OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098

Prepared for:
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(ORIGINAL DECEMBER 2010)

Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date
1		Section 1.4.1.1 – Inserted to detail Lower Sand Unit LNAPL remediation activities (Pg. 21)	
2		Section 1.4.1.2 – Inserted to detail Perched Unit LNAPL remediation activities (Pg. 22)	
3		Section 1.4.2.2 – Modified due to completion of Lower Sand Unit LNAPL remediation (Pg. 23)	
4		Section 1.4.2.3 – Modified due to completion of Perched Unit LNAPL remediation (Pg. 24)	
5		Section 2.2.1.3 – Modified due to completion of Lower Sand Unit LNAPL remediation (Pg. 33)	
6		Section 2.2.1.4 – Modified due to completion of Perched Unit LNAPL remediation (Pg. 33)	
7		Section 2.2.2.3 – Modified due to completion of Lower Sand Unit LNAPL remediation (Pg. 35)	
8		Section 2.2.2.4 – Modified due to completion of Perched Unit LNAPL remediation (Pg. 35)	
9		Section 2.5.1 & Table B - Updated emergency and site contacts (Pgs. 40-41)	

10		Section 3.1.2 & Table C - Updated monitoring/inspection schedule (Pgs. 46-47)	
11		Sections 3.3.3, 3.3.3.1, & 3.3.3.2 - Modified due to termination of quarterly groundwater monitoring program (Pgs. 48-49)	
12		Section 3.6 & Table D - Updated monitoring/inspection reporting frequency and requirements (Pgs. 51-52)	
13		Section 4.1 – Removed Lower Sand and Perched Units LNAPL remediation system O&M steps, as these systems have been successfully terminated (Pg. 53)	
14		Section 4.2.1.2 – Modified minimum sub-slab vacuum pressure (Pg. 54)	
15		Section 4.2.2 - Modified due to completion of Lower Sand Unit LNAPL remediation and all non-applicable subsections removed (Pg.56)	
16		Section 4.2.3 - Modified due to completion of Perched Unit LNAPL remediation and all non-applicable subsections removed (Pg. 57)	
17		Sections 4.3.1.1 & 4.3.1.3 – Modified minimum sub-slab vacuum pressure (Pgs. 58-59)	
18		Section 4.3.2 - Modified due to completion of Lower Sand Unit LNAPL remediation and all non-applicable subsections removed (Pg. 60)	
19		Section 4.3.3 - Modified due to completion of Perched Unit LNAPL remediation and all non-applicable subsections removed (Pg. 61)	
20		Section 5.3 – Modified to reflect Periodic Review Report submittals (Pg. 64)	

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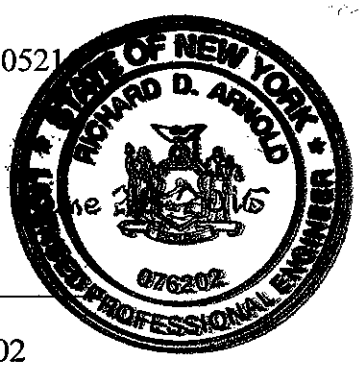
CERTIFICATIONS

I, Richard D. Arnold, certify that I am currently a NYS registered professional engineer and that this Site Management Plan was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

By: EWMA Engineering Services LLC

NYS Certificate of Authorization No. 000521



P.E.

Richard D. Arnold, NYSPE No. 16076202

EWMA Project Number 209014

Note: It is a violation of Article 145 of New York State Education Law for any person, unless he is acting under the direction of a licensed professional engineer, to alter an item of this Site Management Plan in any way. If an item is altered, the altering engineer shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

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SITE MANAGEMENT PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at OCA LIC Fifth Street Mixed-Use Housing (hereinafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Brownfield Cleanup Agreement (BCA) Index# A2-0584-0307, Site # C241098, which was executed on June 1, 2007.

1.1.1 General

OCA LIC, LLC entered into a BCA with the NYSDEC as a Volunteer to remediate an approximately one acre property located in Long Island City, Borough and County of Queens, New York. This BCA required the Remedial Party, OCA LIC, LLC to investigate and remediate contaminated media at the site. A figure showing the Site location and boundaries of this approximately one acre "site" or "area subject to this plan" is provided in **Figure 1**. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by EWMA/EWMA Engineering Services LLC (EWMA), on behalf of OCA LIC, LLC (the Volunteer) in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the site.

1.1.2 Purpose

The Site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Queens County Clerk and/or the New York City Register, will require compliance with this SMP and all ECs and ICs placed on the Site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the Site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a

Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems).

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA (Index # A2-0584-0307; Site #C241098) for the site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

The following is a description of the Site background as provided in the approved RAWP.

1.2.1 Site Location and Description

The site is located in the Long Island City County of Queens, New York and is identified as Block 28 Lots 21 and 121 (formerly Lots 21 and 38 prior to reconfiguration in 2011) on the Borough of Queens Tax Map. The site is an approximately one-acre area bounded by 46th Road to the north, 47th Avenue to the south, commercial/industrial

properties to the east, and 5th Street to the west (see **Figure 1**). The boundaries of the site are more fully described in **Appendix 2** – Metes and Bounds Description.

1.2.2 Site History

1.2.2.1 Past Uses and Ownership

According to the previous Phase I Environmental Site Assessments (ESAs) by others, the subject Site had initially been developed prior to 1898 for use as an ink factory (i.e., M.L. Perlee) and a varnish works (i.e., Pratt & Lambert). Other previous occupants and uses identified at the Site included George L. Fenner (ink factory), Toch Bros. (manufacturer of paints & varnishes), Thibault & Walker Co. (varnish works), I. Wohl Inc. (cleaners & dyers), a dry cleaning and spotting facility, and Accurate Metal Casting Co., Inc. These identified occupants and uses likely used industrial solvents, lubricating and cutting oils, metal polishing materials, plating bath solutions, paint and painting products, and dye products as part of their operations.

Based on available information, a portion of the Site identified as 5-20 46th Road, Long Island City, New York (Block 28, Lot 21) was the subject of an Administrative Order (Docket No. II RCRA-7003-91-0201) issued by the United States Environmental Protection Agency (USEPA) pursuant to Resource Conservation and Recovery Act (RCRA), Section 7003, refer to AOC-14 on **Figure 1**, hereafter "the Deed Notice Area". Pursuant to this Order, Accurate Associates undertook certain removal, investigative and remedial activities at the premises under USEPA's oversight. As part of the remedial activities, portions of the concrete floor and walls within this portion of the Site were encapsulated for the purpose of encapsulating residual lead, arsenic, and selenium contamination. Pursuant to EPA's RCRA Administrative Order for the Site, effective May 29, 1991, the Order's Respondents filed a Notice in Deed in the Queens County City Register on July 14, 1993, No. 47605. The Notice stated that lead, arsenic and selenium are encapsulated beneath portions of the floor and walls at the premises, and that the RCRA Order required that the encapsulation be maintained. The Deed Notice was the final action required by Respondents pursuant to the RCRA Order, as all other removal and remediation actions were satisfactorily performed.

By a letter transmitted to DEC on March 29, 2007, EPA consented to the suspension of the Notice in Deed, No. 47605, and termination of that Notice, upon completion of the remedial program carried out pursuant to the BCP, and provided that the Brownfield Cleanup Agreement be filed in the same place and manner as the Notice in Deed, No. 47605 together with a copy of the EPA consent letter. Refer to **Appendix 13** for copy of EPA consent letter.

On April 5, 2007, NYSDEC accepted OCA's request to participate in the Brownfield Cleanup Program, established under Article 27, Title 14 of the Environmental Conservation Law (ECL). The NYSDEC has accepted OCA to participate in the program as a Volunteer. NYSDEC transmitted the Brownfield Cleanup Agreement (BCA) along with this approval to OCA for signatures and return back to NYSDEC for final execution. Several environmental investigation activities have been completed at the subject Site on behalf of the former as well as the current owners of the Site. The following provides a list of reports that summarize the prior environmental investigation activities, and were previously submitted as part of the BCP application for the Site:

1. "Phase I Environmental Site Assessment, 46-31, 46-33, 46-35 5th Street, Long Island City, New York", prepared by J.C. Broderick & Associates, Inc. (JCB), June 2005;
2. Letter report titled "Environmental Sampling Services Utilizing Geoprobe® Methodology at 5-36 46th Road, Long Island City, New York, Sampling Date: May 18,2005", prepared by JCB, June 09, 2005;
3. Letter report titled "Environmental Sampling Services Utilizing Geoprobe® Methodology at 5-36 46th Road, Long Island City, New York, Sampling Date: August 08 and 09, 2005", prepared by JCB, September 19, 2005;
4. "Phase I Environmental Site Assessment, 5-20 46th Road, Long Island City, New York", prepared by EEA, Inc. (EEA), May 4, 2006; and
5. "Phase II Subsurface Investigation Report, 5-20 46th Road, Long Island City, New York", prepared by EEA, May 19, 2006.

In addition to the investigation activities summarized in the reports above, investigation and cleanup activities were conducted during 1991-1992 at the subject Site as part of the USEPA enforcement actions under the RCRA Administrative Order at the 5-20 46th Road portion of the Site. The following reports summarize the results of these activities, and were available to EWMA as part of the preparation of this RIWP:

1. "Report of Investigation and Clean-Up Activities, Accurate Famous Castings, Inc. Site, Long Island City, New York", prepared by CA Rich Consultants, Inc. (CA Rich), March 24, 1992;

2. "Report of Soil Sample Investigation for: Accurate Famous Castings, Inc. Site, Long Island City, New York", prepared by CA Rich, July 10, 1992; and

3. "Corrective Measures Plan for the Accurate Famous Casting Site, Long Island City, New York", prepared by CA Rich, July 10, 1992.

1.2.2.2 Sanborn Maps

Prior to the demolition activities which began in early 2008, the Site was primarily covered with buildings, which included 1-, 2-, and 3-story structures constructed in several stages. A small eastern portion of the Site served as a parking lot. The original portions of the subject buildings were constructed during the early 1900s. A majority of the buildings were constructed on concrete slabs with no basement levels, with the exception of the eastern section of the building along 46th Road (5-20 and 5-36 46th Road), which includes basements. The buildings on the Site were a mixture of brick and concrete block construction. All structures have now been demolished and removed, including the subsurface concrete structures in the Deed Notice Area, and with the exception of the concrete floor slab from the former varnoline UST vault which is situated within the underlying peat layer.

1.2.3 Geologic Conditions

1.2.3.1 Site Geology

The uppermost unit beneath the Site consists of 10 to 12 feet of historic fill material. The fill is very variable, but tends to be coarse grained (i.e., sand and/or gravel). Cinders, coal, and brick and wood fragments are common within the fill. Below the fill lies one to three feet of dark brown clayey peat. This clayey peat has been encountered in nearly all the soil borings, so it appears to be continuous beneath the Site. The clayey peat is interpreted as marsh/wetland deposits, and probably represents the natural ground surface before historic fill was emplaced at the Site.

Fine to coarse sand to silty sand underlies the clayey peat. The top of the sand is found at depths ranging from 11 to 15 feet below surface grade (bsg). Discontinuous lenses of silt and clay are present within the sand.

Bedrock was not encountered in any of the borings completed by EWMA, but geotechnical borings completed at the Site reportedly have encountered bedrock (gray schist) at depths ranging from 32 feet bsg to greater than 52 feet bsg.

1.2.3.2 Site-Specific Hydrogeology

Based on the soil boring and well installations performed by EWMA and others, there are two water-bearing zones immediately beneath the Site: an upper, perched-water zone ("perched unit"), and an underlying sand unit ("lower sand unit"). The perched unit occurs within the fill material on top of the clayey peat. Depths to water in monitoring wells completed within the perched unit are about seven to eight feet bsg. The saturated thickness of the perched unit is three to four feet. The lower sand unit underlies the clayey peat layer. Depths to water for monitoring wells completed in the lower sand unit are about 10 to 11 ft bsg.

The difference in water levels between the perched unit and the lower sand unit (two to three feet) shows that the clayey peat is acting as a confining layer, and is limiting the downward migration of perched water from the fill into the lower sand unit.

Based on RI water-level elevation contour maps (**Figures 2 and 3),** groundwater flow within the lower sand unit is to the southwest, toward the nearby East River (as expected). This contrasts sharply with flow within the perched unit, which is to the north and east. The reason for the eastward flow within the perched unit is not known, but it may reflect the surface water drainage patterns that existed in the area before the historic fill was emplaced. Site specific geologic cross sections are shown in **Figure 4**.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI were described in detail in the

following reports:

1.Remedial Investigation Workplan – January 25, 2008

2.Remedial Investigation Workplan Addendum #1 – February 1, 2008

3.Remedial Investigation Workplan Addendum #2 – February 20, 2008

4.Remedial Investigation Workplan Addendum #3 – June 25, 2008

5.Interim Remedial Measures Workplan – February 4, 2009, Revised April 8, 2009

6.Remedial Investigation Report – March 2009

7.Remedial Action Workplan – December 31, 2008, Revised March 5, 2009, Final Revision July 15, 2009 *8.Remedial Design for Lower Sand Unit Aquifer* – May 2010

9. Draft Site Management Plan – June 1, 2010

10. Remedial Action Workplan Addendum – July 16, 2010

11. Draft Final Engineering Report – September 30, 2010

Generally, the RI determined that soil and groundwater contamination including metals, SVOCs, and volatile organic compounds (VOCs) were detected above NYSDEC applicable standards. Light non-aqueous phase liquid (LNAPL) was detected in the perched unit. LNAPL was also detected in several groundwater monitoring wells screened beneath the peat in the lower sand unit and located at the most upgradient portion of the Site (based on the observed groundwater flow direction). The soil vapor investigation results indicated several VOCs were detected in both sub-slab and soil vapor samples at concentrations above background concentrations.

Below is a summary of site conditions when the RI was performed in 2008. The summary below is intended to describe the historic conditions at the Site that do not exist post-remediation. For a summary of remaining contamination, refer to Section 1.4.3:

1.3.1 Soil

The soil samples collected during the RI phase of the investigation was targeted toward specific contaminants of concern (i.e. contaminants associated with historic site operations) as well as a full suite of analysis for non-area specific sampling. The bulk of the contaminants detected in soil at the Site, including VOCs, metals and SVOCs, are derived from on-site AOCs. Several SVOCs and metals may be derived from on-site fill materials. The following is a summary of historic soil exceedances of the UUSCO by parameter type that existed at the site prior to remediation:

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SUMMARY OF HISTORIC VOC CONTAMINANTS IN SOIL				
Parameter	**UUSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**Maximum Concentration (ppm)**
Acetone	0.05	47	22	2.6
Methylene Chloride	0.05	47	1	0.05
2-Butanone	0.12	47	1	0.12
Cis-1,2-Dichloroethene	0.25	47	1	0.27
Benzene	0.06	47	2	0.4
Ethyl Benzene	1	47	3	6.9

UUSCO – Unrestricted Use Soil Cleanup Objectives. NYSDEC Subpart 375-6: Remedial Program Soil Cleanup Objectives, December 14, 2006
ppm – Parts per Million

SUMMARY OF HISTORIC SVOC CONTAMINANTS IN SOIL				
Parameter	**UUSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**Maximum Concentration (ppm)**
2-Methylphenol	0.33	47	1	0.76
3+4-Methylphenols	0.33	47	2	3.7
Naphthalene	12	47	4	230
Acenaphthene	20	47	2	67
Dibenzofuran	7	47	2	57

SUMMARY OF HISTORIC SVOC CONTAMINANTS IN SOIL				
Parameter	**UUSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**Maximum Concentration (ppm)**
Fluorene	30	47	2	53
Phenanthrene	100	47	1	130
Benzo(a)anthracene	1	47	20	31
Chrysene	1	47	19	31
Benzo(b)fluoranthene	1	47	21	57
Benzo(k)fluoranthene	0.8	47	16	22
Benzo(a)pyrene	1	47	22	59
Indeno(1,2,3-cd)pyrene	0.5	47	22	51
Dibenz(a,h)anthracene	0.33	47	16	12

UUSCO – Unrestricted Use Soil Cleanup Objectives. NYSDEC Subpart 375-6: Remedial Program Soil Cleanup Objectives, December 14, 2006. ppm – Parts per Million

SUMMARY OF HISTORIC METAL CONTAMINANTS IN SOIL				
PARAMETER	**UUSCO (ppm)**	**# SAMPLES**	**# SAMPLES > UUSCO**	**MAXIMUM CONCENTRATION (ppm)**
Arsenic	13	47	1	19
Copper	50	47	6	501
Lead	63	47	13	4,490
Mercury	0.18	47	19	11.3
Nickel	30	47	1	31.5
Zinc	109	47	6	401

- UUSCO – Unrestricted Use Soil Cleanup Objectives. NYSDEC Subpart 375-6: Remedial Program Soil Cleanup Objectives, December 14, 2006. ppm – Parts per Million

SUMMARY OF HISTORIC PESTICIDES CONTAMINANTS IN SOIL				
Parameter	**UUSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**Maximum Concentration (ppm)**
4,4-DDE	0.0033	47	1	0.0078
4,4-DDD	0.0033	47	5	3.3
4,4-DDT	0.0033	47	1	0.0076

UUSCO – Unrestricted Use Soil Cleanup Objectives. NYSDEC Subpart 375-6: Remedial Program Soil Cleanup Objectives, December 14, 2006. ppm – Parts per Million

SUMMARY OF HISTORIC PCB CONTAMINANTS IN SOIL				
Parameter	**UUSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**Maximum Concentration (ppm)**
PCB (Aroclor 1254)	0.1	47	1	1.1
PCB (Aroclor 1260)	0.1	47	2	0.2

UUSCO – Unrestricted Use Soil Cleanup Objectives. NYSDEC Subpart 375-6: Remedial Program Soil Cleanup Objectives, December 14, 2006. ppm – Parts per Million

1.3.2 On-Site Groundwater

VOCs, including acetone, ethylbenzene, isopropylbenzene, benzene, toluene, vinyl chloride, methylene chloride, tetrachloroethene, cis-1,2-dichloroethene, and t-1,3-dichloropropene, exceeded their GWQS in the RI groundwater samples. The most elevated VOC concentrations were detected within the perched unit in the western portion of the Site. Concentrations detected in the eastern portion of the Site and in the lower sand unit were significantly lower.

SUMMARY OF UNFILTERED VOC CONTAMINANTS IN GROUNDWATER[1](Perched Zone)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
Vinyl Chloride	2	45	2	5.4
Acetone	50	45	6	340
Methylene Chloride	5	45	1	13
Cis-1,2-Dichloroethene	5	45	1	58
Benzene	1	45	5	100
Toluene	5	45	3	22
Trans-1,2-Dichloropropene	0.4	45	1	21
Tetrachloroethene	5	45	1	13
Ethyl Benzene	5	45	5	150
Isopropylbenzene	5	45	24	150

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

SUMMARY OF UNFILTERED CONTAMINANTS IN GROUNDWATER (Sand Unit)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
Vinyl Chloride	2	21	1	12
Benzene	1	21	4	170
Toluene	5	21	2	140
Trans-1,2-Dichloropropene	0.4	21	1	11
Ethyl Benzene	5	21	6	530
Isopropyl Benzene	5	21	7	290

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

SUMMARY OF <u>UNFILTERED</u> SVOC CONTAMINANTS IN GROUNDWATER (Perched Zone)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
Naphthalene	5	39	7	3400

[1] OCA recognized that NYSDEC does not accept the analytical results from filtered samples. However, the results of the filtered and unfiltered samples are included for discussion purposes.

1,1-Biphenyl	5	39	1	66
Acenaphthene	20	39	1	420
Fluorene	50	39	5	250
Phenanthrene	50	39	6	540
Anthracene	50	39	1	110
Fluoranthene	50	39	3	280
Pyrene	50	39	2	160
Benzo(a)anthracene	0.002	39	12	24
Chrysene	0.002	39	13	20
bis(2-Ethylhexyl)phthalate	5	39	5	490
Benzo(b)fluoranthene	0.002	39	12	110
Benzo(k)fluoranthene	0.002	39	6	8
Indeno(1,2,3-cd)pyrene	0.002	39	7	12

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

SUMMARY OF <u>FILTERED</u> SVOC CONTAMINANTS IN GROUNDWATER (Perched Zone)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
Acenaphthene	20	21	2	290
Fluorene	50	21	1	150
Pentachlorophenol	1	21	1	7.3
Phenanthrene	50	21	1	100
Chrysene	50	21	1	1.2
Benzo(b)fluoranthene	0.002	21	1	1.5

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

SUMMARY OF <u>UNFILTERED</u> SVOC CONTAMINANTS IN GROUNDWATER (Sand Unit)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
2,4-Dimethylphenol	1	27	4	20
Naphthalene	10	27	5	1,400
1,1-Biphenyl	5	27	4	12
Acenaphthene	20	27	3	110
Fluorene	50	27	7	950
Pentachlorophenol	1	27	1	10
Phenanthrene	50	27	2	2,100

Anthracene	50	27	2	260
Fluoranthene	50	27	2	100
Pyrene	50	27	2	210
Benzo(a)anthracene	0.002	27	2	18
Chrysene	0.002	27	2	35

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

SUMMARY OF <u>FILTERED</u> SVOC CONTAMINANTS IN GROUNDWATER (Sand Unit)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
2,4-Dimethylphenol	1	6	1	22
1,1-Biphenyl	5	6	3	100
Acenaphthene	20	6	3	420
Fluorene	50	6	3	750
Phenanthrene	50	6	2	1,800
Anthracene	50	6	2	210
Fluoranthene	50	6	2	64
Pyrene	50	6	2	310
Benzo(a)anthracene	0.002	6	2	22
Chrysene	0.002	6	2	34
Benzo(b)fluoranthene	0.002	6	1	0.48
Benzo(k)fluoranthene	0.002	6	1	0.34
Indeno(1,2,3-cd)pyrene	0.002	6	1	0.74

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

SUMMARY OF <u>UNFILTERED</u> METAL CONTAMINANTS IN GROUNDWATER (Perched Zone)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
Antimony	3	43	5	314
Arsenic	25	43	4	129
Barium	1000	43	6	2,060
Beryllium	3	43	3	6.4
Cadmium	5	43	2	15.8

Chromium	50	43	8	155
Copper	200	43	5	457
Iron	300	43	43	195,000
Lead	25	43	25	4,820
Magnesium	35000	43	16	91,100
Manganese	300	43	43	5,850
Mercury	0.7	43	13	103
Nickel	100	43	4	677
Selenium	10	43	1	25.4
Sodium	20000	43	42	1,200,000
Thallium	0.5	43	7	49.2
Zinc	2000	43	1	3,150

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

SUMMARY OF <u>FILTERED</u> METAL CONTAMINANTS IN GROUNDWATER (Perched Zone)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
Antimony	3	34	19	54.3
Iron	300	34	30	3,210
Lead	25	34	1	40.6
Magnesium	35000	34	12	85,900
Manganese	300	34	32	2,070
Nickel	100	34	1	161
Sodium	20000	34	34	389,000
Thallium	0.5	34	6	13.4

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998.
ppb – Parts per Billion

SUMMARY OF PCB CONTAMINANTS IN GROUNDWATER (Sand Unit)				
PARAMETER	**TOGs 1.1.1 (ppb)**	**# SAMPLES**	**# SAMPLES > TOGs**	**MAXIMUM CONCENTRATION (ppb)**
PCB (Aroclor-1260)	0.09	12	2 [2]	1,500

TOGS – NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) – Ambient Water Quality Standards, June 1998. ppb – Parts per Billion

[2] Includes a field duplicate sample, FD-5, which had a concentration of 1,400 ppb.

1.3.3 On-site Light Non-Aqueous Phase Liquids

LNAPL identified via GC fingerprinting as a variety of oils (motor oil, fuel oil, waste oil, gasoline and Stoddard solvents) was detected in the perched unit in wells MW-3S, MW-4S, MW-6S, MW-7S, GW-3, GW-4, and GW-5 during at least one measurement event. Within the perched unit, LNAPL was present only in the western half of the Site

Within the lower sand unit, four monitoring wells (MW-10I, MW-14I, MW-16I and MW-20I) had exhibited measurable thicknesses of LNAPL identified via GC fingerprinting as No. 2 fuel oil**.** All of these wells are located in the eastern portion of the Site and the most upgradient with regard to groundwater flow direction in the sand unit indicating an off-site source. Within the sand unit, LNAPL was found to be present only in the eastern half of the Site.

1.3.4 Off-Site Ground Water

Two off-site ground water monitoring wells completed in the perched unit (MW-12S and MW-8S) exhibited elevated levels of VOCs and/or SVOCs.

1.3.5 On-Site Related Soil Vapor Intrusion

The results of the January 2008 vapor sampling indicate the following VOCs above the background level: acetone, benzene, 1,3-butadiene, carbon disulfide, chloroform, cyclohexane, dichlorodifluoromethane, cis-1,2-dichloroethylene, ethylbenzene, heptane, hexane, isopropyl alcohol, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, methyl-t-butyl ether, styrene, tetrachloroethylene, toluene, 1,1,1-trichloroethane, trichloroethylene, trichlorofluoromethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, vinyl chloride, m or p-xylene, and o-xylene.

Several aromatic volatile compounds were detected in both the soil gas and ambient air and are likely due to either the vehicular traffic around the site or to former

discharges of heating oil and other petroleum based oils at and around the site. In addition, the presence of mixed fill material containing ash and cinders may also contribute to the presence of aromatics in the soil gas and ambient air background sample.

1.3.6 Underground Storage Tanks

A total of 36 **u**nderground storage tanks were encountered and removed during remediation of the Site. Two tanks were utilized for storage and dispensement of gasoline, 22 tanks were utilized for varnoline storage for historic on-site dry cleaning operations, while the remainder of the tanks are suspected to have stored fuel oil for on-site heating purposes. The former tank locations are depicted on **Figure 5.**

1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Remedial Action Work Plan dated July 15, 2009 and the RAWP Addendum dated July 16, 2010. Refer to Section 1.4.3 and Table 1 for summary of remaining contaminants at the Site.

The remedial actions summarized herein were designed to follow a Track 4 cleanup under 6 NYCRR 375 to achieve, to the extent practicable, the Restricted Residential Soil Cleanup Objectives (RUSCO), as depicted on Table 375-6.8(b).

The following is a summary of the Remedial Actions performed at the Site in accordance with the RAWP requirements:

1. Excavation and truck loading activities were conducted under a negative pressure containment structure;
2. Removed on-site source(s) of soil contamination (i.e., LNAPL and grossly contaminated soil), to the extent practicable;
3. Remediated the soil contamination at the Site in order to achieve compliance with Restricted Use Soil Cleanup Objectives (RUSCOs) for residential use (Table 375-6.8(b)) with the exception of lead, which was remediated to the restricted commercial SCO, and the Protection of Groundwater Standards for

soils in the saturated zone. These criteria shall hereafter be referred to as the Site-specific Soil Cleanup Objectives (SSCOs). The soil remedial mechanism was via excavation, characterization and proper off-site disposal of excavated soils;

4. Collected and analyzed end-point soil samples to evaluate the performance of the remedy with respect to attainment of SSCOs;

5. Construct and maintain an engineered composite cover system consisting of building structural foundation slab, asphalt paving and/or a minimum of two feet of virgin quarry process (QP) stone to prevent human exposure to residual contaminated soil/fill remaining under the Site;

6. Initiated the remediation of LNAPL contamination identified in the lower sand unit via installation of a capture wall, collection and recovery wells, and down-well skimming equipment to collect and remove the LNAPL. Also, installed thirty eight monitoring and remediation wells for future groundwater monitoring and LNAPL recovery;

7. Backfilled excavations with imported virgin quarry process stone materials in compliance with: (1) chemical criteria identified in 6 NYCRR Part 375-6.7(d), (2) all Federal, State and local rules and regulations for handling and transport of material;

8. Recorded an Environmental Easement, including Institutional Controls, to prevent future exposure to any residual contamination remaining at the Site;

9. Implemented engineering controls via an engineering design work plan to provide design and specifications for vapor intrusion control, composite cover system, LNAPL capture wall and removal utilities, and LNAPL monitoring and remediation wells;

10. Implemented a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting; and

11. Implemented groundwater monitoring program to evaluate the performance of the remedy with respect to attainment of groundwater standards.

The majority of the remedial activities (i.e., excavation) were completed at the Site between December 2009 and June 2010. Additional activities subsequent to that time included installation, testing and operation of the engineered LNAPL remediation system in the lower sand unit and perched unit LNAPL remediation activities.

1.4.1 Removal of Contaminated Materials from the Site

The SSCOs as defined in Section 1.4 were selected as the objective endpoint soil contaminant concentrations for the performed remedial action. Sidewall, base and targeted AOCs samples were collected to document the effectiveness of the remedial excavation action. A list of the SSCOs for this site is provided in **Table 1**.

A total of 16,384.53 tons of soil was excavated from the site and transported for disposal at Clean Earth of New Castle, Delaware and Clean Earth, Carteret, New Jersey. The soil was classified as Non-Hazardous Petroleum Contaminated Material.

A figure showing areas where excavation was performed is shown in **Figure 5**.

In addition, a total of 3,044.58 tons of soil was excavated from the RCRA area and disposed offsite at Clean Earth, New Castle, Delaware as non-hazardous petroleum contaminated.

Subsurface concrete structures from the RCRA portion of the Site were sampled for waste characterization parameters prior to off-site disposal, determined to be non-hazardous and disposed with other construction debris.

Figures showing areas where excavation was performed are included as **Figure 5**. Refer to Section 1.4.3 and **Table 2** for summary of remaining contaminants at the Site post remediation.

1.4.1.1 Lower Sand Unit LNAPL Remediation

Pursuant to the approved RDR, the LNAPL remediation system originally consisted of a capture wall and a total of 38 wells within the Lower Sand Unit. As required by NYSDEC, four additional perimeter lower sand unit wells were installed in November 2012 to successfully confirm the LNAPL fluid mass in the unit was stable. Eight additional onsite lower sand unit wells were installed between June 2013 and July 2013 to support LNAPL monitoring and recovery efforts in the unit. Refer to **Appendix 8** for a sample well construction log. Over the course of the remediation period, several wells were damaged as a result of storm events and construction activities and were subsequently repaired or abandoned. Other wells were abandoned after being deemed unnecessary by NYSDEC due to historically non-measurable LNAPL gauged thickness measurements.

LNAPL system operation and monitoring consisted of the following activities: (1) Vacuum Enhanced Fluid Recovery (VEFR); (2) surfactant injection (using a proprietary mixed BioSolve) in combination with Vacuum Enhanced Fluid Recovery (VEFR) recovery (August to October 2013) pursuant to the NYSDEC approved Full-Scale Work Plan, July 2013; (3) continuous LNAPL skimming using active belt skimmers, passive skimmers, and sorbent socks; (4) frequent LNAPL thickness gauging; and (5) quarterly groundwater sampling for targeted dissolved compounds in perimeter wells.

By end of May 2014, the detection of measurable LNAPL was limited to one recovery well, LN-29. In November 2014, EWMA replaced the existing 4-inch diameter LN-29 well with a new 12-inch diameter well (LN-29R) with a 24-inch borehole at the same location and screen depth. The replacement well enhanced hydraulic recovery characteristics that were more favorable to LNAPL recovery from the lower sand unit formation. LNAPL extraction was continued until no measurable LNAPL thickness measurements were detected after a two-week rebound monitoring period.

The lower sand unit LNAPL remediation system was operated until NYSDEC approved the cessation of LNAPL all removal and monitoring activities in February 2015. During the entire LNAPL removal timeframe January 2011 through February

2015, 158,986 gallons of total fluid and an estimated 1,688 gallons of LNAPL were removed from the lower sand unit. Detailed descriptions of the lower sand unit LNAPL remediation were included in the Periodic Review Reports for 2012-2015.

1.4.1.2 Perched Unit LNAPL Remediation

In accordance with NYSDEC request, a post-remedial investigation of the perched unit was performed and a brownish LNAPL was encountered in the northwest quadrant of the Site. This LNAPL was fingerprinted by a New York State Certified Analytical Laboratory and it did not match the standard library suite of petroleum and other substances. NYSDEC expressed concern about possible impacts to groundwater, requested investigation and delineation, and the requested activities were performed.

The delineation and LNAPL measurement activities consisted of soil sampling and analysis, groundwater sampling and analysis, and physical delineation of the extent of the LNAPL plume. The plume area was found to be roughly 2,500 square feet in area, in an oblong shape in the northwest quadrant of the Site. The average thickness of the LNAPL in the monitoring wells based on interface probe measurements was found to be about ¼-inch.

A conceptual remedial plan for removal of the LNAPL was submitted to NYSDEC and approved. The layout is included in the FER.

The system consisted of 24 4-inch diameter monitoring/recovery wells and 14 1-inch diameter monitoring/contingent injection wells. Refer to **Appendix 8** for a sample well construction log. The 4-inch diameter wells were primarily for extraction, and the 1-inch diameter wells were primarily for injection.

Extraction was performed via vacuum enhanced fluid extraction methods using primarily the 4-inch wells. Initial extraction events were conducted on a daily basis for one week, and then on a weekly basis. Extraction frequency was adjusted periodically to provide for more efficient recovery.

Bio-degradable surfactants with very limited residence times were also injected to facilitate LNAPL extraction. LNAPL extraction was continued until no LNAPL or only

insignificant amounts were detected at each well after a rebound test of no pumping for at least one week. All perched unit extraction and monitoring was ended in January 2013, and all of the wells were closed.

1.4.2 Site-Related Treatment Systems

1.4.2.1 Vapor Intrusion Control

Future development plans include buildings with ground floor concrete slabs (building slabs on grade - SOG) constructed near or below the seasonal high water table, and buildings with ground floor slabs constructed above the seasonal high water table. In accordance with the requirements of this SMP, vapor intrusion control features will installed during the construction of all buildings and will be operated subsequently to the completion of construction. The vapor intrusion control features will be: 1) permitted, installed and inspected in compliance with governing state and city codes, rules and ordinances; 2) installed in compliance with the provisions of this SMP, manufacturer's installation recommendations, and good construction practices; and 3) installed in accordance with the design requirements of the Building Design Engineers and Architects (BDEA). Detailed conceptual vapor intrusion engineering control information intended to facilitate and support the required design and installation is provided in Section 2.0 and in **Appendix 14** of this SMP.

1.4.2.2 Lower Sand Unit LNAPL Remediation

The LNAPL Remediation System in the Lower Sand Unit was limited to the Student Housing Parcel and was designed to recover LNAPL. The system originally consisted of a capture wall and a total of 38 wells within the Lower Sand Unit. Details of the Lower Sand Unit LNAPL Remediation System were reported in the previously submitted *Periodic Review Report – August 2014 – July 2015.*

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 with no significant measurable LNAPL remaining, per written authorization from NYSDEC dated February 17, 2015. Therefore, no further remediation of the Lower Sand Unit is necessary. The capture wall is still intact and two perimeter wells (PW-3 and

PW-5) are currently maintained by NYSDEC, in the event they are needed during the PW-11 remedial process, as directed by NYSDEC.

1.4.2.3 Perched Unit LNAPL Remediation

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013, per written authorization from NYSDEC in an email dated January 23, 2013. This system was designed to recover LNAPL within the Perched Unit beneath the Market Rate Housing Parcel. Details of the Perched Unit LNAPL Containment and Extraction System were reported in the previously submitted *Periodic Review Report – August 2012 - July 2013*.

The Perched Unit LNAPL removal was successfully completed in January 2013 with no significant measurable LNAPL remaining. Therefore, no further remediation of the Lower Sand Unit is necessary. Only one perimeter well (PW-11) has measurable LNAPL, which was confirmed to be from an upgradient and off-site source, and is currently being maintained by NYSDEC.

1.4.3 Remaining Contamination

During the primary excavation that was completed in the first half of 2010, soil excavation was conducted to an average depth of 7' below surface grade (bsg). Deeper excavations were conducted at source areas (i.e. tank areas) and areas where end point sampling results exceeded the SSCOs. As shown in **Figures 8-11**, urban fill remains in some areas, with concentrations of metals and SVOCs above the SSCOs. In addition, some VOCs exceed the SSCOs in area where LNAPL remains.

A Mirafi 140NW orange geotechnical fabric demarcation barrier was installed at an average 7-feet depth bsg. This demarcation barrier was placed above the unexcavated urban fill and below a 2-foot thick layer of imported, virgin quarry process (QP) fill. Where the remedial excavation was extended below 7-feet bsg, imported QP was utilized to raise the excavated area to 7-foot bsg, the warning barrier was installed, and an additional 2' of imported QP was placed over the demarcation barrier. In all cases, future

excavation to or disturbance of materials below the demarcation barrier, regardless of the nature of materials underlying the barrier, is to comply with the Excavation Work Plan included herein as **Appendix 1**.

The following is a summary by contaminant type of soil contaminant concentrations remaining on site.

Volatile Organic Compounds (VOCs)

A review of the post-excavation soil data indicates isolated exceedances of the SSCOs . Specifically, only one sample location exceeded the total xylene SSCO of 100 ppm and one sample exceeded the SSCO of 2.3 ppm for isopropylbenzene. In addition, isolated soil sample results exceeded the UUSCO for toluene, ethylbenzene, total xylenes and isopropyl benzene. One sample at depth and within the saturated zone exceeded the SSCO for toluene, ethylbenzene and total xylenes. An overview of the remaining VOC soil data is provided below.

