwater Analytical Results
Phase II Investigation
34-22 35th Street
Astoria, New York

Compound	Sample Id	NYSDEC TOGS Standards and Guidance Values - GA	GP-1 (MW-1)		GP-2 (MW-2)		GP-3 (MW-3)		GP-FIELD BLANK		TRIP BLANK		DUP GP-1 (MW-1)	
	Collection Date		11/19/2014		11/19/2014		11/19/2014		11/19/2014		11/19/2014		11/19/2014	
	Matrix		Ground Water		Ground Water		Ground Water		Ground Water		Ground Water		Ground Water	
	Units		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
PCBs By 608/ 8082														
PCB-1016	ug/L	0.09	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1221	ug/L	0.09	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1232	ug/L	0.09	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1242	ug/L	0.09	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1248	ug/L	0.09	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1254	ug/L	0.09	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1260	ug/L	0.09	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1262	ug/L	NE	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
PCB-1268	ug/L	NE	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
Pesticides By SW8081														
4,4' -DDD	ug/L	0.3	< 0.010	0.01	< 0.050	0.05	< 0.010	0.01	< 0.010	0.01	NA	NA	< 0.010	0.01
4,4' -DDE	ug/L	0.2	< 0.010	0.01	< 0.050	0.05	< 0.010	0.01	< 0.010	0.01	NA	NA	< 0.010	0.01
4,4' -DDT	ug/L	0.2	< 0.010	0.01	< 0.050	0.05	< 0.010	0.01	< 0.010	0.01	NA	NA	< 0.010	0.01
a-BHC	ug/L	0.01	< 0.005	0.005	< 0.025	0.025	< 0.005	0.005	< 0.005	0.005	NA	NA	< 0.005	0.005
Alachlor	ug/L	0.5	< 0.075	0.075	< 0.075	0.075	< 0.075	0.075	< 0.075	0.075	NA	NA	< 0.075	0.075
Aldrin	ug/L	NE	< 0.005	0.005	0.003	0.002	< 0.002	0.002	< 0.003	0.003	NA	NA	< 0.005	0.005
b-BHC	ug/L	0.04	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	NA	NA	< 0.005	0.005
Chlordane	ug/L	0.05	< 0.050	0.05	< 0.30	0.3	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
d-BHC	ug/L	0.04	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	NA	NA	< 0.025	0.025
Dieldrin	ug/L	0.004	< 0.005	0.005	0.007	0.002	< 0.005	0.005	< 0.005	0.005	NA	NA	< 0.002	0.002
Endosulfan I	ug/L	NE	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
Endosulfan II	ug/L	NE	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
Endosulfan Sulfate	ug/L	NE	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
Endrin	ug/L	NE	< 0.010	0.01	< 0.050	0.05	< 0.010	0.01	< 0.010	0.01	NA	NA	< 0.010	0.01
Endrin Aldehyde	ug/L	5	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
Endrin ketone	ug/L	5	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	< 0.050	0.05	NA	NA	< 0.050	0.05
g-BHC (Lindane)	ug/L	0.05	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	< 0.025	0.025	NA	NA	< 0.025	0.025
Heptachlor	ug/L	0.04	< 0.005	0.005	< 0.025	0.025	< 0.005	0.005	< 0.005	0.005	NA	NA	< 0.005	0.005
Heptachlor epoxide	ug/L	0.03	< 0.005	0.005	< 0.025	0.025	< 0.005	0.005	< 0.005	0.005	NA	NA	< 0.005	0.005
Methoxychlor	ug/L	35	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	NA	NA	< 0.10	0.1
Toxaphene	ug/L	0.06	< 0.20	0.2	< 1.0	1	< 0.20	0.2	< 0.20	0.2	NA	NA	< 0.20	0.2

Notes:
NE: Not established
NA: Not analyzed
Bolding indicates a detected concentration
Shading Indicates Result Exceeds AWQS

Table 3: Soil Vapor Analytical Results
Phase II Subsurface Investigation
34-22 35th Street
Astoria, New York

Compound	NYSDOH Soil Vapor Intrusion Matrix 1 & 2 Action Levels	Sample ID Collection Date Units	GP6(SG-1)		GP4(SG-2)		GP7(SG-3)		DUP SG4(SG-2)	
			11/13/2014		11/13/2014		11/13/2014		11/13/2014	
			Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachloroethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1,1-Trichloroethane	100	ug/m3	10.2	1	12.3	1	8.18	1	12	1
1,1,2,2-Tetrachloroethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1,2-Trichloroethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1-Dichloroethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,1-Dichloroethene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2,4-Trichlorobenzene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2,4-Trimethylbenzene	NE	ug/m3	45.8	1	5.85	1	37.4	1	4.42	1
1,2-Dibromoethane(EDB)	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichlorobenzene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichloroethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-dichloropropane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichlorotetrafluoroethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,3,5-Trimethylbenzene	NE	ug/m3	11.9	1	1.92	1	9.92	1	1.38	1
1,3-Butadiene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,3-Dichlorobenzene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,4-Dichlorobenzene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
1,4-Dioxane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
2-Hexanone(MBK)	NE	ug/m3	12.8	1	< 1.00	1	14.3	1	< 1.00	1
4-Ethyltoluene	NE	ug/m3	21.2	1	3.49	1	17.7	1	2.31	1
4-Isopropyltoluene	NE	ug/m3	1.1	1	< 1.00	1	< 1.00	1	< 1.00	1
4-Methyl-2-pentanone(MIBK)	NE	ug/m3	1.68	1	< 1.00	1	1.1	1	< 1.00	1
Acetone	NE	ug/m3	318	1	227	1	342	1	235	1
Acrylonitrile	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Benzene	NE	ug/m3	31.4	1	22.9	1	33.5	1	22.7	1
Benzyl chloride	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Bromodichloromethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Bromoform	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Bromomethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Carbon Disulfide	NE	ug/m3	7.69	1	4.32	1	1.34	1	4.23	1
Carbon Tetrachloride	5	ug/m3	3.08	0.25	15.5	0.25	9.05	0.25	15	0.25
Chlorobenzene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Chloroethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Chloroform	NE	ug/m3	3.37	1	25.9	1	4.64	1	24.9	1
Chloromethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Cis-1,2-Dichloroethene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
cis-1,3-Dichloropropene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Cyclohexane	NE	ug/m3	5.85	1	5.4	1	5.95	1	5.19	1
Dibromochloromethane	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Dichlorodifluoromethane	NE	ug/m3	2.08	1	2.17	1	2.27	1	2.03	1
Ethanol	NE	ug/m3	16.3	1	84	1	28.8	1	82.8	1
Ethyl acetate	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Ethylbenzene	NE	ug/m3	98.1	1	36.7	1	97.6	1	34.4	1
Heptane	NE	ug/m3	48.7	1	34	1	54.9	1	33.2	1
Hexachlorobutadiene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Hexane	NE	ug/m3	35.9	1	32.2	1	41.9	1	32.5	1
Isopropylalcohol	NE	ug/m3	5.67	1	9.6	1	4.1	1	6.9	1
Isopropylbenzene	NE	ug/m3	5.21	1	1.33	1	4.72	1	1.18	1
m,p-Xylene	NE	ug/m3	289	1	107	1	279	1	98.1	1
Methyl Ethyl Ketone	NE	ug/m3	354	1	589	1	548	1	566	1
Methyl tert-butyl ether(MTBE)	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Methylene Chloride	NE	ug/m3	1.04	1	< 1.00	1	1.94	1	< 1.00	1
n-Butylbenzene	NE	ug/m3	2.91	1	< 1.00	1	2.47	1	< 1.00	1
o-Xylene	NE	ug/m3	88.5	1	29.7	1	84.6	1	27.1	1
Propylene	NE	ug/m3	41.8	1	12.8	1	9.22	1	13.4	1
sec-Butylbenzene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Styrene	NE	ug/m3	1.23	1	< 1.00	1	1.28	1	< 1.00	1
Tetrachloroethane	100	ug/m3	8.2	0.25	32.4	0.25	36.1	0.25	30.6	0.25
Tetrahydrofuran	NE	ug/m3	849	1	763	1	1,120	1	716	1
Toluene	NE	ug/m3	426	1	212	1	426	1	203	1
Trans-1,2-Dichloroethene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
trans-1,3-Dichloropropene	NE	ug/m3	< 1.00	1	< 1.00	1	< 1.00	1	< 1.00	1
Trichloroethene	5	ug/m3	< 0.25	0.25	8.43	0.25	2.9	0.25	8.27	0.25
Trichlorofluoromethane	NE	ug/m3	8.08	1	15.3	1	24.2	1	15.3	1

Notes:
NE: Not established
Bolding indicates a detected concentration
Shading Indicates Result Exceeds nysdoh Action Levels

Table 4.Track 1 Soil Cleanup Objectives
Remedial Action Work Plan
34-22 35th Street
Astoria, New York

Compound	Sample Id	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
	Collection Date Matrix Units	
Volatiles By SW8260		
1,1,1,2-Tetrachloroethane	ug/Kg	NE
1,1,1-Trichloroethane	ug/Kg	680
1,1,2,2-Tetrachloroethane	ug/Kg	NE
1,1,2-Trichloroethane	ug/Kg	NE
1,1-Dichloroethane	ug/Kg	270
1,1-Dichloroethene	ug/Kg	330
1,1-Dichloropropene	ug/Kg	NE
1,2,3-Trichlorobenzene	ug/Kg	NE
1,2,3-Trichloropropane	ug/Kg	NE
1,2,4-Trichlorobenzene	ug/Kg	NE
1,2,4-Trimethylbenzene	ug/Kg	3,600
1,2-Dibromo-3-chloropropane	ug/Kg	NE
1,2-Dibromoethane	ug/Kg	NE
1,2-Dichlorobenzene	ug/Kg	1,100
1,2-Dichloroethane	ug/Kg	20
1,2-Dichloropropane	ug/Kg	NE
1,3,5-Trimethylbenzene	ug/Kg	8,400
1,3-Dichlorobenzene	ug/Kg	2,400
1,3-Dichloropropane	ug/Kg	NE
1,4-Dichlorobenzene	ug/Kg	1,800
2,2-Dichloropropane	ug/Kg	NE
2-Chlorotoluene	ug/Kg	NE
2-Hexanone	ug/Kg	NE
2-Isopropyltoluene	ug/Kg	NE
4-Chlorotoluene	ug/Kg	NE
4-Methyl-2-pentanone	ug/Kg	NE
Acetone	ug/Kg	50
Acrylonitrile	ug/Kg	NE
Benzene	ug/Kg	60
Bromobenzene	ug/Kg	NE
Bromochloromethane	ug/Kg	NE
Bromodichloromethane	ug/Kg	NE
Bromoform	ug/Kg	NE
Bromomethane	ug/Kg	NE
Carbon Disulfide	ug/Kg	NE
Carbon tetrachloride	ug/Kg	760
Chlorobenzene	ug/Kg	1,100
Chloroethane	ug/Kg	NE
Chloroform	ug/Kg	370
Chloromethane	ug/Kg	NE
cis-1,2-Dichloroethene	ug/Kg	250
cis-1,3-Dichloropropene	ug/Kg	NE
Dibromochloromethane	ug/Kg	NE
Dibromomethane	ug/Kg	NE
Dichlorodifluoromethane	ug/Kg	NE
Ethylbenzene	ug/Kg	1,000
Hexachlorobutadiene	ug/Kg	NE
Isopropylbenzene	ug/Kg	NE
m&p-Xylene	ug/Kg	NE
Methyl Ethyl Ketone	ug/Kg	120
Methyl t-butyl ether (MTBE)	ug/Kg	930
Methylene chloride	ug/Kg	50
Naphthalene	ug/Kg	NE
n-Butylbenzene	ug/Kg	12,000
n-Propylbenzene	ug/Kg	3,900

Table 4.Track 1 Soil Cleanup Objectives
Remedial Action Work Plan
34-22 35th Street
Astoria, New York

Compound	Sample Id	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
	Collection Date Matrix Units	
o-Xylene	ug/Kg	NE
p-Isopropyltoluene	ug/Kg	NE
sec-Butylbenzene	ug/Kg	11,000
Styrene	ug/Kg	NE
tert-Butylbenzene	ug/Kg	5,900
Tetrachloroethene	ug/Kg	1,300
Tetrahydrofuran (THF)	ug/Kg	NE
Toluene	ug/Kg	700
Total Xylenes	ug/Kg	260
trans-1,2-Dichloroethene	ug/Kg	190
trans-1,3-Dichloropropene	ug/Kg	NE
trans-1,4-dichloro-2-butene	ug/Kg	NE
Trichloroethene	ug/Kg	470
Trichlorofluoromethane	ug/Kg	NE
Trichlorotrifluoroethane	ug/Kg	NE
Vinyl chloride	ug/Kg	20
Semivolatiles By SW 8270		
1,2,4,5-Tetrachlorobenzene	ug/Kg	NE
1,2,4-Trichlorobenzene	ug/Kg	NE
1,2-Dichlorobenzene	ug/Kg	NE
1,2-Diphenylhydrazine	ug/Kg	NE
1,3-Dichlorobenzene	ug/Kg	NE
1,4-Dichlorobenzene	ug/Kg	NE
2,4,5-Trichlorophenol	ug/Kg	NE
2,4,6-Trichlorophenol	ug/Kg	NE
2,4-Dichlorophenol	ug/Kg	NE
2,4-Dimethylphenol	ug/Kg	NE
2,4-Dinitrophenol	ug/Kg	NE
2,4-Dinitrotoluene	ug/Kg	NE
2,6-Dinitrotoluene	ug/Kg	NE
2-Chloronaphthalene	ug/Kg	NE
2-Chlorophenol	ug/Kg	NE
2-Methylnaphthalene	ug/Kg	NE
2-Methylphenol (o-cresol)	ug/Kg	330
2-Nitroaniline	ug/Kg	NE
2-Nitrophenol	ug/Kg	NE
3&4-Methylphenol (m&p-cresol)	ug/Kg	NE
3,3'-Dichlorobenzidine	ug/Kg	NE
3-Nitroaniline	ug/Kg	NE
4,6-Dinitro-2-methylphenol	ug/Kg	NE
4-Bromophenyl phenyl ether	ug/Kg	NE
4-Chloro-3-methylphenol	ug/Kg	NE
4-Chloroaniline	ug/Kg	NE
4-Chlorophenyl phenyl ether	ug/Kg	NE
4-Nitroaniline	ug/Kg	NE
4-Nitrophenol	ug/Kg	NE
Acenaphthene	ug/Kg	20,000
Acenaphthylene	ug/Kg	100,000
Acetophenone	ug/Kg	NE
Aniline	ug/Kg	NE
Anthracene	ug/Kg	100,000
Benzo(a)anthracene	ug/Kg	1,000
Benzidine	ug/Kg	NE
Benzo(a)pyrene	ug/Kg	1,000
Benzo(b)fluoranthene	ug/Kg	1,000
Benzo(ghi)perylene	ug/Kg	100,000
Benzo(k)fluoranthene	ug/Kg	800

Table 4.Track 1 Soil Cleanup Objectives
Remedial Action Work Plan
34-22 35th Street
Astoria, New York

Compound	Sample Id	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
	Collection Date Matrix Units	
Benzoic acid	ug/Kg	NE
Benzyl butyl phthalate	ug/Kg	NE
Bis(2-chloroethoxy)methane	ug/Kg	NE
Bis(2-chloroethyl)ether	ug/Kg	NE
Bis(2-chloroisopropyl)ether	ug/Kg	NE
Bis(2-ethylhexyl)phthalate	ug/Kg	NE
Carbazole	ug/Kg	NE
Chrysene	ug/Kg	1,000
Dibenz(a,h)anthracene	ug/Kg	330
Dibenzofuran	ug/Kg	7,000
Diethyl phthalate	ug/Kg	NE
Dimethylphthalate	ug/Kg	NE
Di-n-butylphthalate	ug/Kg	NE
Di-n-octylphthalate	ug/Kg	NE
Fluoranthene	ug/Kg	100,000
Fluorene	ug/Kg	30,000
Hexachlorobenzene	ug/Kg	NE
Hexachlorobutadiene	ug/Kg	NE
Hexachlorocyclopentadiene	ug/Kg	NE
Hexachloroethane	ug/Kg	NE
Indeno(1,2,3-cd)pyrene	ug/Kg	500
Isophorone	ug/Kg	NE
Naphthalene	ug/Kg	12,000
Nitrobenzene	ug/Kg	NE
N-Nitrosodimethylamine	ug/Kg	NE
N-Nitrosodi-n-propylamine	ug/Kg	NE
N-Nitrosodiphenylamine	ug/Kg	NE
Pentachloronitrobenzene	ug/Kg	NE
Pentachlorophenol	ug/Kg	800
Phenanthrene	ug/Kg	100,000
Phenol	ug/Kg	330
Pyrene	ug/Kg	100,000
Pyridine	ug/Kg	NE
Metals, Total		
Aluminum	mg/Kg	NE
Antimony	mg/Kg	NE
Arsenic	mg/Kg	13
Barium	mg/Kg	350
Beryllium	mg/Kg	7.2
Cadmium	mg/Kg	2.5
Calcium	mg/Kg	NE
Chromium	mg/Kg	30
Cobalt	mg/Kg	NE
Copper	mg/Kg	50
Iron	mg/Kg	NE
Lead	mg/Kg	63
Magnesium	mg/Kg	NE
Manganese	mg/Kg	1,600
Mercury	mg/Kg	0.18
Nickel	mg/Kg	30
Potassium	mg/Kg	NE
Selenium	mg/Kg	3.9
Silver	mg/Kg	2
Sodium	mg/Kg	NE
Thallium	mg/Kg	NE
Vanadium	mg/Kg	NE
Zinc	mg/Kg	109

Table 4.Track 1 Soil Cleanup Objectives
Remedial Action Work Plan
34-22 35th Street
Astoria, New York

Compound	Sample Id	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
	Collection Date Matrix Units	
PCBs By SW 8082		
PCB-1016	ug/Kg	100
PCB-1221	ug/Kg	100
PCB-1232	ug/Kg	100
PCB-1242	ug/Kg	100
PCB-1248	ug/Kg	100
PCB-1254	ug/Kg	100
PCB-1260	ug/Kg	100
PCB-1262	ug/Kg	NE
PCB-1268	ug/Kg	NE
Pesticides - Soil By SW8081		
4,4' -DDD	ug/Kg	3.3
4,4' -DDE	ug/Kg	3.3
4,4' -DDT	ug/Kg	3.3
a-BHC	ug/Kg	20
a-Chlordane	ug/Kg	94
Aldrin	ug/Kg	5
b-BHC	ug/Kg	36
Chlordane	ug/Kg	NE
d-BHC	ug/Kg	40
Dieldrin	ug/Kg	5
Endosulfan I	ug/Kg	2,400
Endosulfan II	ug/Kg	2,400
Endosulfan sulfate	ug/Kg	2,400
Endrin	ug/Kg	14
Endrin aldehyde	ug/Kg	NE
Endrin ketone	ug/Kg	NE
g-BHC	ug/Kg	100
g-Chlordane	ug/Kg	NE
Heptachlor	ug/Kg	42
Heptachlor epoxide	ug/Kg	NE
Methoxychlor	ug/Kg	NE
Toxaphene	ug/Kg	NE
Miscellaneous/Inorganics		
Total Cyanide	mg/Kg	27
Percent Solid	%	NE

APPENDIX 1

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 34-22 Astoria Partners, LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, 34-22 Astoria Partners, 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 NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Ms. Sarah Pong, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 442-8342.

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. 34-22 Astoria Partners, LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Queens Library at Long Island City

37-44 21st Street, Long Island City

(718) 752-3700

Monday 9:00 AM – 8:00 PM

Tuesday 1:00 PM – 6:00 PM

Wednesday & Friday – 10:00 AM – 6:00 PM

Thursday – 12:00 PM – 8:00 PM

Saturday – 10:00 AM – 5:30 PM

Sunday – Closed

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

Identify Issues of Public Concern. Soil impacts may be of concern to local stakeholders and they will be mitigated and monitored during construction as described above.

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

34-22 Astoria Partners, LLC, reviewed and approved by OER prior to distribution and mailed by 34-22 Astoria Partners, 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 2

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.

The outbound truck transport routes will be provided when the disposal facility is selected. 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 Queens, 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 sources will be stored, transported, and disposed of in compliance with applicable laws and regulations.

1.7 MATERIALS REUSE ON-SITE

No materials reuse on-site is planned for this project.

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.

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

No backfill is planned for this project. [2 feet of clean soil in exposed areas require import]

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Table 1.

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.
- 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 yd³ 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, 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 3

CONSTRUCTION HEALTH AND SAFETY PLAN

**Construction Health and Safety Plan
(CHASP)**

**34-22 35th Street
Astoria, New York
OER Project Number: 10RHAZ062Q**

Prepared for:
34-22 Astoria Partners, LLC
4400 Second Avenue
(718) 832-2444

Prepared by:
GEI Consultants Inc., P.C.
110 Walt Whitman Road
Huntington Station, New York 11746
(631) 760-9300

March 2015

Table of Contents

1. Background Information	4
1.1 General	4
1.2 Property Description	4
1.3 Site Activities	5
1.4 Hazard/Risk Analysis	5
1.4.1 Physical Hazards	5
1.4.2 Fire and Explosion	6
1.4.3 Cold Stress	6
1.4.4 Heat Stress	6
1.4.5 Noise	6
1.4.6 Hand and Power Tools	6
1.4.7 Slips, Trips, and Falls	7
1.4.8 Manual Lifting	8
1.4.9 Projectile Objects, Debris and Overhead Dangers	8
1.4.10 Heavy Equipment Operation	8
1.4.11 Confined Spaces	8
1.4.12 Illumination	9
1.4.13 Lockout/Tagout	9
1.4.14 Fall Hazards	9
1.4.15 Ladder Safety	10
1.4.16 Scaffolding Safety	10
1.4.17 Welding	11
1.4.18 Asbestos-Containing Material	11
1.5 Evaluation of Potential Chemical Hazards	14
1.5.1 Volatile Organic Compounds (VOCs)	15
1.5.2 Semi-volatile organic compounds	15
1.5.3 Metals	16
1.5.4 Asbestos-Containing Materials	16
1.5.5 Polychlorinated Biphenyls	16
1.5.6 Polychlorinated Biphenyls	16
1.6 Biological Hazards	16
1.6.1 Animals	16
1.6.2 Insects	17
1.6.2.1 Tick Borne Illnesses	17
1.6.2.2 Wasps and Bees	19
1.6.3 Plants	19
1.7 Sun Exposure	20
1.8 Personal Safety	20



Accident/Incident Report Form

Please complete this form and send it to your Branch Manager, HR and CHSO **within 24 hours** of the incident.