SUMMARY OF REMAINING VOC CONTAMINATION IN SOIL						
Parameter	**UUSCO (ppm)**	**SSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**# Samples > SSCO**	**Maximum Concentration (ppm)**
Targeted VOC (ppm)						
Ethyl Benzene	1	41	92	2	0	3.26
Total Xylenes	0.26	100	92	7	0	20.3
Isopropylbenzene	2.3	2.3	92	3	3	28.1

ppm – Parts per Million

Semi-Volatile Organic Compounds (SVOCs)

A review of the post-excavation soil data indicates that a number of SVOCs exceeded the UUSCOs and SSCO. SVOCs are generally associated with urban fill materials, which were documented during RI activities to extend to a depth on-site between10-12' bsg. SVOCs tend to adhere strongly to soil particles and have low volatility, therefore, these compounds generally do not pose a concern for vapor intrusion or impact to ground water. An overview of the remaining SVOC soil data is provided below.

SUMMARY OF REMAINING SVOC CONTAMINATION IN SOIL						
Parameter	**UUSCO (ppm)**	**SSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**# Samples >SSCO**	**Maximum Concentration (ppm)**
Targeted SVOCs (ppm)						
Naphthalene	12	100	80	2	0	58.1
Acenaphthene	20	100	80	3	0	78.1
Dibenzofuran	7	59	80	3	0	43.3
Fluorene	30	100	80	3	0	59
Phenanthrene	100	100	80	1	1	114
Benzo[a]anthracene	1	1	80	49	49	25
Chrysene	1	3.9	80	49	26	25.8
Benzo[b]fluoranthene	1	1	80	45	45	27.9
Benzo[k]fluoranthene	1	1	80	46	45	21.1
Benzo[a]pyrene	1	1	80	50	50	27.2
Indeno[1,2,3-cd]pyrene	0.5	0.5	80	48	48	17.5
Dibenz[a,h]anthracene	0.33	0.33	80	41	41	7.06

ppm – Parts per Million

Metals

A review of the post-excavation soil data indicates that several metals exceeded the UUSCO and SSCO. As with SVOCs, metals are generally associated with urban fill materials. Also similar to SVOCs, metals tend to adhere strongly to soil particles, and with the exception of mercury, have no vapor potential. Therefore, these compounds generally do not pose a concern for vapor intrusion or impact to ground water. An overview of the remaining metals soil data is provided below.

SUMMARY OF REMAINING METAL CONTAMINATION IN SOIL						
Parameter	**UUSCO (ppm)**	**SSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**# Samples > SSCO**	**Maximum Concentration (ppm)**
Metals (ppm)						
Arsenic	13	16	80	13	7	104
Barium	350	400	80	16	12	804
Chromium, Trivalent	30	180	80	6	0	77.7
Copper	50	50	80	38	5	653
Lead	63	1000	80	67	4	1650
Mercury	0.18	0.81	80	51	38	10.6
Nickel	30	310	80	5	0	127
Selenium	3.9	180	80	2	0	4.04
Silver	2	180	80	3	0	8.46
Zinc	109	10000	80	45	0	1510
Cyanide, Total	27	27	80	1	1	217

Pesticides

A review of the post-excavation soil data indicates isolated detection of pesticides 4,4-DDD, 4,4-DDE and 4,4-DDT at concentrations above the UUSCO. No pesticides remain at concentrations exceeding the RUSCO. Low level detection of these historic pesticide compounds generally occurs at industrial and commercial sites that were historically treated for pesticides and were active prior to the discontinued use of these pesticides in the late 1970's. Similar to SVOCs and metals, pesticides 4,4-DDD, 4,4-DDE and 4,4-DDT tend to adhere strongly to soil particles and generally do not pose a concern for impact to ground water. An overview of the remaining pesticides soil data is provided below.

SUMMARY OF REMAINING PESTICIDE CONTAMINATION IN SOIL						
Parameter	**UUSCO (ppm)**	**RUSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**# Samples > RUSCO**	**Maximum Concentration (ppm)**
PESTICIDES (ppm)						
4,4'-DDE	0.0033	8.9	80	13	0	0.247
4,4'-DDD	0.0033	13	80	25	0	7.81
4,4'-DDT	0.0033	7.9	80	15	0	0.405

PCBs

A review of the post-excavation soil data indicates isolated detection of PCBs aroclor 1254 and 1260 above the UUSCOs and at or below the RUSCOs. Only one soil result marginally exceeded the RUSCO of 1 ppm (1.18 ppm). An overview of the soil data is provided below.

SUMMARY OF REMAINING PCB CONTAMINATION IN SOIL						
Parameter	**UUSCO (ppm)**	**RUSCO (ppm)**	**Total # of Samples**	**# Samples > UUSCO**	**# Samples > RUSCO**	**Maximum Concentration (ppm)**
PCBs (ppm)						
Aroclor-1254	0.1	1	80	1	0	0.675
Aroclor-1260	0.1	1	80	6	2	1.18

Table 1 and Figures 8 through 10 summarize the results of all soil samples remaining at the site after completion of Remedial Action that exceed the Track 1 (unrestricted SCO) and the Track 4 (SSCO).

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil, groundwater and soil vapor exists beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

1. A description of all EC/ICs on the site;
2. The basic implementation and intended role of each EC/IC;
3. A description of the key components of the ICs set forth in the Environmental Easement;
4. A description of the features to be evaluated during each required inspection and periodic review;
5. A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
6. Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Composite Cover System

Exposure to remaining contamination in soil/fill at the site prior to development is currently prevented by 2 feet of imported QP placed above an orange fabric demarcation barrier placed on unexcavated soils. Upon completion of site development and construction, exposure to remaining contamination in soil/fill will be prevented by a composite cover system that will consist of the following components:

- a minimum 24 inch total thickness of clean fill underlain by a demarcation barrier on all landscaped areas. The clean soil will meet the chemical requirements in 6NYCRR Part 375-6.7(d), and the top six inches of the soil cover will be of sufficient quality to support vegetation;

- a minimum 1 foot thick asphalt or concrete pavement on roads, sidewalks, parking lots; or

- a minimum 6-inch concrete building slab.

The Excavation Work Plan that appears in **Appendix 1** outlines the procedures to be implemented in the event that the cover system is breached, penetrated or temporarily removed and any underlying residual contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.1.2 Vapor Intrusion Controls

Future development plans include buildings with ground floor concrete slabs constructed near or below the seasonal high water table, and buildings with ground floor slabs constructed above the seasonal high water table. In accordance with the requirements of this SMP, vapor intrusion control features will be installed during the

construction of all buildings and will be certified operational prior to building occupancy. The vapor intrusion control features will be: 1) permitted, installed and inspected in compliance with governing state and city codes, rules and ordinances; 2) installed in compliance with the provisions of this SMP, manufacturer's installation recommendations, and good engineering practices; and 3) installed in accordance with the design requirements of the BDEA. Detailed **conceptual** vapor intrusion control information intended to facilitate and support the required design and installation is provided in Section 2.0 and in **Appendix 14** of this SMP. A summary of the planned vapor intrusion controls is provided below.

Buildings will be provided with vapor intrusion control features as follows:

1. A layer of geotechnical fabric for prevention of sub-grade soil infiltration into the overlying clean crushed stone layer will be placed on level, compacted sub-grade at a depth of six inches below designed bottom of all slabs, with minimum two foot overlaps of individual fabric sheets. ¾-inch clean crushed stone will then be placed on the geotechnical fabric and leveled and compacted to a minimum layer thickness of six inches;

2. Porous or slotted pipe laterals will be installed within the vertical center of the ¾-inch clean crushed stone layer with the offset openings down if porous pipe is used to prevent stone infiltration into the pipe. These laterals will be installed from front to back of each building at spacings to be determined during final design, and will be supported by slabs using pipe hangars to prevent pipe damage in the event of post-construction soil settlement beneath the buildings. Each lateral will be capped at one end and connected to either a vent manifold or directly to vent riser piping at the other end. The sub-slab piping will then be connected to riser piping that will transition through the building slab or through the building frost wall to locations that are above top of slab in the building or above grade exterior to the building. These locations will be as determined in final design.

3. The riser piping above top of slab or above grade, depending on whether the riser piping is installed within or exterior to building, will be routed through an accessible control box where the piping will be fitted with a sampling and measurement port and

with a balancing valve if that is called for in the final design. From the control box the piping will be routed to an electrically powered exhaust blower(s) and then on to riser piping that will terminate above the roof-line with tee fitting(s) at top. The exhaust system will be fitted with an alarm system that will provide alarm within the maintenance managers office in the event of deficient vacuum pressure. For system testing at start-up, interior building slabs will be fitted with four small monitoring points near the building corners. The monitoring points will be installed through and sealed in the building slab, will be screened in the crushed stone layer beneath the slab, and will be completed safe for personnel traffic flush with top of slab using a flush mount fitting with accessible plug for periodic measurement use during initial start-up during re-starts as may be needed subsequent to system repairs.

4. A waterproof vapor barrier will be placed over the ¾-inch stone layer and installed as a continuous liner that is sealed/bonded to the bottom surface of all slabs. Overlaps of liner material will be provided at all exterior edges of slabs, and the vapor barrier will be sealed/bonded to exterior wall liner material to provide a continuous liner that extends from bottom surface of slabs to exterior surface of exterior walls;

5. A similar vapor barrier will be installed as a continuous liner that is sealed/bonded to the exterior surface of all below grade exterior walls;

6. Because building design elevations have been increased to avoid flooding, the water table is not expected to rise up to or above the elevation of the sub-slab vapor intrusion control system.

7. During periods of low water, the vapor intrusion control system is expected to remain in continuous operation as during periods of high water, and the vapor barrier and SSDS will both provide primary mechanisms for vapor intrusion control;

8. During installation of the vapor barrier, the number of necessary liner penetrations will be minimized by the building design and by the foundation, utility and building construction methods that are utilized. Any necessary penetrations of the vapor barrier that occur during construction will be sealed and repaired in accordance with the manufactures recommendations to the acceptance of BDEA;

9. Procedures for monitoring the performance of the vapor intrusion control system are presented in the Monitoring Plan Section 3 of this SMP. The Monitoring Plan also presents the procedures for severe conditions inspections in the event that a severe condition such as a storm may affect the site controls. Procedures for operating and maintaining the vapor intrusion control system are presented in the Operations & Maintenance Plan Section 4 of this SMP.

2.2.1.3 Lower Sand Unit LNAPL Remediation System

The LNAPL Remediation System in the Lower Sand Unit was limited to the Student Housing Parcel and was designed to recover LNAPL. The system originally consisted of a capture wall and a total of 38 wells within the Lower Sand Unit. Details of the Lower Sand Unit LNAPL Remediation System were reported in the previously submitted *Periodic Review Report – August 2014 – July 2015.*

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 with no significant measurable LNAPL remaining, per written authorization from NYSDEC dated February 17, 2015. Therefore, no further remediation of the Lower Sand Unit is necessary. The capture wall is still intact and two perimeter wells (PW-3 and PW-5) are currently maintained by NYSDEC, in the event they are needed during the PW-11 remedial process, as directed by NYSDEC.

2.2.1.4 Perched Unit NAPL Remediation System

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013, per written authorization from NYSDEC in an email dated January 23, 2013. This system was designed to recover LNAPL within the Perched Unit beneath the Market Rate Housing Parcel. Details of the Perched Unit LNAPL Containment and Extraction System were reported in the previously submitted *Periodic Review Report – August 2012 - July 2013*.

The Perched Unit LNAPL removal was successfully completed in January 2013 with no significant measurable LNAPL remaining. Therefore, no further remediation of the Lower Sand Unit is necessary. Only one perimeter well (PW-11) has measurable

LNAPL, which was confirmed to be from an upgradient and off-site source, and is currently being maintained by NYSDEC.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

2.2.2.1 Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected annually by a licensed professional engineer, who will visually examine the site for integrity of the composite cover system, will perform site walks, and will interview personnel familiar with the site operations. Their findings will then be included in annual certification that will be submitted to NYSDEC as a part of the Periodic Review Report, as provided for in Section 3 of this SMP.

2.2.2.2 Vapor Intrusion Controls

The vapor intrusion control system is a permanent control and the quality, operability and integrity of this system will be inspected annually by a licensed professional engineer, who will visually examine the vapor intrusion control system for integrity, operability and function. He will perform site walks and look at all of the exterior vapor intrusion control features, will obtain field measurements at representative inlet and outlet locations with a PID, will observe exhaust blowers for functionality, will interview personnel familiar with the site operations and will examine representative ground floor locations and obtain field measurements at those locations with a PID. The findings will then be included in an annual certification that will be submitted to NYSDEC as a part of the annual Periodic Review Report, as provided for in Section 3 of this SMP. The vapor intrusion control system operations will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data

indicates that the system is no longer required, a proposal to discontinue the system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.2.2.3 Lower Sand Unit LNAPL Remediation System

The lower sand unit LNAPL remediation has been completed, and the remediation system has been decommissioned, in accordance with NYSDEC approval, and is no longer required.

2.2.2.4 Perched Unit LNAPL Remediation System

The perched unit LNAPL remediation has been completed, and the remediation system has been decommissioned, in accordance with NYSDEC approval, and is no longer required.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the RAWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to restricted residential uses only. Adherence to these Institutional Controls on the site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP;.

- Groundwater, Soil Vapor, LNAPL and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted residential, commercial or industrial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed;
- The property may not be used for a higher level of use, such as unrestricted use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- Future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited;
- A composite cover system will be installed and maintained at the Site as described in this SMP;
- Vegetable gardens and farming on the property are prohibited;
- The site owner or remedial party will submit to NYSDEC an annual written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; 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. NYSDEC retains the right to access such Controlled Property at

any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

- On-site environmental monitoring devices, including but not limited to, groundwater monitor wells and soil vapor probes, must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP;

2.3.1 Excavation Work Plan

The Site has been remediated for restricted residential use. Any future intrusive work that will penetrate the composite cover system, or encounter or disturb the remaining contamination below the orange warning barrier, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as **Appendix 1** to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as **Appendix 4** to this SMP that is in current compliance with DER-10, 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. The CAMP is presented in **Appendix 5**. Additionally, a Storm Water Pollution Prevention Plan is required to be prepared and implemented prior to performance of intrusive activities. A copy of the current SWPPP is provided in **Appendix 6**. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic

inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The Site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6NYCRR Part 375, and/or Environmental Conservation Law.
- 15-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, including summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the BCA, and all approved work plans and reports, including this SMP

- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to Don Richardson, President, EWMA. These emergency contact lists must be maintained in an easily accessible location at the site.

Table A: Emergency Contact Numbers	
Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Table B: Site Contact Numbers	
Owner's Representative: Tom Huth	212-546-0821
Owner's Project Manager: Don Richardson, President, EWMA	973-560-1400 ext. 186
Owner's PE: Richard Arnold, PE, Chief Engineer	973-560-1400 ext. 174
NYSDEC Project Manager: Bryan Wong	718-482-4905

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

Site Location: 5-20 46th Road, Long Island City, NY

Nearest Hospital Name: New York University Medical Center

Hospital Location: 560 1st Avenue, New York, NY 10016

Hospital Telephone: 911 or 212-263-7300

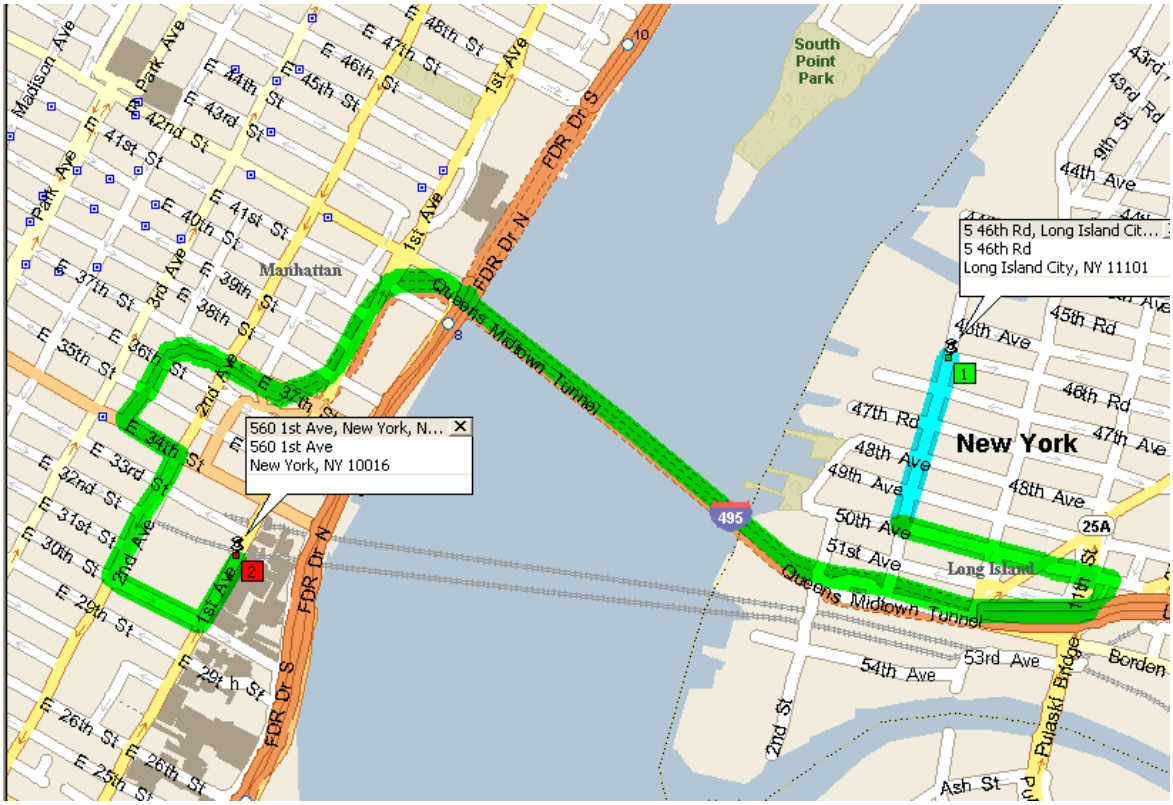
Directions to the Hospital:

Time	Mile	Instruction	For	Toward
9:00 AM	0.0	Depart 5 46th Rd, Long Island City, NY 11101 [5 46th Rd, Long Island City, NY 11101] on 5th St (South)	0.2 mi	
9:00 AM	0.2	Turn LEFT (East) onto 50th Ave	0.3 mi	
9:01 AM	0.5	Take Ramp (RIGHT) onto I-495 [Queens Midtown Tunnel Plaza]	1.4 mi	Queens Midtown Tunnel
9:03 AM	1.9	Turn off onto Ramp	0.1 mi	
9:03 AM	2.0	Keep LEFT to stay on Ramp	0.1 mi	35 St / 34 St / Downtown
9:03 AM	2.2	Bear RIGHT (South-West) onto Queens Midtown Tunnel Exit [Tunnel Exit St], then immediately turn LEFT (East) onto E 34th St	0.1 mi	
9:04 AM	2.3	Turn RIGHT (South) onto 2nd Ave	0.2 mi	
9:04 AM	2.5	Turn LEFT (East) onto E 30th St	0.1 mi	
9:05 AM	2.6	Turn LEFT (North) onto 1st Ave	0.1 mi	
9:05 AM	**2.7**	**Arrive 560 1st Ave, New York, NY 10016**		

Total Distance: 2.7 miles

Total Estimated Time: 5 minutes

Map Showing Route from the site to the Hospital:



2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table A). The list will also be posted prominently at the site and made readily available to all personnel at all times.

2.5.3.1 Spill Response Activities

In the event of a spill, on-site personnel will utilize supplies provided in a PIG spill response container to stabilize the spill and remove any spilled materials and containerize them. Amendments to the contingency plan and additional spill response details are provided in Section 9 of the Site Specific Health and Safety Plan (HASP) presented in **Appendix 4**.

2.5.3.2 Emergency Alerting Procedures

Prior to the commencement of redevelopment construction, a Site Safety Officer (SSO) will be established and the SMP amended to add this information. The SSO will alert the appropriate work groups when an emergency occurs. The communication method(s) will be established by the SSO with the approval of the Project Manager. The SSO and any isolated work group will carry radios if direct contact cannot be maintained. If direct contact cannot be maintained, an air horn will be used to signal workers to stop work and assemble in the Contamination Reduction Zone. If evacuation of the Site is necessary, a pre-arranged signal from the air horn will be sounded.

2.5.3.3 Evacuation Procedures and Routes

Normally, personnel should evacuate through the Contamination Reduction Zone, and from there, to the Support Zone. Evacuation from the Contamination Reduction Zone will proceed in an upwind direction from the emergency. If evacuation to the Support Zone does not provide sufficient protection from the emergency, personnel will be advised to evacuate the Site proper.

2.5.3.4 Emergency Response Personnel

The SSO will have the primary role in responding to all emergencies at the Site. The SSO, or the Alternate SSO, will be present at the Site during all work activities under this SMP. If any emergency such as a fire, chemical exposure, or physical injury occurs, the SSO shall be notified immediately. The SSO will direct all site personnel in cases of emergency.

After an emergency has occurred at the Site, the causes and responses to that emergency shall be thoroughly investigated, reviewed and documented by the Project Manager and SSO; this documentation is to be submitted to the Health and Safety Officer within 48 hours of the incident.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. Monitoring of other Engineering Controls is described in Chapter 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance,;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.
- To adequately address these issues, this Monitoring Plan provides information on:
- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;

- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Table C: Monitoring/Inspection Schedule

Monitoring Program	Sampling Location	Frequency*	Matrix	Analysis
Composite Cover System	Entire site	Annual, until less frequent inspection is approved by DEC	Composite cover system consisting of soil, concrete, asphalt	Visual cap integrity
Vapor Intrusion Control System (Vapor Barrier and SSDS)	All constructed buildings	Annual after system start-up, until less frequent inspection is approved by DEC	Piping, fans, control panels	Visual integrity and functionality

*The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH.

3.2 COMPOSITE COVER SYSTEM MONITORING

The quality and integrity of the composite cover system will be inspected (monitored) annually by independent engineering personnel. These personnel will visually examine the site for integrity of the composite cover system, will perform site walks, and will interview personnel familiar with the site operations.

In the event that the composite cover system is accidentally disturbed or must be disturbed, the site owner will notify the NYSDEC and the Engineer of the accidental or pending disturbance. It will be evaluated for magnitude and type, and supplemental inspection will be performed to provide technical support, to provide assurance that the provisions of the SMP are implemented effectively, and to provide assurance that repairs or restoration of the composite cover system will be in compliance with the provisions of this SMP. The components of the composite cover system are included in Figure 12.

3.3 MEDIA MONITORING PROGRAM

The former Media Monitoring Program contained elements of sampling methods, requirements, and procedures for the presence of LNAPL in the lower sand unit, presence of LNAPL in the perched unit, and groundwater quality. All three operations have been subsequently approved for cessation by NYSDEC and are no longer applicable.

3.3.1 Lower Sand Unit LNAPL Monitoring

The LNAPL Remediation System in the Lower Sand Unit was limited to the Student Housing Parcel and was designed to recover LNAPL. The LNAPL monitoring program for the Lower Sand Unit formerly consisted of routine measurements for fluid levels in LNAPL related monitoring wells. The Lower Sand Unit LNAPL removal was successfully completed in February 2015 with no significant measurable LNAPL remaining, per written authorization from NYSDEC dated February 17, 2015. Therefore, no further monitoring of the Lower Sand Unit is necessary.

3.3.2 Perched Unit LNAPL Monitoring

This LNAPL Remediation System in the Perched Unit was designed to recover LNAPL within the Perched Unit beneath the Market Rate Housing Parcel. The LNAPL monitoring program for the Perched Unit formerly consisted of routine measurements for fluid levels in LNAPL related monitoring wells. The Perched Unit LNAPL removal was successfully completed in January 2013 with no significant measurable LNAPL remaining, per written authorization from NYSDEC in an email dated January 23, 2013. Therefore, no further remediation of the Lower Sand Unit is necessary.

3.3.3 Groundwater Monitoring

The former groundwater monitoring program utilized a network of perimeter and interior monitoring wells that were installed to support the LNAPL remediation program. The final quarterly groundwater sampling event was performed in December 2014. The groundwater monitoring program was terminated in February 2015 (coinciding with the completion of LNAPL removal in the Lower Sand Unit), per written authorization from

NYSDEC dated February 17, 2015. Therefore, no further groundwater monitoring is necessary.

3.3.3.1 Sampling Protocol

The groundwater monitoring program was terminated in February 2015 (coinciding with the completion of LNAPL removal in the Lower Sand Unit), per written authorization from NYSDEC dated February 17, 2015. Therefore, no further groundwater monitoring is necessary and the sampling protocol is no longer applicable.

3.3.3.2 Monitoring Well Repairs, Replacement and Decommissioning

The groundwater monitoring program was terminated in February 2015 (coinciding with the completion of LNAPL removal in the Lower Sand Unit), per written authorization from NYSDEC dated February 17, 2015. Only one perimeter well (PW-11) has measurable LNAPL, which was confirmed to be from an upgradient and off-site source, and is currently being maintained by NYSDEC. The capture wall is still intact and two perimeter wells (PW-3 and PW-5) are also currently maintained by NYSDEC, in the event they are needed during the PW-11 remedial process, as directed by NYSDEC.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (**Appendix 12).** The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and

- Confirm that site records are up to date.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site (**Appendix 7).** Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC ASP requirements.
    - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
    - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
    - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;

- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared, subsequent to each sampling event. The report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;

- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled to be submitted electronically in the NYSDEC-identified format;
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy and digital format. A summary of the monitoring program deliverables is provided in Table D below.

Table D: Schedule of Monitoring/Inspection Reports

Task	**Reporting Frequency***
Composite Cover System	Annual reporting to be included with Periodic Review Reports.
Vapor Intrusion Control System	Annual reporting to be included with Periodic Review Reports.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan has been modified to describe the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site. Steps pertaining to operation of maintenance of the Lower Sand Unit and Perched Unit LNAPL remediation systems have been removed, as these systems have been successfully terminated, per written authorization from NYSDEC.

This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the vapor intrusion control system;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in Site conditions or the manner in which the Vapor Intrusion Control System is operated and maintained.

Information on non-mechanical Engineering Controls (i.e., composite cover system) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the Site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

4.2.1 Vapor Intrusion Control System (VIC System)

The primary components of the VIC System are the synthetic liner beneath the building slab(s), the 6-inch layer of ¾-inch clean crushed stone, underlying geotechnical fabric, the slotted or porous pipe laterals within the stone layer, the vent manifold or vent riser piping connections to the slotted or porous pipe laterals, the vent riser piping transition from sub-slab areas through slab or frost wall to above slab or above grade

areas, the accessible control box areas through which riser piping will pass, the electrically powered exhaust blowers that will provide vacuum for the SSDS system, and the riser piping that will convey vapors from the blower exhausts to tee fittings above the roof-lines, and the four monitoring points within each building. These components are described in **Appendix 14** Vapor Intrusion Control.

The synthetic liner, crushed stone layer, geotechnical fabric, slotted or porous pipe laterals, piped connections, and sub-slab vent riser piping will likely be located within the building envelope primarily beneath the floor slabs and will likely not be visible during a typical site inspection.

The vent riser piping, control box areas and exhaust blowers above top of slab or above grade will be visible to the inspector and therefore can readily be inspected. These three system components are the most likely to sustain damage due to normal system usage or a severe storm.

4.2.1.1 VIC System O&M Scope

Annual inspections will be performed by trained staff under the supervision of the Remedial Engineer and will include visual examination of vent riser piping, control boxes, and exhaust fans. The results of the annual inspection will be documented the annual Periodic Review Report.

In the event that any deficiencies are noted, the deficiency will be reported to NYSDEC and the property owner, and corrective action shall be taken in the form of repair or rehabilitation as needed to restore system operation. The Remedial Engineer will be responsible to ensure that any corrective actions are completed in accordance with this SMP.

4.2.1.2 VIC System Start-Up and Testing

During installation, the system shall be inspected periodically by the Remedial Engineer for conformance with the provisions of the SMP. In accordance with the post mitigation/confirmation testing requirements of NYSDOH's Guidance for Evaluating

Soil Vapor Intrusion in the State of New York dated October 2006, the goal for operation of the active component of the VIC will be to achieve, at a minimum, a sub-slab differential pressure (with respect to building interior ambient pressure) of –0.004 inches of water. To achieve this goal, the following actions will be performed during initial startup of the VIC.

1. Shortly after start up of the VIC, and prior to building occupancy, the sub-slab pressure at each monitoring point will be measured utilizing an appropriate hand-held instrument. If necessary, sub-slab vacuum will be adjusted to achieve –0.004 inches of water at each monitoring point. The control box controlling the vacuum to the sub-slab lateral piping will be utilized to balance the sub-slab pressure.
2. After achieving sub-slab pressure of –0.004 inches of water, smoke tests will be performed to identify any leaks through cracks in the concrete floor, floor joints, etc. Identified leaks will be sealed until smoke tests indicate that an appropriate seal of the floor slab has been achieved.
3. Appliances relying on natural draft for exhaust of carbon monoxide and other combustion gases will be tested for back draft caused by the operation of the SSDS. Testing for back draft will entail utilizing a carbon monoxide meter to detect the presence of this compound in the air near exhausts for appliances. If necessary, any back draft caused by the SSDS will be corrected by sealing any leaks in the floor slab, as described above.
4. The operation of the warning device for exhaust fan malfunction will be confirmed. If a concern is noted, it will be addressed until the appropriate level of vacuum is achieved before the building can be certified for occupancy.

The results of the start-up and testing will be reported to the NYSDEC in the annual Site Management Report.

4.2.1.3 VIC System Operation: Routine Operating Procedures and Maintenance

In accordance with the schedule set forth in Section 3 (Table C) of this SMP, routine maintenance and inspection will be conducted to ensure that the active components of the VIC are operating properly and will continue until NYSDEC and NYSDOH have determined there is no need for such a system. The operation of the SSDS will not be discontinued without written approval from the NYSDEC. On a monthly basis, qualified building personnel will confirm that the suction fan and warning device are working properly. Appendix 14 contains a routine maintenance SSDS

checklist. Appendix 14 also contains an Operations, Maintenance, and Montoring (OM&M) manual for the SSDS exhaust fans.

On an annual basis, the following will performed:

- Conduct a visual inspection of the complete system;
- Inspect the exhaust fan(s) for bearing failures or signs of other abnormal operations, and repair or replace if required;
- Inspect the discharge location of the vent pipe to ensure that no air intake or operable window is located nearby;
- Determine, through discussions with building management, if any HVAC system modifications have occurred that might affect the performance of the SSDS; and
- Inspect the floor slab and foundation walls for evidence of cracks and/or holes, and repair of cracks and/or holes, if required.

4.2.1.4 VIC System Operation: Non-Routine Equipment Maintenance

Non-routine maintenance would typically occur when the warning device indicates the system is not working properly, or the system becomes damaged. The scope of non-routine maintenance will vary depending upon the situation. In general, the following actions will be taken as part of non-routine maintenance:

- Examine the building for structural or HVAC system changes, or other changes that may affect the performance of the SSDS (e.g., new combustion appliances or deterioration of the concrete slab);
- Examine and address the operation of the warning device and the suction fan, and measure the sub-slab pressure at monitoring points; and
- Repair or adjust the SSDS as appropriate. If necessary, the SSDS should be redesigned and restarted (see Section 4.2.1.2 for system startup).

4.2.2 Lower Sand Unit LNAPL Remediation System

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 with no significant measurable LNAPL remaining, per written authorization from NYSDEC dated February 17, 2015. Therefore, no further remediation of the Lower Sand Unit is necessary. The capture wall is still intact and two perimeter wells (PW-3 and PW-5) are currently maintained by NYSDEC, in the event they are needed during the PW-11 remedial process, as directed by NYSDEC.

4.2.2.1 Lower Sand Unit LNAPL System O&M Scope

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.2.2.2 Lower Sand Unit LNAPL System Start-Up and Testing

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.2.2.3 Lower Sand Unit LNAPL System Operation: Routine Operating Procedures and Maintenance

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.2.2.4 Lower Sand Unit LNAPL System Operation: Non-Routine Equipment Maintenance

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.2.3 Perched Unit LNAPL Remediation System

The Perched Unit LNAPL removal was successfully completed in January 2013 with no significant measurable LNAPL remaining. Therefore, no further remediation of the Perched Unit is necessary. Only one perimeter well (PW-11) has measurable LNAPL, which was confirmed to be from an upgradient and off-site source, and is currently being maintained by NYSDEC.

4.2.3.1 Perched Unit LNAPL System O&M Scope

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.2.3.2 Perched Unit LNAPL System Start-Up and Testing

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.2.3.3 Perched Unit LNAPL System Operation: Routine Operating Procedures and Maintenance

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.2.3.4 Perched Unit LNAPL System Operation: Non-Routine Equipment Maintenance

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

4.3.1 New Vapor Intrusion Control Systems (VIC Systems)

VIC Systems will be installed for all of the buildings planned at the Site to mitigate possible soil vapor intrusion into occupied buildings. These systems will be active and electrically powered.

4.3.1.1 VIC System Monitoring Schedule

Shortly after start up of the VIC, and prior to building occupancy, the sub-slab pressure at each monitoring point will be measured utilizing an appropriate hand-held instrument. If necessary, sub-slab vacuum will be adjusted to achieve –0.004 inches of water at each monitoring point. The control box controlling the vacuum to the sub-slab lateral piping will be utilized to balance the sub-slab pressure.

After achieving sub-slab pressure of –0.004 inches of water, smoke tests will be performed to identify any leaks through cracks in the concrete floor, floor joints, etc. Identified leaks will be sealed until smoke tests indicate that an appropriate seal of the floor slab has been achieved.

Appliances relying on natural draft for exhaust of carbon monoxide and other combustion gases will be tested for back draft caused by the operation of the SSDS. Testing for back draft will entail utilizing a carbon monoxide meter to detect the presence of this compound in the air near exhausts for appliances. If necessary, any back draft caused by the SSDS will be corrected by sealing any leaks in the floor slab, as described above.

The operation of the warning device for exhaust fan malfunction will be confirmed. If a concern is noted, it will be addressed until the appropriate level of vacuum is achieved before the building can be certified for occupancy.

If a re-start is necessary subsequent to repair of SSDS components, then the start-up monitoring protocol will be repeated and the SSDS will be adjusted until compliance with sub-slab vacuum level requirements is verified.

It should be noted that the inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the VIC System has been reported or when an emergency has occurred that is deemed likely to affect the system operation.

4.3.1.2 VIC System General Equipment Monitoring

A visual inspection of the visible portions of the complete system will be conducted during each inspection event, and the riser pipes and suction fans will be visually examined during those events. Component descriptions and locations are provided in the Inspection Checklist presented in **Appendix 14** Vapor Intrusion Control.

4.3.1.3 VIC System Monitoring Devices and Alarms

The VIC Systems will be active and electrically powered. The sub-slab vacuum levels will be monitored at start-up to verify compliance with the -0.004 inches of water minimum cross slab vacuum levels. An alarm system will be installed and will alarm in the maintenance managers office if one of the exhaust blowers is not exerting sufficient vacuum pressure to maintain the required sub-slab vacuum levels of if an exhaust blower shuts down.

4.3.2 Lower Sand Unit LNAPL Remediation System (LNAPL System)

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 with no significant measurable LNAPL remaining, per written authorization from NYSDEC dated February 17, 2015. Therefore, no further remediation of the Lower Sand Unit is necessary. The capture wall is still intact and two perimeter wells (PW-3 and PW-5) are currently maintained by NYSDEC, in the event they are needed during the PW-11 remedial process, as directed by NYSDEC.

4.3.2.1 Lower Sand Unit LNAPL System Monitoring Schedule

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.3.2.2 Lower Sand Unit LNAPL System General Equipment Monitoring

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.3.2.3 Lower Sand Unit LNAPL System Monitoring Devices and Alarms

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.3.2.4 Lower Sand Unit LNAPL System Sampling Event Protocol

The Lower Sand Unit LNAPL removal was successfully completed in February 2015 and this section is no longer applicable.

4.3.3 Perched Unit LNAPL Remediation System

The Perched Unit LNAPL removal was successfully completed in January 2013 with no significant measurable LNAPL remaining. Therefore, no further remediation of the Lower Sand Unit is necessary. Only one perimeter well (PW-11) has measurable LNAPL, which was confirmed to be from an upgradient and off-site source, and is currently being maintained by NYSDEC.

4.3.3.1 Perched Unit LNAPL System Monitoring Schedule

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.3.3.2 Perched Unit LNAPL System General Equipment Monitoring

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.3.3.3 Perched Unit LNAPL System Monitoring Devices and Alarms

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.3.3.4 Perched LNAPL System Sampling Event Protocol

The LNAPL Remediation System in the Perched Unit was successfully completed in January 2013 and this section is no longer applicable.

4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file at the site. All reports, forms, and other relevant information generated will be available to the NYSDEC upon request and submitted as part of the annual Site Management Report, as specified in Section 5 of this SMP.

4.4.1 Routine Maintenance Reports

Checklists and forms (see **Appendix 14**) will be completed during each routine maintenance event. Checklists and forms will include but not be limited to the following information:

- Date;
- Name, Company, and position of person(s) conducting maintenance activities;

- Maintenance activities conducted;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet) and;
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc. (attached to the checklist/form).

4.4.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan (**Table C**) of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system which are contained in **Appendix 12.** Additionally, a general site-wide inspection form will be completed during the site-wide inspection (see **Appendix 12).** These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP and FER.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare a certification in the Periodic Review Report submittal, and will prepare certifications in the IC/EC Certification Submittal. The IC/EC Certification Submittal will be provided as an appendix to the Periodic Review Report submittal. All of the certifications will be prepared in accordance with NYSDEC guidance as set forth in the current version of NYSDEC DER-10.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the Department beginning eighteen months after the Certificate of Completion is issued, and thereafter, as stipulated in Table D. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in **Appendix 2** (Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site;
- Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted.