SECTION A ACCIDENT/INCIDENT DETAILS

EMPLOYEE INFORMATION:		OTHER INJURED (IF APPLICABLE):	
Name: _____		Name: _____	
Home Address: _____ Street Address City State Zip Code		Home Address: _____ Street Address City State Zip Code	
Contact Information: () () Primary Secondary		Contact Information: () () Primary Secondary	
Date of Birth: _____		Date of Birth: _____	
Date of Hire: _____		Date of Hire: _____	
Branch: _____		Branch: _____	
Supervisor: _____		Supervisor: _____	

Date and Time Accident/Incident	Date and Time Reported	LOCATION OF INCIDENT/ACCIDENT
____ / ____ / ____ Month Day Year ____ A.M. ____ P.M.	____ / ____ / ____ Month Day Year ____ A.M. ____ P.M.	Project Name: _____ Client and Location: _____ or _____ Office Location: _____

INCIDENT TYPE: (Check All That Applies)	WITNESS INFORMATION
<input type="checkbox"/> Personal Injury/Illness <input type="checkbox"/> Vehicle Accident <input type="checkbox"/> Property Damage <input type="checkbox"/> Environmental Spill <input type="checkbox"/> Other	Name: _____ Contact Number: _____ Company: _____

WHAT HAPPENED TO THE INJURED PARTY: First Aid Administered Refused Treatment/Transport Transported to Hospital
 Returned to Work Went Home Went to Physician Unknown

Clinic/Hospital or Treating Physician: _____ Phone: _____
 Name Street Address City State Zip Code

SECTION B PERSONAL INJURY

Cause of Injury: _____

Part of Body Injured: _____ Multiple Injuries: Y N

Was PPE worn when injured? : Y N What PPE was worn? _____

WAS INJURY A RESULT OF THE USE A MOTOR VEHICLE: YES NO (If yes, complete Section C)

NEAR MISS REPORT

A near miss is a potential hazard or incident that has not resulted in any personal injury. Unsafe working conditions, unsafe employee work habits, improper use of equipment, or use of malfunctioning equipment have the potential to cause work related injuries. It is everyone's responsibility to report and/or correct these potential accidents/incidents immediately. Please complete this form as a means to report these near-miss situations. Send a copy of the completed form to the Project Manager, Regional Health and Safety Officer and the Corporate Health and Safety Officer.

Location: _____

Site Name: _____

Date: _____

Time: _____ a.m. p.m.

Weather conditions, site operations taking place during near miss. _____

Please check all appropriate conditions:

Unsafe Act

Unsafe equipment

Unsafe Condition

Unsafe use of equipment

Description of incident or potential hazard: _____

Employees or sub-contractors involved if applicable. _____

Employee Signature _____ Date _____

Print Name _____

NEAR MISS INVESTGATION

Description of the near-miss condition: _____

Causes (primary & contributing) _____

Corrective action taken (Remove the hazard, replace, repair, or retrain in the proper procedures for the task) _____

Actions not yet taken _____

Signed: _____ Date Completed: _____

Print Name

Not completed for the following reason: _____ Date: _____

2. Community Air Monitoring Plan	22
3. Project Personnel/Responsibilities and Lines of Authority	23
3.1 Construction Manager (CM)	23
3.2 Construction Health and Safety Officer (CHSO)	23
3.3 Site Safety Officer (SSO)	24
3.4 Field Representative (FR)	24
4. Subcontractors	26
5. Emergency Contact List	27
6. Training Program	28
6.1 Hazard Communication	28
6.2 Onsite Safety Briefings	28
7. Medical Support	29
8. Personal Protective Equipment	30
9. Supplemental Contingency Plan Procedures	32
9.1 Fire	32
9.2 Severe Weather	32
9.3 Spills or Material Release	32
9.4 Alcohol and Drug Abuse Prevention	32
10. Decontamination Procedures	33
10.1 Personnel Decontamination Station	33
10.2 Decontamination Equipment Requirements	33
Construction Health and Safety Plan Sign-Off	34

Appendices

Appendix A	Route to Hospital
Appendix B	Cold Stress Guidelines
Appendix C	Heat Stress Guidelines
Appendix D	Incident Reporting Form

1. Background Information

1.1 General

Engineer Volmar Construction, Inc.
4400 Second Avenue 42-22 35th Street
Queens, Astoria, New York

Project Name 34-22 35th Street
Astoria, New York

This Construction Health and Safety Plan (CHASP) establishes policies and procedures to protect Volmar Construction, Inc. (Volmar) personnel from the potential hazards posed by the activities at the 34-22 35th Street site located in Astoria, New York (see **Appendix A** – Site-Specific Information).

Reading of and adherence to the CHASP is required of all onsite Volmar personnel. Subcontractors for this project will be required to develop their own HASP for protection of their employees, but at a minimum must adhere to applicable requirements set forth in this CHASP. Additionally, federal, state, and local representatives, as well as Volmar representatives may be required to sign and adhere to this CHASP, depending on the nature of their presence onsite during activities conducted by Volmar.

The plan identifies measures to minimize accidents and injuries, which may result from project activities, emergencies, or during adverse weather conditions. Activities performed under this HASP will comply with applicable parts of Occupational Safety and Health Administration (OSHA) Regulations, primarily 29 Code of Federal Regulations (CFR) Parts 1910 and 1926.

Included in **Appendix A** is a route to the nearest medical facility to the site with directions and contact information. **Appendix B** and **Appendix C** detail the signs, symptoms, care and procedures to both cold and heat stress, respectively. **Appendix D** contains the incident reporting form to be filled out in the event of an injury, accident or near-miss onsite.

1.2 Property Description

The site is located at a vacant lot with a lot area of approximately 15,000 square feet (Queens Block 642, Lot 36). The site is located on the west side of 35th Street between 34th Avenue and 35th Avenue. The site is bound to the north and west by existing buildings, to the south by a parking lot, and to the east by 35th Street.

1.3 Site Activities

The proposed project includes a 7-story, mixed use (residential and commercial) building consisting of first floor residential, small commercial, and common area amenity space, one level of underground space (cellar), and a rear garden space. The cellar level will be used for parking and for mechanical and common area building space – refuse room, superintendent’s office etc., and will encompass the majority of the lot footprint of approximately 15,000 ft². Access to the cellar will be available from street level from an approximately 10-foot-wide ramp located at the southern end of the Site. The aboveground portion of the building will occupy a footprint of approximately 8,172 ft² (59 feet by 138.5 feet) set against the north and east lot lines. Floors 2 through 7 will consist of 66 residential units. The 7th floor will also include approximately 2,100 ft² of terrace space.

The finished floor elevation of the cellar will require excavation to a depth of 17 feet below existing grade and excavation for the elevator pit(s) to approximately 22 feet below existing grade. Therefore, an estimated 10,000 cubic yards (15,000 tons) of soil will require excavation for the new building's cellar. The planned excavation depths are above the groundwater table which is present approximately 21 feet below ground surface (bgs). No demolition is required to complete the construction of the proposed building. Site work will consist of:

- Foundation excavation, loading and removal of site soils
- Site grading
- Building construction

1.4 Hazard/Risk Analysis

1.4.1 Physical Hazards

Physical hazards associated with heavy equipment operations may be present during site activities. These activities would require the use of heavy equipment by subcontractors such as a backhoe or a drill rig, which is associated with, but not limited to, the following hazards:

- bodily injuries
- slipping, tripping or falling
- heavy lifting
- caught in-between injuries
- struck by injuries
- cold/heat stress
- noise

1.4.2 Fire and Explosion

Fire extinguishers are located on heavy equipment operating onsite and within any work vehicles onsite. All fires should be reported to 911 emergency services. The Construction Manager (CM) Contractor and the Construction Health & Safety Officer (CHSO) will determine if it is necessary to shut down site work for the day due to fire related issues.

1.4.3 Cold Stress

During the winter months, workers may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia as well as slippery surfaces, brittle equipment, and poor judgment. The procedures to be followed regarding the avoidance of cold stress are provided in **Appendix B – Cold Stress Guidelines**.

1.4.4 Heat Stress

A heat stress prevention program will be implemented when ambient temperatures exceed 70°F. The procedures to be followed are provided in **Appendix C – Heat Stress Guidelines**.

1.4.5 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps, generators, and other equipment associated with earthwork tasks. Site workers who will perform suspected or established high noise tasks and operations shall wear hearing protection. Other workers who do not need to be in proximity of the noise should distance themselves from the equipment generating the noise.

1.4.6 Hand and Power Tools

In order to complete the various tasks for the project, personnel will use hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn by the operating personnel at all times when using hand and power tools. Ground Fault Circuit Interrupter (GFCI)-equipped circuits will be used for all power tools.

The CM Contractor is responsible for the safe condition of tools and equipment used by employees but the employees have the responsibility for properly using and maintaining tools.

Saw blades, knives, or other tools should be directed away from aisle areas and other employees working in close proximity. Knives and scissors must be sharp. Dull tools can be more hazardous than sharp ones.

Appropriate personal protective equipment (PPE), e.g., safety goggles, gloves, etc., should be worn due to hazards that may be encountered while using portable power tools and hand tools. Floors must be kept as clean and dry as possible to prevent accidental slips with or around dangerous hand tools.

Around flammable substances, sparks produced by iron and steel hand tools can be a potential ignition source. Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will provide for safety.

The following general precautions should be observed by power tool users:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits, and cutters.
- All observers should be kept at a safe distance away from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool.
- Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories.
- Be sure to keep good footing and maintain good balance.
- The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts.
- All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use."

Staff and subcontractors should follow all associated OSHA standards (29 CFR 1926), the most updated of which can be found at <http://www.osha.gov>. OSHA standards supersede any guidelines stated within this CHASP.

1.4.7 Slips, Trips, and Falls

Working in and around the site will pose slip, trip, and fall hazards due to slippery surfaces. Excavation at the sites will cause uneven footing in the trenches and around the spoil piles. Employees will wear proper footwear (i.e. steel toe/shank boots) and will employ good work practice and housekeeping procedures to minimize the potential for slips, trips, and falls.

1.4.8 Manual Lifting

Manual lifting of objects and equipment may be required. Failure to follow proper lifting technique can result in back injuries and strains. Site workers should use power equipment to lift heavy loads whenever possible and should evaluate loads before trying to lift them (i.e., they should be able to easily tip the load and then return it to its original position). Carrying heavy loads with a buddy and proper lifting techniques include:

- 1) make sure footing is solid
- 2) make back straight with no curving or slouching
- 3) center body over feet
- 4) grasp the object firmly and as close to your body as possible
- 5) lift with legs
- 6) turn with your feet, don't twist

1.4.9 Projectile Objects, Debris and Overhead Dangers

Overhead dangers, including but not limited to falling debris and equipment, can occur while heavy machinery is in operation or work is taking place overhead. Staff will be instructed to maintain a minimum distance from large overhead operations. Staff must also maintain proper communication with heavy equipment operators and their handlers, especially if work necessitates their presence beyond the minimum safe distance. Additionally, employees should be cognizant of low-hanging overhead power lines, as these can snag on vehicles entering and exiting the site. Vehicles that are large enough to damage overhead power lines require spotters when entering and exiting the site. Proper PPE will be worn at all times during these types of activities including steel-toed or equivalent boots, safety vests, and hard hats.

1.4.10 Heavy Equipment Operation

Heavy equipment may be present onsite. Staff should be cautious when working near or operating heavy equipment, and maintain a safe distance from the equipment. Personnel should maintain eye contact with the vehicle spotter or operator before traversing any paths that may cross that of the machinery. Safety vests are to be worn when working near operating heavy equipment.

1.4.11 Confined Spaces

If any work in confined spaces is required, it will be performed in accordance with 29 CFR 1910.146 (effective April 15, 1993), as applicable. Copies of the standards will be kept on file in the CM Contractor's main office, if work in confined spaces will be performed. Confined space

work will not be performed without first notifying and receiving approval from the CM, if applicable.

1.4.12 Illumination

Illumination requirements identified by OSHA are directed to work efforts inside buildings and/or during non-daylight hours. OSHA illumination requirements will be followed when work is taking place inside the buildings. All exterior site activities at the site will occur during daylight hours. However, if yard areas are used after dark they will be equipped with illumination that meets or exceeds requirements specified in 29 CFR 1926.56, Illumination.

1.4.13 Lockout/Tagout

Site personnel will assume that all electrical equipment at surface and overhead locations is energized, until the equipment has been designated as de-energized by a representative from the utility company. If the equipment cannot be de-energized, work will stop and the CM and appropriate contacts will be consulted. The CM will notify the client prior to working adjacent to this equipment, and will verify that the equipment is energized or de-energized in the vicinity of the work being conducted.

All power lines which have been indicated to be de-energized must be locked out, such that the lines cannot be energized when personnel are working near them. The lines shall not be unlocked and re-energized until the CM notifies the client that they have completed work in the area and that all personnel are clear of the area. Client representatives will thoroughly familiarize personnel with site-specific lockout/tagout procedures during the site orientation, if applicable.

If power lines cannot be de-energized, the CM will consult with utility safety personnel to determine the safe working distance from the energized line. Work tasks will only commence after determination that a safe working distance can be maintained and all personnel working in the area have been informed of the limitation.

1.4.14 Fall Hazards

Fall hazards exist onsite in several areas. Workers must follow all safeguards for fall protection as defined in OSHA 29 CFR 1926, Subpart M-Fall Protection. In general, workers should use the following guidelines:

- Use at least one of the following whenever employees are exposed to a fall of 6 feet or more above a lower level:
 - [Guardrail Systems](#)
 - [Safety Net Systems](#)

- [Personal Fall Arrest Systems](#)

- Cover or guard floor holes as soon as they are created during new construction.
- For existing structures, survey the site before working and continually audit as work continues. Guard or cover any openings or holes immediately.
- Construct all floor hole covers so they will effectively support two times the weight of employees, equipment, and materials that may be imposed on the cover at any one time. Floor hole covers are to be secured so they are not moved off of the hole and labeled so workers are aware what is under the cover.
- In general, it is better to use fall *prevention* systems, such as guardrails, than fall *protection* systems, such as safety nets or fall arrest devices, because they provide more positive safety means.
- Construct all scaffolds according to the manufacturer's instructions and 29 CFR 1926.451.
- Install guardrail systems along all open sides and ends of platforms.
- Use at least one of the following for scaffolds more than 10 feet above a lower level:

- [Guardrail Systems](#)
- [Personal Fall Arrest Systems](#)

- Provide safe access to scaffold platforms [*For additional information, see [Scaffold Access](#)*].
- Do not climb cross-bracing as a means of access.
- Guard all protruding ends of steel rebar with rebar caps or wooden troughs, *or*
- Bend rebar so exposed ends are no longer upright.
- When employees are working at any height above exposed rebar, fall protection/prevention is the first line of defense against impalement.

1.4.15 Ladder Safety

Portable ladders must be safely positioned each time they are used. Staff and subcontractors should follow all associated OSHA standards (CFR 1926.1053), the most updated of which can be found at <http://www.osha.gov>. OSHA standards supersede any guidelines stated within this CHASP.

1.4.16 Scaffolding Safety

Scaffolding presents significant fall hazards and various types of scaffolds may be present onsite. Staff and subcontractors should follow all associated OSHA standards (CFR 1926 Subpart L - Scaffolds), the most updated of which can be found at <http://www.osha.gov>.

1.4.17 Welding

The intense light associated with welding operations can cause serious and sometimes permanent eye damage if operators do not wear proper eye protection. Additionally, sparks from the welding process present a risk to the employee conducting welding and nearby employees. Any flammable or combustible materials that may be exposed to sparks or other heat sources must be protected or relocated to prevent fire hazards. Fire extinguishers will be located in areas where welding or hot work will be taking place. Staff must wear helmets that comply with ANSI Z49.1, with filter lenses that comply with ANSI Z87.1. Boots must comply with ASTM F2412 and ASTM F2413 for fire resistance. Welding operators must also wear flame-resistant welder's gloves.

Several chemicals may be used in the process of welding. Staff must be aware of the variety of chemicals used, and must possess appropriate welding training to perform welding activities. Additionally, compressed gas cylinders used in welding must be stored, placed, and transported according to OSHA standards. Staff and subcontractors should follow all associated OSHA standards (CFR 1926), the most updated of which can be found at <http://www.osha.gov>.

1.4.18 Asbestos-Containing Material

Although the site does not contain asbestos-containing materials (ACM), workers should be aware of the risks associated with asbestos exposure. Chronic exposure to asbestos may cause asbestosis and mesothelioma. The primary route of exposure for asbestos is inhalation during the disturbance and/or removal of asbestos from pipe insulation and cement pipes.

Asbestos is strictly regulated under OSHA 29 CFR 1910.1001/1926.1101. Employees that may be potentially exposed to ACM must participate in a medical surveillance program, have specific training in the hazards and controls of exposure to asbestos and wear respirators with high efficiency particulate (HEPA) filters. All work must be conducted in demarcated regulated areas to minimize the amount of people within the exposure area. Employers must conduct air sampling and provide signs and labels regarding the presence of asbestos. Staff and subcontractors should follow all associated OSHA standards (CFR 1926), the most updated of which can be found at <http://www.osha.gov>.

The potential hazards for this project are listed in the following Activity Hazard Analysis and Site Hazards sections.

SITE HAZARDS	
Potential Hazard	Control Measures
Construction Safety	<ul style="list-style-type: none"> ▪ Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations. Coordinate hand signals with operators. ▪ Stay Alert! Pay attention to equipment backup alarms and swing radii. ▪ Wear a high visibility vest when working near equipment or motor vehicle traffic. ▪ Position yourself in a safe location when filling out logs and talking with the contractor. ▪ Notify the contractor immediately if any problems arise. ▪ Do not stand or sit under suspended loads or near any pressurized equipment lines. ▪ Do not use cellular telephones near operating equipment. ▪ Follow general traffic safety guidelines
Scaffolding Safety and Power Tools	<ul style="list-style-type: none"> ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart L - Scaffolds. ▪ Do not use impact tools (i.e. chisels, hammers) with mushroomed heads. ▪ Do not use wooden-handled tools if the handle is damaged, splintered, loose or cracked. ▪ Inspect, maintain and replace tools as needed. ▪ Do not use wrenches if jaws are sprung. ▪ Tools should be directed away from aisles, other employees and trafficked areas. ▪ Wear appropriate PPE when using tools. ▪ Floors must be kept clean and as dry as possible to prevent slips, trips and falls around tools. ▪ Never carry a tool by the cord or hose. ▪ Never yank the cord or the hose to disconnect it from the receptacle. ▪ Keep cords and hoses away from heat, oil, and sharp edges. ▪ Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters. ▪ All observers should be kept at a safe distance away from the work area. ▪ Secure work with clamps or a vise, freeing both hands to operate the tool. ▪ Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool. ▪ Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories. ▪ Be sure to keep good footing and maintain good balance. ▪ The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts. ▪ All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use." ▪ Keep all tools in good condition with regular maintenance. ▪ Use the right tool for the job. ▪ Examine each tool for damage before use. ▪ Operate according to the manufacturer's instructions. ▪ Provide and use the proper protective equipment.

CONSTRUCTION HEALTH AND SAFETY PLAN
 34-22 35TH STREET
 ASTORIA, NEW YORK
 MARCH 2015

Heavy Equipment Operation	<ul style="list-style-type: none"> ▪ Maintain awareness of location of equipment. ▪ Subcontractor use of a spotter for equipment operation. ▪ Safety vest is to be worn around all operating equipment. ▪ Maintain eye contact with the operator. ▪ Stay out of the swing radii of the apparatus.
Slips, Trips, Falls	<ul style="list-style-type: none"> ▪ Keep trafficked areas clear of debris and tools. Keep work areas and traffic areas dry.
Lock Out/Tag Out	<ul style="list-style-type: none"> ▪ Maintain contact with utility to determine if energized lines or equipment has been de-energized ▪ Follow OSHA Lock Out/Tag Out requirements in 29 CFR 1910.147.
Welding	<ul style="list-style-type: none"> ▪ Wear appropriate PPE (welding helmet, apron, fire-resistant gloves and boots, leggings) as needed. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart J – Welding and Cutting.
Fire	<ul style="list-style-type: none"> ▪ Keep fire extinguishers in working order by inspecting on a regular basis. ▪ Keep the appropriately rated and sized fire extinguishers on site as specified by 29 CFR 1926.150. ▪ Keep flammable materials away from ignition sources. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart F – Fire Protection and Prevention and NPFA standards. ▪ Wear appropriate PPE when working around flammable materials.
Ladder Safety	<ul style="list-style-type: none"> ▪ Follow safety guidelines for safe ladder use. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926.1053.
Fall Hazards	<ul style="list-style-type: none"> ▪ Use appropriate fall protection at heights of 6 feet or greater. ▪ Avoid working in areas with a drop off of more than 2 feet. ▪ Erect appropriate barriers and guard rails. ▪ Wear appropriate fall protection PPE. ▪ Mark fall hazards so they are visible to employees. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart M – Fall Protection.
Physical Injury	<ul style="list-style-type: none"> ▪ Wear work boots in good condition with non-slip soles. ▪ Maintain good visibility of the work area. ▪ Avoid walking on uneven or debris ridden ground surfaces. ▪ Use proper lifting techniques. Ask fellow worker for help.
Noise	<ul style="list-style-type: none"> ▪ Wear hearing protection when near loud noises. ▪ Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; this much noise indicates the need for protection.
Vehicular Traffic	<ul style="list-style-type: none"> ▪ Wear traffic safety vest at all times. ▪ Use cones, flags, barricades, and caution tape to define work area. ▪ Use a "spotter" to locate oncoming vehicles. ▪ Use vehicle to block work area. ▪ Engage police detail if needed.