These will include a presentation of past data as part of an evaluation of contaminant concentration trends;

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
    - The overall performance and effectiveness of the remedy.
- A performance summary for all treatment systems at the site during the calendar year, including information such as:
    - The number of days the system was run for the reporting period;
    - The average, high, and low flows per day;
    - The contaminant mass removed;
    - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
    - A description of the resolution of performance problems;
    - A summary of the performance, effluent and/or effectiveness monitoring; and
    - Comments, conclusions, and recommendations based on data evaluation.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Regional Office in which the site is located, and in electronic format to

NYSDEC Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

APPENDIX 1 – EXCAVATION WORK PLAN

A-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the Department. Currently, this notification will be made to:

Jane O'Connell
Regional Hazardous Waste Remediation Engineer
NYSDEC
47-40 21st Street
Long Island City, NY 11101

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control,
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP,
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in **Appendix 4** of this document,
- Identification of disposal facilities for potential waste streams,

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

A-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

A-3 STOCKPILE METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

A-4 MATERIALS EXCAVATION AND LOAD OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

A-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Truck transport route is as follows: All trucks loaded with site materials will enter the site via 47th Avenue and exit the site onto 46th Road. The trucks shall make a left onto Vernon Boulevard, a right onto 44th Drive, a right onto 21st Street, a right onto

Jackson Avenue, and a left onto 11th Street to the Pulaski Bridge and the BQE. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting 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; (g) community input where necessary.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

A-6 MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

A-7 MATERIALS REUSE ON-SITE

There is no planned on-site reuse of materials.

A-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site.

If water generated during large-scale construction activities is to be discharged to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit that will be provided to NYSDEC for their information.

A-9 COMPOSITE COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the RAWP and the provisions of this SMP. If disturbed, the demarcation barrier will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt) as shown on **Figure 12** and discussed in Section 2.2.1.1, this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination'. A figure showing the modified surface will be included in the subsequent annual Site Management Report and in any updates to the Site Management Plan. A certification will be provided by a Professional Engineer licensed in NYS that the modified surface provides the same level of public health protection as the original cover system component which it replaced.

A-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in **Table 1.** Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

The source of the backfill that will be imported onto this Site has not been determined at this time. In addition to meeting the site-specific requirements dictated by the proposed development activities, the imported fill will demonstrate compliance with Part 375 section 6.8. Unless an alternate sampling frequency has been previously approved by the NYSDEC, all imported fill from a virgin source will be sampled for full TCL/TAL with collection of one composite sample per source. Fill from non-virgin sources will be sampled for full TCL/TAL as per the following:

1. If less than 1,000 cy of non-virgin material, one composite sample per 500 cubic yards;

2. If more than 1,000 cy of non-virgin fill, two initial screening composite samples will be collected from the first 1,000 cy and analyzed. If these samples meet criteria, sampling will be reduced to one composite sample per 2,500 cy; or
3. If greater than 5,000 cy of non-virgin fill, sample frequency will be reduced to one per 5,000 cy.

All analysis will be performed by a NYSDOH ELAP certified laboratory.

Information documenting the source of the fill, past use of the Site where the backfill originated, the type of fill, the amount of fill and any pertinent laboratory analytical documentation will be provided to the NYSDEC prior to importation of the fill material onto the site, unless from a source previously approved by the NYSDEC.

A-11 STORMWATER POLLUTION PREVENTION

The site-specific Stormwater Pollution Prevention Plan (SWPPP) is included in **Appendix 6**. The SWPPP must be followed during all excavation work under this EWP. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are

accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

A-12 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

A-13 COMMUNITY AIR MONITORING PLAN

A figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in **Appendix 5.** These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations, one of which will be a fixed monitoring station at the southwest corner of the site in the direction of a public school and a day care center (i.e., sensitive receptors). In the event of an exceedance of action levels, the site operations will be evaluated by the QEP, and, if necessary, will be ceased as a first contingent mitigation step. The cause of the exceedance will be evaluated and operations

will be adjusted and then go forward with the necessary mitigation which may include but not be limited to the use of plastic cover sheeting, vapor suppressing sprays, or reduction of operating rates depending on the identified cause of exceedance. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

A-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site. Specific odor control methods to be used on a routine basis will include limiting the extent of excavation areas, limiting the extent of soil stockpiles, using soil cover, covering or shrouding with plastic sheeting, and foaming with Biosolve odor control foam. If nuisance odors are identified at the site boundary, or if odor complaints are received, 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. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remedial Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

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

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

A-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

A-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Tables

TABLE 1
NYSDEC SOIL CLEANUP OBJECTIVES
EWMA PROJECT OCA-LIC-205490/207266 BCP PROJECT C241098

Sample ID: Sample Depth: Lab ID: Date Sampled: Matrix:	NYSDEC Part 375.6 UUSCO (Unrestricted)	Site Specific Soil Cleanup Objective (SSCO)
Volatiles (ppm)		
Acetone	0.05	100
Carbon disulfide	(NA)	(NA)
Methylene chloride	0.05	10
Chloroform	0.37	49
Benzene	0.06	4.8
Trichloroethene	0.47	21
Toluene	0.7	100
Tetrachloroethene	1.3	19
Ethylbenzene	1	41
Total Xylenes	0.26	100
Isopropylbenzene	2.3	2.3
Methyl acetate	(NA)	(NA)
1,2,4-Trichlorobenzene	3.6	NA
1,2,3-Trichlorobenzene	NA	NA
Cyclohexane	(NA)	(NA)
Methylcyclohexane	(NA)	(NA)
TOTAL VO's:	NA	NA
TOTAL TIC's:	NA	NA
TOTAL VO's & TIC's:	NA	NA
Semivolatiles - BNA (ppm)		
4-Methylphenol	NA	NA
Naphthalene	12	100
2-Methylnaphthalene	NA	NA
1,1'-Biphenyl	(NA)	(NA)
Acenaphthylene	100	100
Acenaphthene	20	100
Dibenzofuran	7	59
Fluorene	30	100
Phenanthrene	100	100
Anthracene	100	100
Carbazole	(NA)	(NA)
Di-n-butyl phthalate	NA	NA
Fluoranthene	100	100
Pyrene	100	100
Benzo[a]anthracene	1	1
Chrysene	1	3.9
Bis(2-ethylhexyl) phthalate	NA	NA
Benzo[b]fluoranthene	1	1
Benzo[k]fluoranthene	0.8	1
Benzo[a]pyrene	1	1
Indeno[1,2,3-cd]pyrene	0.5	0.5
Dibenz[a,h]anthracene	0.33	0.33
Benzo[g,h,i]perylene	100	100
TOTAL BNA'S:	NA	NA
TOTAL TIC's:	NA	NA
TOTAL BN's & TIC's:	NA	NA

TABLE 1
NYSDEC SOIL CLEANUP OBJECTIVES
EWMA PROJECT OCA-LIC-205490/207266 BCP PROJECT C241098

Sample ID: Sample Depth: Lab ID: Date Sampled: Matrix:	NYSDEC Part 375.6 UUSCO (Unrestricted)	Site Specific Soil Cleanup Objective (SSCO)
PCB's (ppm)		
Aroclor-1254	0.1	1
Aroclor-1260	0.1	1
Pesticides (ppm)		
4,4'-DDE	0.0033	8.9
4,4'-DDD	0.0033	13
4,4'-DDT	0.0033	7.9
alpha-Chlordane	0.094	4.2
gamma-Chlordane	NA	NA
Metals (ppm)		
Aluminum	(NA)	(NA)
Antimony	(NA)	(NA)
Arsenic	13	16
Barium	350	400
Beryllium	7.2	72
Cadmium	2.5	4.3
Calcium	(NA)	(NA)
Chromium, trivalent	30	180
Cobalt	(NA)	NA
Copper	50	270
Iron	(NA)	(NA)
Lead	63	1000
Magnesium	(NA)	(NA)
Manganese	1600	2000
Mercury	0.18	0.81
Nickel	30	310
Potassium	(NA)	(NA)
Selenium	3.9	180
Silver	2	180
Sodium	(NA)	(NA)
Thallium	(NA)	(NA)
Vanadium	(NA)	NA
Zinc	109	10000
General Analytical		
Cyanide, Total-ppm	27	27

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT SIDEWALL SOIL DATA

Sample ID: Sample Depth: Lab ID: Date Sampled: Matrix:	NYSDEC Part 375.6 UUSCO (Unrestricted)	Site Specific Soil Cleanup Objective (SSCO)	PES-2 6.5/7 00281-002 1/7/10 Soil	PES-3 6.5/7 04575-001 05/07/2010 Soil	PES-4 6.5/7 04575-002 05/07/2010 Soil	PES-5 6.5/7 00146-002 1/5/10 Soil	PES-6 6.5/7 00526-002 1/12/10 Soil	PES-7 6.5/7 01218-001 2/2/10 Soil	PES-8 6.5/7 01218-002 2/2/10 Soil	PES-9 6.5/7 01218-003 2/2/10 Soil	PES-10 6.5/7 01849-001 2/24/10 Soil	PES-11 6.5/7 01964-001 3/2/10 Soil	PES-12 6.5/7 01964-002 3/3/10 Soil	PES-13 6.5/7 01964-003 3/4/10 Soil
Volatiles (ppm)			Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc
Acetone	0.05	100	ND	ND	ND	0.00388	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.05	10	ND	0.00396 C	0.00746 C	0.00303 C	0.00261 C	ND	ND	ND	0.00564 B	0.00495 B	0.00403 B	0.00542 B
Chloroform	0.37	49	ND	ND	ND	ND	ND	ND	ND	ND	0.00198	ND	ND	ND
Trichloroethene	0.47	21	ND	ND	0.00128	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VO's:		NA	ND	0.00396	0.00874	0.00691	0.00261 C	ND	ND	ND	0.00762	0.00495 B	0.00403 B	0.00542 B
TOTAL TIC's:		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.317
TOTAL VO's & TIC's:		NA	ND	0.00396	0.00874	0.00691	0.00261 C	ND	ND	ND	0.00762	0.00495 B	0.00403 B	0.322 B
Semivolatiles - BNA (ppm)														
4-Methylphenol	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	0.195	0.903	0.428	ND	ND	1.70	0.072 J	ND	ND	ND	0.742	0.934
4-Chloroaniline	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	NA	NA	0.096	0.420	0.251	ND	ND	0.828	0.045 J	ND	ND	ND	0.245	0.233
1,1'-Biphenyl	(NA)	(NA)	ND	0.117 J	0.070 J	ND	ND	0.259 J	ND	ND	ND	ND	0.097 J	0.076 J
Acenaphthylene	100	100	0.078 J	0.176	0.216	ND	ND	0.911	0.030 J	ND	ND	ND	0.156	0.039 J
Acenaphthene	20	100	0.392	1.44	0.935	ND	ND	2.20	0.144	ND	ND	ND	0.828	0.273
Dibenzofuran	7	59	0.187	0.887	0.477	ND	ND	1.68	0.039 J	ND	ND	ND	0.523	0.252
Fluorene	30	100	0.224	1.30	0.701	ND	ND	2.12	0.054 J	ND	ND	ND	0.657	0.133
N-Nitrosodiphenylamine	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	100	3.02	12.3	7.50	0.121	ND	20.3	0.669	ND	ND	ND	8.77	1.02
Anthracene	100	100	0.864	2.75	1.48	0.048 J	ND	5.33	0.228	ND	ND	ND	2.06	0.318
Carbazole	(NA)	(NA)	0.389	1.27	0.553	ND	ND	1.62	0.097	ND	ND	ND	0.680	0.119
Di-n-butyl phthalate	NA	NA	0.105	ND	0.103 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	4.83	14.0	8.33	0.231	ND	22.6	1.27	ND	ND	ND	12.5	1.40
Pyrene	100	100	4.65	12.6	8.32	0.292	ND	20.6	1.46	ND	ND	ND	10.6	1.07
Benzo[a]anthracene	1	1	3.71	8.40	5.43	0.339	ND	11.0	1.35	ND	ND	ND	5.72	1.21
Chrysene	1	3.9	3.75	8.12	5.35	0.341	ND	10.5	1.25	ND	ND	ND	5.65	1.11
Bis(2-ethylhexyl) phthalate	NS	NA	0.768	ND	ND	ND	ND	ND	0.025 J	ND	ND	ND	ND	ND
Benzo[b]fluoranthene	1	1	4.21	8.05	3.69	0.469	ND	7.61	1.42	ND	ND	ND	4.75	1.40
Benzo[k]fluoranthene	0.8	1	3.68	4.70	4.77	0.534	ND	7.97	1.64	ND	ND	ND	4.86	1.31
Benzo[a]pyrene	1	1	6.11	8.76	5.98	0.757	ND	11.2	2.48	ND	ND	ND	5.84	2.43
Indeno[1,2,3-cd]pyrene	0.5	0.5	3.76	3.88	2.76	0.669	ND	6.44	2.14	ND	ND	ND	0.588	1.02
Dibenz[a,h]anthracene	0.33	0.33	1.46	2.08	1.34	0.271	ND	1.81	0.597	ND	ND	ND	ND	0.613
Benzo[g,h,i]perylene	100	100	3.94	4.27	2.98	0.774	ND	7.50	2.66	ND	ND	ND	ND	0.901
TOTAL BNA'S:	NA	NA	46.4	96.4	61.7	4.85	ND	144	17.7	ND	ND	ND	65.3	15.9
TOTAL TIC's:	NA	NA	11.0	19.6	2.66	0.403	ND	41.9	4.07	ND	ND	1.60	73.4	38.1
TOTAL BN's & TIC's:	NA	NA	57.4	116	64.4	5.25	ND	186	21.8	ND	ND	1.60	139	54.0
PCB's (ppm)														
Aroclor-1254	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	0.1	1	ND	0.211	0.336	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides (ppm)														
4,4'-DDE	0.0033	8.9	0.00619 J	ND	ND	ND	ND	ND	ND	ND	0.0505	ND	ND	ND
4,4'-DDD	0.0033	13	ND	ND	ND	ND	ND	ND	ND	ND	0.0447	0.00761 J	0.025	ND
4,4'-DDT	0.0033	7.9	0.026	ND	ND	ND	ND	ND	ND	ND	0.012	ND	ND	ND
alpha-Chlordane	0.094	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.046	ND	ND
gamma-Chlordane	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.197	ND	ND

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT SIDEWALL SOIL DATA

Sample ID: Sample Depth: Lab ID: Date Sampled: Matrix:	NYSDEC Part 375.6 UUSCO (Unrestricted)	Site Specific Soil Cleanup Objective (SSCO)	PES-2 6.5/7 00281-002 1/7/10 Soil	PES-3 6.5/7 04575-001 05/07/2010 Soil	PES-4 6.5/7 04575-002 05/07/2010 Soil	PES-5 6.5/7 00146-002 1/5/10 Soil	PES-6 6.5/7 00526-002 1/12/10 Soil	PES-7 6.5/7 01218-001 2/2/10 Soil	PES-8 6.5/7 01218-002 2/2/10 Soil	PES-9 6.5/7 01218-003 2/2/10 Soil	PES-10 6.5/7 01849-001 2/24/10 Soil	PES-11 6.5/7 01964-001 3/2/10 Soil	PES-12 6.5/7 01964-002 3/3/10 Soil	PES-13 6.5/7 01964-003 3/4/10 Soil
Metals (ppm)														
Aluminum	(NA)	(NA)	5980	6920	4730	5950	7420	7340	7180	6230	7360	1320	7120	8100
Antimony	(NA)	(NA)	ND	ND	0.349 J	ND	ND	ND	ND	ND	ND	0.386 J	ND	ND
Arsenic	13	16	17.9	11.1	10.1	1.63	1.39	6.99	3.50	1.08	3.64	1.62	6.85	4.26
Barium	350	400	394	464	502	40.1	39.8	318	106	36.6	165	259	372	339
Beryllium	7.2	72	0.487	0.454	0.532	0.408	0.342	0.365	0.381	0.253 J	0.363	ND	0.389	0.464
Cadmium	2.5	4.3	1.18	1.33	2.03	ND	ND	0.457	0.185 J	ND	2.17	1.16	1.31	0.383
Calcium	(NA)	(NA)	13400	12700	13800	1380	1050	13900	3500	1160	3930	6640	4640	3940
Chromium (trivalent)	30	180	19.8	21.2	40.8	12.1	12.6	16.8	18.3	11.8	15.3	77.7	17.7	17.4
Cobalt	NA	NA	7.69	9.88	7.93	4.43	5.15	5.66	5.68	4.16	7.24	2.16 J	7.40	6.02
Copper	50	270	188	220	199	43.5	16.4	139	27.0	18.4	27.6	268	530	31.3
Iron	(NA)	(NA)	15800	19700	20900	10100	10400	13600	15800	8840	15100	4270	16100	13600
Lead	63	1000	502	1650	1620	24.8	10.5	692	701	7.79	349	559	465	153
Magnesium	(NA)	(NA)	2270	3000	3650	1620	1840	3190	1890	1620	2470	576	2020	2100
Manganese	1600	2000	348	564	391	273	302	1500	290	231	289	142	342	316
Mercury	0.18	0.81	0.777	2.68	2.04	0.095	0.043	5.01	0.211	0.029	0.270	0.109	0.812	0.865
Nickel	30	310	19.4	21.6	16.3	9.73	10.7	16.0	14.2	8.54	12.7	10.8	13.3	14.2
Potassium	(NA)	(NA)	793	901	566	888	935	1620	1060	921	1230	190	879	1150
Selenium	3.9	180	ND	1.20 J	ND	ND	2.60	1.98 J	1.67 J	1.38 J	2.31	ND	2.55	3.45
Silver	2	180	2.76	0.481 J	0.574 J	ND	ND	0.283 J	ND	ND	ND	0.986	0.323 J	ND
Sodium	(NA)	(NA)	232	188	133	125	122	223	192	93.6 J	208	49.0 J	241	226
Thallium	(NA)	(NA)	ND	0.362	0.446	ND	ND	0.162 J	ND	ND	ND	ND	ND	ND
Vanadium	NA	NA	30.4	36.2	32.6	15.8	16.1	19.8	19.5	14.7	23.5	4.52	21.9	19.7
Zinc	109	10000	575	847	628	44.5	22.6	365	107	18.8	436	301	366	107
General Analytical														
Cyanide, Total-ppm	27	27	1.27	ND	ND	ND	ND	ND	2.68	ND	ND	ND	1.75	3.82

ND = Analyzed for but Not Detected at the MDL

J = The concentration was detected at a value below the RL and above the MDL

C = Common Laboratory and/or Bottle Contaminant.

B = detected in laboratory blank

Dark shaded results exceed the UUSCO

Light shaded results exceed the SSCO

TABLE 2

POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT SIDEWALL SOIL DATA

Sample ID: Sample Depth: Lab ID: Date Sampled: Matrix:	NYSDEC Part 375.6 UUSCO (Unrestricted)	Site Specific Soil Cleanup Objective (SSCO)	PES-14 6.5/7 01964-004 3/4/10 Soil	PES-15 6.5/7 02181-002 3/5/10 Soil	PES-16 6.5/7 02181-001 3/8/10 Soil	PES-17 6.5/7 02961-001 3/31/10 Soil	PES-18 6.5/7 02961-002 3/25/10 Soil	PES-19 6.5/7 02961-003 3/25/10 Soil	PES-20 6.5/7 04062-001 4/29/10 Soil
Volatiles (ppm)			Conc	Conc	Conc	Conc	Conc	Conc	Conc
Acetone	0.05	100	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.05	10	0.00512 B	ND	ND	ND	ND	ND	ND
Chloroform	0.37	49	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.47	21	ND	ND	ND	ND	ND	ND	ND
TOTAL VO's:		NA	0.00512 B	ND	ND	ND	ND	ND	ND
TOTAL TIC's:		NA	ND	ND	ND	ND	0.148	ND	ND
TOTAL VO's & TIC's:		NA	0.00512 B	ND	ND	ND	0.148	ND	ND
Semivolatiles - BNA (ppm)									
4-Methylphenol	NA	NA	ND	ND	ND	ND	ND	ND	0.071 J
Hexachloroethane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	0.066 J
Isophorone	NA	NA	ND	ND	ND	ND	ND	ND	0.290
Naphthalene	12	100	0.181	0.251	2.57	0.174	ND	ND	0.851
4-Chloroaniline	NA	NA	ND	ND	ND	ND	ND	ND	0.193
2-Methylnaphthalene	NA	NA	0.106	0.067 J	1.32	0.067 J	ND	ND	0.549
1,1'-Biphenyl	(NA)	(NA)	0.028 J	ND	ND	ND	ND	ND	0.170
Acenaphthylene	100	100	0.134	0.138	2.16	0.035 J	ND	0.038 J	0.412
Acenaphthene	20	100	0.239	0.099	2.52	0.182	0.046 J	ND	1.71
Dibenzofuran	7	59	0.157	0.080	1.33	0.084	ND	ND	1.05
Fluorene	30	100	0.169	0.102	2.31	0.117	0.027 J	ND	1.05
N-Nitrosodiphenylamine	(NA)	(NA)	ND	ND	ND	ND	ND	ND	0.160
Phenanthrene	100	100	2.46	1.34	26.4	2.03	0.396	0.225	13.8
Anthracene	100	100	0.595	0.498	7.81	0.395	0.099	0.044 J	13.3
Carbazole	(NA)	(NA)	0.232	0.061 J	4.66	0.114	ND	ND	1.26
Di-n-butyl phthalate	NA	NA	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	3.64	2.96	50.9	2.30	0.671	0.504	14.1
Pyrene	100	100	3.47	2.73	36.9	2.14	0.686	0.511	12.4
Benzo[a]anthracene	1	1	2.95	1.42	25.0	2.06	0.438	0.336	6.38
Chrysene	1	3.9	2.86	1.36	25.8	2.23	0.502	0.385	6.49
Bis(2-ethylhexyl) phthalate	NS	NA	ND	0.150	11.1	0.088	ND	ND	0.135 J
Benzo[b]fluoranthene	1	1	2.64	1.09	27.9	1.30	0.316	0.370	8.03
Benzo[k]fluoranthene	0.8	1	2.14	1.16	21.1	1.06	0.322	0.300	8.34
Benzo[a]pyrene	1	1	3.86	1.51	26.8	3.71	0.604	0.342	5.54
Indeno[1,2,3-cd]pyrene	0.5	0.5	1.31	0.758	5.75	0.738	0.166	0.229	2.79
Dibenz[a,h]anthracene	0.33	0.33	0.528	0.273	1.68	1.07	0.133	0.102	1.45
Benzo[g,h,i]perylene	100	100	1.36	0.898	2.68	0.641	0.203	0.207	3.21
TOTAL BNA'S:	NA	NA	29.1	16.9	287	20.6	4.61	3.59	104
TOTAL TIC's:	NA	NA	19.9	26.7	653	14.6	1.82	ND	19.1
TOTAL BN's & TIC's:	NA	NA	49.0	43.6	940	35.2	6.43	3.59	123
PCB's (ppm)									
Aroclor-1254	0.1	1	ND	ND	ND	0.675	ND	ND	ND
Aroclor-1260	0.1	1	ND	ND	ND	ND	ND	ND	ND
Pesticides (ppm)									
4,4'-DDE	0.0033	8.9	ND	0.052	ND	ND	0.00101	ND	ND
4,4'-DDD	0.0033	13	ND	1.11	0.416	ND	0.00999	ND	ND
4,4'-DDT	0.0033	7.9	ND	ND	ND	ND	0.00109	ND	0.019
alpha-Chlordane	0.094	4.2	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	NA	NA	ND	ND	ND	ND	ND	ND	ND

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT SIDEWALL SOIL DATA

Sample ID: Sample Depth: Lab ID: Date Sampled: Matrix:	NYSDEC Part 375.6 UUSCO (Unrestricted)	Site Specific Soil Cleanup Objective (SSCO)	PES-14 6.5/7 01964-004 3/4/10 Soil	PES-15 6.5/7 02181-002 3/5/10 Soil	PES-16 6.5/7 02181-001 3/8/10 Soil	PES-17 6.5/7 02961-001 3/31/10 Soil	PES-18 6.5/7 02961-002 3/25/10 Soil	PES-19 6.5/7 02961-003 3/25/10 Soil	PES-20 6.5/7 04062-001 4/29/10 Soil
Metals (ppm)									
Aluminum	(NA)	(NA)	7000	5840	7810	8060	7160	10600	4510
Antimony	(NA)	(NA)	ND	ND	ND	ND	ND	ND	0.399 J
Arsenic	13	16	8.58	3.23	8.41	27.4	5.92	4.98	6.79
Barium	350	400	750	144	247	60.9	100	97.6	297
Beryllium	7.2	72	0.466	0.293 J	0.462	0.445	0.330	0.420	0.332
Cadmium	2.5	4.3	0.834	0.338	0.338	1.13	0.227 J	0.273 J	1.29
Calcium	(NA)	(NA)	3800	4170	5980	1420	2300	4100	8010
Chromium (trivalent)	30	180	18.6	15.2	17.6	18.4	12.1	17.4	18.2
Cobalt	NA	NA	5.79	4.91	8.11	4.57	5.04	5.53	5.22
Copper	50	270	78.6	42.1	46.4	326	24.6	30.7	66.7
Iron	(NA)	(NA)	12400	10200	18400	14700	10500	17900	12700
Lead	63	1000	351	107	199	138	84.6	195	808
Magnesium	(NA)	(NA)	2560	2540	2610	1910	2060	2050	2370
Manganese	1600	2000	298	170	490	83.7	303	364	291
Mercury	0.18	0.81	1.18	ND	0.832	0.321	0.503	0.932	10.6
Nickel	30	310	14.8	12.2	18.6	44.6	11.3	13.1	10.7
Potassium	(NA)	(NA)	997	818	1310	927	1030	959	688
Selenium	3.9	180	1.29 J	1.27 J	2.21 J	2.01 J	ND	1.36 J	ND
Silver	2	180	ND	ND	ND	ND	ND	0.220 J	5.46
Sodium	(NA)	(NA)	305	250	264	271	262	250	169
Thallium	(NA)	(NA)	0.197 J	ND	0.192 J	ND	ND	ND	ND
Vanadium	NA	NA	21.1	16.2	20.2	14.6	21.6	22.1	15.8
Zinc	109	10000	424	157	160	515	108	134	460
General Analytical									
Cyanide, Total-ppm	27	27	ND	ND	ND	217	ND	ND	1.45

ND = Analyzed for but Not Detected at the MDL

J = The concentration was detected at a value below the RL and above the MDL

C = Common Laboratory and/or Bottle Contaminant.

B = detected in laboratory blank

Dark shaded results exceed the UUSCO

Light shaded results exceed the SSCO

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT BASE SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-1	PEB-2	PEB-3	PEB-4	PEB-5	PEB-6	PEB-7	PEB-8	PEB-9	PEB-10	PEB-11	PEB-12	PEB-14
Sample Depth:	Part 375.6	Soil	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5
Lab ID:	UUSCO	Cleanup	00281-001	00281-004	00281-005	00526-003	00526-004	00526-005	01265-001	01265-002	01265-003	01265-004	01265-005	01265-006	01656-002
Date Sampled:	(Unrestricted)	Objective	1/7/10	1/8/10	1/8/10	1/15/10	1/15/10	1/15/10	2/5/10	2/5/10	2/5/10	2/5/10	2/5/10	2/5/10	2/18/10
Matrix:		(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatiles (ppm)			Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc
Acetone	0.05	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.05	10	ND	ND	ND	0.00333 C	0.00375 C	0.0036 C	ND	ND	ND	ND	ND	ND	0.068 B
Chloroform	0.37	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	0.06	4.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.47	21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	41	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.26	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.015	ND
Isopropylbenzene	2.3	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl acetate	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	3.6	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VO's:	NA	NA	ND	ND	ND	0.00333 C	0.00375 C	0.0036 C	ND	ND	ND	ND	ND	0.015	0.068 B
TOTAL TIC's:	NA	NA	ND	ND	ND	ND	0.220	ND	ND	ND	ND	0.940	0.468	5.26	5.28
TOTAL VO's & TIC's:	NA	NA	ND	ND	ND	0.00333 C	0.00375 C	0.224 C	ND	ND	ND	0.940	0.468	5.28	5.35 B
Semivolatiles - BNA (ppm)															
4-Methylphenol	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	0.124 J	0.323	0.323	1.08	0.413	2.51	0.211	0.322	1.18	0.434	3.61	1.31	0.320
2-Methylnaphthalene	NA	NA	0.079 J	0.275	0.250	0.427	0.213	0.922	0.127	0.141	0.567	0.204	1.29	0.692	0.197
1,1'-Biphenyl	(NA)	(NA)	ND	ND	ND	0.107 J	ND	ND	ND	ND	0.092 J	0.046 J	0.211 J	0.071 J	ND
Acenaphthylene	100	100	0.044 J	0.153 J	0.099 J	0.145 J	0.120	ND	0.028 J	0.033 J	0.261	0.091	0.250 J	0.149	0.057 J
Acenaphthene	20	100	0.343	0.740	1.25	0.823	0.558	1.20	0.331	0.114	0.859	0.549	2.24	0.522	0.495
Dibenzofuran	7	59	0.123 J	0.299	0.644	0.513	0.333	0.628	0.163	0.064 J	0.501	0.265	1.57	0.383	0.238
Fluorene	30	100	0.171	0.388	0.885	0.548	0.432	0.902	0.220	0.058 J	0.570	0.280	1.74	0.491	0.259
Phenanthrene	100	100	1.85	4.27	9.21	7.07	4.43	8.11	2.83	0.810	6.81	2.98	18.4	4.55	1.88
Anthracene	100	100	0.824	1.49	2.52	1.88	1.13	3.48	0.821	0.228	1.76	0.931	3.96	1.11	0.684
Carbazole	(NA)	(NA)	0.552	0.482	0.774	0.688	0.492	1.35	0.272	0.087	0.792	0.382	2.22	0.484	0.178
Di-n-butyl phthalate	NA	NA	ND	ND	ND	0.106 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	4.72	6.30	9.95	10.1	5.76	13.9	3.52	1.31	9.25	4.32	19.3	5.28	1.91
Pyrene	100	100	4.24	6.21	8.87	10.6	4.46	12.3	3.16	1.48	8.64	4.20	17.8	5.00	1.57
Benzo[a]anthracene	1	1	7.27	6.87	5.88	6.70	3.78	15.8	2.76	1.34	6.45	3.99	13.7	3.33	1.06
Chrysene	1	3.9	6.30	6.52	5.86	6.84	3.81	15.2	2.75	1.44	6.14	3.93	14.0	3.60	1.05
Bis(2-ethylhexyl) phthalate	NA	NA	ND	ND	1.06	0.123 J	0.153	ND	ND	ND	0.169	ND	ND	0.467	ND
Benzo[b]fluoranthene	1	1	8.05	8.06	5.99	6.30	4.03	18.7	3.11	1.64	6.73	6.38	17.4	3.38	0.900
Benzo[k]fluoranthene	0.8	1	6.99	8.04	5.20	6.08	3.90	15.5	2.72	1.73	6.34	4.45	12.0	2.94	0.719
Benzo[a]pyrene	1	1	11.7	12.9	8.57	9.52	5.93	27.2	4.28	2.68	9.99	8.91	23.0	4.66	1.15
Indeno[1,2,3-cd]pyrene	0.5	0.5	6.34	7.93	4.73	6.04	4.15	15.4	3.34	2.18	7.70	7.49	17.5	3.24	0.902
Dibenz[a,h]anthracene	0.33	0.33	2.99	3.33	1.88	2.44	1.38	7.06	1.24	0.787	2.70	3.01	4.91	1.05	0.287
Benzo[g,h,i]perylene	100	100	5.75	7.64	4.69	6.82	4.46	14.5	4.13	2.69	9.43	8.87	20.1	3.87	0.656
TOTAL BNA'S:	NA	NA	68.5	82.2	78.6	85.0	49.9	175	36.0	19.1	86.9	61.7	195	46.6	14.2
TOTAL TIC's:	NA	NA	23.5	31.5	23.7	29.6	16.2	55.6	14.1	4.62	30.1	24.7	62.0	28.8	29.5
TOTAL BN's & TIC's:	NA	NA	92.0	114	102	115	66.1	231	50.1	23.7	117	86.4	257	75.4	43.7
PCB's (ppm)															
Aroclor-1254	0.1	1	ND	ND	ND	ND	1.18	ND	ND	0.202	0.292	ND	0.758	ND	ND
Aroclor-1260	0.1	1	ND	ND	ND	ND									

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT BASE SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-1	PEB-2	PEB-3	PEB-4	PEB-5	PEB-6	PEB-7	PEB-8	PEB-9	PEB-10	PEB-11	PEB-12	PEB-14
Sample Depth:	Part 375.6	Soil	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5
Lab ID:	UUSCO	Cleanup	00281-001	00281-004	00281-005	00526-003	00526-004	00526-005	01265-001	01265-002	01265-003	01265-004	01265-005	01265-006	01656-002
Date Sampled:	(Unrestricted)	Objective	1/7/10	1/8/10	1/8/10	1/15/10	1/15/10	1/15/10	2/5/10	2/5/10	2/5/10	2/5/10	2/5/10	2/5/10	2/18/10
Matrix:		(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Pesticides (ppm)															
4,4'-DDE	0.0033	8.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.223	0.00301
4,4'-DDD	0.0033	13	ND	ND	ND	ND	ND	0.018	ND	ND	ND	ND	ND	0.530	0.00229
4,4'-DDT	0.0033	7.9	ND	ND	0.013	ND	ND	ND	ND	ND	ND	ND	ND	0.184	0.014
alpha-Chlordane	0.094	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals (ppm)															
Aluminum	(NA)	(NA)	6910	7140	7570	6770	9090	9130	7870	7980	7200	7140	7870	6320	11000
Antimony	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	13	16	9.88	13.1	12.1	10.2	7.30	10.4	3.34	7.27	6.67	5.98	11.1	13.5	8.35
Barium	350	400	109	146	754	180	180	98.4	81.3	122	126	76.3	280	335	124
Beryllium	7.2	72	0.362	0.458	0.478	0.375	0.666	0.543	0.328	0.437	0.374	0.337	0.438	0.427	0.627
Cadmium	2.5	4.3	ND	ND	1.08	0.297 J	0.265 J	0.331 J	ND	0.157 J	0.214 J	ND	0.798	1.45	ND
Calcium	(NA)	(NA)	7130	10500	11500	10300	13300	11900	4300	3860	6340	5380	14100	11800	6760
Chromium, trivalent	30	180	11.6	14.0	19.6	12.9	22.9	17.1	16.1	15.4	13.7	13.5	19.6	18.3	23.4
Cobalt	(NA)	NA	7.46	15.4	10.2	6.38	12.2	8.32	5.83	8.48	7.22	5.89	7.73	14.8	9.40
Copper	50	270	37.5	79.1	186	32.6	128	49.9	17.9	45.2	39.1	31.5	78.8	91.7	61.9
Iron	(NA)	(NA)	24700	50900	22000	19800	19400	29000	12300	17500	19300	16100	17400	18600	23800
Lead	63	1000	432	541	933	147	417	270	48.6	212	173	132	570	333	260
Magnesium	(NA)	(NA)	1650	1450	3060	2380	3200	2050	2830	2990	2350	2060	3190	4310	4920
Manganese	1600	2000	417	733	389	358	420	373	304	323	372	339	444	338	490
Mercury	0.18	0.81	0.934	0.096	2.11	0.094	0.840	1.11	0.904	0.305	1.77	0.582	5.90	2.35	0.957
Nickel	30	310	16.8	25.4	21.3	15.2	23.0	32.5	12.9	17.7	16.8	13.6	18.0	18.3	24.2
Potassium	(NA)	(NA)	897	736	976	1010	1300	995	1260	1640	1360	1140	1320	1090	2650
Selenium	3.9	180	ND	ND	ND	2.13 J	2.82	4.05	1.61 J	2.28 J	1.78 J	1.37 J	1.83 J	2.89	1.83 J
Silver	2	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.665	6.20	0.199 J
Sodium	(NA)	(NA)	205	218	288	211	317	348	175	179	229	216	328	302	325
Thallium	(NA)	(NA)	ND	ND	ND	0.247 J	ND	ND	ND	ND	ND	ND	0.159 J	0.151 J	0.250 J
Vanadium	(NA)	NA	19.0	28.6	30.4	21.5	23.1	24.5	17.8	22.6	21.8	17.8	22.1	48.4	31.3
Zinc	109	10000	86.2	125	1340	703	640	200	71.7	234	163	99.2	544	539	92.2
General Analytical															
Cyanide, Total-ppm	27	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Analyzed for but Not Detected at the MDL

J = The concentration was detected at a value below the RL and above the MDL

C = Common Laboratory and/or Bottle Contaminant.

B = detected in laboratory blank

Dark shaded results exceed the UUSCO

Light shaded results exceed the SSCO

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT BASE SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-15B-SW	PEB-16A	PEB-17	PEB-20	PEB-21	PEB-22	PEB-23	PEB-24A	PEB-24A	PEB-25	PEB-26	PEB-27	PEB-28	PEB-29
Sample Depth:	Part 375.6	Soil	7.5/8	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5
Lab ID:	UUSCO	Cleanup	03785-001	03436-004	02205-002	03366-001	03079-001	03079-002	02205-005	03366-002	03366-003	02205-007	03079-003	03079-004	02205-008	02205-009
Date Sampled:	(Unrestricted)	Objective	4/22/10	4/14/10	3/11/10	4/9/10	4/6/10	4/6/10	3/11/10	4/9/10	4/9/10	3/11/10	4/6/10	4/6/10	3/11/10	3/11/10
Matrix:		(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatiles (ppm)			Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc
Acetone	0.05	100	ND	ND	ND	ND	0.00946	ND	ND	ND	ND	ND	0.012	ND	0.023	ND
Carbon disulfide	(NA)	(NA)	ND	ND	ND	ND	0.00201	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.05	10	ND	ND	ND	ND	ND	ND	0.00505 C	ND	ND	ND	ND	ND	0.0038 C	0.017 C
Chloroform	0.37	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	0.06	4.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.47	21	ND	ND	ND	ND	ND	ND	0.0012	ND	ND	ND	ND	ND	0.00183	ND
Toluene	0.7	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	41	ND	ND	0.741	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	0.26	100	ND	ND	0.263	ND	ND	ND	ND	ND	ND	2.65	ND	ND	0.023	0.011 J
Isopropylbenzene	2.3	2.3	ND	ND	0.996	ND	ND	ND	ND	ND	ND	1.13	ND	ND	0.00422	0.024
Methyl acetate	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	3.6	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00572	ND
Methylcyclohexane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.21	ND	ND	0.016	ND
TOTAL VO's:	NA	NA	ND	ND	2.67	ND	0.012	ND	0.00625	ND	ND	5.97	0.012	ND	0.077	0.052
TOTAL TIC's:	NA	NA	ND	ND	245	ND	ND	ND	0.191	0.00968	0.00992	730	ND	ND	4.92	13.1
TOTAL VO's & TIC's:	NA	NA	ND	ND	248	ND	0.012	ND	0.197	0.00968	0.00992	736	0.012	ND	5.00	13.2
Semivolatiles - BNA (ppm)																
4-Methylphenol	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	ND	0.965	53.1	0.611	ND	0.199	0.860	ND	ND	0.576	ND	ND	9.29	0.924
2-Methylnaphthalene	NA	NA	ND	0.592 J	21.8	0.319 J	ND	0.199	0.350	ND	ND	0.270	ND	ND	3.30	0.341 J
1,1'-Biphenyl	(NA)	(NA)	ND	ND	6.49	0.344 J	ND	0.057 J	0.106 J	ND	ND	0.077	ND	ND	0.564	ND
Acenaphthylene	100	100	ND	0.322 J	ND	0.616	ND	ND	0.197	ND	ND	0.216	ND	ND	0.262 J	0.136 J
Acenaphthene	20	100	0.114	2.52	78.1	4.21	ND	0.909	1.15	ND	ND	0.392	ND	ND	4.79	0.846
Dibenzofuran	7	59	0.069 J	2.56	43.5	3.16	ND	0.522	0.781	ND	ND	0.296	ND	ND	3.38	0.432
Fluorene	30	100	0.096	2.42	59.0	3.31	ND	0.654	0.852	ND	ND	0.451	ND	ND	3.59	0.670
Phenanthrene	100	100	2.07	40.4	114	27.3	ND	5.61	7.52	0.676	0.401	4.29	ND	ND	10.9	2.47
Anthracene	100	100	0.452	7.83	41.8	5.45	ND	1.18	2.16	0.131	0.096	1.13	ND	ND	2.88	0.969
Carbazole	(NA)	(NA)	0.124	4.25	1.72	1.86	ND	0.557	0.825	ND	0.048 J	0.363	ND	ND	1.01	0.881
Di-n-butyl phthalate	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	2.17	37.1	46.4	27.8	ND	4.48	10.9	0.432	0.565	7.62	ND	ND	10.3	3.06
Pyrene	100	100	2.54	27.7	26.1	20.1	ND	3.53	7.66	0.407	0.460	3.87	ND	ND	5.51	2.02
Benzo[a]anthracene	1	1	1.24	15.9	7.48	10.5	ND	1.86	6.27	1.33	0.322	2.67	ND	ND	3.40	1.29
Chrysene	1	3.9	1.26	16.5	6.67	9.94	ND	1.79	5.66	1.15	0.306	2.67	ND	ND	3.32	1.29
Bis(2-ethylhexyl) phthalate	NA	NA	ND	1.05	ND	ND	ND	ND	ND	0.108	0.057 J	ND	ND	ND	0.568	1.06
Benzo[b]fluoranthene	1	1	0.766	11.1	5.99	9.49	ND	1.11	5.36	0.517	0.264	3.39	ND	ND	3.56	1.55
Benzo[k]fluoranthene	0.8	1	0.921	12.0	6.42	7.48	ND	1.19	5.50	0.249	0.204	3.25	ND	ND	2.59	1.27
Benzo[a]pyrene	1	1	1.19	15.3	7.28	10.4	ND	1.30	8.61	2.19	0.317	4.01	ND	ND	4.45	1.63
Indeno[1,2,3-cd]pyrene	0.5	0.5	0.692	4.44	ND	3.75	ND	0.476	2.76	0.258	0.126	1.20	ND	ND	2.09	1.03
Dibenz[a,h]anthracene	0.33	0.33	0.252	2.02	ND	1.35	ND	0.267	1.21	0.388	0.071 J	0.528	ND	ND	0.856	0.367 J
Benzo[g,h,i]perylene	100	100	0.855	4.44	ND	3.39	ND	0.509	2.64	0.302	0.141	1.10	ND	ND	2.17	1.13
TOTAL BNA'S:	NA	NA	14.8	209	531	151	ND	26.4	71.4	8.34	3.38	38.4	ND	ND	78.8	23.5
TOTAL TIC's:	NA	NA	0.645	29.8	232	45.4	ND	5.70	46.8	9.84	ND	111	ND	ND	587	598
TOTAL BN's & TIC's:	NA	NA	15.4	239	763	196	ND	32.1	118	18.2	3.38	149	ND	ND	666	622
PCB's (ppm)																
Aroclor-1254	0.1	1	ND	ND	ND	ND	ND	0.00294	ND	ND	ND	ND	ND	0.00313	ND	ND
Aroclor-1260	0.1	1	ND	0.00771	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT BASE SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-15B-SW	PEB-16A	PEB-17	PEB-20	PEB-21	PEB-22	PEB-23	PEB-24A	PEB-24A	PEB-25	PEB-26	PEB-27	PEB-28	PEB-29
Sample Depth:	Part 375.6	Soil	7.5/8	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5
Lab ID:	UUSCO	Cleanup	03785-001	03436-004	02205-002	03366-001	03079-001	03079-002	02205-005	03366-002	03366-003	02205-007	03079-003	03079-004	02205-008	02205-009
Date Sampled:	(Unrestricted)	Objective	4/22/10	4/14/10	3/11/10	4/9/10	4/6/10	4/6/10	3/11/10	4/9/10	4/9/10	3/11/10	4/6/10	4/6/10	3/11/10	3/11/10
Matrix:		(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Pesticides (ppm)																
4,4'-DDE	0.0033	8.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.242	ND	0.000579	0.032	0.154
4,4'-DDD	0.0033	13	ND	ND	0.015	ND	ND	ND	0.039	ND	ND	0.133	ND	0.0029	0.757	3.20
4,4'-DDT	0.0033	7.9	ND	7.013	0.026	ND	ND	ND	0.023	ND	ND	0.405	ND	0.000463	0.038	0.101
alpha-Chlordane	0.094	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals (ppm)																
Aluminum	(NA)	(NA)	6290	7100	11200	6960	8940	7080	11000	7090	7800	5340	9220	12800	10600	10200
Antimony	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	13	16	3.96	15.2	10.9	14.7	3.01	3.07	8.27	12.1	17.5	7.37	2.87	3.70	10.0	9.49
Barium	350	400	109	220	215	176	21.2	43.2	437	425	256	433	21.4	37.9	625	577
Beryllium	7.2	72	0.362	0.478	0.577	0.514	0.308 J	0.303	0.662	0.441	0.455	0.410	0.361	0.477	0.570	0.804
Cadmium	2.5	4.3	ND	0.586	0.484	1.38	ND	ND	0.460	1.97	1.21	0.761	ND	ND	1.03	0.824
Calcium	(NA)	(NA)	2310	20400	13000	16900	458	779	7730	7450	15000	10600	479	773	19900	14700
Chromium, trivalent	30	180	13.4	17.6	25.7	15.6	12.2	10.7	35.1	14.7	18.6	14.3	12.8	16.8	39.1	34.1
Cobalt	(NA)	NA	5.12	7.55	9.80	6.33	4.85	5.25	8.25	8.17	6.95	5.19	5.73	9.42	10.1	10.3
Copper	50	270	30.9	76.1	92.3	95.1	263	25.7	421	54.9	133	42.1	139	14.7	125	278
Iron	(NA)	(NA)	9890	17400	22200	16500	13900	13500	21500	15600	26800	13600	13500	18000	21800	18200
Lead	63	1000	172	657	467	342	6.22	75.3	753	290	385	233	6.10	9.27	449	364
Magnesium	(NA)	(NA)	2220	4530	4520	1770	2770	2130	3250	2670	2320	2690	2750	3350	4340	4320
Manganese	1600	2000	265	424	410	844	95.0	104	397	405	802	251	99.0	133	531	345
Mercury	0.18	0.81	1.25	2.52	1.56	1.21	0.015 J	0.160	1.50	1.11	1.01	3.09	0.018	0.068	3.01	1.98
Nickel	30	310	13.4	16.5	32.3	16.2	14.1	18.2	20.0	17.3	18.3	14.5	15.4	20.3	25.8	26.2
Potassium	(NA)	(NA)	909	1300	1670	995	1040	859	1590	1230	1040	781	1080	1160	1620	1670
Selenium	3.9	180	ND	1.66 J	2.79	1.48 J	ND	ND	2.89	1.69 J	1.95 J	2.19 J	ND	2.61	3.94	3.79
Silver	2	180	ND	2.23	0.898	0.282 J	ND	ND	0.174 J	1.12	0.630	ND	ND	ND	0.769	1.26
Sodium	(NA)	(NA)	186	380	439	575	389	80.6 J	415	168	664	205	394	137	468	428
Thallium	(NA)	(NA)	ND	0.229 J	ND	0.215 J	ND	ND	ND	ND	0.196 J	ND	ND	ND	ND	0.164 J
Vanadium	(NA)	NA	15.4	26.2	66.4	20.0	14.8	15.0	30.1	21.5	24.8	19.8	16.0	19.7	33.5	30.5
Zinc	109	10000	111	476	230	413	32.8	81.6	234	183	327	318	36.9	54.6	444	560
General Analytical																
Cyanide, Total-ppm	27	27	ND	1.39	2.01	1.98	2.11	12.3	4.11	ND	1.02 J	1.77	2.49	ND	4.22	1.65

ND = Analyzed for but Not Detected at the MDL
J = The concentration was detected at a value below the RL and above the MDL
C = Common Laboratory and/or Bottle Contaminant.
B = detected in laboratory blank
Dark shaded results exceed the UUSCO
Light shaded results exceed the SSCO

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT BASE SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-30	PEB-31	PEB-32	PEB-33	PEB-34	PEB-35	PEB-36	PEB-37	PEB-38	PEB-39	PEB-40	PEB-41	PEB-42
Sample Depth:	Part 375.6	Soil	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5
Lab ID:	UUSCO	Cleanup	02205-010	03079-005	03079-006	03079-007	03079-008	03079-009	06659-001	06659-002	06659-003	06659-004	06659-005	06659-006	06659-007
Date Sampled:	(Unrestricted)	Objective	3/11/10	4/6/10	4/6/10	4/6/10	4/6/10	4/6/10	7/8/10	7/8/10	7/8/10	7/8/10	7/8/10	7/8/10	7/8/10
Matrix:		(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatiles (ppm)			Conc	Conc	Conc	Conc	Conc	Conc							
Acetone	0.05	100	0.007	0.044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.05	10	0.00605 C	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.37	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	0.06	4.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.47	21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	19	0.00201	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1	41	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.886	ND	ND	ND
Total Xylenes	0.26	100	ND	ND	ND	ND	ND	ND	ND	ND	1.69	3.61	ND	0.00394 J	ND
Isopropylbenzene	2.3	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.08	3.79	ND	ND
Methyl acetate	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.13	ND	ND	ND
1,2,4-Trichlorobenzene	3.6	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	2.69	ND	ND	0.011	ND
Methylcyclohexane	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VO's:	NA	NA	0.015	0.044	ND	ND	ND	ND	ND	ND	4.08	7.91	3.79	0.014	ND
TOTAL TIC's:	NA	NA	ND	ND	ND	0.075	ND	ND	2.11	ND	1130	932	1340	4.23	257
TOTAL VO's & TIC's:	NA	NA	0.015	0.044	ND	0.075	ND	ND	2.11	ND	1130	940	1340	4.24	257
Semivolatiles - BNA (ppm)															
4-Methylphenol	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	0.600	ND	ND	ND	0.131	ND	0.938	0.898	1.04	1.56	1.11	0.874	12.5
2-Methylnaphthalene	NA	NA	0.192	ND	ND	ND	0.081	ND	0.250	0.265	0.181	1.10	0.362	0.272	11.5
1,1'-Biphenyl	(NA)	(NA)	ND	ND	ND	ND	ND	ND	0.043 J	ND	ND	0.128	ND	0.086	3.94
Acenaphthylene	100	100	0.052 J	ND	ND	ND	0.120	ND	0.138	0.112 J	0.041 J	0.097	0.405	0.054 J	0.546
Acenaphthene	20	100	0.269	ND	ND	ND	0.302	ND	0.552	0.667	0.812	1.64	4.78	2.44	21.0
Dibenzofuran	7	59	0.108	ND	ND	ND	0.183	ND	0.299	0.303	0.314	1.25	1.14	1.61	15.5
Fluorene	30	100	0.181	0.048 J	ND	ND	0.215	ND	0.376	0.412	0.430	1.36	4.14	1.82	16.5
Phenanthrene	100	100	1.45	ND	0.112	0.199	3.47	ND	3.39	3.46	2.19	5.35	15.4	4.12	45.3
Anthracene	100	100	0.554	ND	ND	0.047 J	0.640	ND	1.03	1.74	0.889	1.10	5.70	1.30	9.69
Carbazole	(NA)	(NA)	0.143	ND	ND	ND	0.277	ND	0.425	0.601	0.404	0.372	ND	0.327	2.26
Di-n-butyl phthalate	NA	NA	ND	ND	ND	ND	ND	ND	0.041 J	ND	ND	ND	ND	ND	ND
Fluoranthene	100	100	2.17	ND	0.050 J	0.316	4.13	ND	5.09	7.64	4.16	3.33	15.9	2.64	20.4
Pyrene	100	100	1.48	ND	0.072 J	0.321	3.66	ND	4.28	6.48	3.20	2.23	17.5	1.74	14.4
Benzo[a]anthracene	1	1	1.19	ND	0.218	0.191	1.65	ND	3.28	11.1	4.40	1.23	12.3	0.885	4.76
Chrysene	1	3.9	1.19	ND	0.262	0.222	1.63	ND	2.98	9.93	3.96	1.17	11.7	0.837	4.03
Bis(2-ethylhexyl) phthalate	NA	NA	4.00	ND	ND	ND	ND	ND	ND	ND	ND	0.641	0.668	ND	ND
Benzo[b]fluoranthene	1	1	1.65	ND	0.053 J	0.128	1.42	ND	4.35	17.1	6.64	0.897	12.8	0.775	3.97
Benzo[k]fluoranthene	0.8	1	1.14	ND	0.053 J	0.161	1.27	ND	2.80	7.51	3.81	0.562	7.00	0.705	2.61
Benzo[a]pyrene	1	1	2.00	ND	0.161	0.199	1.57	ND	4.95	17.2	7.78	1.43	13.5	1.11	4.99
Indeno[1,2,3-cd]pyrene	0.5	0.5	1.00	ND	ND	0.093	0.676	ND	4.57	10.4	5.30	0.629	7.99	0.796	3.87
Dibenz[a,h]anthracene	0.33	0.33	0.538	ND	ND	0.036 J	0.253	ND	1.98	4.47	2.20	0.328	2.84	0.247	1.40
Benzo[g,h,i]perylene	100	100	1.10	ND	ND	0.141	0.784	ND	4.51	9.01	5.04	0.621	7.19	0.724	3.54
TOTAL BNA'S:	NA	NA	21.0	0.048 J	0.981	2.05	22.8	ND	46.3	109	52.8	27.0	142	23.4	211
TOTAL TIC's:	NA	NA	99.5	ND	1.59	ND	2.96	ND	33.1	34.7	40.8	123	195	64.8	184
TOTAL BN's & TIC's:	NA	NA	121	0.048 J	2.57	2.05	25.8	ND	79.4	144	93.6	150	337	88.2	395
PCB's (ppm)															
Aroclor-1254	0.1	1	ND	ND	0.033	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor-1260	0.1	1	ND	ND	ND	ND	ND	ND	1.16	ND	ND	ND	ND	ND	ND

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT BASE SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-30	PEB-31	PEB-32	PEB-33	PEB-34	PEB-35	PEB-36	PEB-37	PEB-38	PEB-39	PEB-40	PEB-41	PEB-42
Sample Depth:	Part 375.6	Soil	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5
Lab ID:	UUSCO	Cleanup	02205-010	03079-005	03079-006	03079-007	03079-008	03079-009	06659-001	06659-002	06659-003	06659-004	06659-005	06659-006	06659-007
Date Sampled:	(Unrestricted)	Objective	3/11/10	4/6/10	4/6/10	4/6/10	4/6/10	4/6/10	7/8/10	7/8/10	7/8/10	7/8/10	7/8/10	7/8/10	7/8/10
Matrix:		(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Pesticides (ppm)															
4,4'-DDE	0.0033	8.9	0.212	ND	0.00364	ND	ND	ND	ND	ND	ND	0.057	ND	ND	ND
4,4'-DDD	0.0033	13	7.81	ND	0.010	ND	ND	ND	ND	ND	ND	0.370	0.083	0.018	0.029
4,4'-DDT	0.0033	7.9	ND	ND	0.00716	ND	ND	ND	ND	ND	ND	0.032	ND	ND	ND
alpha-Chlordane	0.094	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals (ppm)															
Aluminum	(NA)	(NA)	7340	7690	13100	6820	6870	7190	7360	6970	11300	6960	8220	7920	9500
Antimony	(NA)	(NA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.369 J	ND	ND
Arsenic	13	16	9.16	2.78	3.95	7.94	5.32	104	7.72	7.40	2.90	20.2	10.3	3.43	38.5
Barium	350	400	143	26.5	40.2	87.4	102	28.0	336	80.1	99.0	224	460	103	428
Beryllium	7.2	72	0.532	0.368	0.535	0.299 J	0.316	0.303	0.486	0.438	0.678	0.443	0.754	0.356	0.519
Cadmium	2.5	4.3	0.256 J	ND	ND	ND	0.317	ND	0.652	ND	ND	0.493	0.952	0.255 J	0.387
Calcium	(NA)	(NA)	14000	974	874	1310	5000	570	22500	4600	2630	13700	16800	59000	8620
Chromium, trivalent	30	180	18.7	10.9	16.4	10.4	11.3	10.6	21.6	13.7	20.8	14.1	21.1	14.4	23.2
Cobalt	(NA)	NA	9.78	7.21	9.07	7.09	6.70	4.89	7.49	9.43	7.44	5.93	9.01	5.17	8.49
Copper	50	270	74.1	11.9	20.8	20.9	52.4	105	663	47.3	20.7	653	311	47.8	575
Iron	(NA)	(NA)	20400	14800	17900	17600	15200	13600	15100	32900	13900	13700	26700	15400	18200
Lead	63	1000	428	5.51	14.9	67.1	266	6.10	503	493	136	278	1010	173	725
Magnesium	(NA)	(NA)	2330	2690	3290	1950	2710	2240	3690	1920	2690	2730	3130	5170	3560
Manganese	1600	2000	222	297	125	301	428	137	447	292	142	224	531	241	387
Mercury	0.18	0.81	6.12	0.011 J	0.084	0.595	0.355	0.128	4.55	0.279	0.253	8.83	8.68	2.07	3.62
Nickel	30	310	28.1	13.5	28.2	14.1	12.6	22.5	15.5	18.7	19.0	32.7	23.1	10.4	127
Potassium	(NA)	(NA)	1060	1010	1160	644	693	801	1230	1050	1280	975	1350	1380	1750
Selenium	3.9	180	2.62 J	ND	3.22	1.28 J	ND	1.58 J	1.45 J	1.84 J	1.47 J	1.97 J	2.93	ND	1.90 J
Silver	2	180	ND	ND	ND	ND	0.155 J	ND	0.408 J	ND	ND	0.263 J	0.226 J	ND	ND
Sodium	(NA)	(NA)	410	102 J	159	66.0 J	98.3 J	115 J	386	305	268	440	582	526	658
Thallium	(NA)	(NA)	ND	ND	ND	ND	ND	ND	0.148 J	0.173 J	ND	ND	0.260 J	ND	0.196 J
Vanadium	(NA)	NA	22.2	14.6	19.3	14.7	15.0	13.8	25.3	22.8	24.8	22.9	29.8	22.4	27.7
Zinc	109	10000	182	36.8	84.0	93.1	247	102	459	58.4	50.1	695	541	103	1420
General Analytical															
Cyanide, Total-ppm	27	27	1.86	ND	ND	ND	ND	ND	ND	3.95	ND	10.1	3.99	ND	7.37

ND = Analyzed for but Not Detected at the MDL
J = The concentration was detected at a value below the RL and above the MDL
C = Common Laboratory and/or Bottle Contaminant.
B = detected in laboratory blank
Dark shaded results exceed the UUSCO
Light shaded results exceed the SSCO

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT PERCHED UNIT SOIL DATA

Sample ID:	Site Specific	PEB-15B-BASE	M-1-PX	PEB-VV-N1	PEB-VV-S1	PEB-VV-S2	VV-BASE A	PEB-VV-W1	PEB-VV-E2	TW-4-1	TW-4-2	TW-4-3	TW-4-4	TW-4-5
Sample Depth:	Soil	8/8.5	10/10.5	11.5/12.5	15.5/16	15.5/16	16/17	15/15.5	12.5/13	9.5/10	9/10'	9/10'	9/10'	9.5/10
Lab ID:	Cleanup	03785-002	01849-002	02164-003	02164-007	02164-008	02380-001	03080-001	03080-002	09490-001	09490-002	09490-003	09490-004	09490-005
Date Sampled:	Objective	4/22/10	2/24/10	3/10/10*	3/10/10^	3/10/10^	3/16/10	4/6/10	4/6/10	09/22/2010	09/22/2010	09/22/2010	09/22/2010	09/22/2010
Matrix:	(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatiles (ppm)		Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc
Acetone	0.05	ND	ND	ND	ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND
Carbon disulfide	NA	ND	ND	ND	ND	0.00239	ND	ND	0.00952	ND	ND	ND	ND	ND
Methylene chloride	0.05	ND	0.010 B	ND	ND	0.00597 C	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	49	ND	0.00721	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1.3	ND	0.00235	ND	ND	ND	ND	ND	0.00367	ND	ND	ND	ND	ND
Ethylbenzene	1	ND	ND	ND	ND	ND	ND	ND	0.00274	ND	ND	ND	ND	ND
Total Xylenes	1.6	ND	ND	ND	ND	ND	ND	ND	0.00403 J	ND	ND	ND	ND	ND
Isopropylbenzene	2.3	ND	ND	0.313	ND	ND	ND	0.107	0.00896	2.61	3.69	ND	0.5	ND
Cyclohexane	NA	ND	ND	1.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	NA	ND	ND	2.18	ND	ND	ND	0.164	ND	ND	ND	ND	ND	ND
TOTAL VO's:	NA	ND	0.020	3.69	ND	0.00836 C	ND	0.271	0.051	28.1	8.65	ND	4.25	ND
TOTAL TIC's:	NA	ND	ND	43.9	ND	1.35	28.2	33.4	0.951	2710	977	707	1170	1120
TOTAL VO's & TIC's:	NA	ND	0.020	47.6	ND	1.36	28.2	33.7	1.00	2740	986	707	1170	1120
Semivolatiles - BNA (ppm)														
Naphthalene	12	ND	ND	0.918	ND	0.601	0.124	0.303	0.088	~	~	~	~	~
2-Methylnaphthalene	NA	ND	ND	0.084 J	ND	ND	0.060 J	0.172	0.052 J	~	~	~	~	~
1,1'-Biphenyl	NA	ND	ND	0.021 J	ND	ND	ND	ND	ND	~	~	~	~	~
Acenaphthylene	107	ND	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~
Acenaphthene	98	0.043 J	ND	2.58	ND	1.89	0.148	0.321	0.201	~	~	~	~	~
Dibenzofuran	210	ND	ND	0.327	ND	ND	0.073	0.153	ND	~	~	~	~	~
Fluorene	386	0.030 J	ND	0.723	ND	0.594	0.121	0.222	0.072 J	~	~	~	~	~
Phenanthrene	1000	0.649	ND	0.679	ND	2.10	0.437	0.803	0.090	~	~	~	~	~
Anthracene	1000	0.155	ND	0.430	ND	0.873	0.152	0.264	ND	~	~	~	~	~
Carbazole	NA	0.056 J	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~
Di-n-butyl phthalate	NA	ND	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~
Fluoranthene	1000	0.984	ND	1.92	ND	2.62	0.445	0.677	0.038 J	~	~	~	~	~
Pyrene	1000	1.15	ND	1.32	ND	2.75	0.438	0.623	0.040 J	~	~	~	~	~
Benzo[a]anthracene	1	0.693	ND	1.57	ND	2.10	0.167	0.229	ND	~	~	~	~	~
Chrysene	1	0.703	ND	1.54	ND	3.57	0.208	0.220	ND	~	~	~	~	~
Bis(2-ethylhexyl) phthalate	NA	ND	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~
Benzo[b]fluoranthene	1.7	0.521	ND	2.35	ND	1.86	0.125	0.145	ND	~	~	~	~	~
Benzo[k]fluoranthene	1.7	0.570	ND	2.24	ND	1.08	0.147	0.139	ND	~	~	~	~	~
Benzo[a]pyrene	22	0.746	ND	3.12	ND	2.08	0.170	0.148	ND	~	~	~	~	~
Indeno[1,2,3-cd]pyrene	8.2	0.441	ND	1.44	ND	0.492 J	0.112	0.072 J	ND	~	~	~	~	~
Dibenz[a,h]anthracene	1000	0.184	ND	0.832	ND	ND	0.031 J	0.056 J	ND	~	~	~	~	~
Benzo[g,h,i]perylene	1000	0.497	ND	1.49	ND	0.946	0.132	0.076 J	ND	~	~	~	~	~
TOTAL BNA'S:	NA	7.42	ND	23.5	ND	25.6	3.09	4.62	0.581	~	~	~	~	~
TOTAL TIC's:	NA	0.415	2.49	41.8	0.366	335	59.8	125	1.91	~	~	~	~	~
TOTAL BN's & TIC's:	NA	7.84	2.49	65.3	0.366	361	62.9	130	2.49	~	~	~	~	~
PCB's (ppm)	3.2	ND	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~
Pesticides (ppm)										~	~	~	~	~
4,4'-DDE	17	ND	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~
4,4'-DDD	14	ND	0.00943	ND	ND	ND	0.012	ND	ND	~	~	~	~	~
4,4'-DDT	136	ND	0.019	ND	ND	ND	ND	ND	ND	~	~	~	~	~
alpha-Chlordane	2.9	ND	0.010	ND	ND	ND	ND	ND	ND	~	~	~	~	~
gamma-Chlordane	(NA)	ND	0.057	ND	ND	ND	ND	ND	ND	~	~	~	~	~

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT PERCHED UNIT SOIL DATA

Sample ID:	Site Specific	PEB-15B-BASE	M-1-PX	PEB-VV-N1	PEB-VV-S1	PEB-VV-S2	VV-BASE A	PEB-VV-W1	PEB-VV-E2	TW-4-1	TW-4-2	TW-4-3	TW-4-4	TW-4-5
Sample Depth:	Soil	8/8.5	10/10.5	11.5/12.5	15.5/16	15.5/16	16/17	15/15.5	12.5/13	9.5/10	9/10'	9/10'	9/10'	9.5/10
Lab ID:	Cleanup	03785-002	01849-002	02164-003	02164-007	02164-008	02380-001	03080-001	03080-002	09490-001	09490-002	09490-003	09490-004	09490-005
Date Sampled:	Objective	4/22/10	2/24/10	3/10/10*	3/10/10*	3/10/10*	3/16/10	4/6/10	4/6/10	09/22/2010	09/22/2010	09/22/2010	09/22/2010	09/22/2010
Matrix:	(SSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals (ppm)										~	~	~	~	~
Aluminum	NA	5970	1640	15700	11800	29500	5940	9140	7500	~	~	~	~	~
Antimony	NA	ND	1.83	ND	ND	ND	ND	ND	ND	~	~	~	~	~
Arsenic	16	3.23	1.55	10.3	1.46	15.5	1.61	0.520 J	0.425 J	~	~	~	~	~
Barium	820	60.0	299	103	29.0	97.1	85.3	26.9	4.92 J	~	~	~	~	~
Beryllium	47	0.343	ND	0.761	ND	1.15	ND	ND	ND	~	~	~	~	~
Cadmium	7.5	ND	2.32	ND	ND	ND	0.657	ND	ND	~	~	~	~	~
Calcium	NA	2360	6620	7030	2950	6410	36600	561	1560	~	~	~	~	~
Chromium	NA	11.5	25.5	26.8	10.6	43.1	12.3	7.74	7.19	~	~	~	~	~
Cobalt	NA	5.11	3.59	15.0	1.21 J	16.4	2.62	1.14 J	1.15 J	~	~	~	~	~
Copper	1720	23.5	974	138	ND	108	12.1	0.854 J	ND	~	~	~	~	~
Iron	NA	9600	4610	39300	6110	41200	8280	5180	3720	~	~	~	~	~
Lead	450	132	412	226	4.86	267	141	5.18	3.45	~	~	~	~	~
Magnesium	NA	2270	631	4320	1490	7270	2700	1300	1490	~	~	~	~	~
Manganese	2000	328	64.1	683	58.1	428	151	28.4	21.9	~	~	~	~	~
Mercury	0.73	0.370	0.243	0.338	0.056	0.452	0.221	0.025	0.047	~	~	~	~	~
Nickel	130	10.8	20.9	29.0	3.61	38.3	7.10	3.87	3.45	~	~	~	~	~
Potassium	NA	813	194	2180	833	4010	694	706	333	~	~	~	~	~
Selenium	4	ND	ND	3.95	1.61 J	5.3	ND	ND	ND	~	~	~	~	~
Silver	8.3	ND	1.08	ND	ND	0.343 J	ND	ND	ND	~	~	~	~	~
Sodium	NA	120	62.1 J	486	607	1570	306	242	213	~	~	~	~	~
Thallium	NA	ND	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~
Vanadium	NA	14.7	4.35	39.8	13.0	59.1	9.89	8.55	8.51	~	~	~	~	~
Zinc	2480	88.1	714	123	3.95	173	579	5.72	7.39	~	~	~	~	~
General Analytical										~	~	~	~	~
Cyanide, Total-ppm	40	ND	ND	ND	ND	ND	ND	ND	ND	~	~	~	~	~

ND = Analyzed for but Not Detected at the MDL

J = The concentration was detected at a value below the RL and above the MDL

C = Common Laboratory and/or Bottle Contaminant.

Dark Shaded highlighted results collected in the water table exceed the SSCO

TABLE 2
POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH
END POINT VARNOLINE VAULT AND ISOLATED EXCAVATION SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-VV-E1	PEB-VV-N1	PEB-VV-N2	PEB-VV-W2	PEB-VV-S1	PEB-VV-S2	PEB-16A	PEB-16A-B	PEB-16A-N	PEB-16A-E	PEB-16A-S	PEB-16A-W	PES-1-B	PES-1-E	PES-1-W	PES-1-N2	PEB-13-N	PEB-13-E	PEB-13-S	PEB-13-W	PEB-13-B
Sample Depth:	Part 375.6	Soil	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8
Lab ID:	UUSCO	Cleanup	02163-001	02163-003	02163-004	02163-006	02163-007	02163-008	03436-004	06765-010	06765-011	06765-012	06765-013	06765-014	06765-001	06765-003	06765-004	06769-047	06765-005	06765-006	06765-007	06765-008	06765-009
Date Sampled:		Objective	3/9/10	3/9/10	3/9/10	3/9/10	3/9/10	3/9/10	4/14/10	7/12/10	7/12/10	7/12/10	7/12/10	7/12/10	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010
Matrix:		(SSSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatiles (ppm)			Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc
Acetone	0.05	100	ND	ND	ND	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Carbon disulfide	(NA)	(NA)	ND	ND	ND	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Methylene chloride	0.05	10	ND	ND	ND	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Toluene	0.7	100	ND	ND	0.455	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Tetrachloroethene	1.3	19	ND	ND	ND	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Ethylbenzene	1	41	ND	ND	1.67	3.26	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Total Xylenes	0.26	100	ND	0.775	20.1	16.6	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Isopropylbenzene	2.3	2.3	0.336	0.499	5.70	7.46	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Cyclohexane	(NA)	(NA)	ND	ND	ND	1.92	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Methylcyclohexane	(NA)	(NA)	0.404	1.11	5.29	6.69	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
TOTAL VO's:	NA	NA	0.740	2.38	33.4	35.9	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
TOTAL TIC's:	NA	NA	111	179	554	954	271	491	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
TOTAL VO's & TIC's:	NA	NA	112	181	587	990	271	491	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Semivolatiles - BNA (ppm)																							
Naphthalene	12	100	10.2	11.1	6.47	7.92	0.734	1.79	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
2-Methylnaphthalene	(NA)	NA	6.08	8.57	2.05	2.71	0.239	0.475	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
1,1'-Biphenyl	(NA)	(NA)	0.453	0.322	0.243	0.536	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Acenaphthylene	100	100	0.261 J	0.380	0.209	0.316	0.087 J	0.073 J	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Acenaphthene	20	100	23	8.38	5.69	8.82	0.999	3.85	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Dibenzofuran	7	59	19.6	4.09	2.86	4.09	0.581	2.00	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Fluorene	30	100	17.9	6.30	3.83	6.69	0.683	1.99	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Phenanthrene	100	100	37.4	16.1	7.45	18.8	1.32	3.88	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Anthracene	100	100	9.26	4.18	3.42	5.20	0.635	1.70	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Carbazole	(NA)	(NA)	1.81	1.10	0.752	1.57	0.193	0.392	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Di-n-butyl phthalate	(NA)	NA	0.179 J	ND	ND	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Fluoranthene	100	100	13.7	10.7	5.99	11.5	2.10	4.12	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Pyrene	100	100	9.91	8.56	6.86	13.8	1.73	3.01	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Benzo[a]anthracene	1	1	3.60	5.40	3.93	6.71	1.11	1.18	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Chrysene	1	3.9	3.42	5.58	3.72	6.35	1.15	1.13	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Bis(2-ethylhexyl) phthalate	NA	NA	0.192 J	0.578	ND	ND	0.111	0.145	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Benzo[b]fluoranthene	1	1	4.05	5.63	5.16	6.88	1.45	1.27	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Benzo[k]fluoranthene	0.8	1	2.87	5.56	3.28	5.32	1.25	0.997	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Benzo[a]pyrene	1	1	4.93	8.96	6.40	9.14	1.74	1.61	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Indeno[1,2,3-cd]pyrene	0.5	0.5	2.78	4.53	3.68	3.78	0.981	0.902	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Dibenz[a,h]anthracene	0.33	0.33	1.24	2.61	1.96	2.17	0.345	0.384	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Benzo[g,h,i]perylene	100	100	3.07	5.14	4.16	3.79	1.02	0.920	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
TOTAL BNA'S:	NA	NA	179	124	78.1	126	18.5	31.8	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
TOTAL TIC's:	NA	NA	163	294	137	228	120	306	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
TOTAL BN's & TIC's:	NA	NA	342	418	215	354	139	338	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
PCB's (ppm)	0.1	1	ND	ND	ND	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Pesticides (ppm)																							
4,4'-DDE	0.0033	8.9	0.037	0.074	ND	0.040	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
4,4'-DDD	0.0033	13	0.478	0.188	0.191	0.468	0.039	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
4,4'-DDT	0.0033	7.9	0.017	ND	ND	ND	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~

TABLE 2

POST-REMEDIAL SOIL EXCEEDANCES OF THE SCO (UNRESTRICTED AND RESTRICTED RESIDENTIAL) BY COMPOUND AND DEPTH

END POINT VARNOLINE VAULT AND ISOLATED EXCAVATION SOIL DATA

Sample ID:	NYSDEC	Site Specific	PEB-VV-E1	PEB-VV-N1	PEB-VV-N2	PEB-VV-W2	PEB-VV-S1	PEB-VV-S2	PEB-16A	PEB-16A-B	PEB-16A-N	PEB-16A-E	PEB-16A-S	PEB-16A-W	PES-1-B	PES-1-E	PES-1-W	PES-1-N2	PEB-13-N	PEB-13-E	PEB-13-S	PEB-13-W	PEB-13-B
Sample Depth:	Part 375.6	Soil	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7/7.5	7.5/8
Lab ID:	UUSCO	Cleanup	02163-001	02163-003	02163-004	02163-006	02163-007	02163-008	03436-004	06765-010	06765-011	06765-012	06765-013	06765-014	06765-001	06765-003	06765-004	06769-047	06765-005	06765-006	06765-007	06765-008	06765-009
Date Sampled:		Objective	3/9/10	3/9/10	3/9/10	3/9/10	3/9/10	3/9/10	4/14/10	7/12/10	7/12/10	7/12/10	7/12/10	7/12/10	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010	07/12/2010
Matrix:		(SSSCO)	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals (ppm)									~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Aluminum	(NA)	(NA)	13900	9360	10100	8640	8480	9970	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Arsenic	13	16	18.9	7.97	7.18	11.1	13.5	14.7	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Barium	350	400	158	322	277	507	804	197	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Beryllium	7.2	72	0.497	0.396	0.427	0.420	0.486	0.509	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Cadmium	2.5	4.3	0.722	0.593	0.580	0.798	2.01	0.238 J	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Calcium	(NA)	(NA)	19300	11000	19300	23300	24400	22100	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Chromium	30	110	25.5	27.5	26.7	806	24.6	19.8	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Cobalt	(NA)	NA	23.7	7.63	10.6	11.8	8.40	11.0	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Copper	50	270	148	68.8	61.2	145	119	60.7	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Iron	(NA)	(NA)	38100	17600	27400	24300	24400	25300	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Lead	63	1000	216	284	199	631	549	419	627	806	29.3	30.5	189	1050	904	859	286	215	100	43.6	406	146	213
Magnesium	(NA)	(NA)	4810	3200	3460	3550	3360	3640	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Manganese	1600	2000	513	415	301	583	1290	391	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Mercury	0.18	0.81	0.421	2.16	2.28	2.15	2.62	0.827	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Nickel	30	310	29.4	19.9	28.3	19.9	21.9	24.5	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Potassium	(NA)	(NA)	1830	1350	1400	1370	1150	1570	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Selenium	3.9	180	3.00	3.06	2.71	2.73 J	3.15	3.89	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Silver	2	180	0.254 J	0.169 J	0.225 J	0.302 J	0.182 J	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Sodium	(NA)	(NA)	513	416	388	363	416	387	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Thallium	(NA)	(NA)	0.184 J	ND	ND	ND	0.166 J	0.205 J	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Vanadium	(NA)	NA	40.2	29.2	23.5	25.2	28.5	28.0	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Zinc	109	10000	569	255	247	514	828	145	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
General Analytical									~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Cyanide, Total-ppm	27	27	ND	ND	ND	1.54	ND	ND	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~

ND = Analyzed for but Not Detected at the MDL

J = The concentration was detected at a value below the RL and above the MDL

C = Common Laboratory and/or Bottle Contaminant.