Utilities	<ul style="list-style-type: none"> ▪ Check that contactor has cleared underground utilities before any intrusive activities, and that contractor has coordinate with utility locating services, property owner(s) or utility companies. ▪ Utilities are to be considered live or active until documented otherwise. ▪ For overhead utilities within 50 feet, have contractor determine with the utility company the appropriate safe distance. Minimum distance for clearance is based on voltage of the line. ▪ An observer will be established when operating drilling rigs near overhead utilities.
-----------	--

ACTIVITY HAZARDS		
Activity	Potential Hazards	Protective Equipment
Entering Construction Site	Heavy equipment, dust, noise.	Hardhat, reflective safety vest, steel-toed, steel-shank boots, safety glasses, protective leather work gloves, and earplugs. Follow general traffic safety guidelines. Employ dust suppression controls (i.e. watering) to keep dust levels down to prevent inhalation of excavated materials.
General Construction (Foundation Work, Earthwork, Soil Vapor Barrier System Installation)	Heavy equipment, dust, noise. Contact with excavated soils.	Hardhat, reflective safety vest, steel-toed, steel-shank boots, safety glasses, protective leather work gloves, and earplugs. Follow general traffic safety guidelines. Employ dust suppression controls (i.e. watering) to keep dust levels down to prevent inhalation of excavated materials.
Personal Protective Equipment (PPE) is the <i>initial level of protection</i> based on the activity hazards and Site conditions which have been identified.		

1.5 Evaluation of Potential Chemical Hazards

The characteristics of potential compounds at the Site are discussed below for information purposes. Adherence to the safety and health guidelines in this CHASP should reduce the potential for exposure to the compounds discussed below. **Table 1-1** presents chemical data regarding potential exposure and monitoring for the chemical types listed below.

Potential exposures to contaminants were identified in soil, soil vapor and groundwater. Exceedances of applicable standards were identified for Semi-Volatile Organic Compounds (SVOCs) (soil and groundwater), and two pesticides (groundwater only). Groundwater is not anticipated to be encountered during construction. Several Volatile Organic Compounds (VOCs) were identified in soil vapor including benzene, toluene, ethylbenzene, and xylenes (BTEX) and chlorinated VOCs including tetrachloroethene (PCE) (max of 36.1 microgram per cubic meter [$\mu\text{g}/\text{m}^3$]), carbon tetrachloride (max of 15.5 $\mu\text{g}/\text{m}^3$), trichloroethene (TCE) (max of 8.43 $\mu\text{g}/\text{m}^3$), and trichloroethane (TCA) (max of 12.3 $\mu\text{g}/\text{m}^3$) were detected in all soil vapor samples.

Concentrations for TCE, and carbon tetrachloride were above the monitoring level ranges established within the New York State Department of Health (NYSDOH) soil vapor guidance matrix level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

1.5.1 Volatile Organic Compounds (VOCs)

VOCs may cause contact dermatitis. Direct contact can be irritating to the skin and produce itching, burning, swelling, and redness. Direct contact or exposure to vapors may be irritating to the eyes. Conjunctivitis may result from prolonged exposure. High levels of exposure to SVOCs, though not anticipated during work activities conducted during this project, may increase the risk of cancer including lung, kidney, and skin cancer. Poisoning may occur by ingestion of large doses, inhalation, or skin absorption.

The major route of entry for the work activities to be conducted at this site is through direct contact. Exposure is most likely when handling soil samples. Inhalation may occur when the soil is disturbed causing respirable and nuisance dust particles to become airborne. Details for monitoring procedures can be found in Section 2.

1.5.2 Semi-volatile organic compounds

Several SVOCs, which were limited to polycyclic aromatic hydrocarbons (PAHs) were detected in soil and groundwater above applicable guidelines during the investigation. PAHs are generally produced as byproducts of fuel burning and are commonly found in urban fill-type material.

SVOC compounds are at environmental concentrations and are not expected to be at concentrations that exposure symptoms would occur. SVOCs such as those listed above may cause contact dermatitis. Direct contact can be irritating to the skin and produce itching, burning, swelling, and redness. Direct contact or exposure to the vapors may be irritating to the eyes. Conjunctivitis may result from prolonged exposure. Many SVOCs are considered to be very toxic, if ingested. High levels of exposure to SVOCs, though not anticipated during work activities conducted during this project, may increase the risk of cancer including lung, kidney, and skin cancer. Naphthalene is also an eye and skin irritant and can cause nausea, headache, fever, anemia, liver damage, vomiting, convulsions, and coma. Poisoning may occur by ingestion of large doses, inhalation, or skin absorption.

The major route of entry for the work activities to be conducted at this Site is through direct contact. Inhalation may occur when the soil is disturbed causing respirable and nuisance dust particles to become airborne.

1.5.3 Metals

Several metals were detected in soil and groundwater above applicable guidelines during the investigation.

Exposure to high concentrations of copper through inhalation can cause irritation of the eyes, nose, pharynx, nasal septum. Ingestion may cause a metallic taste. Skin irritation may result from direct contact with skin. Damage to the liver and kidneys may occur.

Exposure to high concentrations of selenium may cause eye, skin, nose and throat irritation, headache, chills, fever, bronchitis, a metallic taste in the mouth, garlic breath, gastrointestinal disturbance, dermatitis, and eye and skin burns.

The primary route of exposure is through inhalation of dust particles when soil is disturbed and becomes airborne.

1.5.4 Asbestos-Containing Materials

As asbestos containing-materials (ACM) have not been identified onsite, they are not currently monitored for at the site. However, in the course of earthwork, staff should be cognizant of potential ACM and report any suspected ACM to the CM Contractor and the CHSO, who will then determine the appropriate course of action.

1.5.5 Polychlorinated Biphenyls

As polychlorinated Biphenyls (PCBs) have not been identified onsite, they are not considered a potential concern at the site.

1.5.6 Pesticides

As concentrations of pesticides above applicable standards were limited to groundwater and groundwater is not anticipated to be encountered during construction, they are not considered a potential concern at the site.

1.6 Biological Hazards

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals, insects and plants. Workers will be instructed in hazard recognition, health hazards, and control measures during site-specific training.

1.6.1 Animals

During the conduct of site operations, wild animals such as stray dogs or cats, raccoons, and mice may be encountered. Workers will use discretion and avoid all contact with wild animals.

If these animals present a problem, efforts will be made to remove these animals from the site by contacting a licensed animal control technician.

1.6.2 Insects

Insects, including bees, wasps, hornets, and spiders, may be present at the site making the chance of a bite possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. Any individuals who have been bitten or stung by an insect should notify the SSO. The following is a list of preventive measures:

- Apply insect repellent prior to performing any field work and as often as needed throughout the work shift.
- Wear proper protective clothing (work boots, socks, and light colored pants).
- Field personnel who may have insect allergies should have bee sting allergy medication onsite and should provide this information to the SSO prior to commencing work.

1.6.2.1 Tick Borne Illnesses

Lyme disease is caused by infection from a deer tick that carries a spirochete. During the painless tick bite, the spirochete may be transmitted into the bloodstream that could lead to the worker contracting Lyme disease.

Lyme disease may cause a variety of medical conditions including arthritis, which can be treated successfully if the symptoms are recognized early and medical attention is received. Treatment with antibodies has been successful in preventing more serious symptoms from developing. Early signs may include a flu-like illness, an expanding skin rash, and joint pain. If left untreated, Lyme disease can cause serious nerve or heart problems, as well as a disabling type of arthritis.

Symptoms can include a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. This flu-like illness is out of season, commonly happening between May and October when ticks are most active. A large expanding skin rash may develop around the area of the bite. More than one rash may occur. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. It's easy to miss the rash and the connection between the rash and a tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash.

Joint or muscle pain may be an early sign of Lyme disease. These aches and pains may be easy to confuse with the pain that comes with other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

Lyme disease can affect the nervous system. Symptoms include stiff neck, severe headache, and fatigue usually linked to meningitis. Symptoms may also include pain and drooping of the muscles on the face, called Bell's Palsy. Lyme disease may also mimic symptoms of multiple sclerosis or other types of paralysis.

The disease can also cause serious, but reversible heart problems, such as irregular heartbeat. Finally, Lyme disease can result in a disabling, chronic type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Often, the effects of Lyme disease may be confused with other medical problems.

It is recommended that personnel check themselves when in areas that could harbor deer ticks, wear light color clothing and visually check themselves and their buddy when coming from wooded or vegetated areas. If a tick is found biting an individual, the PM should be contacted immediately. The tick can be removed by pulling gently at the head with tweezers. The affected area should then be disinfected with an antiseptic wipe. The employee will be offered the option for medical treatment by a physician, which typically involves prophylactic antibiotics. If personnel feel sick or have signs similar to those above, they should notify the PM immediately.

The deer tick can also cause **Babesiosis**, an infection of the parasite *Babesia Microti*. Symptoms of Babesiosis may not be evident, but may also include fever, fatigue and hemolytic anemia lasting from several days to several months. Babesiosis is most commonly diagnosed in the elderly or in individuals whose immune systems are compromised.

Ehrlichiosis is a tick-borne disease which can be caused by either of two different organisms. Human monocytic ehrlichiosis (HME) is caused by *Ehrlichia chaffeensis*, which is transmitted by the lone star tick (*Amblyomma americanum*). Human granulocytic anaplasmosis (HGA), previously known as human granulocytic ehrlichiosis (HGE), is caused by *Anaplasma phagocytophilia*, which is transmitted by the deer tick (*Ixodes scapularis*).

In New York State, most cases of ehrlichiosis have been reported on Long Island and in the Hudson Valley. Ehrlichiosis is transmitted by the bite of infected ticks, including the deer tick and the lone star tick. The symptoms of HME and HGE are the same and usually include fever, muscle aches, weakness and headache. Patients may also experience confusion, nausea, vomiting and joint pain. Unlike Lyme disease or Rocky Mountain spotted fever, a rash is not common. Infection usually produces mild to moderately severe illness, with high fever and headache, but may occasionally be life-threatening or even fatal. Symptoms appear one to three weeks after the bite of an infected tick. However, not every exposure results in infection.

Rocky Mountain spotted fever (RMSF) is a tick-borne disease caused by a rickettsia (a microbe that differs somewhat from bacteria and virus). Fewer than 50 cases are reported annually in New York State. In the eastern United States, children are infected most frequently, while in the western United States, disease incidence is highest among adult males. Disease incidence is directly related to exposure to tick-infested habitats or to infested pets. Most of the

cases in New York State have occurred on Long Island. RMSF is characterized by a sudden onset of moderate to high fever (which can last for two or three weeks), severe headache, fatigue, deep muscle pain, chills and rash. The rash begins on the legs or arms, may include the soles of the feet or palms of the hands, and may spread rapidly to the trunk or rest of the body. Symptoms usually appear within two weeks of the bite of an infected tick.

*(Information on Ehrlichiosis, Babesiosis, and Rocky Mountain Spotted Fever was derived from the New York State Department of Health).

1.6.2.2 Wasps and Bees

Wasps (hornets and yellow-jackets) and bees (honeybees and bumblebees) are common insects that may pose a potential hazard to the field team if work is performed during spring, summer or fall. Bees normally build their nests in the soil. However, they use other natural holes such as abandoned rodent nests or tree hollows. Wasps make a football-shaped, paper-like nest either below or above the ground. Yellow-jackets tend to build their nests in the ground but hornets tend to build their nests in trees and shrubbery. Bees are generally more mild-mannered than wasps and are less likely to sting. Bees can only sting once while wasps are capable of stinging multiple times because of a barbless stinger. Wasps sting when they feel threatened. By remaining calm and not annoying wasps by swatting, you lessen the chance of being stung.

Wasps and bees inject a venomous fluid under the skin when they sting. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers. Some people may develop an allergic reaction (i.e. anaphylactic shock) to a wasp or bee sting. If such a reaction develops, seek medical attention at once. Employees should inform the SSO if they are allergic to bees or wasps, and inform the Site Safety Officer (SSO) if an epi-pen is required treatment and the location of the pen.

1.6.3 Plants

The potential for contact with poisonous plants exists when performing field work in undeveloped and wooded areas. Poison ivy, sumac, and oak may be present onsite. Poison ivy can be found as vines on tree trunks or as upright bushes. Poison ivy consists of three leaflets with notched edges. Two leaflets form a pair on opposite sides of the stalk, and the third leaflet stands by itself at the tip. Poison ivy is red in the early spring and turns shiny green later in the spring. Poison sumac can be present in the form of a flat-topped shrub or tree. It has fern-like leaves, which are velvety dark green on top and pale underneath. The branches of immature trees have a velvety "down." Poison sumac has white, "hairy" berry clusters. Poison oak can be present as a sparingly branched shrub. Poison oak is similar to poison ivy in that it has the same leaflet configuration; however, the leaves have slightly deeper notches. Prophylactic application of Tecnu may prevent the occurrence of exposure symptoms. Post exposure over the counter

products are available and should be identified at the local pharmacist. Susceptible individuals should be identified to the Project Manager (PM).

Contact with poison ivy, sumac, or oak may lead to a skin rash, characterized by reddened, itchy, blistering skin which needs first aid treatment. If a field worker believes they have contacted one of these plants, immediately wash skin thoroughly with soap and water, taking care not to touch your face or other body parts.

1.7 Sun Exposure

Employees are encouraged to liberally apply sunscreen, with a minimum sun protection factor (SPF) of 15, when working outdoors to avoid sunburn and potential skin cancer, which is associated with excessive sun exposure to unprotected skin. Additionally, employees should wear safety glasses that offer protection from UVA/UVB rays.

1.8 Personal Safety

Field activities have the potential to take site workers into areas which may pose a risk to personal safety. The following website (source) has been researched to identify potential crime activity in the area of the project:

www.cityrating.com/crimestatistics.asp

Astoria is a neighborhood in the Queens borough of New York City and has a population of 154,000. Crime statistics in the area report an overall downward trend in crime based on data from 5 years. The primary crimes include assault and larceny. The site falls under the jurisdiction of the New York City Police Department. GEI employees should make sure that their cars are securely locked with personal possessions out of plain view.

To protect yourself, take the following precautions:

- If deemed necessary, use the buddy system (teams of a minimum of two persons present);
- Let the SSO know when you begin work in these areas and when you leave;
- Call in regularly;
- Pay attention to what is going on around you; and
- If you arrive in an area and it does not look safe to get out of your vehicle, lock the doors and drive off quickly, but safely.

Site workers must not knowingly enter into a situation where there is the potential for physical and violent behaviors to occur. If site workers encounter hostile individuals or a confrontation

CONSTRUCTION HEALTH AND SAFETY PLAN
34-22 35TH STREET
ASTORIA, NEW YORK
MARCH 2015

develops in the work area, suspend work activities, immediately leave the area of concern, and contact local 911 for assistance. Notify the SSO and CHSO of any incidents once you are out of potential danger.

In the event of an emergency, prompt communications with local emergency responders is essential. At least one charged and otherwise functioning cell phone to facilitate emergency communications will be on site.

2. Community Air Monitoring Plan

Volmar will implement a Community Air Monitoring Plan (CAMP) in compliance with New York City Department of Environmental Protection (NYCDEP) requirements. Volmar will contract with GEI Consultants, Inc. P.C. to implement the plan.

The CM Contractor will provide the following equipment to implement the CAMP, if deemed necessary:

- Photoionization Meter (PID)
- Dust Meter
- Sound Level Meter by the CHSO, type to be appropriate to the activities performed

All monitoring equipment will be calibrated and maintained in accordance with manufacturer's requirements. All calibrations will be recorded in the project notes daily or on a daily calibration form.

3. Project Personnel/Responsibilities and Lines of Authority

Personnel		
Gerard Hoffman	Project Manager	Office: Cell: 917-417-8035
Robert Franco	Site Safety Officer (SSO)	Office:

Lines of Authority will be as follows:

Onsite – The CM Contractor will have responsibility for safety of its employees during the work performed at the site. The Field Representative (FR) will have a cell phone available to contact the appropriate local authorities, in the event of an emergency. The FR will be available for communication with the SSO and CM and with the client representative. The FR and/or SSO may change due to the nature of work being conducted onsite.

3.1 Construction Manager (CM)

Responsibilities of the CM include the following:

- Verifies implementation of the CHASP
- Conducts periodic inspections and documents these in the field book
- Participates in incident investigations
- Verifies the CHASP has all of the required approvals before any site work is conducted
- Verifies that the client and/or CM site manager is informed of project changes, which require modifications of the CHASP
- Has overall responsibility for project health and safety
- Acts as the primary point of contact with the client for site related activities and coordination with non-project related site operations
- Overseeing of performance of project tasks as outlined in the scope of work
- Plans field work using appropriate safe procedures and equipment
- Verifies and documents current OSHA Construction training compliance for all construction trades
- Verifies that subcontractors acknowledge and sign the projects CHASP

3.2 Construction Health and Safety Officer (CHSO)

The CHSO is a qualified health and safety professional with experience in construction activities. Responsibilities of the CHSO include the following:

- Serves as the primary contact to review health and safety matters that may arise
- Approves revised or new safety protocols for field operations

- Coordinates revisions of this CHASP with field personnel
- Coordinates upgrading or downgrading of PPE with the site manager
- Leads the investigation of all accidents/incidents
- Provide the necessary training of subcontractor trade field crews in accordance with OSHA regulations and provides proof of training to the SSO prior to subcontractor trade personnel entering the site

3.3 Site Safety Officer (SSO)

Responsibilities of the SSO include the following:

- Verifies that the CHASP is implemented and that all health and safety activities identified in the HASP are conducted and/or implemented
- Verifies that field work is scheduled with adequate personnel and equipment resources to complete the job safely and enforces site health and safety rules
- Verifies that adequate communications between trade crews and emergency response personnel is maintained during emergency situations
- Verifies that field site personnel are adequately trained and qualified to work at the site and that proper PPE is utilized
- Report all accidents/incidents to the CHSO and CM
- Stop work if necessary
- Identifies operational changes which require modifications to the CHASP and ensures that the procedure modifications are implemented and documented through changes to the CHASP, with CHSO approval
- Determines upgrades or downgrades of PPE based on site conditions and/or real-time monitoring results with CHSO approval
- Reports to the CHSO and provides summaries of field operations and progress

3.4 Field Representative (FR)

The FR is responsible for carrying out field work on a monthly, quarterly, or as-needed basis. Responsibilities of the FR include:

- Conducts routine safety inspection of the work area
- Documenting occurrences of unsafe activity and what actions were taken to rectify the situation
- Reports any unsafe or potentially hazardous conditions to the SSO and CM
- Maintains familiarity of the information, instructions, and emergency response actions contained in the CHASP
- Complies with rules, regulations and procedures set forth in the CHASP
- Prevents admittance to work site by unauthorized personnel

CONSTRUCTION HEALTH AND SAFETY PLAN
34-22 35TH STREET
ASTORIA, NEW YORK
MARCH 2015

- Inspects all tools and equipment, including PPE, prior to use and documents inspection on the daily safety meeting form or in the appropriate field book
- Verifies that monitoring instruments are calibrated
- Stops work if necessary

4. Subcontractors

The CM Contractor may subcontract with various companies to conduct various work onsite on an as-needed basis. Contact information for these subcontractors will be available when such work is being conducted.

The CM Contractor requires its subcontractors to work in a responsible and safe manner. Subcontractors for this project may be required to develop their own CHASP for protection of their employees and must adhere to applicable requirements set forth in this CHASP.

5. Emergency Contact List

Important Phone Numbers		
Local Police:		911
Fire Department:	911	Fire Department:
Ambulance:	911	Ambulance:
State Police or County Sheriff:	911	State Police or County Sheriff:
Urgent Medical Care Astoria: 32-74 Steinway Street, NY 11103 Mount Sinai Hospital Queens: 25-10 30 th Avenue, Long Island City, NY 11102	718-721-0101 718-932-1000	Urgent Medical Care Astoria: 32-74 Steinway Street, NY 11103 Mount Sinai Hospital Queens: 25-10 30 th Avenue, Long Island City, NY 11102 Project Manager: Sean DiBartolo
Project Manager: Gerard Hoffman	917-417-8035 cell	
Corporate Health and Safety Officer : Robin B. DeHate, Ph.D.	(813) 774-6564 office (813) 323-6220 cell	Corporate Health and Safety Officer : Robin B. DeHate, Ph.D.
Regional Health and Safety Officer Steve Hawkins	860-368-5300 office 860-916-4167 cell	Regional Health and Safety Officer Steve Hawkins
Client Contact: Peter Volandes	347-408-5782 cell	Client Contact: Peter Volandes
Nearest Telephone Location: On-site cellular		

6. Training Program

6.1 Hazard Communication

In accordance with 29 CFR 1926, site workers shall, at the time of job assignment, have received hazard communication training. All hazardous materials used on the site will be properly labeled, stored, and handled. SDSs will be available to onsite staff.

6.2 Onsite Safety Briefings

Other onsite personnel will be given health and safety briefings by a FR to assist personnel in safely conducting work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. These safety briefing will be documented on a daily safety briefing form or other appropriate media.

7. Medical Support

In case of minor injuries, onsite care shall be administered with the Site first aid kit. For serious injuries, call 911 and request emergency medical assistance. Seriously injured persons should not be moved, unless they are in immediate danger.