Dark shaded results exceed the UUSCO

Light shaded results exceed the SSSCO

TABLE 3
POST -REMEDIAL GROUND WATER EXCEEDANCES OF THE NYSDEC WATER QUALITY STANDARDS

Sample ID:	TOGS 1.1.1	TW-2	TW-3	FB	TB	TW1	TW-4	FIELD BLANK	TRIP BLANK	TW-4-1	TW-4-2	TW-4-3	TW-4-4	FB	TB
Sample Depth:	GW STANDARDS														
Lab ID:	GA CLASS	09009-001	09009-002	09009-003	09009-004	09249-001	09249-002	09249-003	09249-004	09551-001	09551-002	09551-003	09551-004	09551-005	09551-006
Date Sampled:		09/09/2010	09/09/2010	09/09/2010	09/09/2010	09/15/2010	09/15/2010	09/15/2010	09/15/2010	09/23/2010	09/23/2010	09/23/2010	09/23/2010	09/23/2010	09/23/2010
Matrix:	(ppb)	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous
Volatiles (ppb)		Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc	Conc
Chloromethane	(NA)	ND	ND	ND	ND	ND	6.79	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	50	ND	ND	ND	ND	33	**705**	ND	ND	**144**	**142**	6.66	**93.0**	ND	ND
Methyl Tert-butyl ether (MTBE)	10*	ND	ND	ND	ND	4.2	ND	ND	ND	1.84	0.951 J	ND	0.608 J	ND	ND
cis-1,2-Dichloroethene	5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.72	ND	ND
2-Butanone (MEK)	50	1.15	1.24	ND	ND	4.47	**101**	ND	ND	20.2	17.6	ND	12.1	ND	ND
Benzene	1	ND	0.251 J	ND	ND	0.834 J	**6.39**	ND	ND	ND	ND	ND	**2.01**	ND	ND
4-Methyl-2-pentanone	(NA)	ND	ND	ND	ND	0.452 J	2.52 J	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5**	0.727 J	0.402 J	ND	ND	0.714 J	4.37	ND	ND	1.15	1.16	**11.2**	**5.26**	ND	ND
Tetrachloroethene	5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.831 J	ND	ND	ND
Chlorobenzene	5**	1.74	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5**	ND	ND	ND	ND	0.499 J	ND	ND	ND	ND	ND	0.495 J	1.46	ND	ND
Total Xylenes	5**	ND	1.25 J	ND	ND	3.55	**12.6**	ND	ND	2.12	2.03	0.803 J	3.22	ND	ND
Isopropylbenzene	5**	2.28	0.851 J	ND	ND	**5.58**	**60.9**	ND	ND	**6.80**	**24.2**	**11.3**	**28.8**	ND	ND
Methylcyclohexane	(NA)	0.709 J	0.358 J	ND	ND	0.901 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL VO's:	NA	6.61	4.35	ND	ND	54.2	900	ND	ND	176	188	31.3	149	ND	ND
Benzene, propyl-	5**	ND	ND	ND	ND	ND	**82.5**	ND	ND	ND	ND	ND	ND	ND	~
Napthalene	10	ND	ND	ND	ND	**34.3**	ND	ND	ND	ND	ND	ND	ND	ND	~
TOTAL TIC's:	NA	22.4	89.5	ND	ND	356	600	ND	ND	597	367	174	471	ND	~
TOTAL VO's & TIC's:	NA	29.0	93.9	ND	ND	410.2	1500	ND	ND	773	555	205	620	ND	NA
Semivolatiles - BNA (ppb)															
Naphthalene	10	2.12	1.87	ND	~	5.4	0.857 J	ND	~	ND	ND	1.20	0.406 J	ND	~
2-Methylnaphthalene	50***	2.20	ND	ND	~	2.44	ND	ND	~	ND	ND	0.771 J	2.62	ND	~
Acenaphthene	20	2.86	**31.3**	ND	~	**24.5**	1.52	ND	~	0.818 J	1.32	1.23	1.32	ND	~
Dibenzofuran	5***	ND	ND	ND	~	**8.6**	ND	ND	~	ND	ND	0.540 J	0.482 J	ND	~
Fluorene	50	2.00	6.85	ND	~	8.32	ND	ND	~	ND	0.574 J	0.503 J	0.494 J	ND	~
Phenanthrene	50	1.19	0.917 J	ND	~	4.33	0.776 J	ND	~	1.39	1.64	1.28	1.56	ND	~
Anthracene	50	0.274 J	2.32	ND	~	1.03	ND	ND	~	ND	ND	0.269 J	ND	ND	~
Carbazole	(NA)	0.366 J	ND	ND	~	1.7	ND	ND	~	ND	ND	0.341 J	ND	ND	~
Fluoranthene	50	ND	0.609 J	ND	~	ND	ND	ND	~	ND	ND	ND	ND	ND	
Pyrene	50	ND	0.305 J	ND	~	ND	ND	ND	~	ND	ND	ND	ND	ND	
TOTAL BNA'S:	NA	11.0	44.2	ND		56.3	3.55	ND		2.21	5.36	6.13	6.88	ND	~
TOTAL TIC's:	NA	31.5	37.3	ND	~	542	5230	ND	~	1800	1380	247	823	ND	~
TOTAL BNA'S & TIC's:	NA	42.5	81.5	ND	~	598.3	5233.55	ND	~	1800	1390	253	830	ND	~
Metals (ppb)															
Aluminum	100	23.1 J	20.3 J	ND	~	ND	24.6 J	ND	~	ND	**105**	ND	ND	ND	~
Antimony	3	1.86 J	**4.42**	ND	~	**3.92 J**	2.31 J	ND	~	1.11 J	2.15 J	ND	1.12 J	ND	~
Arsenic	25	5.09	10.3	ND	~	18.6	12.4	ND	~	5.81	14.3	5.09	5.65	ND	~
Barium	1000	98.2	157	ND	~	326	92.1	ND	~	264	221	129	248	ND	~
Beryllium	3	ND	ND	ND	~	ND	ND	ND	~	ND	ND	ND	ND	ND	~
Cadmium	5	0.537 J	ND	ND	~	0.620 J	ND	ND	~	ND	ND	ND	ND	ND	~
Calcium	(NA)	159000	95100	ND	~	347000	53700	ND	~	123000	128000	55000	159000	ND	~
Chromium	50	ND	ND	ND	~	ND	ND	ND	~	2.12 J	2.23 J	ND	ND	ND	~
Cobalt	(NA)	ND	3.19 J	ND	~	4.94 J	2.27 J	ND	~	10.7	26.9	ND	6.09 J	ND	~
Copper	200	7.78 J	ND	ND	~	4.81 J	11.1	ND	~	ND	2.40 J	ND	ND	ND	~
Iron	300	ND	68.0 J	ND	~	**330**	ND	ND	~	134	94.0 J	65.0 J	194	ND	~
Lead	25	0.685 J	ND	ND	~	ND	1.96 J	ND	~	0.690 J	0.890 J	ND	ND	ND	~
Magnesium	35000	10400	23000	ND	~	**41600**	10200	ND	~	**38600**	**54700**	2250	**72800**	ND	~
Manganese	300	**332**	253	ND	~	**1070**	92.2	ND	~	**313**	**423**	**307**	**732**	ND	~
Mercury	0.7	ND	ND	ND	~	ND	ND	ND	~	ND	ND	ND	ND	ND	~
Nickel	100	4.37	6.28	ND	~	13.5	5.38	ND	~	8.43	10.7	3.24 J	12.0	ND	~
Potassium	(NA)	19600	24900	ND	~	30200	14300	ND	~	36400	67200	5720	33600	ND	~
Selenium	10	5.41 J	ND	ND	~	**12.7**	ND	ND	~	ND	6.29 J	ND	ND	ND	~
Silver	50	ND	ND	ND	~	ND	ND	ND	~	ND	ND	ND	ND	ND	~
Sodium	20000	**710000**	**152000**	ND	~	**882000**	**258000**	ND	~	**219000**	**313000**	**366000**	**117000**	ND	~
Thallium	0.5	ND	ND	ND	~	ND	ND	ND	~	ND	ND	ND	ND	ND	~
Vanadium	(NA)	18.3	4.61 J	ND	~	ND	15.4	ND	~	ND	5.23 J	3.63 J	ND	ND	~
Zinc	2000	17.6	25.6	ND	~	18.8	18.6	ND	~	30.8	29.5	19.0	19.2	ND	~

(NA) = No Standards Available
~ = Sample not analyzed for
ND = Analyzed for but Not Detected at the MDL
J = The concentration was detected at a value below the RL and above the MDL
Bold and Shaded results exceed the TOGS 1.1.1 GA Class standard
Bold and boxed results exceed the TAGM 4046 standard
* Not listed in TOGS 1.1.1; MCL used as standard as listed in 10 NYCRR Part 5
** The principal Organic contaminant standard of 5 ug/l applies to this compound
*** TAGM 4046 ground water standards

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

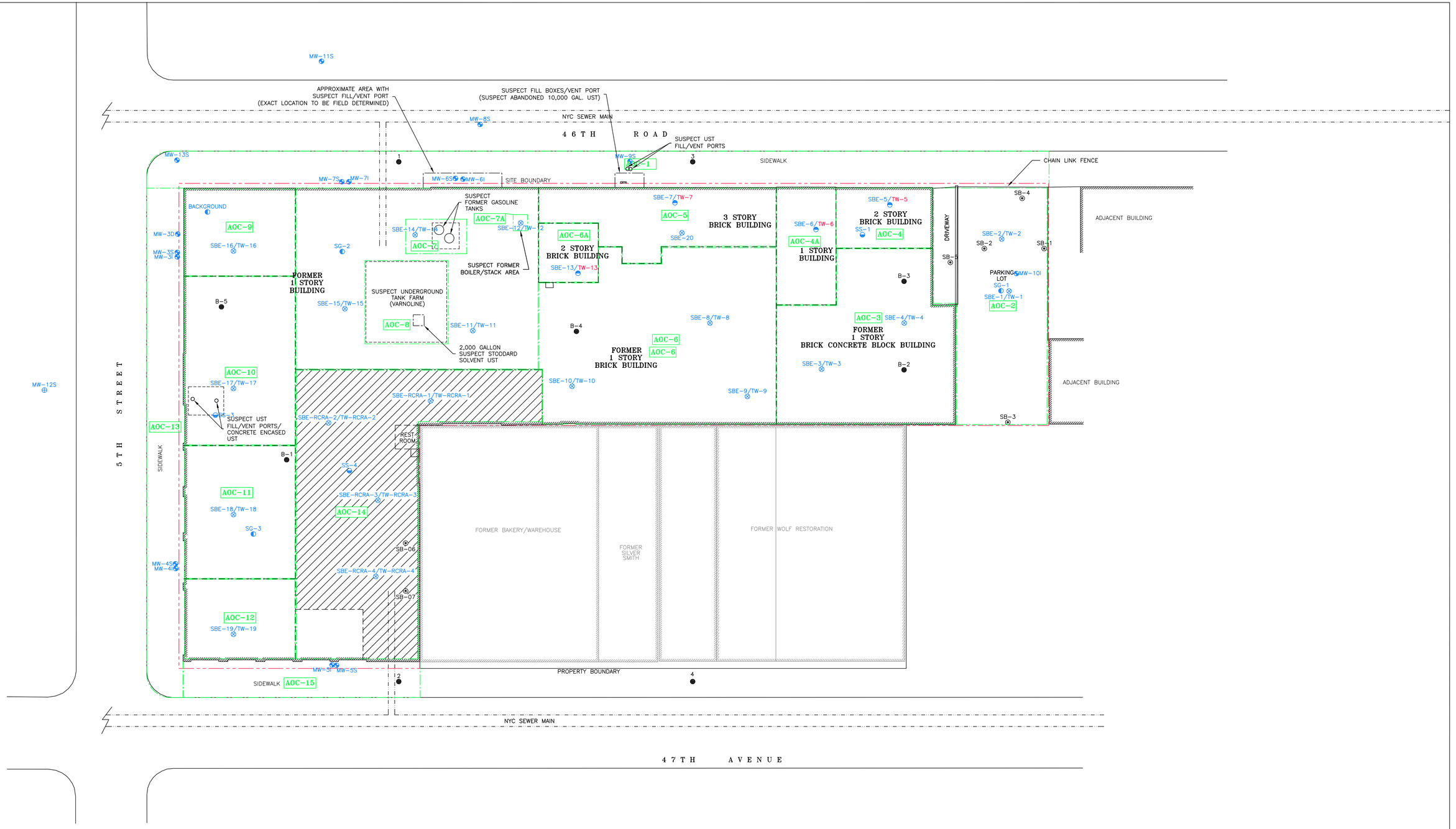
Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Figures

Note: The following figures were in the original December 2010 SMP, but are no longer applicable to this current SMP and have not been included: *Figure 6 - Cut and Fill Lower Sand Unit Cross-Sections, Figure LN-1 – As-Built Existing Well Location Plan with Capture Wall, Figure LN-2 – Detail Plan As-Built, and Figure 7 – As-Built Perched Unit LNAPL Remediation Locations.*



LEGEND

MW-01	J.C. BRODERICK & ASSOCIATES MONITORING WELL LOCATION – 2005
GW-1	EEA, INC. MONITORING WELL LOCATION – 2006
B-1	EEA, INC. SOIL BORING LOCATION – 2005
1	CA RICH CONSULTANTS SAMPLE LOCATION – 1992
SB-1	J.C. BRODERICK & ASSOCIATES SAMPLE LOCATION – 2005
SBE-7/TW-7	EWMA SOIL BORING OR SOIL BORING/TEMPORARY WATER SAMPLE LOCATION – 2008
SBE-6/TW-6	EWMA HAND AUGER SAMPLE LOCATION – 2008 (PROPOSED TEMPORARY WATER SAMPLE NOT COLLECTED)
	CONCRETE REMOVAL AREA / TEST PIT INVESTIGATION
MW-3S	EWMA MONITORING WELL LOCATION (SHALLOW) – 2008/2009
MW-3I	EWMA MONITORING WELL LOCATION (INTERMEDIATE) – 2008/2009
MW-3D	EWMA MONITORING WELL LOCATION (DEEP) – 2008
SS-1	EWMA SUB-SLAB AIR SAMPLE LOCATION FOR VAPOR INTRUSION INVESTIGATION – 2008
SG-1	EWMA SOIL GAS / AMBIENT AIR SAMPLE LOCATION FOR VAPOR INTRUSION INVESTIGATION – 2008
MW-18I	EWMA MONITORING WELL LOCATION (SAND AQUIFER) – 2009 LOCATION APPROXIMATE – NOT SURVEYED
	ENCAPSULATED AREA
	SITE BOUNDARY
	BUILDING OUTER WALL
	BUILDING INTERIOR WALL/MULTIPLE STORY WALL
	AOC BOUNDARY

SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

AREAS OF CONCERN

AOC-1	FORMER 10,000 GALLON #6 FUEL OIL UST/46th ROAD SIDEWALK	AOC-7A	SUSPECT FORMER BOILER/STACK AREA
AOC-2	EASTERN PARKING LOT	AOC-8	SUSPECT TWENTY-TWO (22) 1,500 GALLON VARNOLINE STORAGE TANKS
AOC-3	1-STORY BRICK/CONCRETE BLOCK BUILDING (DEMAND ELECTRIC)	AOC-9	1-STORY BUILDING (AMN RENOVATION)
AOC-4	MOTORCYCLE REPAIR SHOP (BASEMENT 2-STORY BRICK BUILDING)	AOC-10	1-STORY BUILDING (JMJ ELECTRICAL)/SUSPECT UST AND FILL/VENT PORTS
AOC-4A	1-STORY BUILDING	AOC-11	FORMER WOHL, INC. CLEANERS AND DYERS (DIRECT AIR)
AOC-5	3-STORY BRICK BUILDING (ART STUDIOS)	AOC-12	FORMER WOHL, INC. CLEANERS AND DYERS (LIBERTY CONTRACTING)
AOC-6	1-STORY BRICK BUILDING (KNOSSOS CUSTOM DESIGN FURNITURE)	AOC-13	5TH STREET SIDEWALK
AOC-6A	2-STORY BRICK BUILDING	AOC-14	FORMER ACCURATE ASSOCIATES RCRA AREA
AOC-7	TWO (2) FORMER GASOLINE STORAGE TANKS	AOC-15	47TH AVENUE SIDEWALK

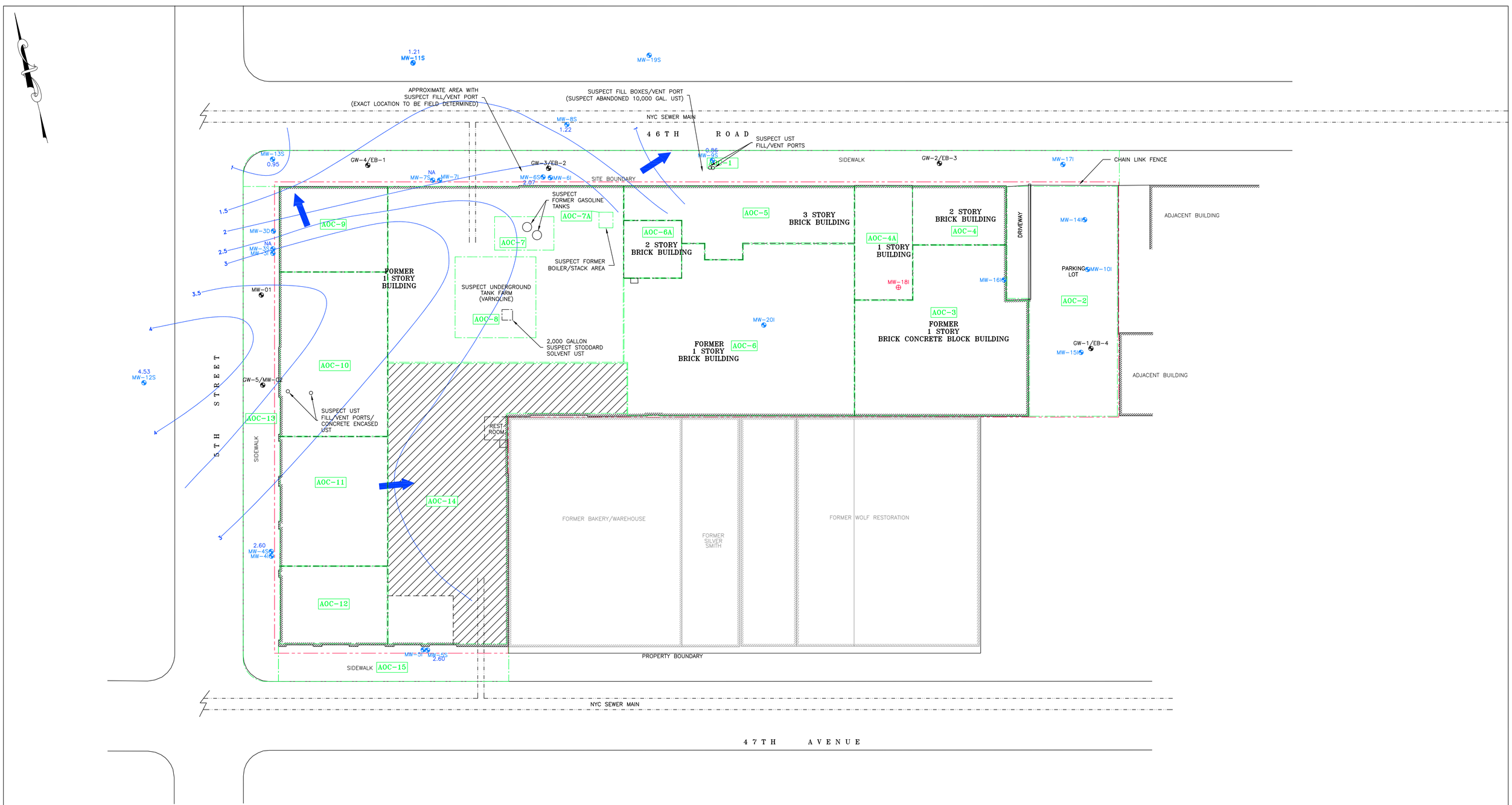
GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

Environmental Waste Management Associates, LLC
P.O. Box 5430
Parsippany, NJ 07054
Tel: (973) 560-1400

SCALE: AS SHOWN	PROJECT# 207266
DATE: 12/3/10	
DRAWN BY: RR	
CHECKED BY: BK	

SITE LOCATION MAP
OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 1



LEGEND

MW-01	J.C. BRODERICK & ASSOCIATES MONITORING WELL LOCATION – 2005
GW-1	EEA, INC. MONITORING WELL LOCATION – 2006
MW-13S 0.95	EWMA MONITORING WELL LOCATION (PERCHED WATER ZONE) WITH WATER LEVEL ELEVATION IN FEET BASED ON ASSUMED SURVEYOR ELEVATION DATUM (ASED) – 2008/2009
MW-3I	EWMA MONITORING WELL LOCATION (SAND AQUIFER) – 2008/2009
MW-3D	EWMA MONITORING WELL LOCATION (SAND AQUIFER) – 2008
3	GROUND WATER CONTOUR WITH ELEVATION IN FEET BASED ON (ASED) WITH FLOW DIRECTION
NA	WATER LEVEL NOT AVAILABLE
MW-18I	EWMA MONITORING WELL LOCATION (SAND AQUIFER) – 2009 LOCATION APPROXIMATE – NOT SURVEYED
	ENCAPSULATED AREA
	SITE BOUNDARY
	BUILDING OUTER WALL
	BUILDING INTERIOR WALL/MULTIPLE STORY WALL
	AOC BOUNDARY

NOTE: J.C. BRODERICK AND EEA INSTALLED WELLS WERE NOT USED IN CONSTRUCTING WATER LEVEL CONTOURS, DUE TO UNCERTAINTIES IN WELL CONSTRUCTION
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

AREAS OF CONCERN

AOC-1	FORMER 10,000 GALLON #6 FUEL OIL UST/46th ROAD SIDEWALK
AOC-2	EASTERN PARKING LOT
AOC-3	1-STORY BRICK/CONCRETE BLOCK BUILDING (DEMAND ELECTRIC)
AOC-4	MOTORCYCLE REPAIR SHOP (BASEMENT 2-STORY BRICK BUILDING)
AOC-4A	1-STORY BUILDING
AOC-5	3-STORY BRICK BUILDING (ART STUDIOS)
AOC-6	1-STORY BRICK BUILDING (KNOSSOS CUSTOM DESIGN FURNITURE)
AOC-6A	2-STORY BRICK BUILDING
AOC-7	TWO (2) FORMER GASOLINE STORAGE TANKS
AOC-7A	SUSPECT FORMER BOILER/STACK AREA
AOC-8	SUSPECT TWENTY-TWO (22) 1,500 GALLON VARNOLINE STORAGE TANKS
AOC-9	1-STORY BUILDING (AMN RENOVATION)
AOC-10	1-STORY BUILDING (JMJ ELECTRICAL)/SUSPECT UST AND FILL/VENT PORTS
AOC-11	FORMER WOHL, INC. CLEANERS AND DYERS (DIRECT AIR)
AOC-12	FORMER WOHL, INC. CLEANERS AND DYERS (LIBERTY CONTRACTING)
AOC-13	5TH STREET SIDEWALK
AOC-14	FORMER ACCURATE ASSOCIATES RCRA AREA
AOC-15	47TH AVENUE SIDEWALK

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

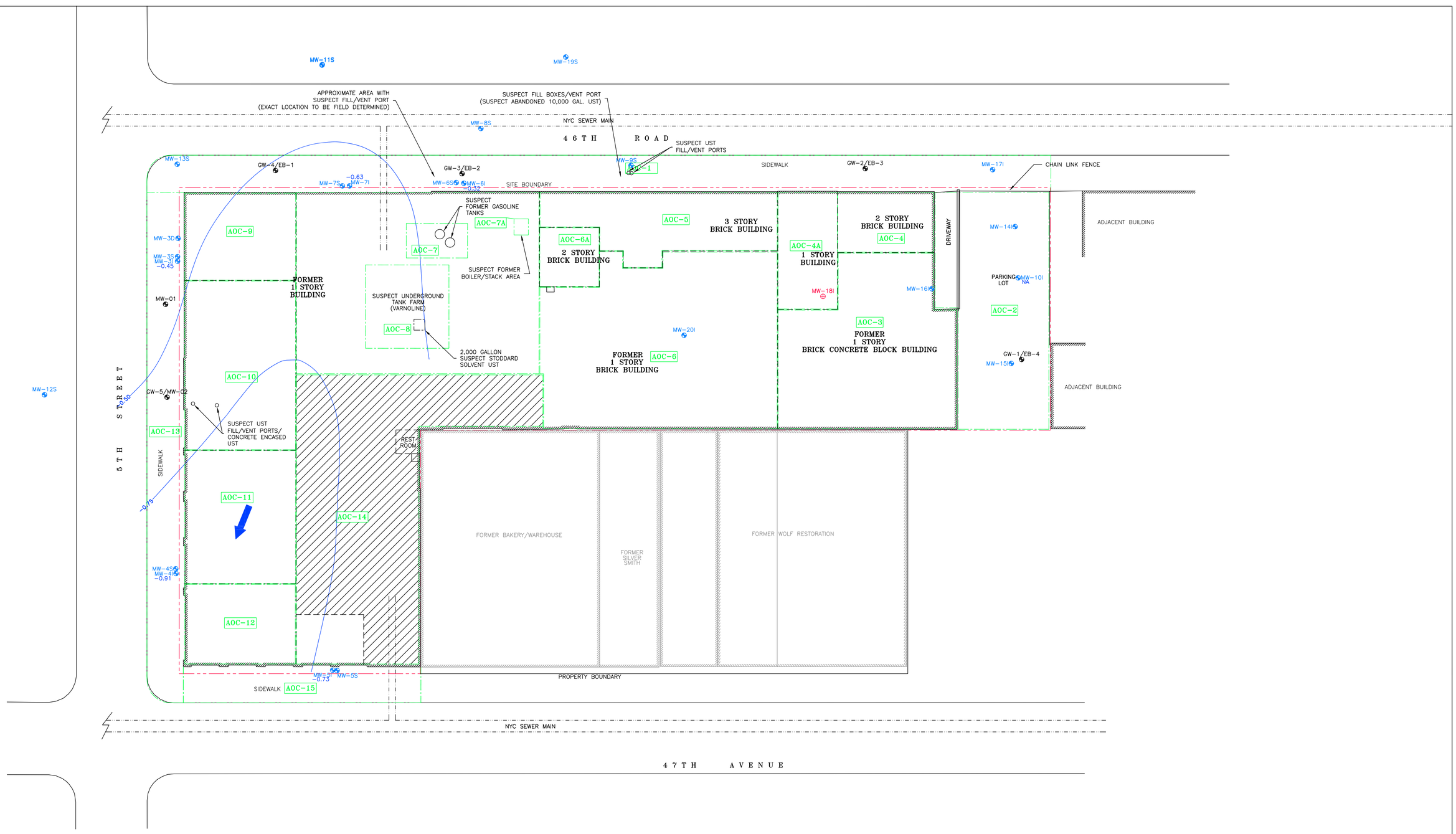
Environmental Waste Management Associates, LLC
P.O. Box 5430
Parsippany, NJ 07054
Tel: (973) 560-1400

SCALE: AS SHOWN
DATE: 12/3/10
PROJECT# 207266
DRAWN BY: RR
CHECKED BY: CV
FILE: k:\drawings\207000\207266\2010 MOV\SWPL207266E2.dwg

WATER LEVEL ELEVATION CONTOUR –PERCHED UNIT – 7/17/08

OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 2



LEGEND

MW-01	J.C. BRODERICK & ASSOCIATES MONITORING WELL LOCATION – 2005
GW-1	EEA, INC. MONITORING WELL LOCATION – 2006
MW-3S	EWMA MONITORING WELL LOCATION (PERCHED WATER ZONE) – 2008/2009
MW-3I -0.45	EWMA MONITORING WELL LOCATION (SAND AQUIFER) WITH WATER LEVEL ELEVATION IN FEET BASED ON ASSUMED SURVEYOR ELEVATION DATUM (ASED) – 2008/2009
MW-3D	EWMA MONITORING WELL LOCATION (SAND AQUIFER) – 2008
0.75	GROUND WATER CONTOUR WITH ELEVATION IN FEET BASED ON (ASED) WITH FLOW DIRECTION
NA	WATER LEVEL ELEVATION NOT AVAILABLE
MW-18I	EWMA MONITORING WELL LOCATION (SAND AQUIFER) – 2009 LOCATION APPROXIMATE – NOT SURVEYED
	ENCAPSULATED AREA
	SITE BOUNDARY
	BUILDING OUTER WALL
	BUILDING INTERIOR WALL/MULTIPLE STORY WALL
	AOC BOUNDARY

NOTE: J.C. BRODERICK AND EEA INSTALLED WELLS WERE NOT USED IN CONSTRUCTING WATER LEVEL CONTOURS, DUE TO UNCERTAINTIES IN WELL CONSTRUCTION
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

AREAS OF CONCERN

AOC-1	FORMER 10,000 GALLON #6 FUEL OIL UST/46th ROAD SIDEWALK	AOC-7A	SUSPECT FORMER BOILER/STACK AREA
AOC-2	EASTERN PARKING LOT	AOC-8	SUSPECT TWENTY-TWO (22) 1,500 GALLON VARNOLINE STORAGE TANKS
AOC-3	1-STORY BRICK/CONCRETE BLOCK BUILDING (DEMAND ELECTRIC)	AOC-9	1-STORY BUILDING (AMN RENOVATION)
AOC-4	MOTORCYCLE REPAIR SHOP (BASEMENT 2-STORY BRICK BUILDING)	AOC-10	1-STORY BUILDING (JMJ ELECTRICAL)/SUSPECT UST AND FILL/VENT PORTS
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AOC-5	3-STORY BRICK BUILDING (ART STUDIOS)	AOC-12	FORMER WOHL, INC. CLEANERS AND DYERS (LIBERTY CONTRACTING)
AOC-6	1-STORY BRICK BUILDING (KNOSSOS CUSTOM DESIGN FURNITURE)	AOC-13	5TH STREET SIDEWALK
AOC-6A	2-STORY BRICK BUILDING	AOC-14	FORMER ACCURATE ASSOCIATES RCRA AREA
AOC-7	TWO (2) FORMER GASOLINE STORAGE TANKS	AOC-15	47TH AVENUE SIDEWALK

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

Environmental Waste Management Associates, LLC
P.O. Box 5430
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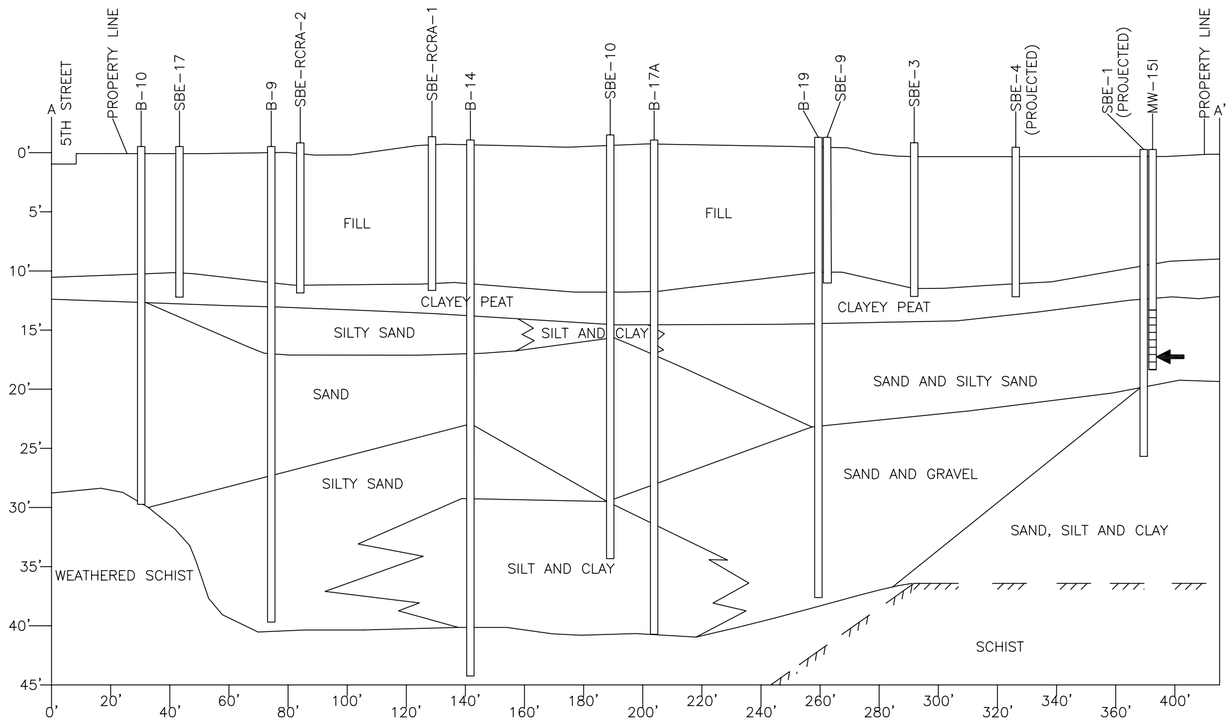
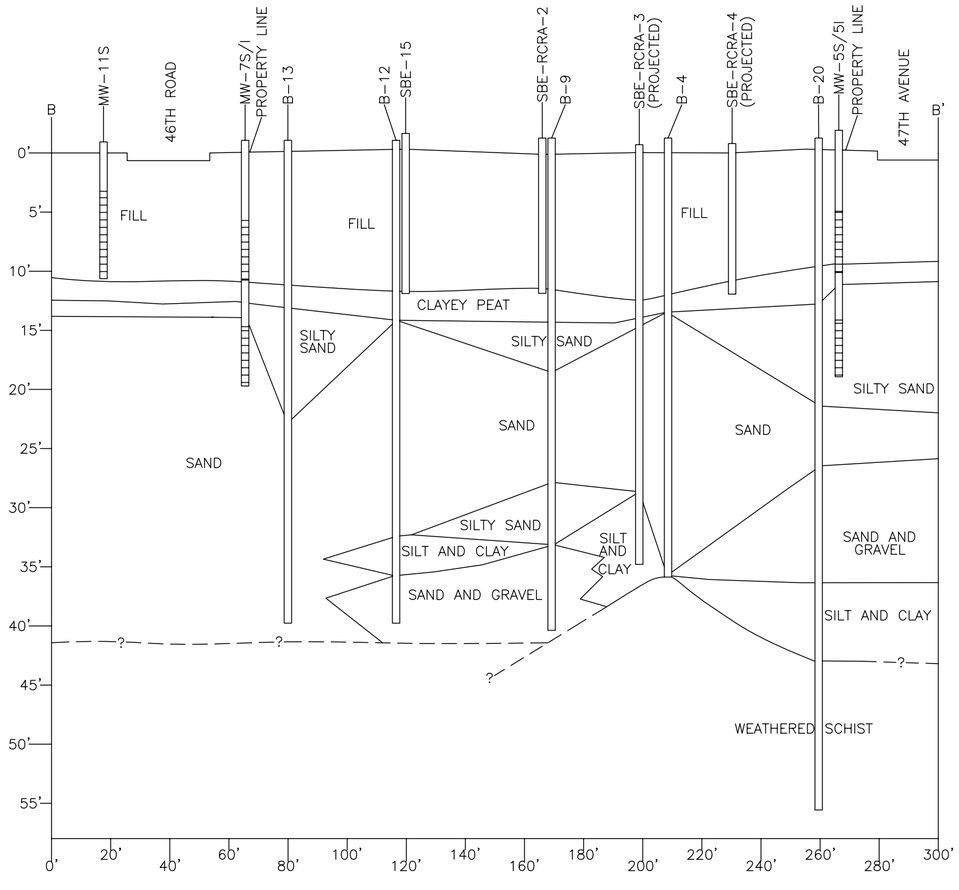
FILE: k:\drawings\207000\207266\2010 WCP\SWP\207266f3.dwg