Section 5 and **Appendix A** contain detailed emergency information, including directions to the nearest hospital, and a list of emergency services and their telephone numbers. Field personnel will carry a cellular telephone.

8. Personal Protective Equipment

PPE required for each level of protection is as follows.

Safety Equipment	Level A	Level B	Level C	Level D
Hard hats with splash shields or safety glasses			•	•
Steel-toe boots with overboots as appropriate for work being performed and materials handled			•	•
Protective Leather Work Gloves or Chemical-resistant gloves as needed			•	•
Reflective Vest			•	•
Half- or full-face respirators with HEPA cartridges as approved by the CHSO as needed			•	
Long Pants	•	•	•	•
Welding Helmet				•
Welding Gloves, apron, leggings (as needed)				•
Flame-resistant boots for welding				•

PPE can include hardhats, safety glasses or face shields, steel toe/steel shank boots, hearing protection, nitrile gloves, and leather gloves as necessary.

OSHA Requirements for PPE

All PPE used during the course of this field investigation must meet the following OSHA standards:

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133	ANSI Z87.1 1968
Respiratory	29 CFR 1910.134	ANSI Z88.1 1980
Head	29 CFR 1910.135	ANSI Z89.1 1969
Foot	29 CFR 1910.136	ANSI Z41.1 1999 or ASTM F-2412-2005, and ASTM F-2413-2005

CFR = Code of Federal Regulations

ANSI = American National Standards Institute

ASTM = American Society For Testing and Materials

Any onsite personnel who have the potential to don a respirator must have a valid fit test certification and documentation of medical clearance. The CHSO will maintain such information on file for onsite personnel. The CM will obtain such information from the subcontractor's site supervisor prior to the initiation of any such work. Both the respirator and cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.134). Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency;
- IDLH concentrations; and
- If contaminant levels exceed designated use concentrations.

For most work conducted at the site, Level D PPE will include long pants, hard hats, safety glasses with side shields, and steel toe safety boots with steel shanks. The CHSO will determine if site works deems an upgrade in PPE. The use of respirators is not anticipated.

Use of Level A or Level B PPE is not anticipated. If conditions indicating the need for Level A or Level B PPE are encountered, personnel will leave the work zone and this CHASP will be revised with oversight of the CHSO, personnel will not re-enter the work zone until conditions allow.

9. Supplemental Contingency Plan Procedures

9.1 Fire

In the event of a fire, all personnel will evacuate the area. The FR will contact the local fire department and report the fire. Notification of evacuation will be made to the client, the CM and the CHSO. The FR or appropriate staff member will account for subcontractor personnel and report their status to the CM.

9.2 Severe Weather

The contingency plan for severe weather includes reviewing the expected weather to determine if severe weather is in the forecast. Severe weather includes high winds over 30 mph, heavy rains or snow squalls, thunderstorms, hurricanes, and lightning storms. If severe weather is approaching, the decision to evacuate staff and subcontractor personnel from the site is the responsibility of the FR. Notification of evacuation will be made to the Project Manager, the Construction Project Manager and the CHSO. The FR will account for onsite staff and report their status to the CM. If safe, work can resume 30 minutes after the last flash of lightening or clap of thunder.

9.3 Spills or Material Release

If a hazardous waste spill or material release occurs, the SSO or their representative, if safe, will immediately assess the magnitude and potential seriousness of the spill or release based on the following:

- SDS, if applicable, for the material spilled or released
- Source of the release or spillage of hazardous material
- An estimate of the quantity released and the rate at which it is being released
- The direction in which the spill or air release is moving
- Personnel who may be or may have been in contact with the material, or air release, and possible injury or sickness as a result
- Potential for fire and/or explosion resulting from the situation
- Estimates of area under influence of release

If the spill or release is determined to be within the onsite emergency response capabilities, the SSO will ensure implementation of the necessary remedial action. If the release is beyond the capabilities of the site personnel, all personnel will be evacuated from the immediate area and the local fire department will be contacted. The SSO will notify the CM and the CHSO.

9.4 Alcohol and Drug Abuse Prevention

Alcohol and drugs will not be allowed on the work site. Project personnel under the influence of alcohol or drugs will not be allowed to enter the site.

10. Decontamination Procedures

10.1 Personnel Decontamination Station

As needed, a personnel decontamination station where workers can drop equipment and remove PPE will be set up as needed by the Contractor. The PPE area will be equipped with basins for water and detergent, and trash bag(s) or cans for containing disposable PPE and discarded materials. Once personnel have decontaminated at this station and taken off their PPE, they will proceed to a portable sink where they will wash themselves wherever they have potentially been exposed to any contaminants (e.g., hands, face, etc.).

Contaminated PPE (gloves, suits, etc.) will be decontaminated and stored for reuse or placed in plastic bags (or other appropriate container) and disposed of in an approved facility. Decontamination wastewater and used cleaning fluids will be collected and disposed of in accordance with all applicable state and federal regulations.

10.2 Decontamination Equipment Requirements

If heavily contaminated soils are encountered during intrusive work, the following equipment, as needed, will be in sufficient supply to implement decontamination procedures for equipment.

- Buckets
- Alconox™ detergent concentrate
- Hand pump sprayers
- Long handle soft bristle brushes
- Large sponges
- Cleaning wipes for respirators
- Bench or stool(s)
- Methanol
- Liquid detergent and paper towels
- Plastic trash bags

CONSTRUCTION HEALTH AND SAFETY PLAN
34-22 35TH STREET
ASTORIA, NEW YORK
MARCH 2015

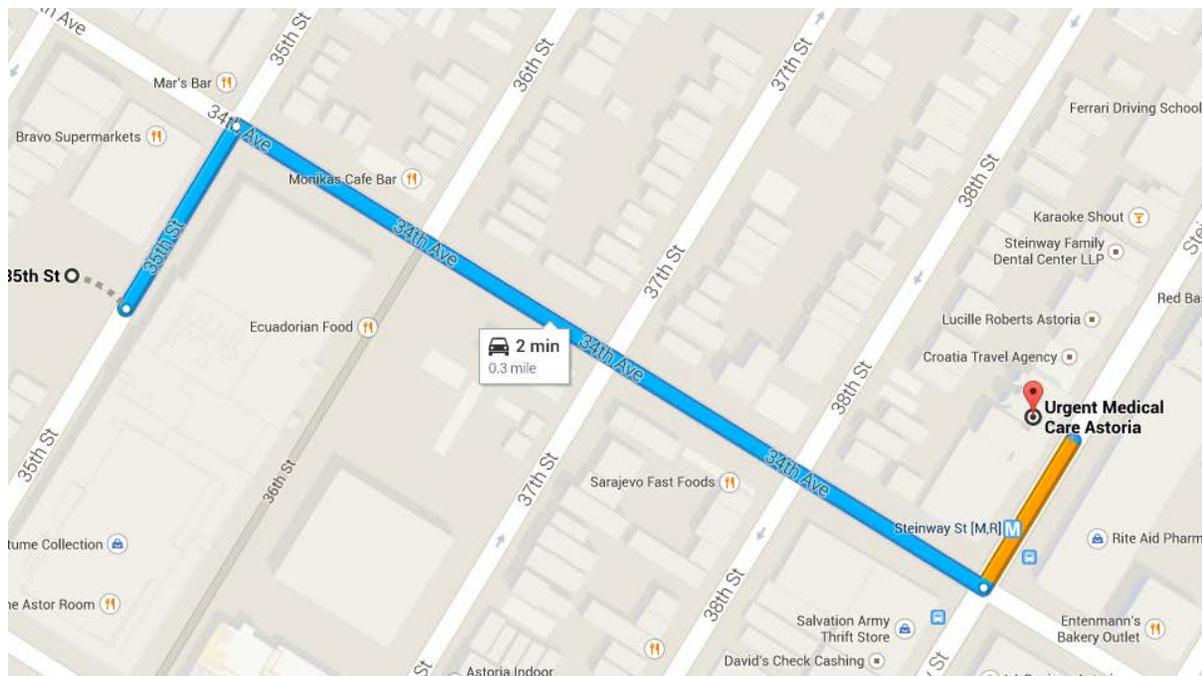
APPENDIX A
SITE-SPECIFIC INFORMATION

Directions and Map to Hospital and Occupational Health Clinic

Hospital Route:

Urgent Medical Care Astoria

32-74 Steinway Street, NY 11103



1. Head northeast on 35th Street towards 34th Avenue
2. Take the 1st right onto 34th Street
3. Turn left onto Steinway Street

Urgent Medical Care Astoria

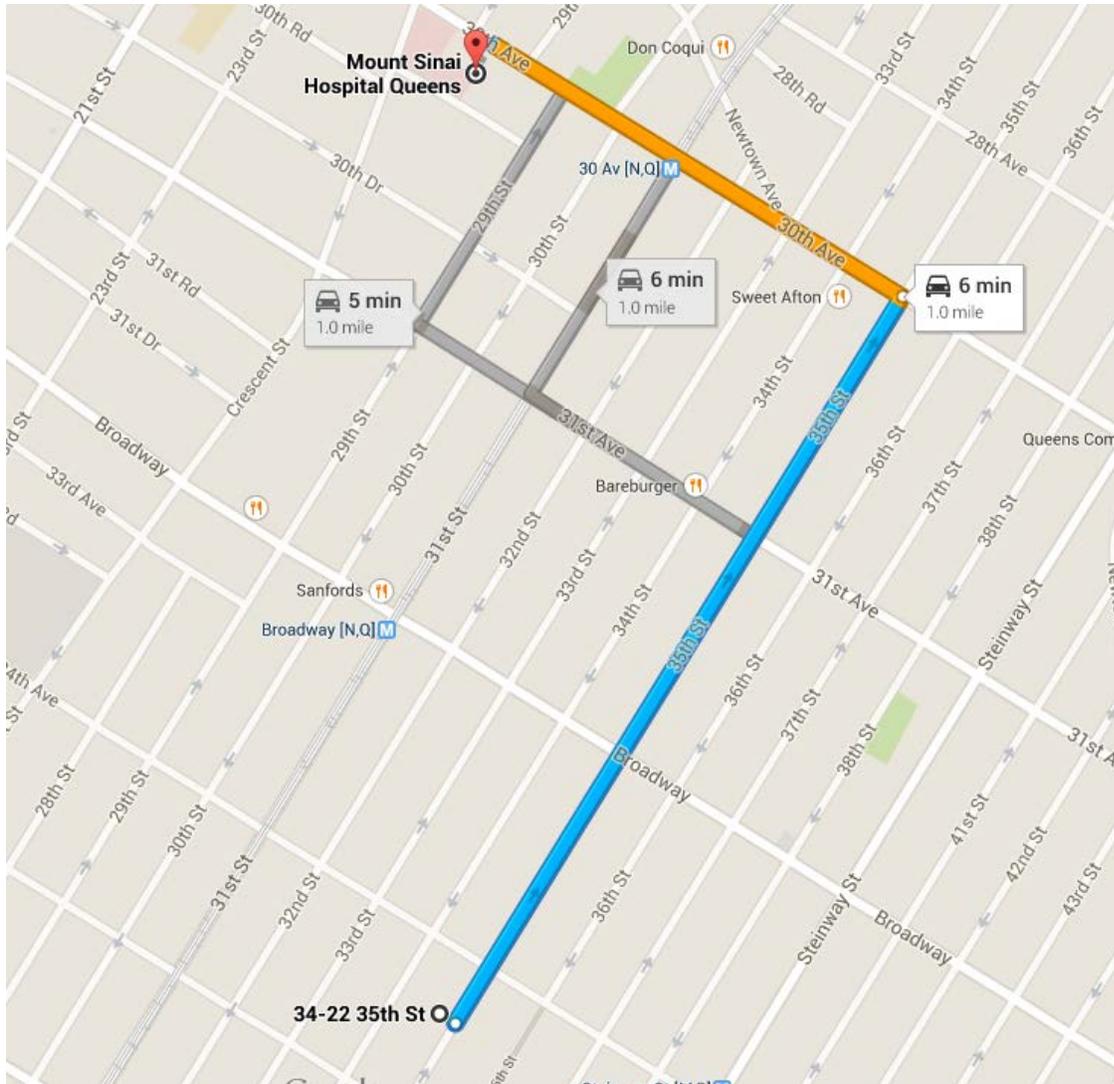
32-74 Steinway Street, NY 11103

Mount Sinai Hospital Route:

Mount Sinai Hospital Queens

25-10 30th Avenue

Long Island City, New York 11102



1. Head northeast on 35th Street towards 34th Avenue 0.6 mi
2. Turn left onto 30th Avenue 0.4

Mount Sinai Hospital Queens
25-10 30th Avenue, Long Island City, New York 11102

CONSTRUCTION HEALTH AND SAFETY PLAN
34-22 35TH STREET
ASTORIA, NEW YORK
MARCH 2015

APPENDIX B
COLD STRESS GUIDELINES

Cold Stress Guidelines

	Symptoms	What to do
<ul style="list-style-type: none"> ▪ Mild Hypothermia 	<ul style="list-style-type: none"> ▪ Body Temp 98-90°F ▪ Shivering ▪ Lack of coordination, stumbling, fumbling hands ▪ Slurred speech ▪ Memory loss ▪ Pale, cold skin 	<ul style="list-style-type: none"> ▪ Move to warm area ▪ Stay active ▪ Remove wet clothes and replace with dry clothes or blankets ▪ Cover the head ▪ Drink warm (not hot) sugary drink
<ul style="list-style-type: none"> ▪ Moderate Hypothermia 	<ul style="list-style-type: none"> ▪ Body temp 90-86°F ▪ Shivering stops ▪ Unable to walk or stand ▪ Confused irrational 	<ul style="list-style-type: none"> ▪ All of the above, plus: ▪ Call 911 ▪ Cover all extremities completely ▪ Place very warm objects, such as hot packs on the victim's head, neck, chest and groin
<ul style="list-style-type: none"> ▪ Severe Hypothermia 	<ul style="list-style-type: none"> ▪ Body temp 86-78°F ▪ Severe muscle stiffness ▪ Very sleepy or unconscious ▪ Ice cold skin ▪ Death 	<ul style="list-style-type: none"> ▪ Call 911 ▪ Treat victim very gently ▪ Do not attempt to re-warm
<ul style="list-style-type: none"> ▪ Frostbite 	<ul style="list-style-type: none"> ▪ Cold, tingling, stinging or aching feeling in the frostbitten area, followed by numbness ▪ Skin color turns red, then purple, then white or very pale skin ▪ Cold to the touch ▪ Blisters in severe cases 	<ul style="list-style-type: none"> ▪ Call 911 ▪ Do not rub the area ▪ Wrap in soft cloth ▪ If help is delayed, immerse in warm, not hot, water
<ul style="list-style-type: none"> ▪ Trench Foot 	<ul style="list-style-type: none"> ▪ Tingling, itching or burning sensation ▪ Blisters 	<ul style="list-style-type: none"> ▪ Soak feet in warm water, then wrap with dry cloth bandages ▪ Drink a warm sugary drink

CONSTRUCTION HEALTH AND SAFETY PLAN
34-22 35TH STREET
ASTORIA, NEW YORK
MARCH 2015

APPENDIX C
HEAT STRESS GUIDELINES



HEAT STRESS GUIDELINES			
Form	Signs & Symptoms	Care	Prevention³
Heat Rash	Tiny red vesicles in affected skin area. If the area is extensive, sweating can be impaired.	Apply mild lotions and cleanse the affected area.	Cool resting and sleeping areas to permit skin to dry between heat exposures
Heat Cramps	Spasm, muscular pain (cramps) in stomach area and extremities (arms and legs).	Provide replacement fluids with minerals (salt) such as Gatorade.	Adequate salt intake with meals ¹ ACCLIMATIZATION ²
Heat Exhaustion	Profuse sweating, cool (clammy) moist skin, dizziness, confusion, pale skin color, faint, rapid shallow breathing, headache, weakness, muscle cramps.	Remove from heat, sit or lie down, rest, replace lost water with electrolyte replacement fluids (water, Gatorade) take frequent sips of liquids in amounts greater than required to satisfy thirst.	ACCLIMATIZATION ² Adequate salt intake with meals ¹ only during early part of heat season. Ample water intake, frequently during the day
Heat Stroke	HOT Dry Skin. Sweating has stopped. Mental confusion, dizziness, nausea, severe headache, collapse, delirium, coma.	HEAT STROKE IS A MEDICAL EMERGENCY - Remove from heat. - COOL THE BODY AS RAPIDLY AS POSSIBLE by immersing in cold (or cool) water, or splash with water and fan. Call for Emergency Assistance. Observe for signs of shock.	ACCLIMATIZATION ² Initially moderate workload in heat (8 to 14 days). Monitor worker's activities.

Footnotes:

- 1) American diets are normally high in salt, sufficient to aid acclimatization. However, during the early part of the heat season, (May, June), one extra shake of salt during one to two meals per day may help, so long as this is permitted by your physician. Check with your personal physician.
- 2) ACCLIMATIZATION - The process of adapting to heat is indicated by worker's ability to perform hot jobs less fluid loss, lower concentrations of salt loss in sweat, and a reduced core (body) temperature and heart rate.
- 3) Method to Achieve Acclimatization - Moderate work or exercise in hot temperatures during early part of heat season. Adequate salt (mineral) and water intake. Gradually increasing work time in hot temperatures. Avoid alcohol. Normally takes 8 to 14 days to achieve acclimatization. Lost rapidly, if removed from strenuous work (or exercise) in hot temperature for more than approximately five days.

CONSTRUCTION HEALTH AND SAFETY PLAN
34-22 35TH STREET
ASTORIA, NEW YORK
MARCH 2015

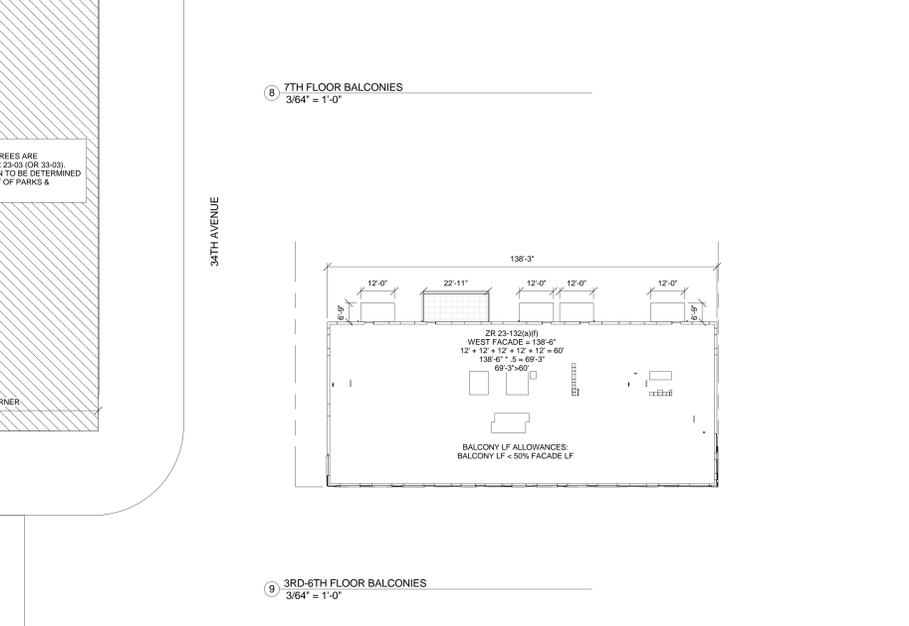
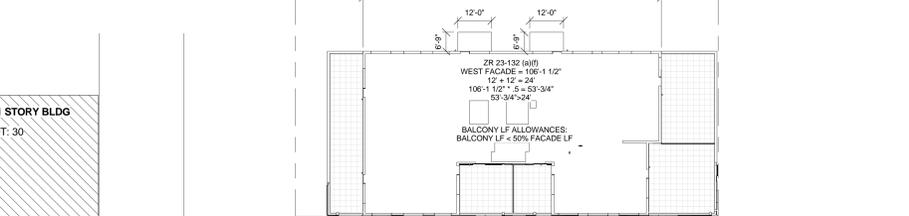
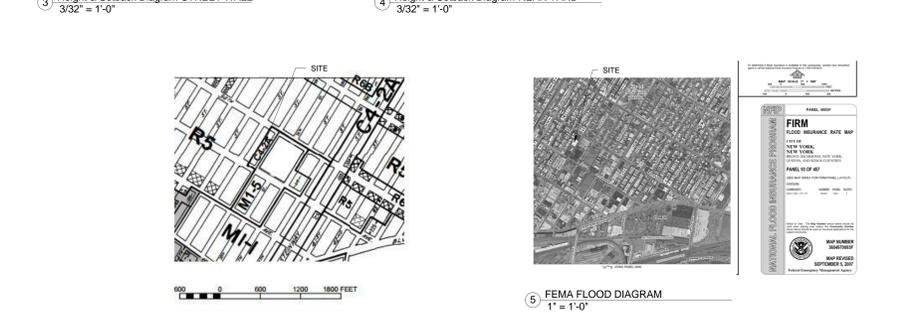
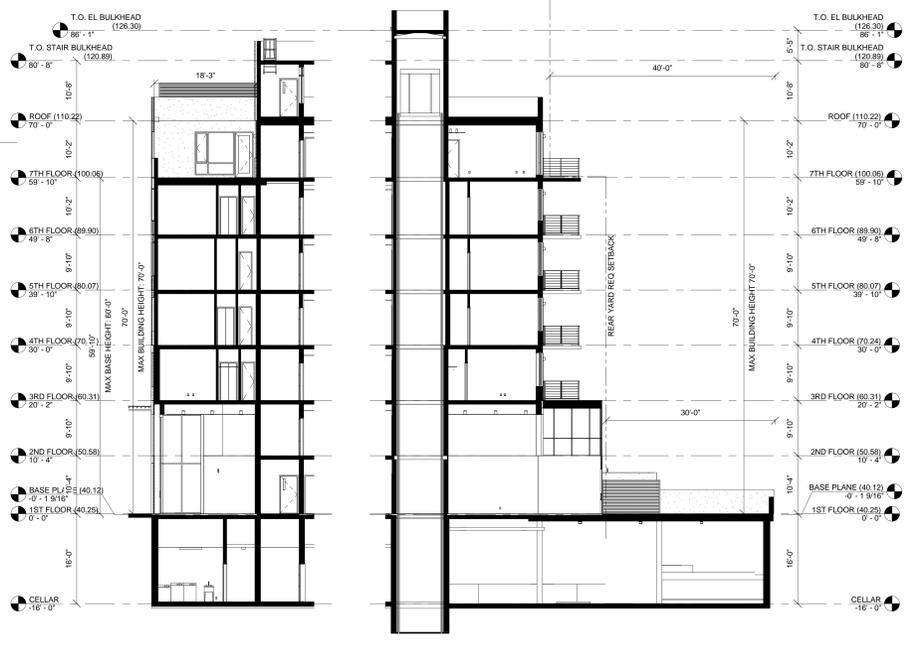
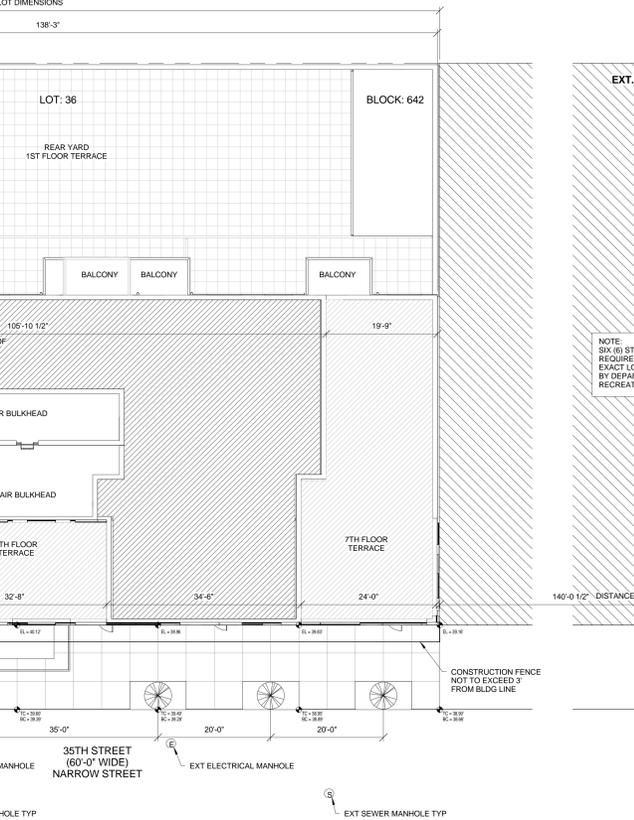
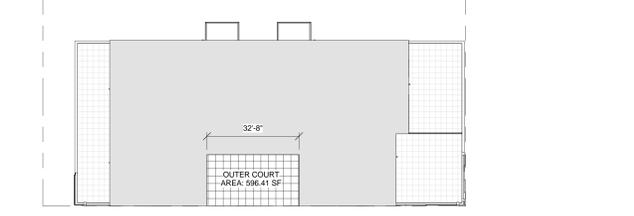
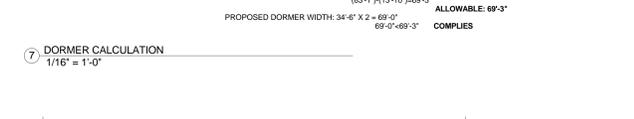
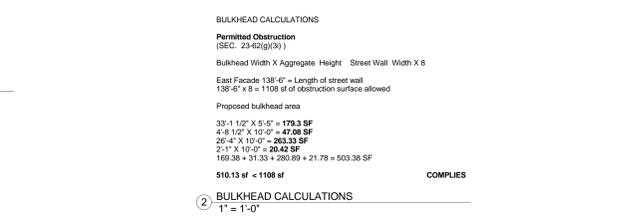
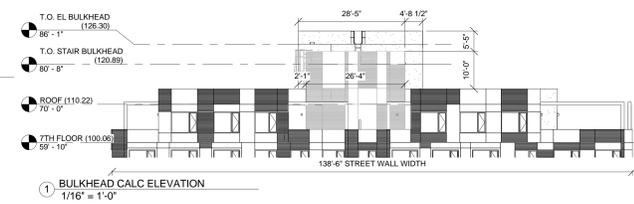
APPENDIX D
Incident Report Form

APPENDIX 4

PROPOSED DEVELOPMENT PLANS

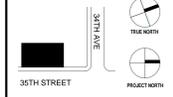


ZONING NOTES			
BLOCK	642		
LOTS	36		
ZONING MAP	R6A		
ZONING DISTRICT	C4-2A		
	R6A	EQUIVALENT	
STREETS	35TH STREET (NARROW)		
LOT AREA	15,027 SF		
32-11 USE GROUPS AS OF RIGHT	C4-2A 1, 2, 3, 4, 5, 6, 8, 9, 10, 12		
32-423 LIMITATION ON GROUND FLOOR LOCATION	8, 9, 12		
BULK REGULATIONS FOR MIXED BUILDINGS			
RESIDENTIAL			
32-21 GENERAL PROVISIONS	C1 C2 C3 C4 C5 C6		
IN THE DISTRICTS INDICATED, THE BULK REGULATIONS SET FORTH IN ARTICLE II, CHAPTER 3, SHALL APPLY TO ALL RESIDENTIAL PORTIONS OF BUILDINGS IN ACCORDANCE WITH THE PROVISIONS AND MODIFICATIONS SET FORTH IN THE REMAINING SECTIONS OF THIS CHAPTER. THE PURPOSE OF THESE MODIFICATIONS IS TO MAKE THE REGULATIONS SET FORTH IN ARTICLE II, CHAPTER 3, APPLICABLE TO COMMERCIAL DISTRICTS.			
MAXIMUM FLOOR AREA RATIO			
32-31	C1 C2 C3 C4 C5 C6		
IN ALL DISTRICTS, EXCEPT AS SET FORTH IN SECTION 35-311, THE PROVISIONS OF THIS SECTION SHALL APPLY TO ANY ZONING LOT SUBJECT TO THE PROVISIONS OF THIS CHAPTER. THE MAXIMUM FLOOR AREA RATIO PERMITTED FOR A COMMERCIAL OR COMMUNITY FACILITY USE SHALL BE AS SET FORTH IN ARTICLE II, CHAPTER 3, AND THE MAXIMUM FLOOR AREA RATIO PERMITTED FOR A RESIDENTIAL USE SHALL BE AS SET FORTH IN ARTICLE II, CHAPTER 3, PROVIDED THE TOTAL OF ALL SUCH FLOOR AREA RATIOS DOES NOT EXCEED THE GREATEST FLOOR AREA RATIO PERMITTED FOR ANY SUCH USE ON THE ZONING LOT.			
32-23 (b)	BULK REGULATIONS FOR RESIDENTIAL PORTION OF MIXED USE BUILDING C4-2A R6A EQUIVALENT		
HEIGHT SETBACK REGULATIONS OF SECTION 35-24 SHALL APPLY			
23-145	QUALITY HOUSING BUILDINGS		
	FAR	3.0	PROPOSED
	LOT AREA	15,027 SF	
	MAX FA	43,464 SF	2.89
33-122	C4-2A	FAR	3.0
	LOT AREA	15,027 SF	
	MAX FA	43,464 SF	0.101
			2.99 x3.0
APPLICABILITY OF DENSITY REGULATIONS			
35-40	C1 C2 C3 C4 C5 C6		
IN THE DISTRICTS INDICATED, THE MAXIMUM NUMBER OF DWELLING UNITS OR ROOMING UNITS ON A ZONING LOT SHALL EQUAL THE MAXIMUM RESIDENTIAL FLOOR AREA PERMITTED FOR THE ZONING LOT DETERMINED IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN SECTION 35-30 (APPLICABILITY OF FLOOR AREA AND OPEN SPACE REGULATIONS) DIVIDED BY THE APPLICABLE FACTOR IN SECTION 23-20 (DENSITY REGULATIONS).			
MAXIMUM NUMBER OF DWELLING UNITS			
23-22	R6A	DENSITY FACTOR	680
		RESIDENTIAL FA PROPOSED	43,464 SF
		PERMITTED DUS	64
23-146	R6A	INTERIOR LOT	65%
		LOT AREA	15,027 SF
		PERMITTED	9,768 SF
			8,354 SF
SPECIAL STREET WALL LOCATION AND HEIGHT AND SETBACK REGULATIONS IN CERTAIN DISTRICTS			
35-24	C4-2A		
IN THE DISTRICTS INDICATED, AND IN OTHER C1 OR C2 DISTRICTS WHEN MAPPED WITHIN R6A, R6B, R7A, R7B, R7D, R7X, R8A, R8B, R8X, R9A, R9B, R9X, R10A OR R10X DISTRICTS, FOR ALL BUILDINGS OR OTHER STRUCTURES, AND FOR QUALITY HOUSING BUILDINGS IN OTHER COMMERCIAL DISTRICTS, STREET WALL LOCATION AND HEIGHT AND SETBACK REGULATIONS ARE SET FORTH IN THIS SECTION. THE HEIGHT OF ALL BUILDINGS OR OTHER STRUCTURES SHALL BE MEASURED FROM THE BASE PLANE			
(a) PERMITTED OBSTRUCTIONS	C4-2A		
IN THE DISTRICTS INDICATED, AND IN OTHER C1 OR C2 DISTRICTS WHEN MAPPED WITHIN R6A, R6B, R7A, R7B, R7D, R7X, R8A, R8B, R8X, R9A, R9B, R9X, R10A OR R10X DISTRICTS, AND FOR QUALITY HOUSING BUILDINGS IN OTHER COMMERCIAL DISTRICTS, THE PROVISIONS OF SECTION 35-42 SHALL APPLY TO ANY BUILDING OR OTHER STRUCTURE. IN ADDITION, A DORMER MAY BE ALLOWED AS A PERMITTED OBSTRUCTION PURSUANT TO PARAGRAPH (C)(1) OF SECTION 23-421 (PERMITTED OBSTRUCTIONS IN CERTAIN DISTRICTS).			
(b) STREET WALL LOCATION	C4-2A		
(1) IN THE DISTRICTS INDICATED, AND IN C1 OR C2 DISTRICTS WHEN MAPPED WITHIN R6A, R6B, R7A, R7B, R7D, R7X, R8A, R8B, R8X, R9A, R9B, R9X, R10A OR R10X DISTRICTS, AND FOR QUALITY HOUSING BUILDINGS IN OTHER COMMERCIAL DISTRICTS WITH A RESIDENTIAL EQUIVALENT OF AN R6 OR R7 DISTRICT, AT LEAST 70 PERCENT OF THE AGGREGATE WIDTH OF STREET WALLS SHALL BE LOCATED WITHIN EIGHT FEET OF THE STREET LINE AND SHALL EXTEND TO AT LEAST THE MINIMUM BASE HEIGHT SPECIFIED IN TABLE A OF THIS SECTION FOR BUILDINGS IN CONTEXTUAL DISTRICTS, OR TABLE FOR BUILDINGS IN NON-CONTEXTUAL DISTRICTS, OR THE HEIGHT OF THE BUILDING, WHICHEVER IS LESS, THE REMAINING 30 PERCENT OF THE AGGREGATE WIDTH OF STREET WALLS MAY BE LOCATED BEYOND 8 FT OF THE STREET LINE			
(c) SETBACK REGULATIONS	C4-2A		
(1) SETBACKS			
TABLE A	C4-2A	NARROW ST	15'-0"
		MIN-BASE HEIGHT	40'-0"
		MAX-BASE HEIGHT	60'-0"
		MAX-BUILDING HEIGHT	70'-0"
BALCONIES ON R6 DISTRICTS			
23-132 (b)			
NOT PROJECT A DISTANCE OF MORE THAN 7'-0"			
23-132 (a)			
BE LOCATED AT OR HIGHER THAN THE FLOOR LEVEL OF THE THIRD STORY OF A BUILDING OR AT LEAST 20 FEET ABOVE CURB LEVEL, EXCEPT THAT FOR BUILDINGS CONTAINING RESIDENCES NOT MORE THAN 32 FEET IN HEIGHT, SUCH BALCONY MAY BE LOCATED AT OR HIGHER THAN THE FLOOR LEVEL OF THE SECOND STORY PROVIDED THAT SUCH BALCONY IS LOCATED NOT LOWER THAN SEVEN FEET ABOVE CURB LEVEL, OR SEVEN FEET ABOVE NATURAL GRADE, WHICHEVER IS HIGHER, AND			
23-32 (f)			
HAVE AN AGGREGATE WIDTH, AT THE LEVEL OF ANY STORY, NOT EXCEEDING 50 PERCENT OF THE WIDTH AT THAT LEVEL OF THE PLANE SURFACE OF THE BUILDING WALL FROM WHICH IT PROJECTS.			
23-421 (C)(1)			
DORMERS SHALL BE ALLOWED AS A PERMITTED OBSTRUCTION, PROVIDED THAT ON ANY STREET FRONTAGE, THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 50 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. FOR EACH FOOT ABOVE THE MAXIMUM BASE HEIGHT, THE AGGREGATE WIDTH OF ALL DORMERS SHALL BE DECREASED BY ONE PERCENT OF THE STREET WALL WIDTH OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT.			
WIDE OUTER COURTS			
23-446	R1 R2 R3 R4 R5 R6 R7 R8 R9 R10		
IN ALL DISTRICTS, AS INDICATED, IF AN OUTER COURT IS 30 FEET OR MORE IN WIDTH, THE WIDTH OF SUCH OUTER COURT MUST BE AT LEAST EQUAL TO THE DEPTH OF SUCH OUTER COURT, EXCEPT THAT SUCH WIDTH NEED NOT EXCEED 60 FEET.			
YARDS			
FRONT YARD			
35-51			
NO FRONT YARD SHALL BE REQUIRED			
SIDE YARD			
35-52			
NOT REQUIRED- IF OPEN AREA IS PROVIDED THE MINIMUM WIDTH OF 8'-0" PROVIDED			
REAR YARD			
23-47			
30'-0" REQUIRED 4'-0" PROVIDED			
MODIFICATION OF REAR YARD REQUIREMENTS			
35-53	C1 C2 C3 C4 C5 C6		
IN THE DISTRICTS INDICATED, FOR A RESIDENTIAL PORTION OF A MIXED BUILDING, THE REQUIRED REAR YARD SHALL BE PROVIDED AT THE FLOOR LEVEL OF THE LOWEST STORY USED FOR DWELLING UNITS OR ROOMING UNITS, WHERE ANY WINDOW OF SUCH DWELLING UNITS OR ROOMING UNITS FACES ONTO SUCH REAR YARD. IF THE LEVEL OF SUCH YARD IS AT OR HIGHER THAN THE FIRST STORY, DECKS, PARAPET WALLS, ROOF THICKNESS, SOLAR ENERGY SYSTEMS UP TO FOUR FEET HIGH, VEGETATED ROOFS, AND WEIRS, SHALL BE PERMITTED, PURSUANT TO SECTION 23-62 (PERMITTED OBSTRUCTIONS).			
STREET WALL LOCATION			
23-433 (a)(1)			
THE STREET WALL SHALL BE NO CLOSER TO THE STREET LINE THAN THE CLOSEST STREET WALL OF AN EXISTING BUILDING ON THE SAME BLOCK, HOWEVER NOT MORE THAN 15 FEET FROM THE STREET WALL			
23-433 (b)			
15' SETBACK FROM NARROW STREET WALL			



Issuance Schedule		
No.	Date	Description
01.16.15		ISSUE FOR FILING

Revision Schedule		
No.	Date	Description



For Department of Buildings Use

ZONING ANALYSIS		
Sign & Seal	Author	Checked by
date	drawn by	job no.
01/16/15	Author	2014-099
sheet scale	checked by	D08 sheet
As indicated	Checker	2 OF 32
D08 NUMBER		

GENERAL NOTES:
1. FOR LIGHT & AIR CALCULATIONS SEE SHEET G-100.00

Project
34-22 35TH STREET
QUEENS, NEW YORK

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P. 212.431.5552 F. 212.431.5663

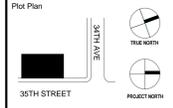


Issuance Schedule

No.	Date	Description
01.16.15		ISSUE FOR FILING

Revision Schedule

No.	Date	Description
-----	------	-------------

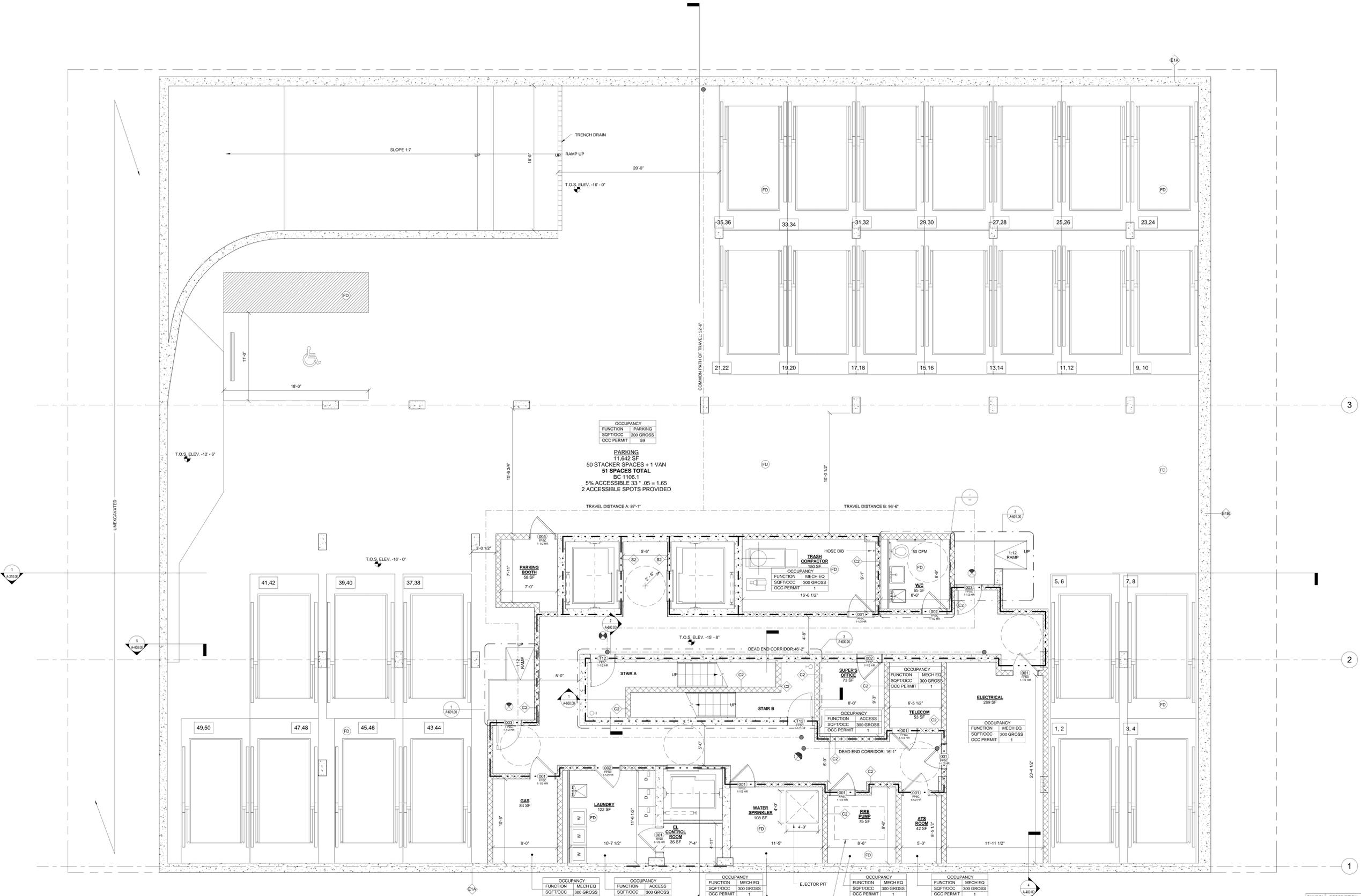


For Department of Buildings Use

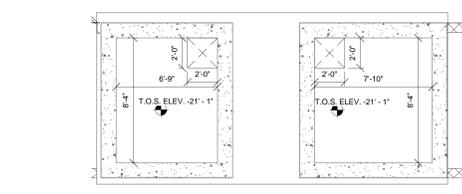
Drawing Title
CELLAR PLAN

Sign & Seal
Drawing No.
A-100.00

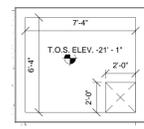
date	drawn by	job no.
01/16/15	Author	2014-099
sheet scale	checked by	DOB sheet
As indicated	Checker	9 OF 32
DOB NUMBER		



1 CELLAR PLAN
1/4" = 1'-0"



2 ELEVATOR PIT PLAN
1/4" = 1'-0"



3 ELEVATOR PIT PLAN 1
1/4" = 1'-0"

BUILDING CODE ANALYSIS:
OCCUPANCY GROUP: R-2

EXIT CAPACITY PER TABLE 1005.1

EXIT TYPE	WIDTH	FACTOR	MAX CAPACITY
STAIR A & B	36"	2' OCC	120 OCC/STAIR
STAIR DOORS	36"	2' OCC	180 OCC/STAIR DOOR
CORRIDOR	48"	2' OCC	240 OCC

NOTE: 2 EXITS PROVIDED AT GRADE FOR LESS THAN 500 OCCUPANTS PER BC 1018
(Table 1015.1 and BC 1016.3)

REQUIRED	PROVIDED	COMPLIES	
Maximum travel distance:	200'-0" max.	SEE PLAN	COMPLIES
Min. corridor width:	44" min.	SEE PLAN	COMPLIES
Maximum Dead end corridor:	80'-0" max.	SEE PLAN	COMPLIES
Common path of egress:	125'-0" max.	SEE PLAN	COMPLIES

1015.3.1: In Group R-2 occupancies, where stairs are enclosed in walls having at least a 2-hour fire-resistance rating and construction of masonry or masonry equivalent in accordance with department rules 3-1.1. The exit doors to such stairs shall be placed a distance apart equal to no less than 15 feet (4572 mm).