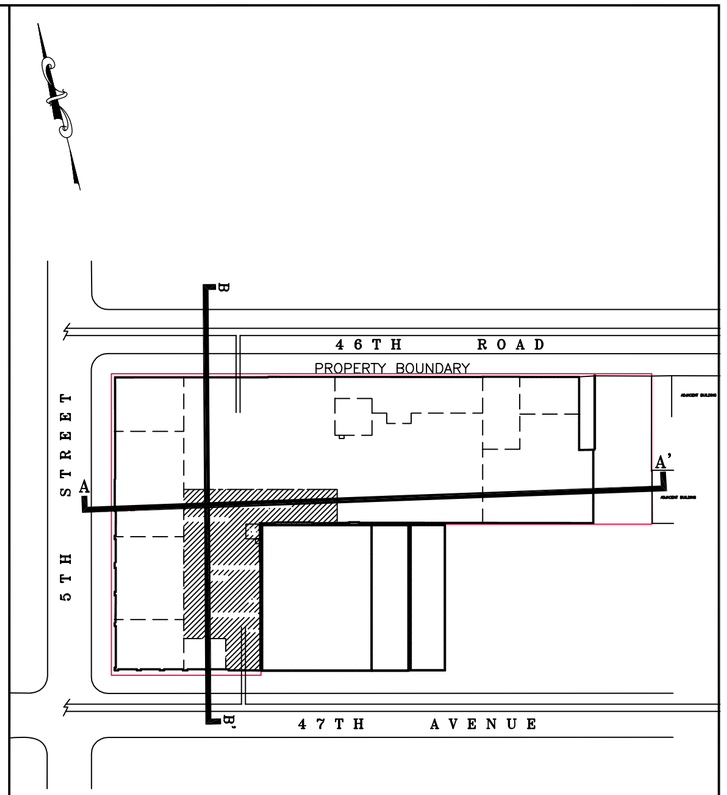
WATER LEVEL ELEVATION CONTOUR –SAND AQUIFER UNIT– 7/17/08

OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 3







GRAPHIC SCALE

80 0 40 80 160

(IN FEET)

LEGEND

SBE– EWMA SOIL BORING LOCATION

MW– MONITORING WELL LOCATION WITH SCREENED INTERVAL

B– DEWBERRY GEOTECHNICAL BORING LOCATION

HYDROCARBON SHEEN ENCOUNTERED AT THIS DEPTH

VERTICAL SCALE IN FEET: 10, 0

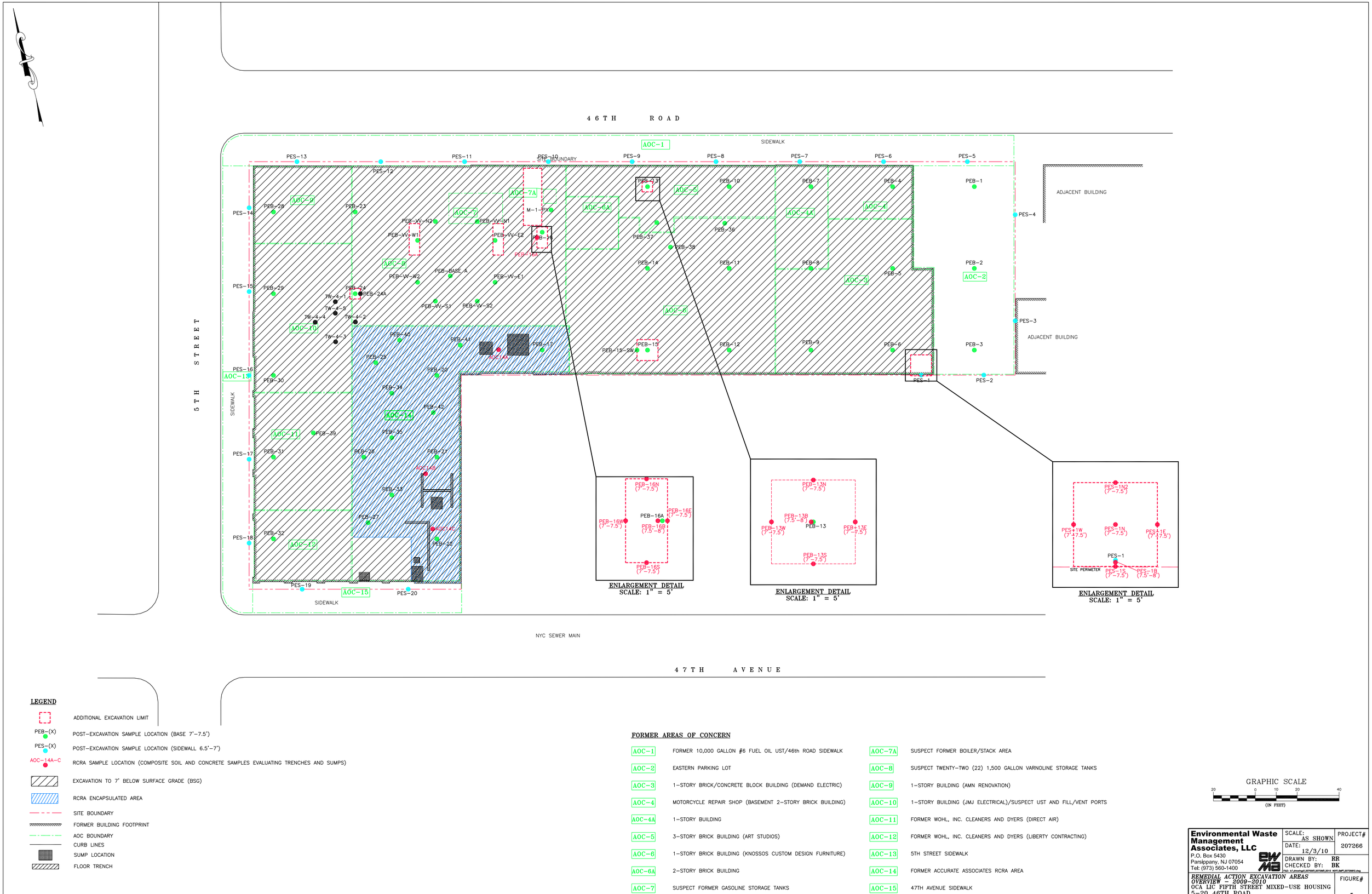
HORIZONTAL SCALE IN FEET: 0, 40

Environmental Waste Management Associates, LLC
P.O. Box 5430
Parsippany, NJ 07054
Tel: (973) 560-1400

SCALE: AS SHOWN
DATE: 12/3/10
PROJECT# 207266
DRAWN BY: RR
CHECKED BY: CV
FILE: k:\drawings\207000\207266\2010 NOV\SMP_207266F4.dwg

SUBSURFACE CROSS-SECTIONS A-A' & B-B'
OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 4



ENLARGEMENT DETAIL
SCALE: 1" = 5'

ENLARGEMENT DETAIL
SCALE: 1" = 5'

ENLARGEMENT DETAIL
SCALE: 1" = 5'

LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-(X) — POST-EXCAVATION SAMPLE LOCATION (BASE 7'-7.5')
- PES-(X) — POST-EXCAVATION SAMPLE LOCATION (SIDEWALL 6.5'-7')
- AOC-14A-C — RCRA SAMPLE LOCATION (COMPOSITE SOIL AND CONCRETE SAMPLES EVALUATING TRENCHES AND SUMPS)
- EXCAVATION TO 7' BELOW SURFACE GRADE (BSG)
- RCRA ENCAPSULATED AREA
- SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- AOC BOUNDARY
- CURB LINES
- SUMP LOCATION
- FLOOR TRENCH

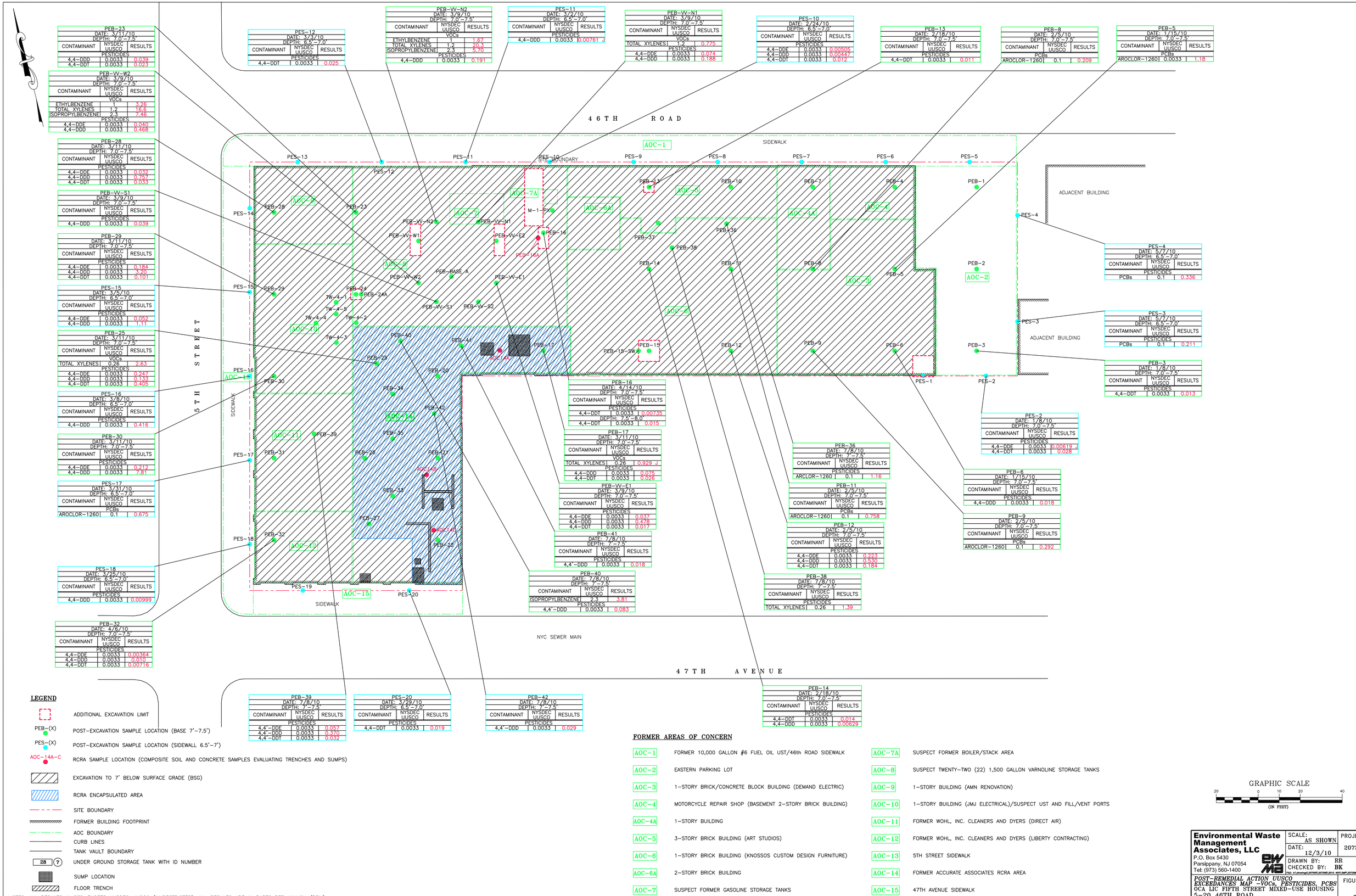
FORMER AREAS OF CONCERN

AOC-1	FORMER 10,000 GALLON #6 FUEL OIL UST/46th ROAD SIDEWALK	AOC-7A	SUSPECT FORMER BOILER/STACK AREA
AOC-2	EASTERN PARKING LOT	AOC-8	SUSPECT TWENTY-TWO (22) 1,500 GALLON VARNOLINE STORAGE TANKS
AOC-3	1-STORY BRICK/CONCRETE BLOCK BUILDING (DEMAND ELECTRIC)	AOC-9	1-STORY BUILDING (AMN RENOVATION)
AOC-4	MOTORCYCLE REPAIR SHOP (BASEMENT 2-STORY BRICK BUILDING)	AOC-10	1-STORY BUILDING (JMJ ELECTRICAL)/SUSPECT UST AND FILL/VENT PORTS
AOC-4A	1-STORY BUILDING	AOC-11	FORMER WOHL, INC. CLEANERS AND DYERS (DIRECT AIR)
AOC-5	3-STORY BRICK BUILDING (ART STUDIOS)	AOC-12	FORMER WOHL, INC. CLEANERS AND DYERS (LIBERTY CONTRACTING)
AOC-6	1-STORY BRICK BUILDING (KNOSSOS CUSTOM DESIGN FURNITURE)	AOC-13	5TH STREET SIDEWALK
AOC-6A	2-STORY BRICK BUILDING	AOC-14	FORMER ACCURATE ASSOCIATES RCRA AREA
AOC-7	SUSPECT FORMER GASOLINE STORAGE TANKS	AOC-15	47TH AVENUE SIDEWALK

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

Environmental Waste Management Associates, LLC P.O. Box 5430 Parsippany, NJ 07054 Tel: (973) 560-1400	SCALE: AS SHOWN	PROJECT# 207266
	DATE: 12/3/10	
	DRAWN BY: RR CHECKED BY: BK FILE: N:\Drawings\207266\SITEMAP_2010_NOV.dwg, 12/7/2010	
REMEDIAL ACTION EXCAVATION AREAS OVERVIEW – 2009-2010 OCA LIC FIFTH STREET MIXED-USE HOUSING 5-20 46TH ROAD LONG ISLAND CITY, NEW YORK		FIGURE# 5



PEB-23
DATE: 3/11/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDD	0.0033	0.039
4,4-DDT	0.0033	0.023

PEB-W-W2
DATE: 3/9/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
VOCs		
ETHYLBENZENE	1	3.26
TOTAL XYLENES	1.2	16.6
ISOPROPYLBENZENE	2.3	7.46
PESTICIDES		
4,4-DDE	0.0033	0.040
4,4-DDD	0.0033	0.468

PEB-28
DATE: 3/11/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.032
4,4-DDD	0.0033	0.757
4,4-DDT	0.0033	0.033

PEB-W-S1
DATE: 3/9/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDD	0.0033	0.039

PEB-29
DATE: 3/11/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.184
4,4-DDD	0.0033	3.20
4,4-DDT	0.0033	0.101

PES-15
DATE: 3/5/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.052
4,4-DDD	0.0033	1.11

PEB-25
DATE: 3/11/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
VOCs		
TOTAL XYLENES	0.26	2.63
PESTICIDES		
4,4-DDE	0.0033	0.247
4,4-DDD	0.0033	0.133
4,4-DDT	0.0033	0.405

PES-16
DATE: 3/8/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDD	0.0033	0.416

PEB-30
DATE: 3/11/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.212
4,4-DDD	0.0033	7.81

PES-17
DATE: 3/31/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PCBs		
AROCLOR-1260	0.1	0.675

PES-18
DATE: 3/25/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDD	0.0033	0.00999

PEB-32
DATE: 4/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.00364
4,4-DDD	0.0033	0.010
4,4-DDT	0.0033	0.00716

PES-12
DATE: 3/3/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDT	0.0033	0.025

PEB-VW-N2
DATE: 3/9/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
VOCs		
ETHYLBENZENE	1	1.67
TOTAL XYLENES	1.2	20.3
ISOPROPYLBENZENE	2.3	5.70
PESTICIDES		
4,4-DDD	0.0033	0.191

PES-11
DATE: 3/2/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDD	0.0033	0.00761 J

PEB-VW-N1
DATE: 3/9/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
VOCs		
TOTAL XYLENES	1.2	0.775
PESTICIDES		
4,4-DDE	0.0033	0.074
4,4-DDD	0.0033	0.188

PES-10
DATE: 2/24/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.00505
4,4-DDD	0.0033	0.00447
4,4-DDT	0.0033	0.012

PEB-13
DATE: 2/18/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDT	0.0033	0.011

PEB-8
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PCBs		
AROCLOR-1260	0.1	0.209

PEB-5
DATE: 1/15/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PCBs		
AROCLOR-1260	0.0033	1.18

PES-4
DATE: 5/7/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
PCBs	0.1	0.336

PES-3
DATE: 5/7/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
PCBs	0.1	0.211

PEB-3
DATE: 1/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDT	0.0033	0.013

PES-2
DATE: 1/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.00619 J
4,4-DDT	0.0033	0.028

PEB-6
DATE: 1/15/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDD	0.0033	0.018

PEB-9
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PCBs		
AROCLOR-1260	0.1	0.292

PEB-16
DATE: 4/14/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDT	0.0033	0.00735
DEPTH: 7.5'-8.0'		
4,4-DDT	0.0033	0.015

PEB-17
DATE: 3/11/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
VOCs		
TOTAL XYLENES	0.26	0.929 J
PESTICIDES		
4,4-DDD	0.0033	0.075
4,4-DDT	0.0033	0.026

PEB-WV-E1
DATE: 3/9/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.037
4,4-DDD	0.0033	0.478
4,4-DDT	0.0033	0.017

PEB-41
DATE: 7/8/10
DEPTH: 7'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4'-DDD	0.0033	0.018

PEB-40
DATE: 7/8/10
DEPTH: 7'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
ISOPROPYLBENZENE	2.3	3.81
PESTICIDES		
4,4'-DDD	0.0033	0.083

PEB-36
DATE: 7/8/10
DEPTH: 7'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
ARCLOR-1260	0.1	1.16

PEB-11
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PCBs		
AROCLOR-1260	0.1	0.758

PEB-12
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDE	0.0033	0.223
4,4-DDD	0.0033	0.530
4,4-DDT	0.0033	0.184

PEB-38
DATE: 7/8/10
DEPTH: 7'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
TOTAL XYLENES	0.26	1.39

PEB-14
DATE: 7/18/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDT	0.0033	0.014
4,4-DDD	0.0033	0.00629

PEB-39
DATE: 7/8/10
DEPTH: 7'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4'-DDE	0.0033	0.057
4,4'-DDD	0.0033	0.370
4,4'-DDT	0.0033	0.032

PES-20
DATE: 3/29/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4-DDT	0.0033	0.019

PEB-42
DATE: 7/8/10
DEPTH: 7'-7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
PESTICIDES		
4,4'-DDD	0.0033	0.029

LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-(X) POST-EXCAVATION SAMPLE LOCATION (BASE 7'-7.5')
- PES-(X) POST-EXCAVATION SAMPLE LOCATION (SIDEWALL 6.5'-7')
- AOC-14A-C RCRA SAMPLE LOCATION (COMPOSITE SOIL AND CONCRETE SAMPLES EVALUATING TRENCHES AND SUMPS)
- EXCAVATION TO 7' BELOW SURFACE GRADE (BSG)
- RCRA ENCAPSULATED AREA
- SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- AOC BOUNDARY
- CURB LINES
- TANK VAULT BOUNDARY
- 28 (7) UNDER GROUND STORAGE TANK WITH ID NUMBER
- SUMP LOCATION
- FLOOR TRENCH

NOTES: ALL RESULTS IN RED EXCEED NYSDEC UUSCO (UNRESTRICTED); ALL RESULTS ARE IN PARTS PER MILLION (PPM)
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

FORMER AREAS OF CONCERN

AOC-1	FORMER 10,000 GALLON #6 FUEL OIL UST/46th ROAD SIDEWALK	AOC-7A	SUSPECT FORMER BOILER/STACK AREA
AOC-2	EASTERN PARKING LOT	AOC-8	SUSPECT TWENTY-TWO (22) 1,500 GALLON VARNOLINE STORAGE TANKS
AOC-3	1-STORY BRICK/CONCRETE BLOCK BUILDING (DEMAND ELECTRIC)	AOC-9	1-STORY BUILDING (AMN RENOVATION)
AOC-4	MOTORCYCLE REPAIR SHOP (BASEMENT 2-STORY BRICK BUILDING)	AOC-10	1-STORY BUILDING (JMJ ELECTRICAL)/SUSPECT UST AND FILL/VENT PORTS
AOC-4A	1-STORY BUILDING	AOC-11	FORMER WOHL, INC. CLEANERS AND DYERS (DIRECT AIR)
AOC-5	3-STORY BRICK BUILDING (ART STUDIOS)	AOC-12	FORMER WOHL, INC. CLEANERS AND DYERS (LIBERTY CONTRACTING)
AOC-6	1-STORY BRICK BUILDING (KNOSSOS CUSTOM DESIGN FURNITURE)	AOC-13	5TH STREET SIDEWALK
AOC-6A	2-STORY BRICK BUILDING	AOC-14	FORMER ACCURATE ASSOCIATES RCRA AREA
AOC-7	SUSPECT FORMER GASOLINE STORAGE TANKS	AOC-15	47TH AVENUE SIDEWALK

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

Environmental Waste Management Associates, LLC
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SCALE: AS SHOWN
DATE: 12/3/10
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CHECKED BY: BK
FILE: s:\drawings\207000\207266\2010 MOP\SMP_207266D1.dwg

PROJECT# 207266

POST-REMEDIAL ACTION UUSCO
EXCEEDANCES MAP -VOCs, PESTICIDES, PCBs
OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 8

PEB-W-N2 DATE: 3/9/10 DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
VOCs		
ISOPROPYLBENZENE	2.3	5.70

PEB-36 DATE: 7/8/2010 DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
PCBs		
AROCLOR-1260	1.0	1.16

PEB-5 DATE: 1/15/10 DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
PCBs		
AROCLOR-1260	1.0	1.18

PEB-W-W2 DATE: 3/9/10 DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
VOCs		
ISOPROPYLBENZENE	2.3	7.46

PEB-40 DATE: 7/08/2010 DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
VOCs		
ISOPROPYLBENZENE	2.3	3.79

46TH ROAD

47TH AVENUE

5TH STREET

SIDEWALK

SITE BOUNDARY

ADJACENT BUILDING

ADJACENT BUILDING

NYC SEWER MAIN

PES-1 PES-2 PES-3 PES-4 PES-5 PES-6 PES-7 PES-8 PES-9 PES-10 PES-11 PES-12 PES-13 PES-14 PES-15 PES-16 PES-17 PES-18 PES-19 PES-20

PEB-1 PEB-2 PEB-3 PEB-4 PEB-5 PEB-6 PEB-7 PEB-8 PEB-9 PEB-10 PEB-11 PEB-12 PEB-13 PEB-14 PEB-15 PEB-16 PEB-16A PEB-17 PEB-20 PEB-21 PEB-22 PEB-23 PEB-24 PEB-25 PEB-26 PEB-27 PEB-28 PEB-29 PEB-30 PEB-31 PEB-32 PEB-33 PEB-34 PEB-35 PEB-36 PEB-37 PEB-38 PEB-39 PEB-40 PEB-41 PEB-42

PEB-BASE A

PEB-W-N1 PEB-W-N2 PEB-W-W1 PEB-W-W2 PEB-W-E1 PEB-W-E2 PEB-W-S1 PEB-W-S2

M-1-PX

TW-4-1 TW-4-2 TW-4-3 TW-4-4 TW-4-5

LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-1 (7'-7.5') — POST-EXCAVATION BASE SAMPLE LOCATION
- PES-1 (6.5'-7') — POST-EXCAVATION SIDEWALL SAMPLE LOCATION
- SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- CURB LINES
- TANK VAULT BOUNDARY
- AOC BOUNDARY
- 28 (7) — UNDER GROUND STORAGE TANK WITH ID NUMBER

NOTES: ALL RESULTS IN RED EXCEED NYSDEC SITE SPECIFIC SOIL CLEANUP OBJECTIVE (SSCO) (RESTRICTED); ALL RESULTS SHOWN IN PARTS PER MILLION (PPM)
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

Environmental Waste Management Associates, LLC
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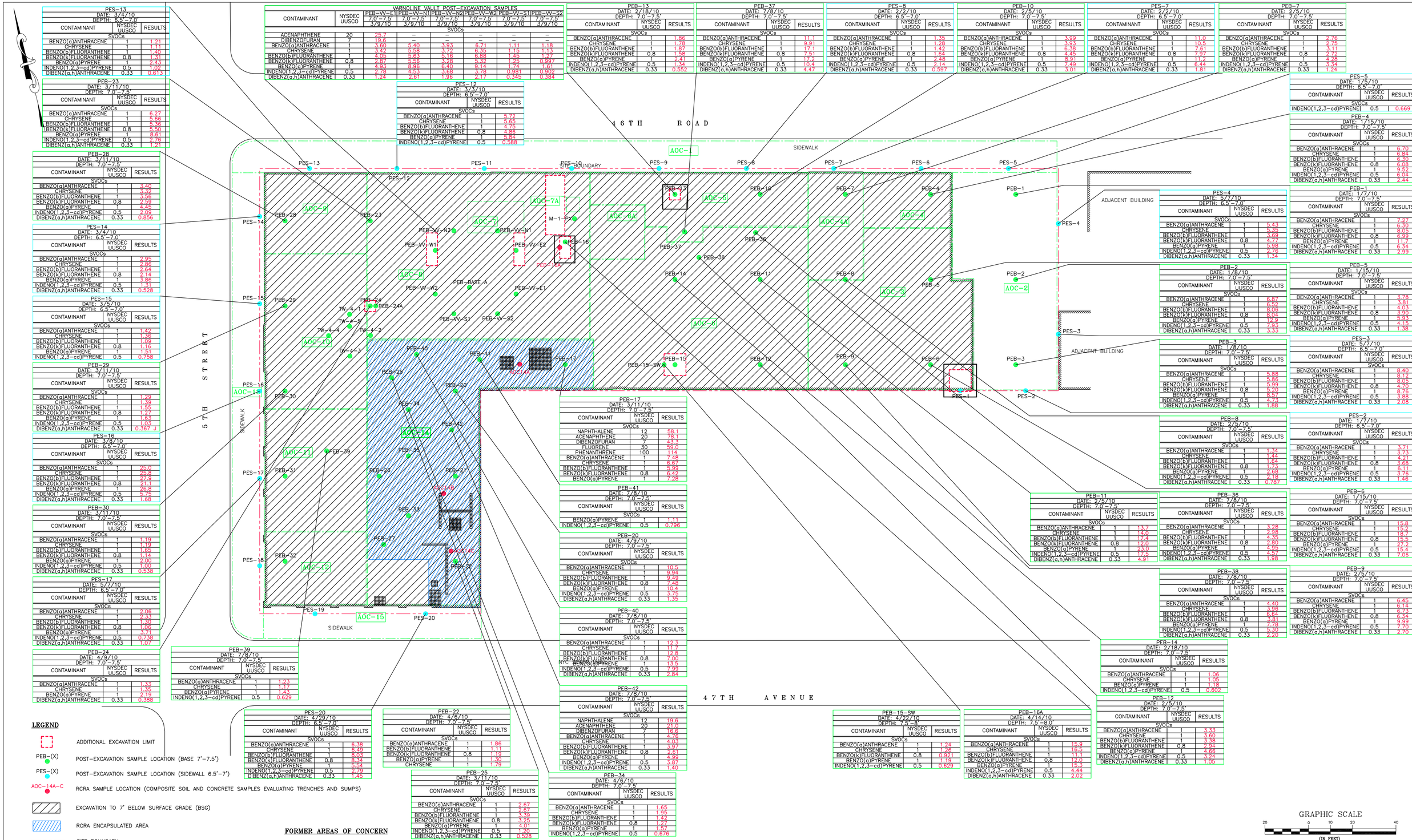
SCALE: AS SHOWN
DATE: 12/3/10
PROJECT# 207266
DRAWN BY: RR
CHECKED BY: BK
FILE: K:\Drawings\207000\207266\2010 WORK\SMP_207266R2.dwg

POST- REMEDIAL ACTION SSCO EXCEEDANCES MAP -VOCs, PESTICIDES, PCBs
OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 8A



PES-13
DATE: 3/4/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.21
CHRYSENE	1	1.11
BENZO(b)FLUORANTHENE	1	1.40
BENZO(k)FLUORANTHENE	0.8	1.31
BENZO(g)PYRENE	1	2.43
INDENO(1,2,3-cd)PYRENE	0.5	1.02
DIBENZ(a,h)ANTHRACENE	0.33	0.613

PEB-23
DATE: 3/11/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.27
CHRYSENE	1	5.66
BENZO(b)FLUORANTHENE	1	5.36
BENZO(k)FLUORANTHENE	0.8	5.50
BENZO(g)PYRENE	1	8.61
INDENO(1,2,3-cd)PYRENE	0.5	2.76
DIBENZ(a,h)ANTHRACENE	0.33	1.21

PEB-28
DATE: 3/11/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.40
CHRYSENE	1	3.32
BENZO(b)FLUORANTHENE	1	3.86
BENZO(k)FLUORANTHENE	0.8	2.59
BENZO(g)PYRENE	1	4.45
INDENO(1,2,3-cd)PYRENE	0.5	1.99
DIBENZ(a,h)ANTHRACENE	0.33	0.856

PES-14
DATE: 3/4/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.95
CHRYSENE	1	2.86
BENZO(b)FLUORANTHENE	1	2.64
BENZO(k)FLUORANTHENE	0.8	2.14
BENZO(g)PYRENE	1	3.86
INDENO(1,2,3-cd)PYRENE	0.5	1.31
DIBENZ(a,h)ANTHRACENE	0.33	0.528

PES-15
DATE: 3/5/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.42
CHRYSENE	1	1.36
BENZO(b)FLUORANTHENE	1	1.09
BENZO(k)FLUORANTHENE	0.8	1.16
BENZO(g)PYRENE	1	1.51
INDENO(1,2,3-cd)PYRENE	0.5	0.758

PEB-29
DATE: 3/11/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.29
CHRYSENE	1	1.39
BENZO(b)FLUORANTHENE	1	1.55
BENZO(k)FLUORANTHENE	0.8	1.27
BENZO(g)PYRENE	1	1.63
INDENO(1,2,3-cd)PYRENE	0.5	1.03
DIBENZ(a,h)ANTHRACENE	0.33	0.367 J

PES-16
DATE: 3/8/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	25.0
CHRYSENE	1	25.8
BENZO(b)FLUORANTHENE	1	27.9
BENZO(k)FLUORANTHENE	0.8	21.1
BENZO(g)PYRENE	1	26.8
INDENO(1,2,3-cd)PYRENE	0.5	5.75
DIBENZ(a,h)ANTHRACENE	0.33	1.68

PEB-30
DATE: 3/11/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.19
CHRYSENE	1	1.19
BENZO(b)FLUORANTHENE	1	1.65
BENZO(k)FLUORANTHENE	0.8	1.14
BENZO(g)PYRENE	1	2.00
INDENO(1,2,3-cd)PYRENE	0.5	1.00
DIBENZ(a,h)ANTHRACENE	0.33	0.538

PES-17
DATE: 5/7/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.06
CHRYSENE	1	2.33
BENZO(b)FLUORANTHENE	1	1.30
BENZO(k)FLUORANTHENE	0.8	1.06
BENZO(g)PYRENE	1	3.71
INDENO(1,2,3-cd)PYRENE	0.5	0.738
DIBENZ(a,h)ANTHRACENE	0.33	1.07

PEB-24
DATE: 4/9/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.33
CHRYSENE	1	1.35
BENZO(g)PYRENE	1	2.19
DIBENZ(a,h)ANTHRACENE	0.33	0.388

VARNOLINE VAULT POST-EXCAVATION SAMPLES

CONTAMINANT	NYSDEC UUSCO	PEB-W-E1 7.0'–7.5' 3/9/10	PEB-W-N1 7.0'–7.5' 3/9/10	PEB-W-N2 7.0'–7.5' 3/9/10	PEB-W-W2 7.0'–7.5' 3/9/10	PEB-W-S1 7.0'–7.5' 3/9/10	PEB-W-S2 7.0'–7.5' 3/9/10
SVOCs							
ACENAPHTHENE	20	25.7	–	–	–	–	–
DIBENZOFURAN	7	19.6	–	–	–	–	–
BENZO(a)ANTHRACENE	1	3.60	5.40	3.93	6.71	1.11	1.18
CHRYSENE	1	3.42	5.58	3.72	6.35	1.15	1.13
BENZO(b)FLUORANTHENE	1	4.05	5.63	5.16	6.88	1.45	1.27
BENZO(k)FLUORANTHENE	0.8	2.97	5.56	3.28	5.32	1.22	0.997
BENZO(g)PYRENE	1	4.93	8.95	5.40	9.14	1.75	1.61
INDENO(1,2,3-cd)PYRENE	0.5	2.78	4.53	3.68	3.78	0.981	0.902
DIBENZ(a,h)ANTHRACENE	0.33	1.24	2.61	1.96	2.17	0.345	0.384

PES-12
DATE: 3/3/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	5.72
CHRYSENE	1	5.65
BENZO(b)FLUORANTHENE	1	4.75
BENZO(k)FLUORANTHENE	0.8	4.86
BENZO(g)PYRENE	1	5.84
INDENO(1,2,3-cd)PYRENE	0.5	0.588

PEB-13
DATE: 2/18/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.86
CHRYSENE	1	1.78
BENZO(b)FLUORANTHENE	1	1.87
BENZO(k)FLUORANTHENE	0.8	1.58
BENZO(g)PYRENE	1	2.41
INDENO(1,2,3-cd)PYRENE	0.5	1.34
DIBENZ(a,h)ANTHRACENE	0.33	0.552

PEB-37
DATE: 7/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	11.1
CHRYSENE	1	9.91
BENZO(b)FLUORANTHENE	1	17.1
BENZO(k)FLUORANTHENE	0.8	7.51
BENZO(g)PYRENE	1	17.2
INDENO(1,2,3-cd)PYRENE	0.5	10.4
DIBENZ(a,h)ANTHRACENE	0.33	4.47

PEB-8
DATE: 2/12/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.35
CHRYSENE	1	1.28
BENZO(b)FLUORANTHENE	1	1.42
BENZO(k)FLUORANTHENE	0.8	1.64
BENZO(g)PYRENE	1	2.48
INDENO(1,2,3-cd)PYRENE	0.5	2.14
DIBENZ(a,h)ANTHRACENE	0.33	0.597

PEB-10
DATE: 2/5/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.99
CHRYSENE	1	3.93
BENZO(b)FLUORANTHENE	1	6.38
BENZO(k)FLUORANTHENE	0.8	4.45
BENZO(g)PYRENE	1	8.91
INDENO(1,2,3-cd)PYRENE	0.5	7.49
DIBENZ(a,h)ANTHRACENE	0.33	3.01

PES-7
DATE: 2/7/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	11.0
CHRYSENE	1	10.5
BENZO(b)FLUORANTHENE	1	7.61
BENZO(k)FLUORANTHENE	0.8	7.97
BENZO(g)PYRENE	1	11.2
INDENO(1,2,3-cd)PYRENE	0.5	6.44
DIBENZ(a,h)ANTHRACENE	0.33	1.81

PEB-7
DATE: 2/5/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.76
CHRYSENE	1	2.75
BENZO(b)FLUORANTHENE	1	3.11
BENZO(k)FLUORANTHENE	0.8	2.72
BENZO(g)PYRENE	1	4.28
INDENO(1,2,3-cd)PYRENE	0.5	3.34
DIBENZ(a,h)ANTHRACENE	0.33	1.24

PES-5
DATE: 1/5/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
INDENO(1,2,3-cd)PYRENE	0.5	0.669

PEB-4
DATE: 1/15/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.70
CHRYSENE	1	6.84
BENZO(b)FLUORANTHENE	1	6.30
BENZO(k)FLUORANTHENE	0.8	6.05
BENZO(g)PYRENE	1	9.52
INDENO(1,2,3-cd)PYRENE	0.5	6.04
DIBENZ(a,h)ANTHRACENE	0.33	2.44

PEB-1
DATE: 1/7/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	7.27
CHRYSENE	1	6.30
BENZO(b)FLUORANTHENE	1	8.05
BENZO(k)FLUORANTHENE	0.8	6.99
BENZO(g)PYRENE	1	11.7
INDENO(1,2,3-cd)PYRENE	0.5	6.34
DIBENZ(a,h)ANTHRACENE	0.33	2.99

PEB-4
DATE: 5/7/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	5.43
CHRYSENE	1	5.35
BENZO(b)FLUORANTHENE	1	3.69
BENZO(k)FLUORANTHENE	0.8	4.77
BENZO(g)PYRENE	1	5.98
INDENO(1,2,3-cd)PYRENE	0.5	2.76
DIBENZ(a,h)ANTHRACENE	0.33	1.34

PEB-2
DATE: 1/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.87
CHRYSENE	1	6.52
BENZO(b)FLUORANTHENE	1	8.06
BENZO(k)FLUORANTHENE	0.8	8.04
BENZO(g)PYRENE	1	12.9
INDENO(1,2,3-cd)PYRENE	0.5	7.93
DIBENZ(a,h)ANTHRACENE	0.33	3.33

PEB-5
DATE: 1/15/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.78
CHRYSENE	1	3.81
BENZO(b)FLUORANTHENE	1	4.03
BENZO(k)FLUORANTHENE	0.8	3.90
BENZO(g)PYRENE	1	5.93
INDENO(1,2,3-cd)PYRENE	0.5	4.15
DIBENZ(a,h)ANTHRACENE	0.33	1.38