(OCCUPANCY LOADS PER TABLE 1004.1.1)

OCCUPANCY	SQ. FT. PER OCCUPANT
Accessory storage areas, mechanical equipment room	300 GROSS
Parking Garage	200 GROSS

SYMBOL DESCRIPTION

(Symbol)	SMOKE DETECTOR
(Symbol)	CARBON MONOXIDE/SMOKE DETECTOR
(Symbol)	HEAT DETECTOR
(Symbol)	EMERGENCY EXIT
(Symbol)	SECURITY CAMERA
(Symbol)	ELEVATOR CHANGE

FIRE RATINGS

2 HR RATED PARTITION	---
3 HR RATED PARTITION	----

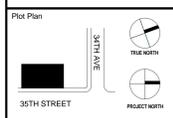


- EQUITONE PANEL TECTIVA TE 20
 - EQUITONE PANEL TECTIVA TE 60
 - EQUITONE PANEL LINEA LT 20
 - EQUITONE PANEL LINEA LT 60
 - STO CORP STUCCO
- Material Legend
 1" = 1'-0"



Revision Schedule

No.	Date	Description
-----	------	-------------



For Department of Buildings Use

PROVIDE 2" OF SEISMIC SEAL @ ADJACENT BUILDINGS

ADJ 1 STORY BUILDING

Drawing Title
EAST ELEVATION

Sign & Seal
 Author: [Signature]
 Date: 01/16/15

Drawing No.
A-300.00

date: 01/16/15
 sheet scale: As indicated
 drawn by: Author
 checked by: Checker
 job no.: 2014-099
 DOB sheet: 21 OF 32
 DOB NUMBER:

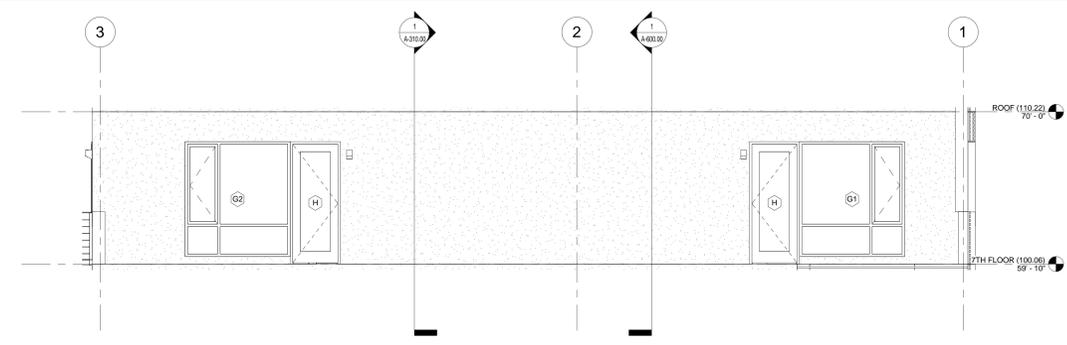
NOTE:
 WINDOWS TO COMPLY WITH ZR 28-22, DOUBLE GLAZED
 WINDOWS TO COMPLY WITH BC 145.13.3 WINDOWS IN
 R-2 OCCUPANCIES



NYC BUILDING CODE 2014 TABLE 705.8
 (10' TO LESS THAN 15' FROM PROPERTY LINE, UNPROTECTED SPRINKLERED OPENINGS)
 WINDOW TYPE E1 = 11.67 SF
 WINDOW TYPE A1 = 20 SF
 WINDOW TYPE A4 = 35 SF
 2ND-6TH FLOOR ELEVATIONS = 8'10" x 39'0" = 580.17 SF
 ALLOWABLE OPENINGS = 45% OF 580.17 SF = 261.07 SF
 AREA OF OPENINGS = (11.67 SF x 2) + 20 SF + 35 SF = 78.34 SF
 261.07 SF > 78.34 SF **COMPLIES**

2 SOUTH LOT LINE WINDOW COMPLIANCE
 1" = 1'-0"

- EQUITONE PANEL TECTIVA TE 20
 - EQUITONE PANEL TECTIVA TE 60
 - EQUITONE PANEL LINEA LT 20
 - EQUITONE PANEL LINEA LT 60
 - STO CORP STUCCO
- Material Legend
 1" = 1'-0"

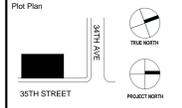


Issuance Schedule

No.	Date	Description
01.16.15		ISSUE FOR FILING

Revision Schedule

No.	Date	Description
-----	------	-------------



For Department of Buildings Use

Drawing Title
SOUTH ELEVATION

Sign & Seal
 Drawing No.
A-301.00

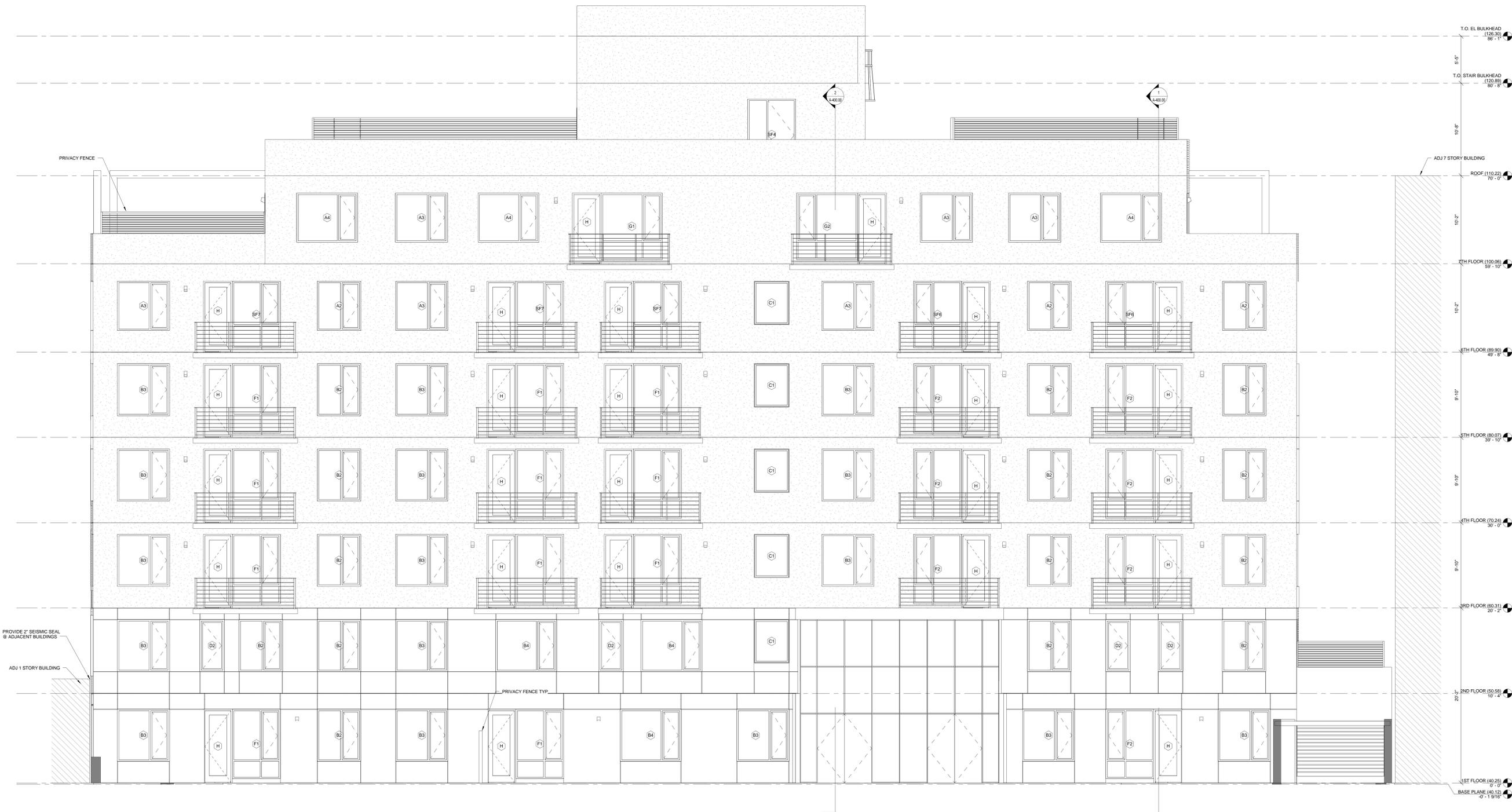
date 01/16/15	drawn by Author	job no. 2014-099
sheet scale As indicated	checked by Checker	D08 sheet 22 OF 32
DOB NUMBER		

NOTE:
 WINDOWS TO COMPLY WITH ZR 28-22, DOUBLE GLAZED
 WINDOWS TO COMPLY WITH BC 1405.13.3 WINDOWS IN
 R-2 OCCUPANCIES



ARCHITECTS
 434 BROADWAY NEW YORK CITY 10013 P. 212.431.5552 F. 212.431.5663
 REGISTERED ARCHITECTS
 STATE OF NEW YORK
 ARCHITECT NO. 10013
 ARCHITECT NO. 10013
 ARCHITECT NO. 10013

- Material Legend**
 1" = 1'-0"
- EQUITONE PANEL TECTIVA TE 20
 - EQUITONE PANEL TECTIVA TE 60
 - EQUITONE PANEL LINEA LT 20
 - EQUITONE PANEL LINEA LT 60
 - STO CORP STUCCO



1 WEST ELEVATION
 1/4" = 1'-0"

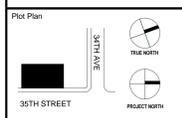
NOTE:
 WINDOWS TO COMPLY WITH ZR 28-22, DOUBLE GLAZED
 WINDOWS TO COMPLY WITH BC 1405.13.3 WINDOWS IN
 R-2 OCCUPANCIES

Issuance Schedule

No.	Date	Description
01.16.15		ISSUE FOR FILING

Revision Schedule

No.	Date	Description
-----	------	-------------



For Department of Buildings Use

Drawing Title
 WEST ELEVATION

Sign & Seal **Drawing No.**
 A-302.00

date	drawn by	job no.
01/16/15	Author	2014-099

sheet scale	checked by	DOB sheet
As indicated	Checker	23 OF 32

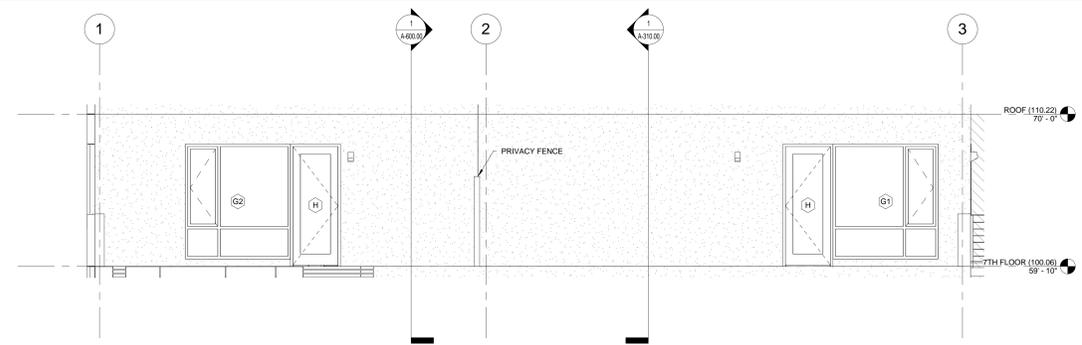
DOB NUMBER



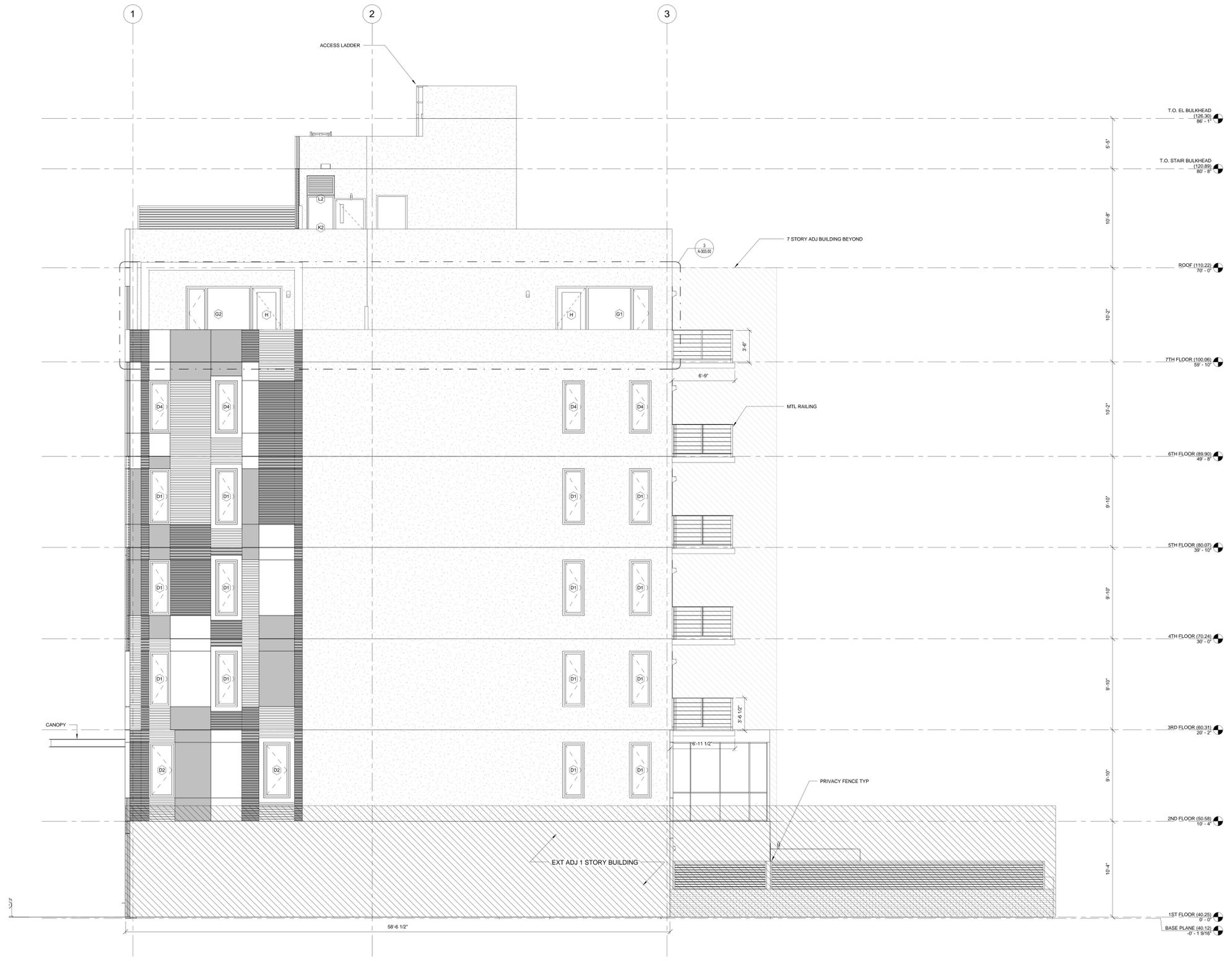
NYC CODE 2014 TABLE 705.6
 WINDOW TYPE E1 = 11.67 SF
 WINDOW TYPE E2 = 14.17 SF
 2ND FLOOR ELEVATIONS = 9'-10" x 59'-0" = 580.17 SF
 ALLOWABLE OPENINGS = 10% OF 580.17 SF = 58.0 SF
 AREA OF OPENINGS = (11.67 SF * 2) + (14.17 SF * 2) = 51.68 SF
 58.0 SF > 51.68 SF **COMPLIES**
 3RD-6TH FLOOR ELEVATIONS = 9'-10" x 59'-0" = 580.17 SF
 ALLOWABLE OPENINGS = 10% OF 580.17 SF = 58.0 SF
 AREA OF OPENINGS = 11.67 SF * 4 = 46.68 SF
 58.0 SF > 46.68 SF **COMPLIES**

② NORTH LOT LINE WINDOW COMPLIANCE
 1" = 1'-0"

- EQUITONE PANEL TECTIVA TE 20
 - EQUITONE PANEL TECTIVA TE 60
 - EQUITONE PANEL LINEA LT 20
 - EQUITONE PANEL LINEA LT 60
 - STO CORP STUCCO
- Material Legend
 1" = 1'-0"



③ Callout of NORTH ELEVATION
 1/4" = 1'-0"



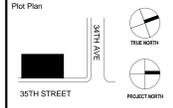
① NORTH ELEVATION
 1/4" = 1'-0"

Issuance Schedule

No.	Date	Description
01.16.15		ISSUE FOR FILING

Revision Schedule

No.	Date	Description
-----	------	-------------



For Department of Buildings Use

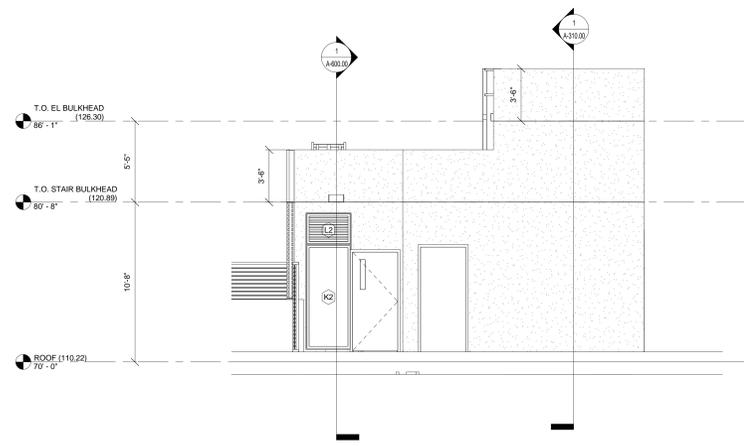
Drawing Title
NORTH ELEVATION

Sign & Seal
 Drawing No.
A-303.00

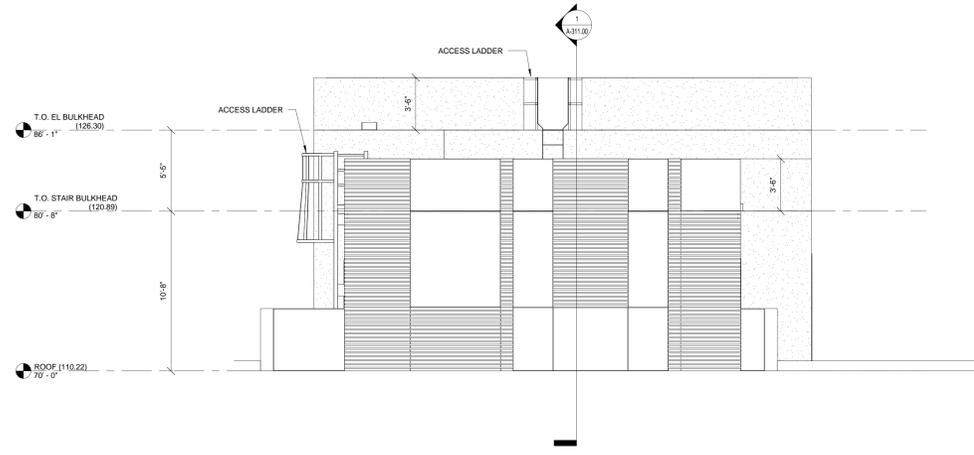
date	drawn by	job no.
01/16/15	Author	2014-099
sheet scale	checked by	DOB sheet
As indicated	Checker	24 OF 32

DOB NUMBER

NOTE:
 WINDOWS TO COMPLY WITH ZR 28-22, DOUBLE GLAZED
 WINDOWS TO COMPLY WITH BC 1405.13.3 WINDOWS IN
 R-2 OCCUPANCIES



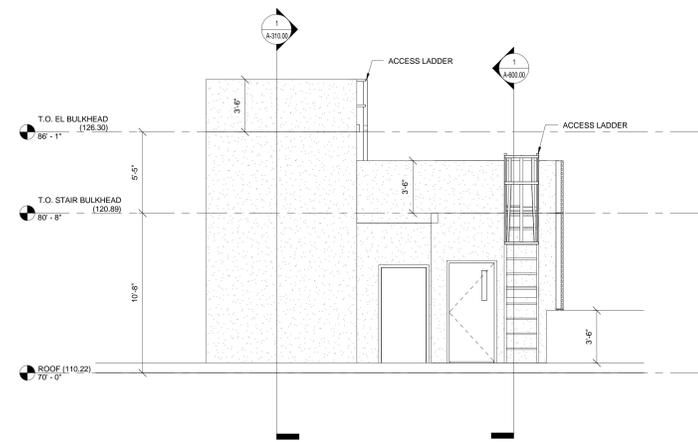
1 NORTH BULKHEAD ELEVATION
 1/4" = 1'-0"



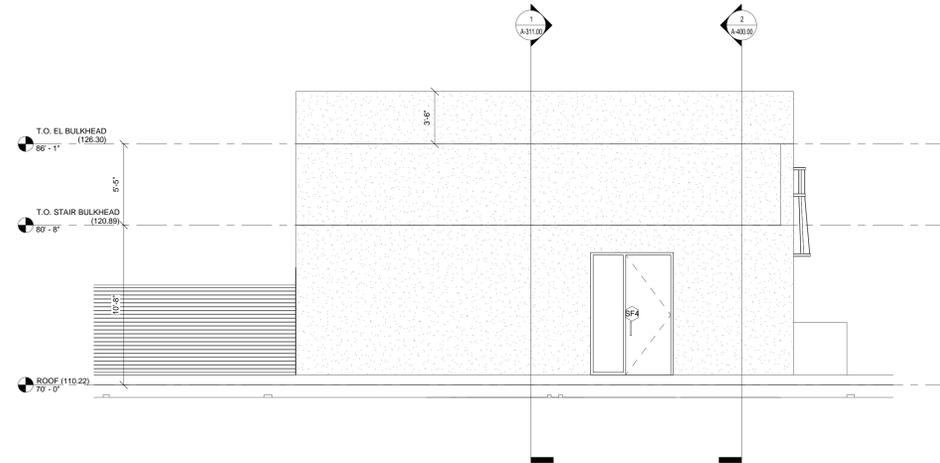
2 EAST BULKHEAD ELEVATION
 1/4" = 1'-0"

NOTES:
 10.3.3 Vent dimensions: The effective venting area shall not be less than 16 square feet (1.5 m²) with no dimension less than 4 feet (1219 mm), excluding ribs or gutters having a total width not exceeding 6 inches (152 mm).
 The max. shaft area dimensions on typical floor: 6'-10" x 23'-1 1/2" = 158 SF
 Required: 158 x 3.5% = 6 SF
 Provided: 4' x 5' = 20 SF
 20 SF > 6 SF of Louver required. **Complies**
 Provided Louver: 4' x 1.07' = 7 SF
Complies

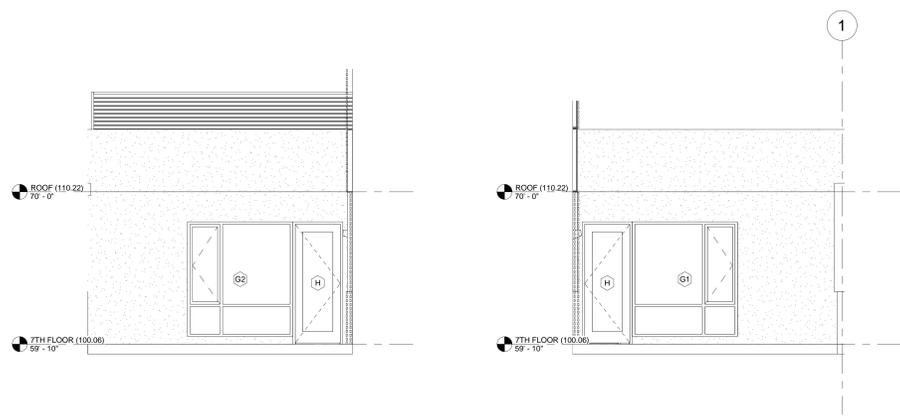
5 SMOKE VENT CALCULATION
 1/16" = 1'-0"



3 SOUTH BULKHEAD ELEVATION
 1/4" = 1'-0"



4 WEST BULKHEAD ELEVATION
 1/4" = 1'-0"



6 7TH FLOOR TERRACE ELEVATION 1
 1/4" = 1'-0"

7 7TH FLOOR TERRACE ELEVATION 2
 1/4" = 1'-0"

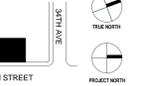
Issue Schedule

No.	Date	Description
01.16.15		ISSUE FOR FILING

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title

ADDITIONAL ELEVATIONS

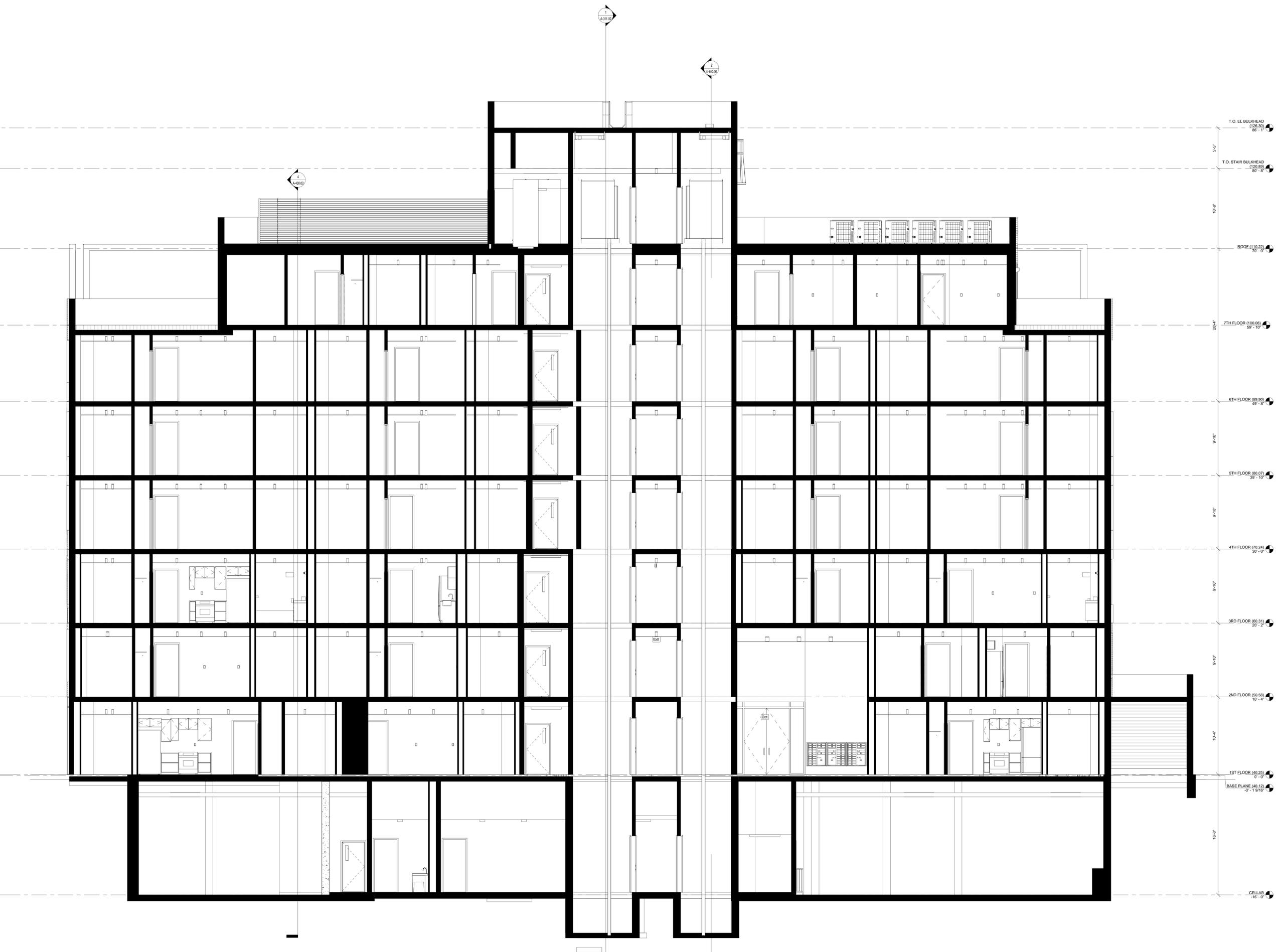
Sign & Seal Drawing No.

A-304.00

date 01/16/15 drawn by Author job no. 2014-099

sheet scale As indicated checked by Checker DOB sheet 25 OF 32

DOB NUMBER

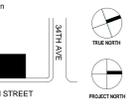


Issuance Schedule

No.	Date	Description
01.16.15	01.16.15	ISSUE FOR FILING

Revision Schedule

No.	Date	Description
-----	------	-------------



For Department of Buildings Use

Drawing Title

LONGITUDINAL BUILDING SECTION

Sign & Seal

Author No. A-310.00

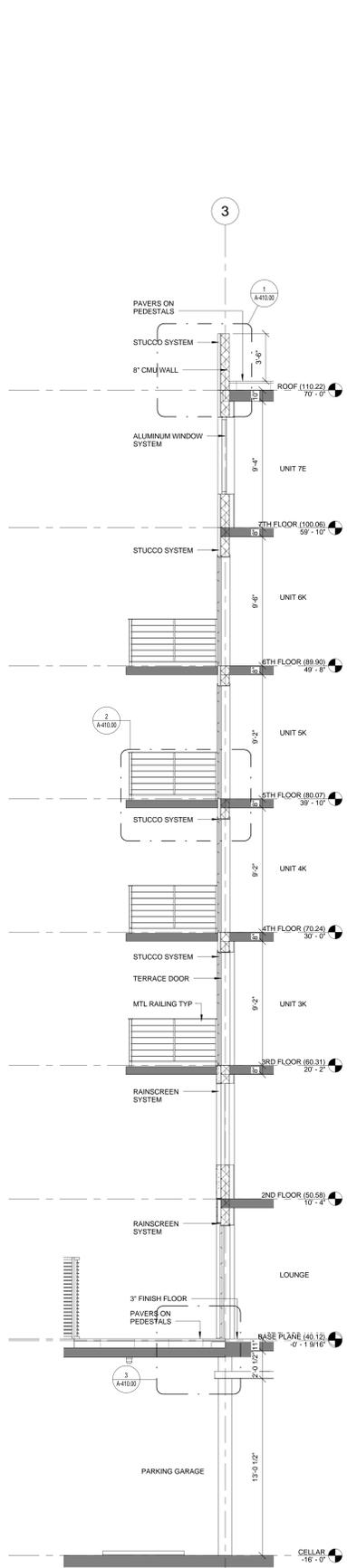
date	drawn by	job no.
01/16/15	Author	2014-099
sheet scale	checked by	DOB sheet
1/4" = 1'-0"	Checker	26 OF 32

DOB NUMBER

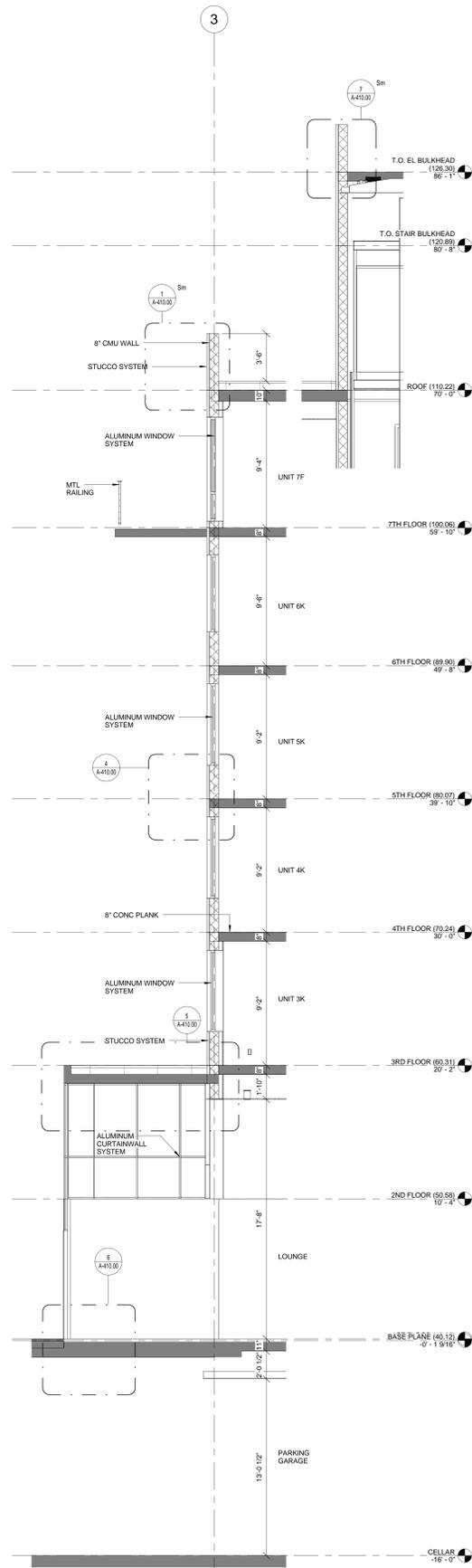
LONGITUDINAL SECTION
 1/4" = 1'-0"



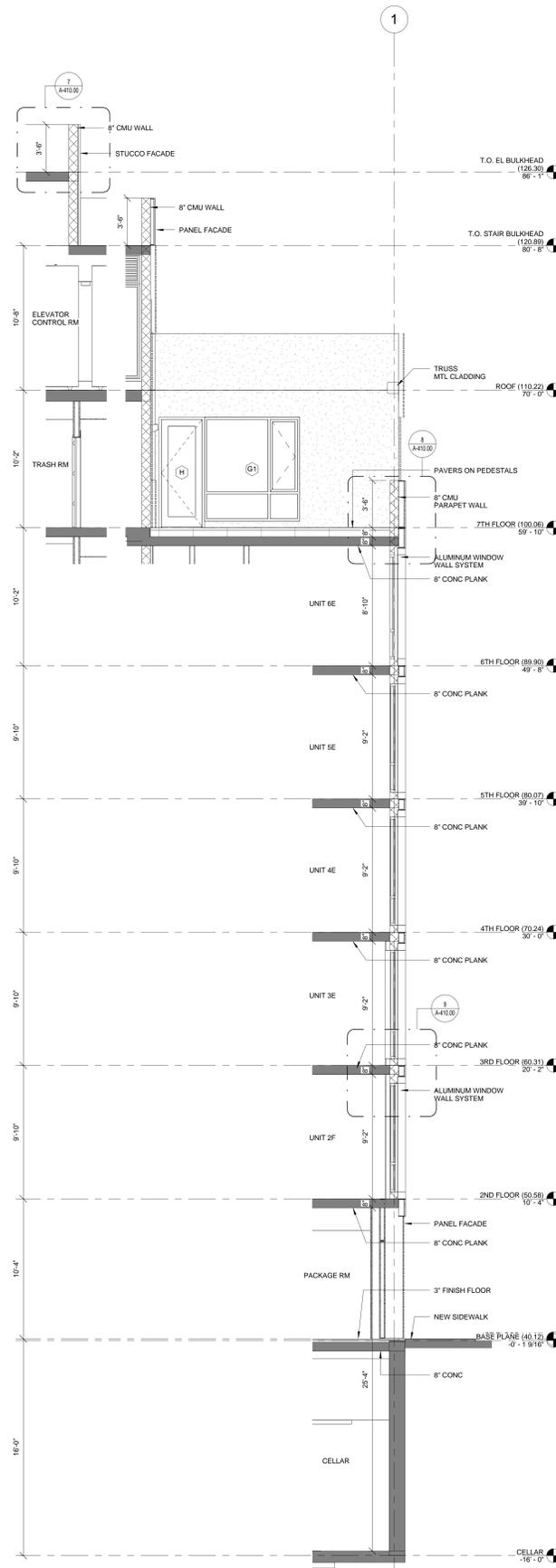
© COPYRIGHT KUTNICKI BERNSTEIN ARCHITECTS 2015



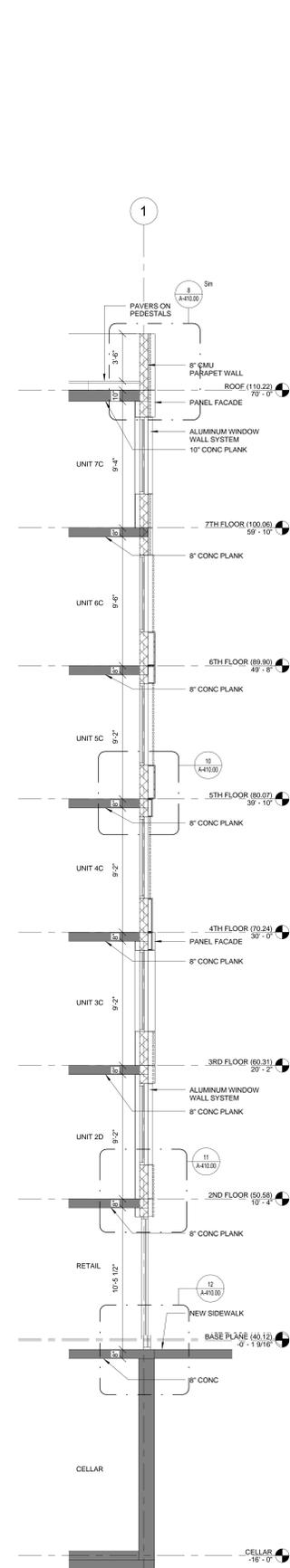
1 WALL SECTION WEST-1
 1/4" = 1'-0"



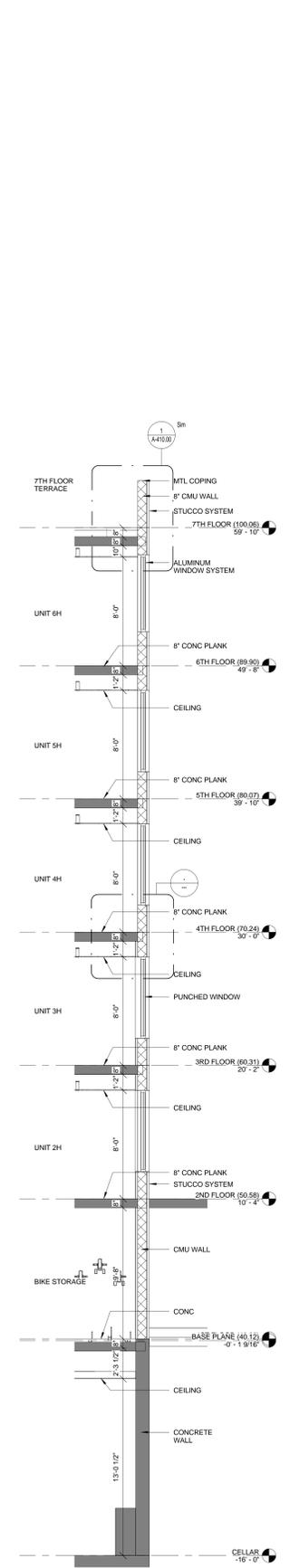
2 WALL SECTION WEST-2
 1/4" = 1'-0"



3 WALL SECTION EAST-2
 1/4" = 1'-0"



4 WALL SECTION EAST-1
 1/4" = 1'-0"



5 WALL SECTION SOUTH-1
 1/4" = 1'-0"

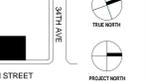
Issuance Schedule

No.	Date	Description
01.16.15		ISSUE FOR FILING

Revision Schedule

No.	Date	Description
-----	------	-------------

Plot Plan



For Department of Buildings Use

Drawing Title

WALL SECTIONS

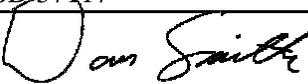
Sign & Seal Author
 Drawing No. A-400.00

Date: 01/16/15
 Sheet scale: 1/4" = 1'-0"
 Drawn by: Author
 Checked by: Checker
 Job no.: 2014-099
 DOB sheet: 28 OF 32

MATERIAL SAFETY DATA SHEET

QUICK IDENTIFIER (In Plant Common Name)

VaporBlock 6, 10 & 15 (VB6,VB10 & VB15)

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	1812 "E" Avenue Sioux Falls, SD 57104
Signature of Person Responsible for Preparation		Date Prepared	June 1, 2006

Section 1 - IDENTITY

Common Name: (Used on Label)	VaporBlock 6, 10 & 15	CAS Number(s)	26221-73-8 147-14-8 25213-02-9
Chemical Name	Copolymer of Ethylene and Hexene	Chemical Family	Polyolefin
Formula	(CH ₂ - CH ₂) _n		

Section 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Component(s) - Chemical and Common Name	%	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 (%)	0.01%	Vapor Density	N/A	Evaporation Rate	N/A	
Solubility in Water	Insoluble in Water		Reactivity in Water	Not Reactive in Water		
Appearance and Odor	Blue, odorless plastic sheet.					
Flash Point	N/A	Flammability Limits in Air, by Volume (%)	Lower	Upper	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 570 F will release combustible gases.
	Stable		
Incompatibility (Materials to Avoid)	Strong oxidizers. May react with free halogens.		
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		

Section 5 - HEALTH HAZARDS**Threshold** N/A**Limit Value****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 they are 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**

VAPORBLOCK® VB6 & VB10

High Performance Underslab Vapor Barrier

RAVEN
ENGINEERED FILMS

Product Description

VaporBlock® is a high performance, underslab vapor barrier designed to retard moisture migration through concrete slabs and concrete walls to protect your structure from:

- **MOLD:** VaporBlock® reduces moisture condensation within a structure, impeding the growth of molds, mildews, and fungi.
- **MOISTURE:** VaporBlock® protects flooring materials by maintaining moisture levels well below the requirements of ASTM E-1745-11.
- **RADON:** VaporBlock® is used as a component of radon mitigation systems to protect indoor air quality and occupant health.

VaporBlock® is one of the most effective underslab vapor barriers on the market today! Benefits include:

- Low moisture vapor permeability
- Superior puncture resistance
- High tensile tear strength
- Resistance to decay and degradation

VaporBlock® is manufactured to strict conformance specifications under our ISO 9001-2008 Certified Management System to consistently exceed ASTM standards and project expectations. Raven's accredited lab ensures VaporBlock® meets the highest possible quality standards across multiple industries. VaporBlock® is supported with independent testing. Results are available upon request, as required under ASTM E-1745-11. VaporBlock® is readily available through nation-wide distribution:

- Available in 6, 10 and 15 mil for optimal project flexibility (VB15 on separate data sheet)
- Larger roll sizes equal lower installation costs

Raven Industries manufactures VaporBlock® and controls all aspects from start to finish assuring the final product meets our high performance standards. Raven is a publicly-traded company, with over 50 years of stability and service excellence to stand behind our products with a future of innovation and growth.