PEB-3
DATE: 1/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	5.88
CHRYSENE	1	5.86
BENZO(b)FLUORANTHENE	1	5.99
BENZO(k)FLUORANTHENE	0.8	5.20
BENZO(g)PYRENE	1	8.57
INDENO(1,2,3-cd)PYRENE	0.5	4.73
DIBENZ(a,h)ANTHRACENE	0.33	1.88

PES-3
DATE: 5/7/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	8.40
CHRYSENE	1	8.12
BENZO(b)FLUORANTHENE	1	8.05
BENZO(k)FLUORANTHENE	0.8	4.70
BENZO(g)PYRENE	1	8.76
INDENO(1,2,3-cd)PYRENE	0.5	3.88
DIBENZ(a,h)ANTHRACENE	0.33	2.08

PEB-8
DATE: 2/5/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.34
CHRYSENE	1	1.44
BENZO(b)FLUORANTHENE	1	1.64
BENZO(k)FLUORANTHENE	0.8	1.73
BENZO(g)PYRENE	1	2.68
INDENO(1,2,3-cd)PYRENE	0.5	2.18
DIBENZ(a,h)ANTHRACENE	0.33	0.787

PES-2
DATE: 1/7/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.71
CHRYSENE	1	3.73
BENZO(b)FLUORANTHENE	1	4.72
BENZO(k)FLUORANTHENE	0.8	3.68
BENZO(g)PYRENE	1	6.11
INDENO(1,2,3-cd)PYRENE	0.5	3.76
DIBENZ(a,h)ANTHRACENE	0.33	1.46

PEB-11
DATE: 2/5/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	13.7
CHRYSENE	1	14.0
BENZO(b)FLUORANTHENE	1	17.4
BENZO(k)FLUORANTHENE	0.8	12.0
BENZO(g)PYRENE	1	23.0
INDENO(1,2,3-cd)PYRENE	0.5	17.5
DIBENZ(a,h)ANTHRACENE	0.33	4.91

PEB-36
DATE: 7/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.28
CHRYSENE	1	2.98
BENZO(b)FLUORANTHENE	1	4.35
BENZO(k)FLUORANTHENE	0.8	2.80
BENZO(g)PYRENE	1	4.95
INDENO(1,2,3-cd)PYRENE	0.5	4.57
DIBENZ(a,h)ANTHRACENE	0.33	1.98

PEB-38
DATE: 7/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	4.40
CHRYSENE	1	3.96
BENZO(b)FLUORANTHENE	1	6.64
BENZO(k)FLUORANTHENE	0.8	3.81
BENZO(g)PYRENE	1	7.78
INDENO(1,2,3-cd)PYRENE	0.5	5.30
DIBENZ(a,h)ANTHRACENE	0.33	2.20

PEB-9
DATE: 2/5/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.45
CHRYSENE	1	6.14
BENZO(b)FLUORANTHENE	1	6.73
BENZO(k)FLUORANTHENE	0.8	6.34
BENZO(g)PYRENE	1	9.99
INDENO(1,2,3-cd)PYRENE	0.5	7.78
DIBENZ(a,h)ANTHRACENE	0.33	2.70

PEB-6
DATE: 1/15/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	15.8
CHRYSENE	1	15.2
BENZO(b)FLUORANTHENE	1	18.7
BENZO(k)FLUORANTHENE	0.8	15.5
BENZO(g)PYRENE	1	27.2
INDENO(1,2,3-cd)PYRENE	0.5	15.4
DIBENZ(a,h)ANTHRACENE	0.33	7.06

PEB-14
DATE: 2/18/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.06
CHRYSENE	1	1.05
BENZO(g)PYRENE	1	1.18
INDENO(1,2,3-cd)PYRENE	0.5	0.602

PEB-12
DATE: 2/5/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.33
CHRYSENE	1	3.60
BENZO(b)FLUORANTHENE	1	3.38
BENZO(k)FLUORANTHENE	0.8	2.94
BENZO(g)PYRENE	1	4.66
INDENO(1,2,3-cd)PYRENE	0.5	3.24
DIBENZ(a,h)ANTHRACENE	0.33	1.05

PEB-17
DATE: 3/11/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
NAPHTHALENE	12	58.1
ACENAPHTHENE	20	78.1
DIBENZOFURAN	7	43.3
FLUORENE	30	59.0
PHENANTHRENE	100	114
BENZO(a)ANTHRACENE	1	7.48
CHRYSENE	1	6.67
BENZO(b)FLUORANTHENE	1	5.99
BENZO(k)FLUORANTHENE	0.8	6.42
BENZO(g)PYRENE	1	7.28

PEB-41
DATE: 7/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(g)PYRENE	1	1.11
INDENO(1,2,3-cd)PYRENE	0.5	0.796

PEB-20
DATE: 4/9/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	10.5
CHRYSENE	1	9.94
BENZO(b)FLUORANTHENE	1	9.49
BENZO(k)FLUORANTHENE	0.8	7.48
BENZO(g)PYRENE	1	10.4
INDENO(1,2,3-cd)PYRENE	0.5	5.75
DIBENZ(a,h)ANTHRACENE	0.33	1.35

PEB-40
DATE: 7/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	12.3
CHRYSENE	1	11.7
BENZO(b)FLUORANTHENE	1	12.8
BENZO(k)FLUORANTHENE	0.8	7.00
BENZO(g)PYRENE	1	13.5
INDENO(1,2,3-cd)PYRENE	0.5	7.99
DIBENZ(a,h)ANTHRACENE	0.33	2.84

PEB-42
DATE: 7/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
NAPHTHALENE	12	19.6
ACENAPHTHENE	20	21.0
DIBENZOFURAN	7	16.6
BENZO(a)ANTHRACENE	1	4.76
CHRYSENE	1	4.03
BENZO(b)FLUORANTHENE	1	3.97
BENZO(k)FLUORANTHENE	0.8	2.61
BENZO(g)PYRENE	1	4.99
INDENO(1,2,3-cd)PYRENE	0.5	3.87
DIBENZ(a,h)ANTHRACENE	0.33	1.40

PEB-39
DATE: 7/8/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.23
CHRYSENE	1	1.17
BENZO(g)PYRENE	1	1.43
INDENO(1,2,3-cd)PYRENE	0.5	0.629

PES-20
DATE: 4/29/10
DEPTH: 6.5'–7.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.38
CHRYSENE	1	6.49
BENZO(b)FLUORANTHENE	1	8.03
BENZO(k)FLUORANTHENE	0.8	8.34
BENZO(g)PYRENE	1	5.54
INDENO(1,2,3-cd)PYRENE	0.5	2.79
DIBENZ(a,h)ANTHRACENE	0.33	1.45

PEB-22
DATE: 4/6/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.86
BENZO(b)FLUORANTHENE	1	1.11
BENZO(k)FLUORANTHENE	0.8	1.19
BENZO(g)PYRENE	1	1.30
CHRYSENE	1	1.79

PEB-25
DATE: 5/11/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.67
CHRYSENE	1	2.67
BENZO(b)FLUORANTHENE	1	3.39
BENZO(k)FLUORANTHENE	0.8	3.25
BENZO(g)PYRENE	1	4.01
INDENO(1,2,3-cd)PYRENE	0.5	1.20
DIBENZ(a,h)ANTHRACENE	0.33	0.528

PEB-34
DATE: 4/6/10
DEPTH: 7.0'–7.5'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.65
CHRYSENE	1	1.95
BENZO(b)FLUORANTHENE	1	1.42
BENZO(k)FLUORANTHENE	0.8	1.27
BENZO(g)PYRENE	1	1.57
INDENO(1,2,3-cd)PYRENE	0.5	0.676

PEB-15-SW
DATE: 4/22/10
DEPTH: 7.5'–8'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.24
CHRYSENE	1	1.26
BENZO(k)FLUORANTHENE	0.8	0.921
BENZO(g)PYRENE	1	1.19
INDENO(1,2,3-cd)PYRENE	0.5	0.629

PEB-16A
DATE: 4/14/10
DEPTH: 7.5'–8.0'

CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	15.9
CHRYSENE	1	16.5
BENZO(b)FLUORANTHENE	1	17.1
BENZO(k)FLUORANTHENE	0.8	12.0
BENZO(g)PYRENE	1	15.3
INDENO(1,2,3-cd)PYRENE	0.5	4.44
DIBENZ(a,h)ANTHRACENE	0.33	2.02

LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-(X) POST-EXCAVATION SAMPLE LOCATION (BASE 7'–7.5')
- PES-(X) POST-EXCAVATION SAMPLE LOCATION (SIDEWALL 6.5'–7')
- AOC-14A–C RCRA SAMPLE LOCATION (COMPOSITE SOIL AND CONCRETE SAMPLES EVALUATING TRENCHES AND SUMPS)
- EXCAVATION TO 7' BELOW SURFACE GRADE (BSG)
- RCRA ENCAPSULATED AREA
- SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- AOC BOUNDARY
- CURB LINES
- TANK VAULT BOUNDARY
- 28 (7) UNDER GROUND STORAGE TANK WITH ID NUMBER
- SUMP LOCATION
- FLOOR TRENCH

FORMER AREAS OF CONCERN

AOC-1	FORMER 10,000 GALLON #6 FUEL OIL UST/46th ROAD SIDEWALK	AOC-5	3–STORY BRICK BUILDING (ART STUDIOS)	AOC-8	SUSPECT TWENTY–TWO (22) 1,500 GALLON VARNOLINE STORAGE TANKS	AOC-13	5TH STREET SIDEWALK
AOC-2	EASTERN PARKING LOT	AOC-6	1–STORY BRICK BUILDING (KNOSSOS CUSTOM DESIGN FURNITURE)	AOC-9	1–STORY BUILDING (AMN RENOVATION)	AOC-14	FORMER ACCURATE ASSOCIATES RCRA AREA
AOC-3	1–STORY BRICK/CONCRETE BLOCK BUILDING (DEMAND ELECTRIC)	AOC-6A	2–STORY BRICK BUILDING	AOC-10	1–STORY BUILDING (JMJ ELECTRICAL)/SUSPECT UST AND FILL/VENT PORTS	AOC-15	47TH AVENUE SIDEWALK
AOC-4	MOTORCYCLE REPAIR SHOP (BASEMENT 2–STORY BRICK BUILDING)	AOC-7	SUSPECT FORMER GASOLINE STORAGE TANKS	AOC-11	FORMER WOHL, INC. CLEANERS AND DYERS (DIRECT AIR)		
AOC-4A	1–STORY BUILDING	AOC-7A	SUSPECT FORMER BOILER/STACK AREA	AOC-12	FORMER WOHL, INC. CLEANERS AND DYERS (LIBERTY CONTRACTING)		

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

NOTES: ALL RESULTS IN RED EXCEED NYSDEC UUSCO (UNRESTRICTED); ALL RESULTS ARE IN PARTS PER MILLION (PPM)
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

Environmental Waste Management Associates, LLC
P.O. Box 5430
Parsippany, NJ 07054
Tel: (973) 560-1400

SCALE: AS SHOWN | PROJECT# 207266
DATE: 12/3/10
DRAWN BY: RR
CHECKED BY: BK
FILE: S:\ewma\pj\207000\207266\2010 WOHL\SAP\207266S.dwg

POST REMEDIAL ACTION SOIL UUSCO EXCEEDANCES MAP –SVOCs
OCA LIC FIFTH STREET MIXED–USE HOUSING
5–20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 9

VARNOLINE VAULT POST-EXCAVATION SAMPLES

CONTAMINANT	NYSDEC SSCO	PEB-VV-E1 7.0'-7.5' 3/9/10	PEB-VV-N1 7.0'-7.5' 3/9/10	PEB-VV-N2 7.0'-7.5' 3/9/10	PEB-VV-W2 7.0'-7.5' 3/9/10	PEB-VV-S1 7.0'-7.5' 3/9/10	PEB-VV-S2 7.0'-7.5' 3/9/10
SVOCs							
BENZO(a)ANTHRACENE	1	3.60	5.40	3.93	6.21	1.11	1.18
CHRYSENE	3.9	–	5.58	–	6.35	–	–
BENZO(b)FLUORANTHENE	1	4.05	5.63	5.16	6.68	1.45	1.27
BENZO(k)FLUORANTHENE	1	2.87	5.56	3.28	5.92	1.25	–
BENZO(g)PYRENE	1	4.93	8.96	6.40	9.14	1.74	1.61
INDENO(1,2,3-cd)PYRENE	0.5	2.78	4.53	3.68	3.78	0.981	0.902
DIBENZ(a,h)ANTHRACENE	0.33	1.24	2.61	1.96	2.17	0.345	0.384

PES-13
DATE: 3/4/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.21
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.40
BENZO(k)FLUORANTHENE	1	1.31
BENZO(g)PYRENE	1	2.43
INDENO(1,2,3-cd)PYRENE	0.5	1.02
DIBENZ(a,h)ANTHRACENE	0.33	0.613

PES-28
DATE: 3/17/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.40
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	3.56
BENZO(k)FLUORANTHENE	1	2.59
BENZO(g)PYRENE		4.45
INDENO(1,2,3-cd)PYRENE	0.5	2.09
DIBENZ(a,h)ANTHRACENE	0.33	0.856

PES-12
DATE: 3/3/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	5.72
CHRYSENE	3.9	5.65
BENZO(b)FLUORANTHENE	1	4.75
BENZO(k)FLUORANTHENE	1	4.66
BENZO(g)PYRENE	1	5.84
INDENO(1,2,3-cd)PYRENE	0.5	0.588

PEB-37
DATE: 7/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	11.1
CHRYSENE	3.9	9.91
BENZO(b)FLUORANTHENE	1	17.1
BENZO(k)FLUORANTHENE	1	7.53
BENZO(g)PYRENE	1	17.2
INDENO(1,2,3-cd)PYRENE	0.5	10.4
DIBENZ(a,h)ANTHRACENE	0.33	4.47

PEB-38
DATE: 7/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	4.40
CHRYSENE	3.9	3.96
BENZO(b)FLUORANTHENE	1	6.64
BENZO(k)FLUORANTHENE	1	3.81
BENZO(g)PYRENE	1	7.78
INDENO(1,2,3-cd)PYRENE	0.5	3.30
DIBENZ(a,h)ANTHRACENE	0.33	2.20

PES-8
DATE: 2/2/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.35
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.42
BENZO(k)FLUORANTHENE	1	1.64
BENZO(g)PYRENE	1	2.48
INDENO(1,2,3-cd)PYRENE	0.5	2.14
DIBENZ(a,h)ANTHRACENE	0.33	0.597

PEB-10
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.99
CHRYSENE	3.9	3.93
BENZO(b)FLUORANTHENE	1	6.38
BENZO(k)FLUORANTHENE	1	4.45
BENZO(g)PYRENE	1	8.91
INDENO(1,2,3-cd)PYRENE	0.5	7.49
DIBENZ(a,h)ANTHRACENE	0.33	3.01

PES-7
DATE: 2/2/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	11.0
CHRYSENE	3.9	10.5
BENZO(b)FLUORANTHENE	1	7.61
BENZO(k)FLUORANTHENE	1	7.97
BENZO(g)PYRENE	1	11.2
INDENO(1,2,3-cd)PYRENE	0.5	6.44
DIBENZ(a,h)ANTHRACENE	0.33	1.81

PEB-7
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.76
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	3.11
BENZO(k)FLUORANTHENE	1	2.72
BENZO(g)PYRENE	1	4.28
INDENO(1,2,3-cd)PYRENE	0.5	3.54
DIBENZ(a,h)ANTHRACENE	0.33	1.24

PEB-36
DATE: 7/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.28
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	4.35
BENZO(k)FLUORANTHENE	1	2.80
BENZO(g)PYRENE	1	4.89
INDENO(1,2,3-cd)PYRENE	0.5	4.57
DIBENZ(a,h)ANTHRACENE	0.33	1.98

PES-5
DATE: 1/5/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
INDENO(1,2,3-cd)PYRENE	0.5	0.669

PES-14
DATE: 3/4/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.95
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	2.64
BENZO(k)FLUORANTHENE	1	2.14
BENZO(g)PYRENE	1	3.66
INDENO(1,2,3-cd)PYRENE	0.5	1.31
DIBENZ(a,h)ANTHRACENE	0.33	0.528

PEB-23
DATE: 3/17/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.27
CHRYSENE	3.9	5.66
BENZO(b)FLUORANTHENE	1	5.36
BENZO(k)FLUORANTHENE	1	5.50
BENZO(g)PYRENE	1	8.51
INDENO(1,2,3-cd)PYRENE	0.5	2.76
DIBENZ(a,h)ANTHRACENE	0.33	1.21

PES-15
DATE: 3/5/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.42
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.09
BENZO(k)FLUORANTHENE	1	1.16
BENZO(g)PYRENE	1	1.51
INDENO(1,2,3-cd)PYRENE	0.5	0.758

PEB-29
DATE: 3/17/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.29
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.55
BENZO(k)FLUORANTHENE	1	1.27
BENZO(g)PYRENE	1	1.63
INDENO(1,2,3-cd)PYRENE	0.5	1.03
DIBENZ(a,h)ANTHRACENE	0.33	0.367 J

PEB-24A
DATE: 4/9/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.33
CHRYSENE	3.9	–
BENZO(g)PYRENE	1	2.19
DIBENZ(a,h)ANTHRACENE	0.33	0.388

PES-16
DATE: 3/8/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	25.0
CHRYSENE	3.9	25.8
BENZO(b)FLUORANTHENE	1	27.9
BENZO(k)FLUORANTHENE	1	21.1
BENZO(g)PYRENE	1	26.8
INDENO(1,2,3-cd)PYRENE	0.5	5.75
DIBENZ(a,h)ANTHRACENE	0.33	1.68

PEB-30
DATE: 3/17/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.19
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.65
BENZO(k)FLUORANTHENE	1	1.14
BENZO(g)PYRENE	1	2.00
INDENO(1,2,3-cd)PYRENE	0.5	1.00
DIBENZ(a,h)ANTHRACENE	0.33	0.538

PES-17
DATE: 3/31/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.06
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.39
BENZO(k)FLUORANTHENE	1	1.06
BENZO(g)PYRENE	1	3.71
INDENO(1,2,3-cd)PYRENE	0.5	0.738
DIBENZ(a,h)ANTHRACENE	0.33	1.07

PEB-39
DATE: 7/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.23
BENZO(g)PYRENE	1	1.43
INDENO(1,2,3-cd)PYRENE	0.5	0.629

PEB-25
DATE: 3/17/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	2.67
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	3.39
BENZO(k)FLUORANTHENE	1	3.25
BENZO(g)PYRENE	1	4.01
INDENO(1,2,3-cd)PYRENE	0.5	1.25
DIBENZ(a,h)ANTHRACENE	0.33	0.528

PEB-34
DATE: 4/6/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.65
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.42
BENZO(k)FLUORANTHENE	1	1.27
BENZO(g)PYRENE	1	1.67
INDENO(1,2,3-cd)PYRENE	0.5	0.676

PEB-40
DATE: 7/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	12.3
CHRYSENE	3.9	11.7
BENZO(b)FLUORANTHENE	1	17.8
BENZO(k)FLUORANTHENE	1	7.00
BENZO(g)PYRENE	1	13.5
INDENO(1,2,3-cd)PYRENE	0.5	7.99
DIBENZ(a,h)ANTHRACENE	0.33	2.84

PES-20
DATE: 4/29/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.38
CHRYSENE	3.9	6.49
BENZO(b)FLUORANTHENE	1	8.03
BENZO(k)FLUORANTHENE	1	8.34
BENZO(g)PYRENE	1	5.54
INDENO(1,2,3-cd)PYRENE	0.5	2.79
DIBENZ(a,h)ANTHRACENE	0.33	1.45

PEB-42
DATE: 7/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	4.76
CHRYSENE	3.9	4.03
BENZO(b)FLUORANTHENE	1	3.97
BENZO(k)FLUORANTHENE	1	2.61
BENZO(g)PYRENE	1	4.99
INDENO(1,2,3-cd)PYRENE	0.5	3.87
DIBENZ(a,h)ANTHRACENE	0.33	1.40

PEB-20
DATE: 4/9/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	10.5
CHRYSENE	3.9	9.94
BENZO(b)FLUORANTHENE	1	9.49
BENZO(k)FLUORANTHENE	1	7.48
BENZO(g)PYRENE	1	10.4
INDENO(1,2,3-cd)PYRENE	0.5	3.75
DIBENZ(a,h)ANTHRACENE	0.33	1.36

PEB-22
DATE: 4/6/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.86
BENZO(b)FLUORANTHENE	1	1.13
BENZO(k)FLUORANTHENE	1	1.19
BENZO(g)PYRENE	1	1.30

PEB-41
DATE: 7/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(g)PYRENE	1	1.11
INDENO(1,2,3-cd)PYRENE	0.5	0.798

PEB-17
DATE: 5/17/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
PHENANTHRENE	100	114
BENZO(a)ANTHRACENE	1	7.48
CHRYSENE	3.9	6.67
BENZO(b)FLUORANTHENE	1	5.99
BENZO(k)FLUORANTHENE	1	6.42
BENZO(g)PYRENE	1	7.28

PEB-15-SW
DATE: 4/22/10
DEPTH: 7.5'-8'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.24
CHRYSENE	3.9	–
BENZO(g)PYRENE	1	1.19
INDENO(1,2,3-cd)PYRENE	0.5	0.629

PEB-16A
DATE: 4/14/10
DEPTH: 7.5'-8'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	15.9
CHRYSENE	3.9	16.5
BENZO(b)FLUORANTHENE	1	11.1
BENZO(k)FLUORANTHENE	1	12.0
BENZO(g)PYRENE	1	15.3
INDENO(1,2,3-cd)PYRENE	0.5	4.44
DIBENZ(a,h)ANTHRACENE	0.33	2.02

PEB-14
DATE: 2/18/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.06
CHRYSENE	3.9	–
BENZO(g)PYRENE	1	1.18
INDENO(1,2,3-cd)PYRENE	0.5	0.602

PEB-12
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.33
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	3.38
BENZO(k)FLUORANTHENE	1	2.94
BENZO(g)PYRENE	1	4.66
INDENO(1,2,3-cd)PYRENE	0.5	1.24
DIBENZ(a,h)ANTHRACENE	0.33	1.05

PEB-11
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	13.7
CHRYSENE	3.9	14.0
BENZO(b)FLUORANTHENE	1	17.4
BENZO(k)FLUORANTHENE	1	12.0
BENZO(g)PYRENE	1	23.0
INDENO(1,2,3-cd)PYRENE	0.5	17.5
DIBENZ(a,h)ANTHRACENE	0.33	4.91

PES-4
DATE: 5/7/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	5.43
CHRYSENE	3.9	5.35
BENZO(b)FLUORANTHENE	1	3.69
BENZO(k)FLUORANTHENE	1	4.27
BENZO(g)PYRENE	1	5.98
INDENO(1,2,3-cd)PYRENE	0.5	2.76
DIBENZ(a,h)ANTHRACENE	0.33	1.34

PEB-9
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.45
CHRYSENE	3.9	6.14
BENZO(b)FLUORANTHENE	1	6.73
BENZO(k)FLUORANTHENE	1	6.14
BENZO(g)PYRENE	1	9.99
INDENO(1,2,3-cd)PYRENE	0.5	7.70
DIBENZ(a,h)ANTHRACENE	0.33	2.70

PEB-6
DATE: 1/15/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	15.8
CHRYSENE	3.9	15.2
BENZO(b)FLUORANTHENE	1	18.7
BENZO(k)FLUORANTHENE	1	15.5
BENZO(g)PYRENE	1	27.2
INDENO(1,2,3-cd)PYRENE	0.5	15.5
DIBENZ(a,h)ANTHRACENE	0.33	7.06

PEB-4
DATE: 1/15/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.70
CHRYSENE	3.9	6.84
BENZO(b)FLUORANTHENE	1	8.30
BENZO(k)FLUORANTHENE	1	6.08
BENZO(g)PYRENE	1	9.52
INDENO(1,2,3-cd)PYRENE	0.5	6.04
DIBENZ(a,h)ANTHRACENE	0.33	2.44

PEB-1
DATE: 1/7/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	7.27
CHRYSENE	3.9	8.38
BENZO(b)FLUORANTHENE	1	8.05
BENZO(k)FLUORANTHENE	1	6.99
BENZO(g)PYRENE	1	11.7
INDENO(1,2,3-cd)PYRENE	0.5	6.34
DIBENZ(a,h)ANTHRACENE	0.33	2.99

PEB-2
DATE: 1/8/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	6.87
CHRYSENE	3.9	6.52
BENZO(b)FLUORANTHENE	1	8.06
BENZO(k)FLUORANTHENE	1	8.04
BENZO(g)PYRENE	1	12.3
INDENO(1,2,3-cd)PYRENE	0.5	7.23
DIBENZ(a,h)ANTHRACENE	0.33	3.33

PEB-5
DATE: 1/15/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.78
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	4.03
BENZO(k)FLUORANTHENE	1	3.90
BENZO(g)PYRENE	1	5.93
INDENO(1,2,3-cd)PYRENE	0.5	4.18
DIBENZ(a,h)ANTHRACENE	0.33	1.38

PES-3
DATE: 5/7/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	8.40
CHRYSENE	3.9	8.17
BENZO(b)FLUORANTHENE	1	8.05
BENZO(k)FLUORANTHENE	1	4.70
BENZO(g)PYRENE	1	8.76
INDENO(1,2,3-cd)PYRENE	0.5	3.88
DIBENZ(a,h)ANTHRACENE	0.33	2.08

PEB-3
DATE: 1/8/10
DEPTH: 7.0'-7.5'

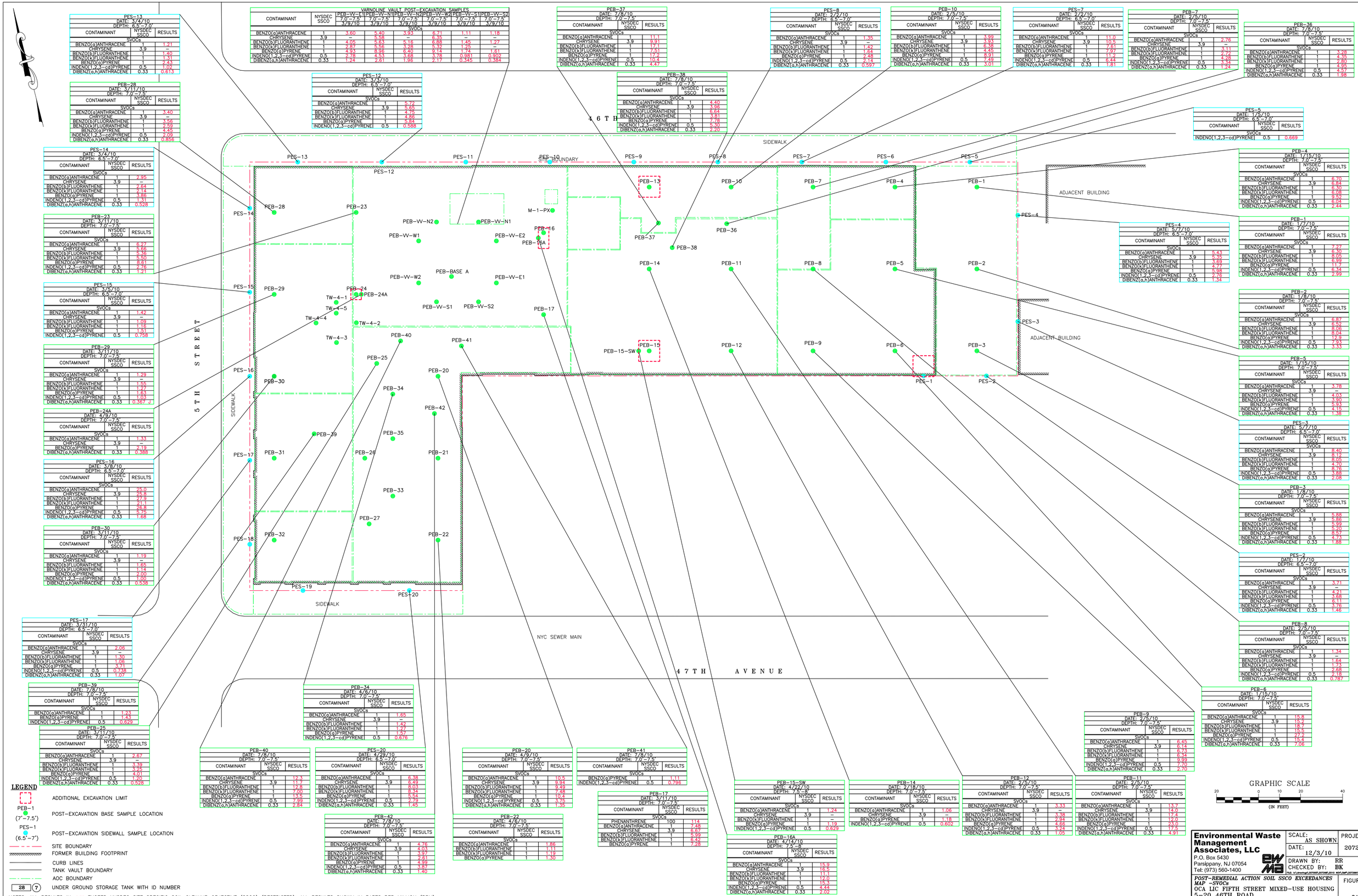
CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	5.88
CHRYSENE	3.9	5.86
BENZO(b)FLUORANTHENE	1	5.39
BENZO(k)FLUORANTHENE	1	5.20
BENZO(g)PYRENE	1	8.21
INDENO(1,2,3-cd)PYRENE	0.5	4.73
DIBENZ(a,h)ANTHRACENE	0.33	1.88

PES-2
DATE: 1/7/10
DEPTH: 6.5'-7.0'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	3.71
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	4.21
BENZO(k)FLUORANTHENE	1	3.68
BENZO(g)PYRENE	1	6.11
INDENO(1,2,3-cd)PYRENE	0.5	3.76
DIBENZ(a,h)ANTHRACENE	0.33	1.46

PEB-8
DATE: 2/5/10
DEPTH: 7.0'-7.5'

CONTAMINANT	NYSDEC SSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	1.34
CHRYSENE	3.9	–
BENZO(b)FLUORANTHENE	1	1.64
BENZO(k)FLUORANTHENE	1	1.73
BENZO(g)PYRENE	1	2.68
INDENO(1,2,3-cd)PYRENE	0.5	2.18
DIBENZ(a,h)ANTHRACENE	0.33	0.787



LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-1 (7'-7.5') — POST-EXCAVATION BASE SAMPLE LOCATION
- PES-1 (6.5'-7') — POST-EXCAVATION SIDEWALL SAMPLE LOCATION
- SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- CURB LINES
- TANK VAULT BOUNDARY
- AOC BOUNDARY
- 28 (7) — UNDER GROUND STORAGE TANK WITH ID NUMBER

NOTES: ALL RESULTS IN RED EXCEED NYSDEC SITE SPECIFIC SOIL CLEANUP OBJECTIVE (SSCO) (RESTRICTED); ALL RESULTS SHOWN IN PARTS PER MILLION (PPM)
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

Environmental Waste Management Associates, LLC
P.O. Box 5430
Parsippany, NJ 07054
Tel: (973) 560-1400

SCALE: AS SHOWN
DATE: 12/3/10
PROJECT# 207266
DRAWN BY: RR
CHECKED BY: BK
FILE: X:\Drawings\2070007\2070007_2010 MOP,SMP\2070007-Aug

POST-REMEDIAL ACTION SOIL SSCO EXCEEDANCES MAP -SVOCs
OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 9A

PES-13		
DATE: 3/4/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	465
MERCURY	0.18	0.812

PEB-23		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	437
CHROMIUM, TRIVALENT	30	45.1
COPPER	50	121
LEAD	63	753
MERCURY	0.18	1.50
ZINC	109	234

PEB-28		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	625
CHROMIUM, TRIVALENT	30	39.1
COPPER	50	128
LEAD	63	449
MERCURY	0.18	3.01
SELENIUM	3.9	3.94
ZINC	109	444

PES-14		
DATE: 3/4/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	750
COPPER	50	78.8
LEAD	63	351
MERCURY	0.18	1.18
ZINC	109	424

PEB-29		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	377
CHROMIUM, TRIVALENT	30	34.1
COPPER	50	278
LEAD	63	364
MERCURY	0.18	1.98
ZINC	109	560

PES-15		
DATE: 3/5/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	107
ZINC	109	157

PEB-24		
DATE: 4/9/10		
DEPTH: 7.5'-8'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	425
COPPER	50	54.9
LEAD	63	290
MERCURY	0.18	1.11
ZINC	109	483
DEPTH: 7.0'-7.5'		
ARSENIC	13	17.5
COPPER	50	131
LEAD	63	485
MERCURY	0.18	1.01
ZINC	109	522

PES-16		
DATE: 3/8/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	199
MERCURY	0.18	0.832
ZINC	109	160

PEB-30		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	74.1
LEAD	63	428
MERCURY	0.18	6.12
ZINC	109	182

PES-17		
DATE: 3/31/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	27.4
COPPER	50	326
LEAD	63	138
MERCURY	0.18	0.323
NICKEL	30	44.6
ZINC	109	515
GENERAL		
CYANIDE, TOTAL	27	217

PEB-39		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	20.2
COPPER	50	653
LEAD	63	278
MERCURY	0.18	8.83
NICKEL	30	32.7
ZINC	109	695

VARNOLINE VAULT POST-EXCAVATION SAMPLES							
CONTAMINANT	NYSDEC UUSCO	PEB-W-E1 7.0'-7.5' 3/9/10	PEB-W-N1 7.0'-7.5' 3/9/10	PEB-W-N2 7.0'-7.5' 3/9/10	PEB-W-W2 7.0'-7.5' 3/9/10	PEB-W-S1 7.0'-7.5' 3/9/10	PEB-W-S2 7.0'-7.5' 3/9/10
METALS							
ARSENIC	13	18.9	–	–	–	13.5	14.7
BARIUM	350	358	–	–	507	804	–
CHROMIUM	30	–	–	–	86.6	–	–
COPPER	50	148	68.8	63.2	144	119	60.7
LEAD	63	216	254	199	631	543	419
MERCURY	0.18	0.421	2.16	2.28	2.15	2.62	0.827
NICKEL	30	–	–	–	–	–	–
SELENIUM	3.9	–	–	–	–	–	–
ZINC	109	369	255	247	514	828	145

CONTAMINANT	NYSDEC UUSCO	PEB-13N 7/12/10 7.0'-7.5'	PEB-13E 7/12/10 7.0'-7.5'	PEB-13S 7/12/10 7.0'-7.5'	PEB-13W 7/12/10 7.0'-7.5'	PEB-13B 7/12/10 7.0'-7.5'
METALS						
LEAD/63	63	100	43.6	406	146	213

PES-12		
DATE: 3/3/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	372
COPPER	50	51.0
LEAD	63	465
MERCURY	0.18	0.812
ZINC	109	366

PES-11		
DATE: 3/3/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
CHROMIUM, TRIVALENT	30	77.7
COPPER	50	268
LEAD	63	559
ZINC	109	301

PES-10		
DATE: 2/24/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	349
MERCURY	0.18	0.270
ZINC	109	136

PEB-37		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	497
MERCURY	0.18	0.279

PES-8		
DATE: 2/22/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	70.1
MERCURY	0.18	0.211
ZINC	109	107

PEB-10		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	122
MERCURY	0.18	0.582

PEB-36		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	66.3
LEAD	63	503
MERCURY	0.18	4.55
ZINC	109	459

PES-7		
DATE: 2/7/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	139
LEAD	63	692
MERCURY	0.18	5.01
ZINC	109	563

PEB-7		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
MERCURY	0.18	0.904

PEB-4		
DATE: 7/15/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	147
ZINC	109	204

PEB-1		
DATE: 1/7/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
SVOCs		
BENZO(a)ANTHRACENE	1	7.27
CHRYSENE	1	6.30
BENZO(b)FLUORANTHENE	1	8.05
BENZO(k)FLUORANTHENE	0.8	6.99
BENZO(g)PYRENE	1	11.7
INDENO(1,2,3-cd)PYRENE	0.5	6.34
DIBENZ(a,h)ANTHRACENE	0.33	2.99

PEB-8		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	212
MERCURY	0.18	0.805
ZINC	109	234

PES-4		
DATE: 5/7/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	502
CHROMIUM (TRIVALENT)	30	40.8
COPPER	50	199
LEAD	63	1,620
MERCURY	0.18	2.04
ZINC	109	678

PES-5		
DATE: 7/15/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	128
LEAD	63	417
MERCURY	0.18	0.840
ZINC	109	640

PEB-2		
DATE: 1/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	13.1
COPPER	50	79.6
LEAD	63	541
ZINC	109	725

PEB-6		
DATE: 1/15/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	270
MERCURY	0.18	1.11
NICKEL	30	32.4
SELENIUM	3.9	4.04
ZINC	109	200

PES-3		
DATE: 5/7/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	464
COPPER	50	220
LEAD	63	1,650
MERCURY	0.18	2.68
ZINC	109	847

PEB-3		
DATE: 1/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	754
COPPER	50	188
LEAD	63	933
MERCURY	0.18	2.11
ZINC	109	1,540

PES-2		
DATE: 1/7/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	17.9
BARIUM	350	394
COPPER	50	188
LEAD	63	602
MERCURY	0.18	0.777
SILVER	2	2.76
ZINC	109	578