Vapor Barrier - Commercial

Product

Part

VAPORBLOCK 6.....	VB6
VAPORBLOCK 10.....	VB10

APPLICATIONS

- Underslab Vapor Retarder/Barrier
- Foundation Wall Vapor Retarder
- Radon Retarder

Note: All instructions on architectural or structural drawings should be reviewed and followed. Detailed installation instructions accompany each roll of VaporBlock and can also be located on our website.

ASTM E-1643 also provides general installation information for vapor retarders. All VaporBlock series materials can be installed with print or color facing up or down and will provide the same performance.

ASTM E-1745-11, "Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs".

VAPORBLOCK® VB6 & VB10

High Performance Underslab Vapor Barrier

PROPERTIES	TEST METHOD	VAPORBLOCK VB6	VAPORBLOCK VB10	ASTM E 1745-11 Class A, B & C ¹
		Imperial	Imperial	Imperial
APPEARANCE		Blue	Blue	-
THICKNESS, NOMINAL		6 mil	10 mil	-
ROLL SIZE		15 ft x 200 ft	15 ft x 200 ft	-
WEIGHT		29 lbs/MSF	49 lbs/MSF	-
CLASSIFICATION	ASTM E1745-11	CLASS C	CLASS A, B & C	Class A, B, or C
TENSILE STRENGTH AVERAGE MD & TD (NEW MATERIAL)	ASTM E154 Section 9, (D882)	32 lbs/in	52 lbs/in	Class A = 45 lbs/in Class B = 30 lbs/in Class C = 13.6 lbs/in Minimum
(AFTER EXPOSURE)		25 lbs/in	53 lbs/in	
PUNCTURE RESISTANCE	ASTM D1709 Method B	>1500 g	>2600 g	Class A = 2200 g Class B = 1700 g Class C = 475 g Minimum
PERMEANCE (NEW MATERIAL)	ASTM E154 Section 7 ASTM E96 Procedure B	0.090 *Perms	0.0146 *Perms	Class A, B, & C 0.1 *Perms Maximum
(AFTER CONDITIONING)	ASTM E154 Section 8, E96	0.105	0.0153	
	Section 11, E96	0.124	0.0151	
	Section 12, E96	0.097	0.0160	
	Section 13, E96	0.099	0.0181	
WVTR	ASTM E96 Procedure B	0.080 grain/hr-ft ²	0.0084 grain/hr-ft ²	-
MAXIMUM USE TEMPERATURE		180° F	180° F	-
MINIMUM USE TEMPERATURE		-70° F	-70° F	-

* grains/(ft²·hr·in Hg)

¹ Referencing ASTM E1745-11, Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs



VaporBlock® can be identified as blue in color printed with the VaporBlock® logo and the conformance information listing ASTM E-1745, classifications.

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



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



Engineered Films Division
P.O. Box 5107
Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333

Toll Free: 800-635-3456
Email: efdsales@ravenind.com
www.ravenefd.com
3/14 EFD 1485

VaporBlock®

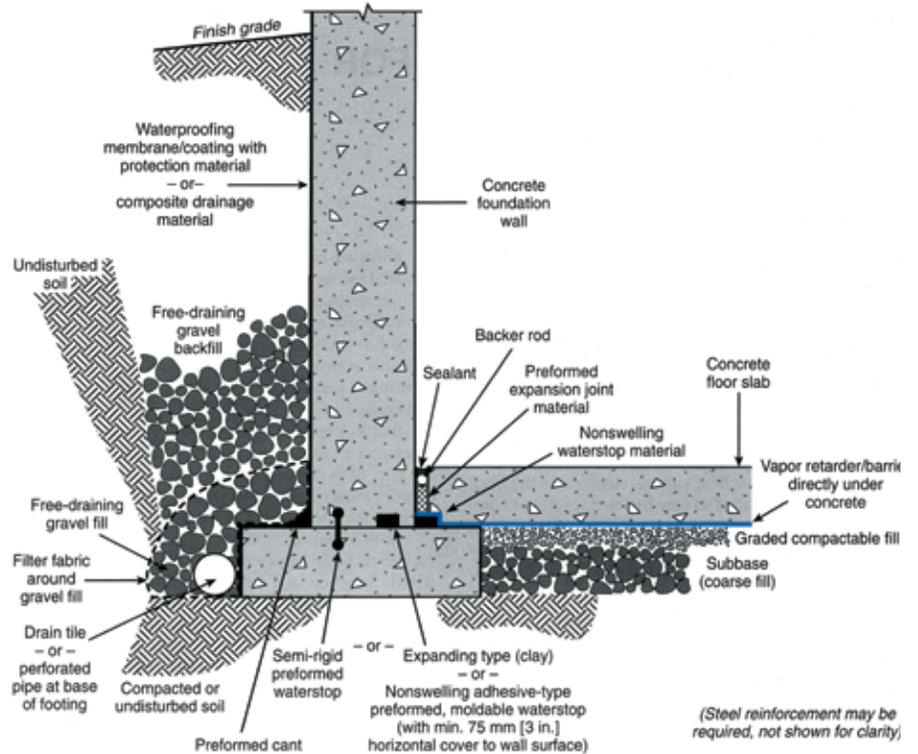
UNDERSLAB VAPOR RETARDER

INSTALLATION GUIDELINES

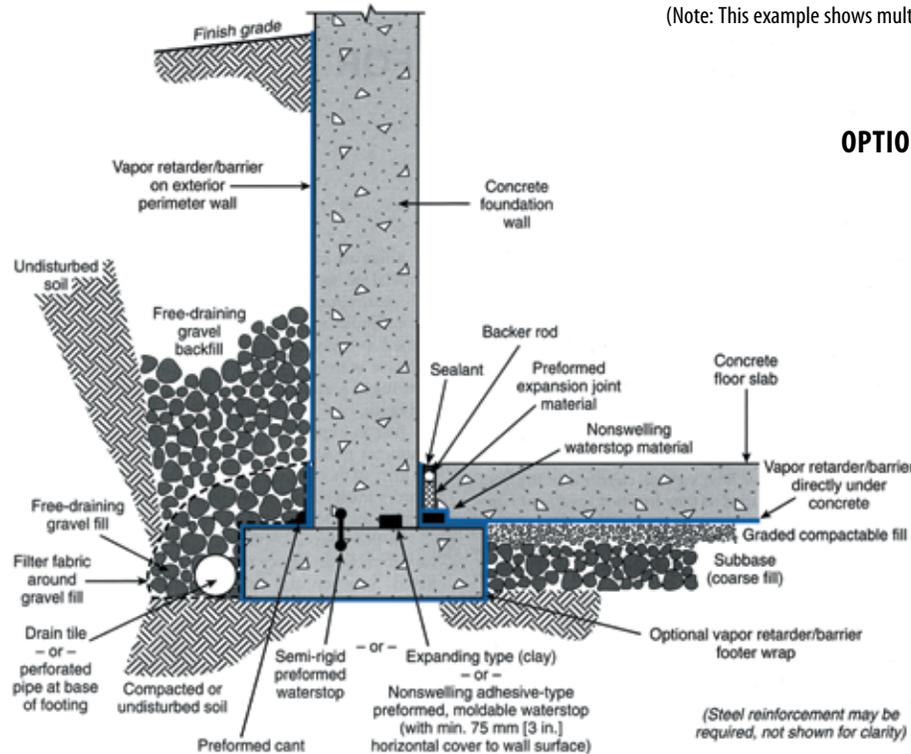
Please Note: Read these instructions thoroughly before installation to ensure proper use of VaporBlock®. ASTM E 1643 can also provide valuable information regarding the installation of vapor retarders. When installing this product, contractors shall conform to all applicable local, state and federal regulations and laws pertaining to residential and commercial building construction.

Materials List:

VaporBlock® Vapor Retarder (Barrier)
 VaporBond 4" Seaming Tape
 Butyl Seal 2-Sided Tape
 VaporBoot Pipe Boot System 25/Tube plus Tape
 VaporBoot Tape (optional)



Elements of a moisture-resistant floor system. General illustration only.
 (Note: This example shows multiple options for waterstop placement.)



Elements of a moisture-resistant floor system. General illustration only.
 (Note: This example shows multiple options for waterstop placement.)

OPTIONAL PERIMETER WALL & FOOTER METHODS

An optional perimeter wall class "A" vapor retarder can be installed with or without a bituminous coating applied to the concrete.

Raven VaporBlock® 10 or 15 mil (Class A) vapor retarders can be sealed to the perimeter wall with Raven Butyl Seal Tape. An optional footer wrap may also be applied.

Original diagrams on this page were reprinted with permission by the Portland Cement Association. Reference: Kanare, Howard M., Concrete Floors and Moisture, EB119, Portland Cement Association, Skokie, Illinois, and National Ready Mixed Concrete Association, Silver Spring, Maryland, USA, 2008, 176 pages.

VAPORBLOCK® PLACEMENT

- 1.1. Level and tamp or roll granular base as specified by your architectural or structural drawings. If sharp crushed rock is used, a 1/2" layer of fine grade compactable fill is required between the base and the vapor retarder.
- 1.2. Unroll **VaporBlock®** running the longest dimension parallel with the direction of the pour and pull open all folds to full width. (Fig. 1)
- 1.3. Lap **VaporBlock®** over the footings and seal with Raven 2-sided Butyl Seal tape. Prime concrete surfaces and assure they are dry and clean prior to applying Raven Butyl Seal Tape. Apply even and firm pressure with a rubber roller.

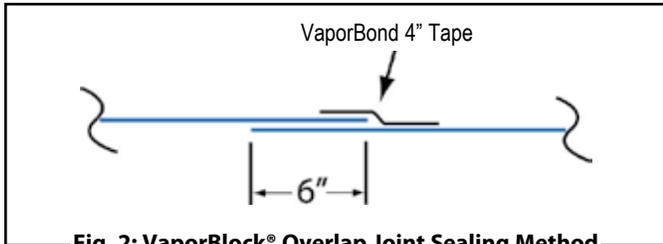


Fig. 2: VaporBlock® Overlap Joint Sealing Method

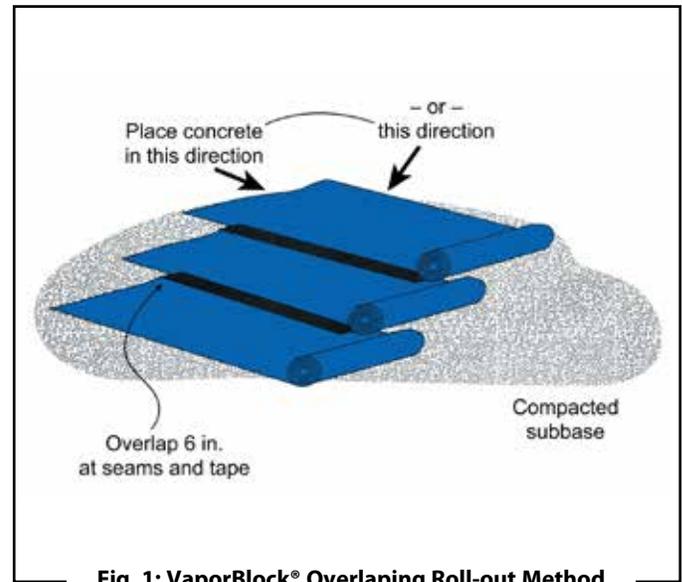


Fig. 1: VaporBlock® Overlapping Roll-out Method

SINGLE PENETRATION PIPE BOOT INSTALLATION

Overlap joints a minimum of 6" and seal overlap with Raven VaporBond Tape.

- 1.4. Seal around all plumbing, conduit, support columns or other penetrations that come through the **VaporBlock®** membrane. The Raven VaporBoot Pipe Boot System is the recommended sealing method. (Includes 25 pre-cut VaporBlock® pipe boots along with 1 roll of VaporBoot Tape). (Fig. 3 & 4)

Pipe boots may also be fabricated from excess **VaporBlock®** membrane (Fig. 3 & 4) and sealed with VaporBoot Tape or VaporBond Tape (sold separately).

Reminder Note: All holes or penetrations through the membrane will need a patch cut to a minimum of 6" from the opening in all directions.

To fabricate pipe boots from **VaporBlock®** excess material (see Fig. 3 & 4 for A-E):

- A) Cut a square large enough to overlap 6" in all directions.
- B) Mark where to cut opening on the center of the square and cut four to eight slices about 3/8" less than the diameter of the pipe.

- C) Force the square over the pipe leaving the tightly stretched cut area around the bottom of the pipe with approximately a 1/2" of the boot material running vertically up the pipe. *(no more than a 1/2" of stretched boot material is recommended)*

- D) Use VaporBoot Tape or VaporBond Tape to secure the boot to the pipe.

VaporBoot Tape (option) – fold tape in half lengthwise, remove half of the release liner and wrap around the pipe allowing 1" extra for overlap sealing. Peel off the second half of the release liner and work the tape outward gradually forming a complete seal.

VaporBond Tape (option) - Tape completely around the pipe overlapping the to get a tight seal against the pipe.

- E) Complete the process by taping over the boot perimeter edge with VaporBond Tape to create a monolithic membrane between the surface of the slab and moisture sources below and at the slab perimeter. (Fig. 3 & 4)

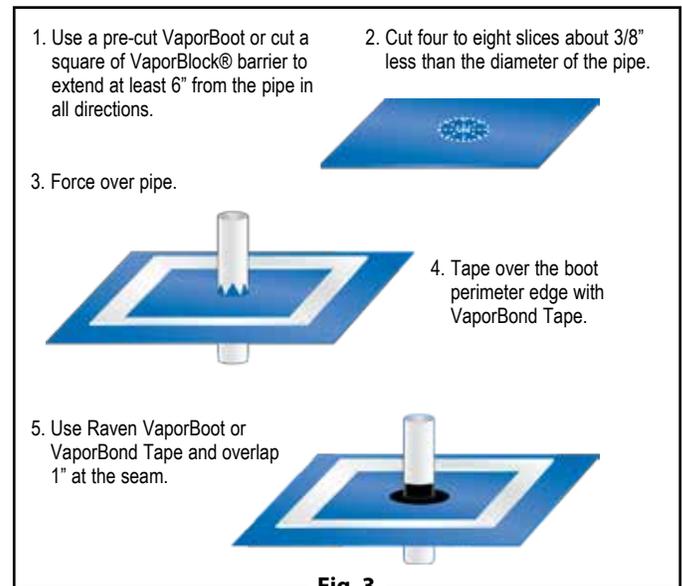


Fig. 3

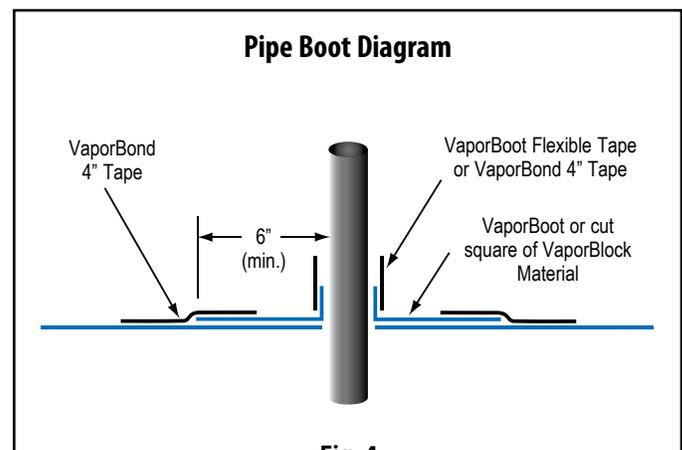


Fig. 4

MULTIPLE PENETRATION PIPE BOOT INSTALLATION

1.5. For side-by-side multiple penetrations;

- A) Cut a patch large enough to overlap 6" in all directions (Fig. 6) of penetrations.
- B) Mark where to cut openings and cut four to eight slices about 3/8" less than the diameter of the penetration for each.
- C) Slide patch material over penetration to achieve a tight fit.
- D) Tape around each of the penetrations and the patch with VaporBond 4" Tape. (Fig. 7) For additional protection apply an acceptable polyurethane elastomeric sealant around the penetrations. (Fig. 8)

1.6. Holes or openings through **VaporBlock®** are to be repaired by cutting a piece of **VaporBlock®** 6" larger in all directions from the opening. Seal the edges of the patch with VaporBond Tape.

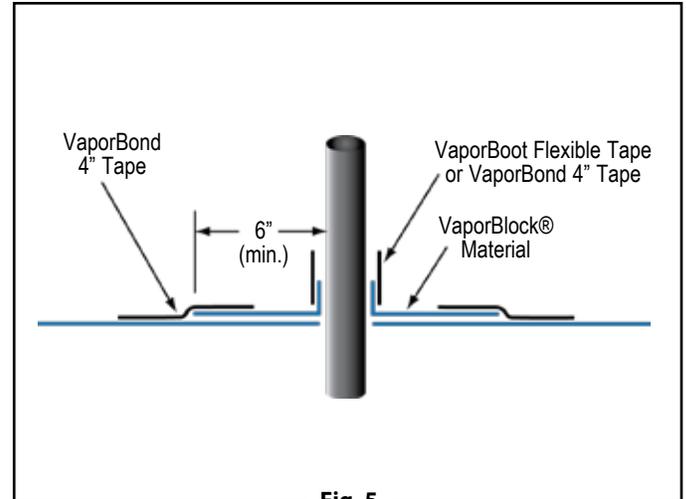


Fig. 5

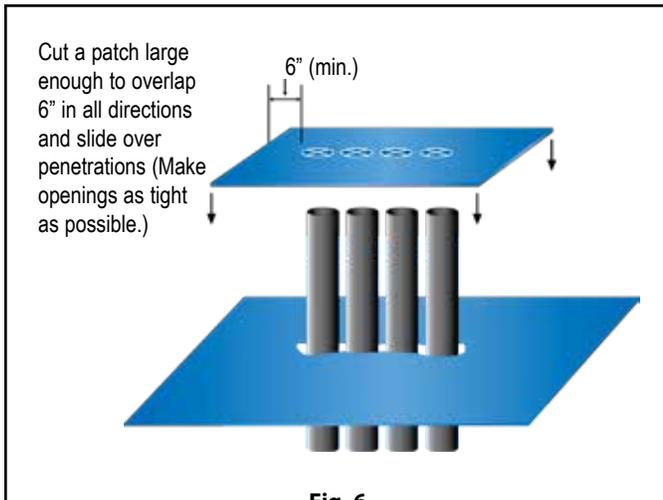


Fig. 6

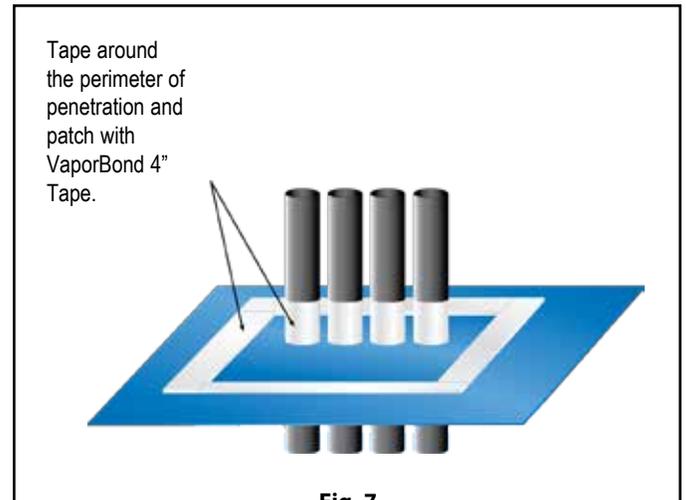


Fig. 7

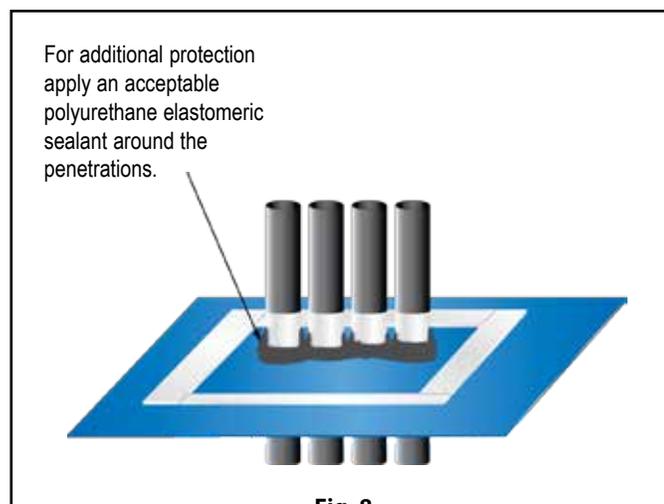


Fig. 8

VAPORBLOCK® PROTECTION

- 2.1. When installing reinforcing steel and utilities, in addition to the placement of concrete, take precaution to protect **VaporBlock®**. Carelessness during installation can damage the most puncture-resistant membrane. Sheets of plywood cushioned with geotextile fabric temporarily placed on **VaporBlock®** provide for additional protection in high traffic areas including concrete buggies.
- 2.2. Use only brick-type or chair-type reinforcing bar supports to protect **VaporBlock®** from puncture.
- 2.3. Avoid driving stakes through **VaporBlock®**. If this cannot be avoided, each individual hole must be repaired.
- 2.4. If a cushion or blotter layer is required in the design between **VaporBlock®** and the slab, additional care should be given if sharp crushed rock is used. Washed rock will provide less chance of damage during placement. Care must be taken to protect blotter layer from precipitation before concrete is placed.



VaporBlock® Vapor Barrier can be identified on site as blue in color printed in black ink with the following logo and classification listing:



Note: To the best of our knowledge, these are typical installation procedures and are intended as guidelines only. Architectural or structural drawings must be reviewed and followed as well as on a project basis. NO WARRANTIES ARE MADE AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS OR GUIDELINES REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and we disclaim all liability for resulting loss or damage.



Engineered Films Division
P.O. Box 5107
Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333

© 2014 RAVEN INDUSTRIES INC. All rights reserved.

Toll Free: 800-635-3456
Email: efdsales@ravenind.com
www.ravenefd.com
2/14 EFD 1156