CONTAMINANT	NYSDEC UUSCO	PES-1B 7/12/10 7.0'-7.5'	PES-1E 7/12/10 7.0'-7.5'	PES-1W 7/12/10 7.0'-7.5'	PES-1N2 7/12/10 7.0'-7.5'
METALS					
LEAD/63	63	904	139	228	215

PEB-9		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	173
MERCURY	0.18	1.77
ZINC	109	163

PEB-11		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	76.6
LEAD	63	570
MERCURY	0.18	5.90
ZINC	109	544

PEB-14		
DATE: 2/18/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	61.9
LEAD	63	290
MERCURY	0.18	0.957

PEB-38		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	136
MERCURY	0.18	0.253

CONTAMINANT	NYSDEC UUSCO	PEB-16A-B 7/12/10 7.0'-7.5'	PEB-16A-N 7/12/10 7.0'-7.5'	PEB-16A-E 7/12/10 7.0'-7.5'	PEB-16A-S 7/12/10 7.0'-7.5'	PEB-16A-W 7/12/10 7.0'-7.5'
METALS						
LEAD/63	63	806	29.3	30.5	189	1,050

PEB-12		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	13.5
COPPER	50	91.7
LEAD	63	853
MERCURY	0.18	2.35
SILVER	2	6.90
ZINC	109	537

PES-19		
DATE: 3/25/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	195
MERCURY	0.18	0.732
ZINC	109	134

PEB-35		
DATE: 7/7/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	104
COPPER	50	105

PEB-42		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	48.5
BARIUM	350	428
COPPER	50	575
LEAD	63	725
MERCURY	0.18	3.62
NICKEL	30	127
ZINC	109	352

PEB-40		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	460
COPPER	50	311
LEAD	63	1,010
MERCURY	0.18	8.68
ZINC	109	351

PES-15-SW		
DATE: 4/22/10		
DEPTH: 7.5'-8'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	172
MERCURY	0.18	1.25

PES-18		
DATE: 3/25/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	84.6
MERCURY	0.18	0.503

PEB-22		
DATE: 4/6/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	75.3

PEB-26		
DATE: 1/7/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	139

PEB-34		
DATE: 4/6/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	59.4
LEAD	63	266
MERCURY	SITE BOUNDARY	0.355
ZINC	109	217

PEB-20		
DATE: 4/9/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
ARSENIC	13	14.7
COPPER	50	95.1
LEAD	63	342
MERCURY	0.18	1.71
ZINC	109	513

PEB-17		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	92.3
LEAD	63	467
MERCURY	0.18	1.56
NICKEL	30	32.3
ZINC	109	250

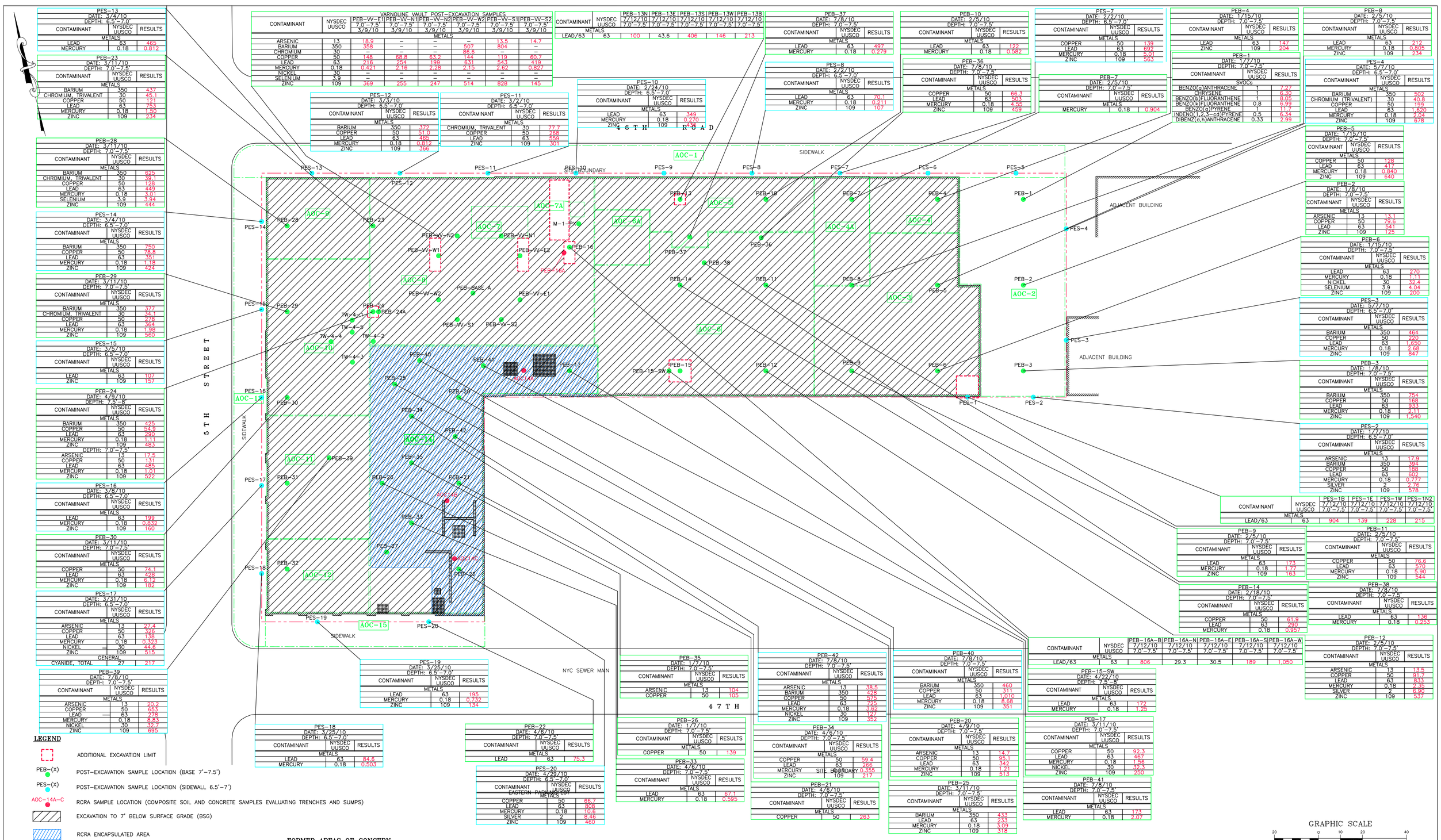
PES-20		
DATE: 4/29/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
EASTERN PARKING LOT		
METALS		
COPPER	50	66.7
LEAD	63	808
MERCURY	0.18	10.6
SILVER	2	8.46
ZINC	109	460

PEB-33		
DATE: 4/6/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	67.1
MERCURY	0.18	0.595

PEB-21		
DATE: 4/6/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
COPPER	50	263

PEB-25		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
BARIUM	350	433
LEAD	63	233
MERCURY	0.18	3.09
ZINC	109	318

PEB-41		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC UUSCO	RESULTS
METALS		
LEAD	63	173
MERCURY	0.18	2.07



LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-(X) POST-EXCAVATION SAMPLE LOCATION (BASE 7'-7.5')
- PES-(X) POST-EXCAVATION SAMPLE LOCATION (SIDEWALL 6.5'-7')
- AOC-14A-C RCRA SAMPLE LOCATION (COMPOSITE SOIL AND CONCRETE SAMPLES EVALUATING TRENCHES AND SUMPS)
- EXCAVATION TO 7' BELOW SURFACE GRADE (BSG)
- RCRA ENCAPSULATED AREA
- FORMER BUILDING FOOTPRINT
- AOC BOUNDARY
- CURB LINES
- TANK VAULT BOUNDARY
- 28 (7) UNDER GROUND STORAGE TANK WITH ID NUMBER
- SUMP LOCATION
- FLOOR TRENCH

FORMER AREAS OF CONCERN

AOC-1	FORMER 10,000 GALLON #6 FUEL OIL UST/46th ROAD SIDEWALK	AOC-5	3-STORY BRICK BUILDING (ART STUDIOS)	AOC-8	SUSPECT TWENTY-TWO (22) 1,500 GALLON VARNOLINE STORAGE TANKS
AOC-2		AOC-6	1-STORY BRICK BUILDING (KNOSSOS CUSTOM DESIGN FURNITURE)	AOC-9	1-STORY BUILDING (AMN RENOVATION)
AOC-3	1-STORY BRICK/CONCRETE BLOCK BUILDING (DEMAND ELECTRIC)	AOC-6A	2-STORY BRICK BUILDING	AOC-10	1-STORY BUILDING (JMJ ELECTRICAL)/SUSPECT UST AND FILL/VENT PORTS
AOC-4	MOTORCYCLE REPAIR SHOP (BASEMENT 2-STORY BRICK BUILDING)	AOC-7	SUSPECT FORMER GASOLINE STORAGE TANKS	AOC-11	FORMER WOHL, INC. CLEANERS AND DYERS (DIRECT AIR)
AOC-4A	1-STORY BUILDING	AOC-7A	SUSPECT FORMER BOILER/STACK AREA	AOC-12	FORMER WOHL, INC. CLEANERS AND DYERS (LIBERTY CONTRACTING)
				AOC-13	5TH STREET SIDEWALK
				AOC-14	FORMER ACCURATE ASSOCIATES RCRA AREA
				AOC-15	47TH AVENUE SIDEWALK

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

NOTES: ALL RESULTS IN RED EXCEED NYSDEC UUSCO (UNRESTRICTED); ALL RESULTS ARE IN PARTS PER MILLION (PPM)
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

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SCALE: AS SHOWN | PROJECT# 207266
DATE: 12/3/10
DRAWN BY: RR
CHECKED BY: BK
FILE: k:\drawings\207000\207266\2012 NOV\SMP\207266f2.dwg

POST REMEDIAL ACTION SOIL UUSCO EXCEEDANCES MAP -METALS
OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 10

PES-13		
DATE: 3/4/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.812

PEB-23		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	437
MERCURY	0.81	1.50

PEB-28		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	625
MERCURY	0.81	3.01

PES-14		
DATE: 3/4/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	750
MERCURY	0.81	1.18

PEB-24A		
DATE: 4/9/10		
DEPTH: 7.5'-8'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	425
MERCURY	0.81	1.11
DEPTH: 7.0'-7.5'		
ARSENIC	16	17.5
MERCURY	0.81	1.01

PEB-29		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
COPPER	270	278
MERCURY	0.81	1.98

PEB-40		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	350	460
COPPER	50	311
LEAD	63	1,010
MERCURY	0.81	8.68

PES-16		
DATE: 3/8/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.832

PEB-30		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	6.12

PES-17		
DATE: 3/31/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
ARSENIC	16	27.4
COPPER	270	326
GENERAL		
CYANIDE, TOTAL	27	217

PEB-25		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	433
MERCURY	0.81	3.09

PEB-39		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
ARSENIC	16	20.7
COPPER	270	653
MERCURY	0.81	8.83

PEB-20		
DATE: 4/9/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	1.21

VARNOLINE VAULT POST-EXCAVATION SAMPLES								
DEPTH: 7.0'-7.5'								
CONTAMINANT	NYSDEC UUSCO	PEB-W-E1 3/9/10	PEB-W-N1 3/9/10	PEB-W-N2 3/9/10	PEB-W-W2 3/9/10	PEB-W-S1 3/9/10	PEB-W-S2 3/9/10
SVOCs							
ARSENIC	16	18.9	–	–	–	–	–
BARIUM	400	–	–	–	507	804	–
MERCURY	0.81	–	2.16	2.28	2.15	2.62	0.827

PES-12		
DATE: 3/3/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.865

PEB-14		
DATE: 2/18/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.957

PEB-36		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	4.55

PEB-36		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	4.55

PES-7		
DATE: 2/2/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	5.01

PEB-7		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.904

PEB-1		
DATE: 1/7/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.934

PES-4		
5/7/2010		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	502
LEAD	1000*	1,620
MERCURY	0.81	2.04

PEB-5		
DATE: 1/15/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.840

PES-3		
5/7/2010		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	484
LEAD	1000*	1,650
MERCURY	0.81	2.68

PEB-3		
DATE: 1/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
BARIUM	400	754
MERCURY	0.81	2.11

PES-2		
DATE: 1/7/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
ARSENIC	16	17.9

PEB-6		
DATE: 1/15/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	1.11

PEB-8		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	0.805

PEB-9		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	1.77

PEB-11		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	5.90

PEB-12		
DATE: 2/5/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	2.35

PEB-15-SW		
DATE: 4/14/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	1.25

PEB-16A		
DATE: 4/14/10		
CONTAMINANT	NYSDEC SSCO	RESULTS
DEPTH: 7.5'-8'		
MERCURY	0.81	2.52

PEB-16A-W		
DATE: 7/12/2010		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
LEAD	1,000*	1,050

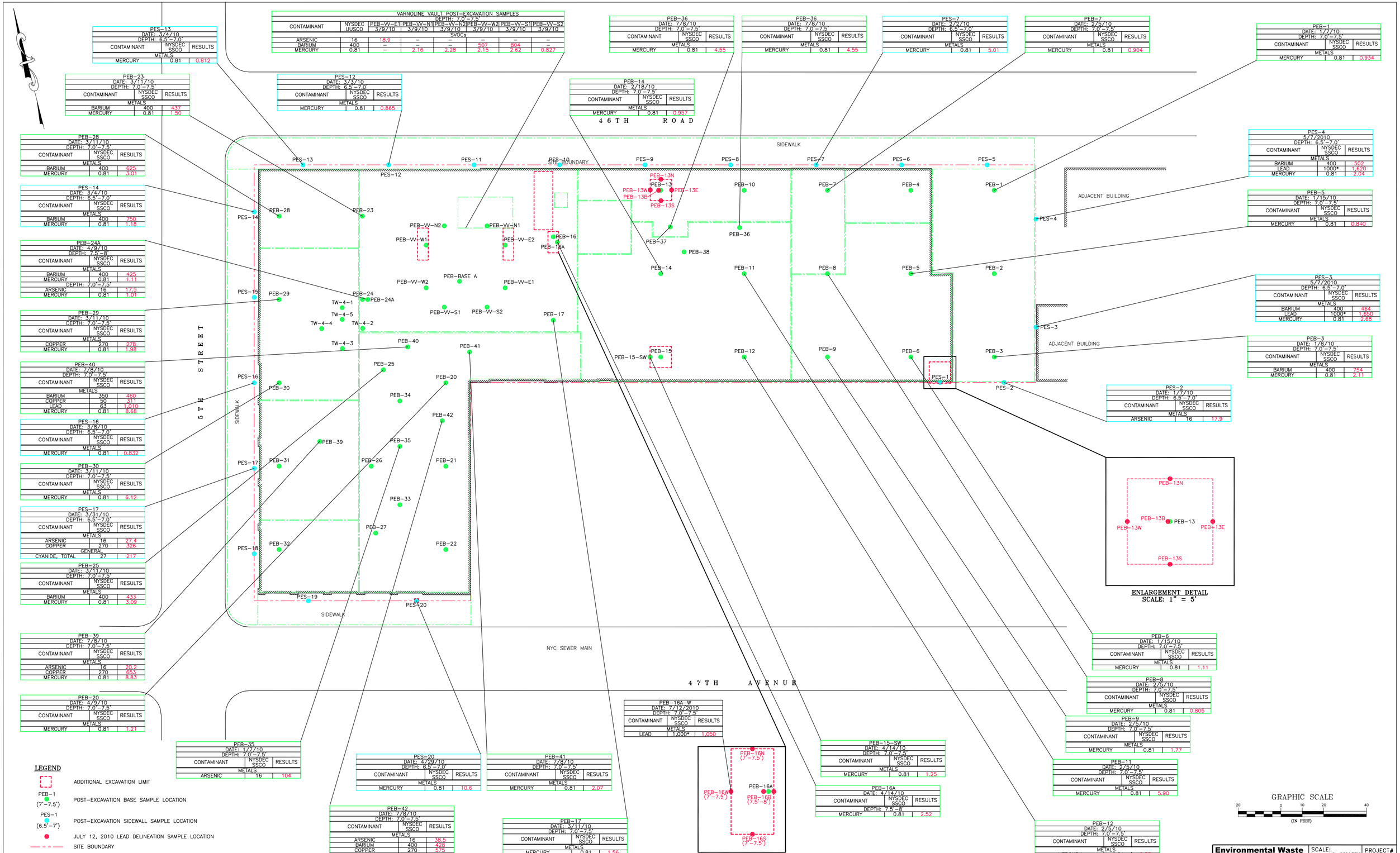
PEB-35		
DATE: 1/7/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
ARSENIC	16	104

PES-20		
DATE: 4/29/10		
DEPTH: 6.5'-7.0'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	10.6

PEB-41		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	2.07

PEB-42		
DATE: 7/8/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
ARSENIC	16	38.5
BARIUM	400	428
COPPER	270	575
MERCURY	0.81	3.62

PEB-17		
DATE: 3/11/10		
DEPTH: 7.0'-7.5'		
CONTAMINANT	NYSDEC SSCO	RESULTS
METALS		
MERCURY	0.81	1.56



ENLARGEMENT DETAIL
SCALE: 1" = 5'

ENLARGEMENT DETAIL
SCALE: 1" = 5'

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-1 (7'-7.5') — POST-EXCAVATION BASE SAMPLE LOCATION
- PES-1 (6.5'-7') — POST-EXCAVATION SIDEWALL SAMPLE LOCATION
- JULY 12, 2010 LEAD DELINEATION SAMPLE LOCATION
- SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- CURB LINES
- TANK VAULT BOUNDARY
- AOC BOUNDARY
- 28 (7) — UNDER GROUND STORAGE TANK WITH ID NUMBER

NOTES: ALL RESULTS IN RED EXCEED NYSDEC SSCO (RESTRICTED); ALL RESULTS ARE IN PARTS PER MILLION (PPM)
RESULTS IN RED FOR LEAD EXCEED THE COMMERCIAL USE SCO (CUSCO) OF 1,000 PPM
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

NOTE: SUPPLEMENTAL DATA IS SHOWN IN ENLARGEMENT DETAILS TO DISPLAY DELINEATION RESULTS AFTER SUPPLEMENTAL EXCAVATION WORK WAS COMPLETED IN LEAD EXCEEDANCE AREAS.

Environmental Waste Management Associates, LLC P.O. Box 5430 Parsippany, NJ 07054 Tel: (973) 560-1400	SCALE: AS SHOWN	PROJECT# 207266
	DATE: 12/3/10	
	DRAWN BY: RR CHECKED BY: BK FILE: X:\Drawings\207000\207266\2010 AOV\Def_207266R2.dwg	
POST-REMEDIAL ACTION SOIL SSCO EXCEEDANCES MAP -METALS OCA LIC FIFTH STREET MIXED-USE HOUSING 5-20 46TH ROAD LONG ISLAND CITY, NEW YORK		FIGURE# 10A

PEB-W-N1		
DATE: 3/10/10		
DEPTH: 11.5'-12.5'		
CONTAMINANT	NYSDEC POGW	RESULTS
SEMIVOLATILES - BNA		
BENZO(a)ANTHRACENE	1	1.56
CHRYSENE	1	1.54
BENZO(b)FLUORANTHENE	1.7	2.25
BENZO(k)FLUORANTHENE	1.7	2.24

TW-4-1		
DATE: 9/22/10		
DEPTH: 11.5'-12.5'		
CONTAMINANT	NYSDEC POGW	RESULTS
VOLATILES		
ISOPROPYLBENZENE	2.3*	28.1

TW-4-4		
DATE: 9/22/10		
DEPTH: 11.5'-12.5'		
CONTAMINANT	NYSDEC POGW	RESULTS
VOLATILES		
ISOPROPYLBENZENE	2.3*	4.25

TW-4-2		
DATE: 9/22/10		
DEPTH: 11.5'-12.5'		
CONTAMINANT	NYSDEC POGW	RESULTS
VOLATILES		
ISOPROPYLBENZENE	2.3*	8.65

PEB-W-S2		
DATE: 3/10/10		
DEPTH: 15.5'-16'		
CONTAMINANT	NYSDEC POGW	RESULTS
SEMIVOLATILES - BNA		
BENZO(a)ANTHRACENE	1	2.10
CHRYSENE	1	5.57
BENZO(b)FLUORANTHENE	1.7	1.86
METALS		
SELENIUM	4	4.81

46TH ROAD

47TH AVENUE

5TH STREET

SIDEWALK

SITE BOUNDARY

ADJACENT BUILDING

ADJACENT BUILDING

NYC SEWER MAIN

PES-1 PES-2 PES-3 PES-4 PES-5 PES-6 PES-7 PES-8 PES-9 PES-10 PES-11 PES-12 PES-13 PES-14 PES-15 PES-16 PES-17 PES-18 PES-19 PES-20

PEB-1 PEB-2 PEB-3 PEB-4 PEB-5 PEB-6 PEB-7 PEB-8 PEB-9 PEB-10 PEB-11 PEB-12 PEB-13 PEB-14 PEB-15 PEB-15-SW PEB-16 PEB-16A PEB-17 PEB-20 PEB-21 PEB-22 PEB-23 PEB-24 PEB-24A PEB-25 PEB-26 PEB-27 PEB-28 PEB-29 PEB-30 PEB-31 PEB-32 PEB-33 PEB-34 PEB-35 PEB-36 PEB-37 PEB-38 PEB-39 PEB-40 PEB-41 PEB-42 PEB-BASE A

PEB-W-N1 PEB-W-N2 PEB-W-S1 PEB-W-S2 PEB-W-E1 PEB-W-E2 PEB-W-W1

M-1-PX

TW-4-1 TW-4-2 TW-4-3 TW-4-4 TW-4-5

LEGEND

- ADDITIONAL EXCAVATION LIMIT
- PEB-1 (7'-7.5') — POST-EXCAVATION BASE SAMPLE LOCATION
- PEB-W-N1 (BELOW 8') — POST-EXCAVATION SAMPLE LOCATION COLLECTED BELOW 8' FROM SURFACE GRADE
- PES-1 (6.5'-7') — POST-EXCAVATION SIDEWALL SAMPLE LOCATION
- JULY 12, 2010 LEAD DELINEATION SAMPLE LOCATION
- SAMPLE LOCATION COLLECTED IN SATURATED ZONE
- SITE BOUNDARY
- FORMER BUILDING FOOTPRINT
- CURB LINES
- TANK VAULT BOUNDARY
- AOC BOUNDARY
- 28 (7) — UNDER GROUND STORAGE TANK WITH ID NUMBER

NOTES: ALL RESULTS EXCEED THE NYSDEC PART 375.6 PROTECTION OF GROUND WATER RESTRICTED USE SITE SPECIFIC SOIL CLEANUP OBJECTIVE (SSCO)
SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

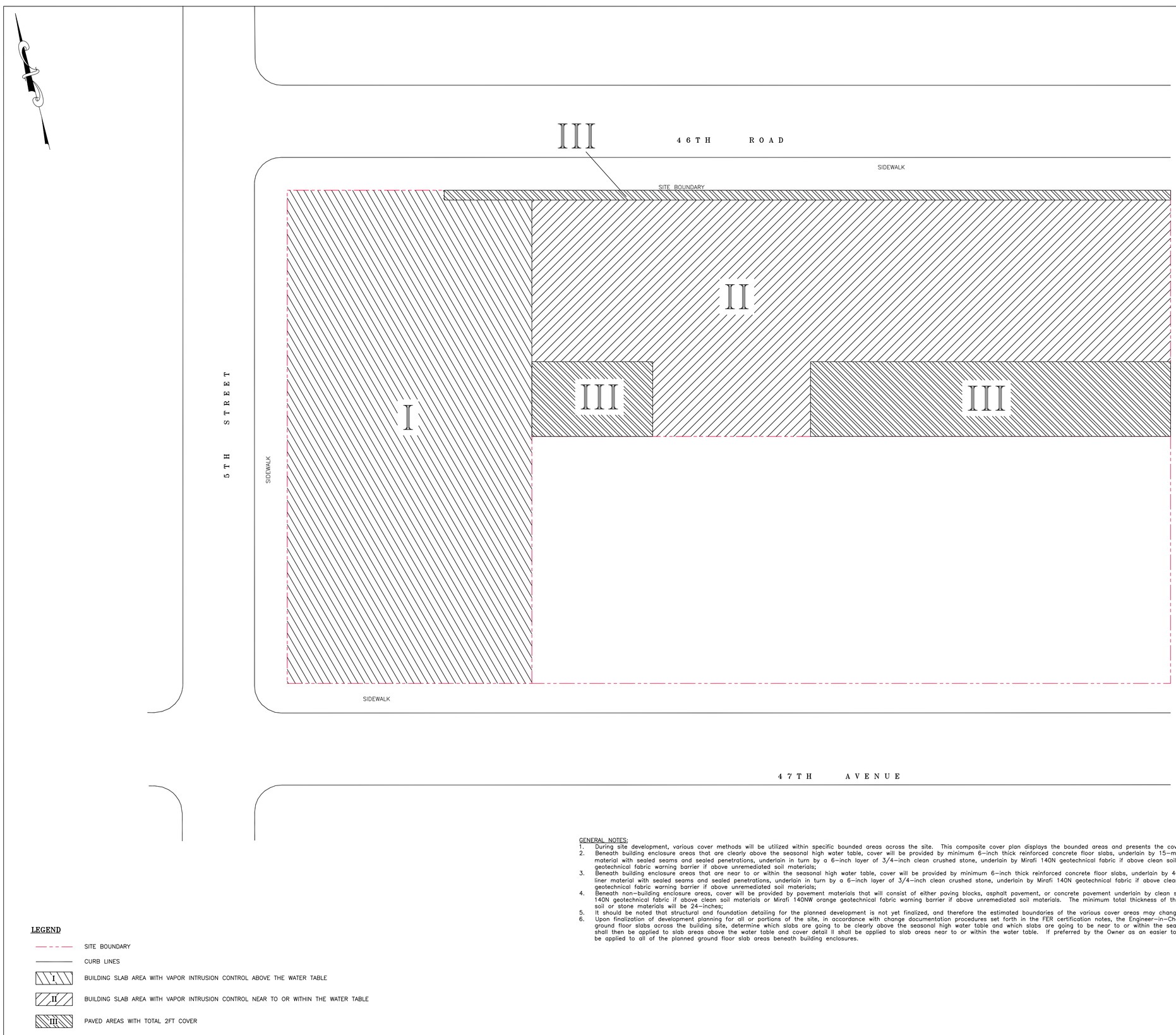
GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

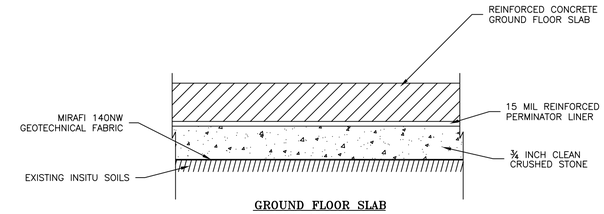
Environmental Waste Management Associates, LLC
P.O. Box 5430
Parsippany, NJ 07054
Tel: (973) 560-1400

SCALE: AS SHOWN
DATE: 12/3/10
PROJECT# 207266
DRAWN BY: RR
CHECKED BY: BK
FILE: k:\cleanup\207000\207266\2010 WCP\Swf\207266fl1.dwg

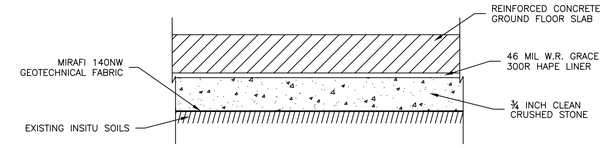
FINAL POST-REMEDIAL ACTION PERCHED UNIT SOIL POGW EXCEEDANCES
OCA LIC FIFTH STREET MIXED-USE HOUSING
5-20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 11

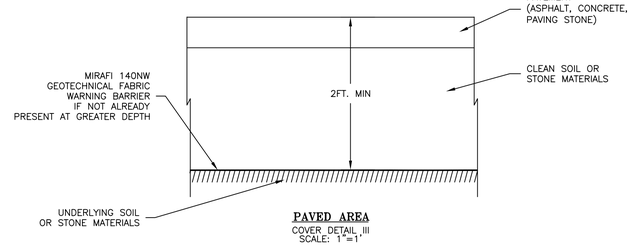




GROUND FLOOR SLAB
COVER DETAIL I
ABOVE WATER TABLE
SCALE: 1"=1'



GROUND FLOOR SLAB
COVER DETAIL II
NEAR WATER TABLE
SCALE: 1"=1'



PAVED AREA
COVER DETAIL III
SCALE: 1"=1'

GENERAL NOTES:

1. During site development, various cover methods will be utilized within specific bounded areas across the site. This composite cover plan displays the bounded areas and presents the cover details;
2. Beneath building enclosure areas that are clearly above the seasonal high water table, cover will be provided by minimum 6–inch thick reinforced concrete floor slabs, underlain by 15–mil reinforced perminator synthetic liner material with sealed seams and sealed penetrations, underlain in turn by a 6–inch layer of 3/4–inch clean crushed stone, underlain by Mirafi 140N geotechnical fabric if above clean soil materials or Mirafi 140NW orange geotechnical fabric warning barrier if above unremediated soil materials;
3. Beneath building enclosure areas that are near to or within the seasonal high water table, cover will be provided by minimum 6–inch thick reinforced concrete floor slabs, underlain by 46–mil W. R. Grace 300R HDPE synthetic liner material with sealed seams and sealed penetrations, underlain in turn by a 6–inch layer of 3/4–inch clean crushed stone, underlain by Mirafi 140N geotechnical fabric if above clean soil materials or Mirafi 140NW orange geotechnical fabric warning barrier if above unremediated soil materials;
4. Beneath non–building enclosure areas, cover will be provided by pavement materials that will consist of either paving blocks, asphalt pavement, or concrete pavement underlain by clean soil or stone materials, underlain by Mirafi 140N geotechnical fabric if above clean soil materials or Mirafi 140NW orange geotechnical fabric warning barrier if above unremediated soil materials. The minimum total thickness of the pavement materials and underlying clean soil or stone materials will be 24–inches;
5. It should be noted that structural and foundation detailing for the planned development is not yet finalized, and therefore the estimated boundaries of the various cover areas may change.
6. Upon finalization of development planning for all or portions of the site, in accordance with change documentation procedures set forth in the FER certification notes, the Engineer–in–Charge is to evaluate the elevations of ground floor slabs across the building site, determine which slabs are going to be clearly above the seasonal high water table and which slabs are going to be near to or within the seasonal high water table. Cover detail I shall then be applied to slab areas above the water table and cover detail II shall be applied to slab areas near to or within the water table. If preferred by the Owner as an easier to construct alternate, cover detail II can be applied to all of the planned ground floor slab areas beneath building enclosures.

LEGEND

- SITE BOUNDARY
- CURB LINES
- I — BUILDING SLAB AREA WITH VAPOR INTRUSION CONTROL ABOVE THE WATER TABLE
- II — BUILDING SLAB AREA WITH VAPOR INTRUSION CONTROL NEAR TO OR WITHIN THE WATER TABLE
- III — PAVED AREAS WITH TOTAL 2FT COVER

SOURCE: "ARCHITECTURAL SURVEY" MONTROSE SURVEYING CO., LLP., RICHMOND HILL, N.Y. 4/2/07

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)

An Environmental Consulting & Remediation Firm
100 Misty Lane
P.O. Box 5430
Parsippany, NJ 07054

SCALE: AS SHOWN	PROJECT# 207266
DATE: 12/3/10	
DRAWN BY: RR	
CHECKED BY: RA	

FILE: X:\Acad\pdf\207000\207266\2010 WORK\SMP\207266F12.dwg

COMPOSITE COVER SYSTEM LOCATIONS AND CROSS SECTIONS
OCA LIC FIFTH STREET MIXED–USE HOUSING
5–20 46TH ROAD
LONG ISLAND CITY, NEW YORK

FIGURE# 12

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendices

Note: The following appendices were in the original December 2010 SMP, but are no longer applicable to this current SMP and have not been included: *Appendix 9 – Groundwater Sampling Log, Appendix 10 – Truck Route, and Appendix 11 – Noise Control Plan.*

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
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New York, NY 10022

Appendix 1

Excavation Work Plan

APPENDIX 1 – EXCAVATION WORK PLAN

A-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the Department. Currently, this notification will be made to:

Jane O'Connell
Regional Hazardous Waste Remediation Engineer
NYSDEC
47-40 21st Street
Long Island City, NY 11101

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control,
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP,
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in **Appendix 4** of this document,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

A-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

A-3 STOCKPILE METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

A-4 MATERIALS EXCAVATION AND LOAD OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

A-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Truck transport route is as follows: All trucks loaded with site materials will enter the Site via 47th Avenue and exit the Site onto 46th Road. The trucks shall make a left onto Vernon Boulevard, a right onto 44th Drive, a right onto 21st Street, a right onto Jackson Avenue, and a left onto 11th Street to the Pulaski Bridge and the BQE. The approved truck route shall take into account: (a) limiting transport through residential areas and past sensitive Sites; (b) use of city mapped truck routes; (c) prohibiting 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; (g) community input where necessary.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

A-6 MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

A-7 MATERIALS REUSE ON-SITE

There is no planned on-site reuse of materials.

A-8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, but will be managed off-site.

If water generated during large-scale construction activities is to be discharged to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit that will be provided to NYSDEC for their information.

A-9 COMPOSITE COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the RAWP and the provisions of this SMP. If disturbed, the demarcation barrier will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt) as shown on **Figure 12** and discussed in Section 2.2.1.1, this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination'. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan. A certification will be provided by a Professional Engineer licensed in NYS that the modified surface provides the same level of public health protection as the original cover system component which it replaced.

A-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in **Table 1.** Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

The source of the backfill that will be imported onto this Site has not been determined at this time. In addition to meeting the site-specific requirements dictated by the proposed development activities, the imported fill will demonstrate compliance with Part 375 section 6.8. Unless an alternate sampling frequency has been previously approved by the NYSDEC, all imported fill from a virgin source will be sampled for full TCL/TAL with collection of one composite sample per source. Fill from non-virgin sources will be sampled for full TCL/TAL as per the following:

1. If less than 1,000 cy of non-virgin material, one composite sample per 500 cubic yards;
2. If more than 1,000 cy of non-virgin fill, two initial screening composite samples will be collected from the first 1,000 cy and analyzed. If these samples meet criteria, sampling will be reduced to one composite sample per 2,500 cy; or
3. If greater than 5,000 cy of non-virgin fill, sample frequency will be reduced to one per 5,000 cy.

All analysis will be performed by a NYSDOH ELAP certified laboratory.

Information documenting the source of the fill, past use of the Site where the backfill originated, the type of fill, the amount of fill and any pertinent laboratory analytical documentation will be provided to the NYSDEC prior to importation of the fill material onto the Site, unless from a source previously approved by the NYSDEC.

A-11 STORMWATER POLLUTION PREVENTION

The site-specific Stormwater Pollution Prevention Plan (SWPPP) is included in **Appendix 6**. The SWPPP must be followed during all excavation work under this EWP. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

A-12 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

A-13 COMMUNITY AIR MONITORING PLAN

A figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in **Appendix 5.** These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations, one of which will be a fixed monitoring station at the southwest corner of the Site in the direction of a public school and a day care center (i.e., sensitive receptors). In the event of an exceedance of action levels, the Site operations will be evaluated by the QEP, and, if necessary, will be ceased as a first contingent mitigation step. The cause of the exceedance will be evaluated and operations will be adjusted and then go forward with the necessary mitigation which may include but not be limited to the use of plastic cover sheeting, vapor suppressing sprays, or reduction of operating rates depending on the identified cause of exceedance. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

A-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site. Specific odor control methods to be used on a routine basis will include limiting the extent of excavation areas, limiting the extent of soil stockpiles, using soil cover, covering or shrouding with plastic sheeting, and foaming with Biosolve odor control foam. If nuisance odors are identified at the Site boundary, or if odor complaints are received, 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. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remedial Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

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

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

A-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

A-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 2

Metes and Bounds Description

First American Title Insurance Company of New York

Title No.: 3008-234603

EXHIBIT A

The subject tract of land with respect to which the foregoing parties are the parties in interest as aforesaid, is known as Tax Lot Number(s) **21, 38, 12, 15, 17 and 18** in Block(s) **28** as shown on the Tax Map of the City of New York, Queens County and more particularly described as follows:

AS TO LOTS 21 AND 38:

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:-

BEGINNING AT THE CORNER BY THE INTERSECTION OF THE SOUTHERLY SIDE OF 46TH ROAD (W. NINTH STREET), 60 FEET WIDE, AND THE EASTERLY SIDE OF 5TH STREET (WEST AVENUE, 60 FEET WIDE);

RUNNING THENCE SOUTHERLY ALONG THE EASTERLY SIDE OF 5TH STREET 200 FEET 0 INCHES TO THE CORNER FORMED BY THE INTERSECTION OF THE EASTERLY SIDE OF 5TH STREET AND THE NORTHERLY SIDE OF 47TH AVENUE (W. EIGHT STREET), 60 FEET WIDE;

THENCE EASTERLY ALONG THE NORTHERLY SIDE OF 47TH AVENUE; 100 FEET 0 INCHES;

THENCE NORTHERLY AT RIGHT ANGLES TO THE NORTHERLY SIDE OF 47TH AVENUE, 100 FEET 0 INCHES;

THENCE EASTERLY AT RIGHT ANGLES TO THE LAST MENTIONED COURSE 264 FEET 11-1/8 INCHES TO A POINT;

THENCE NORTHERLY AT RIGHT ANGLES TO THE LAST MENTIONED COURSE, 100 FEET TO THE SOUTHERLY SIDE OF 46TH ROAD;

THENCE WESTERLY ALONG THE SOUTHERLY SIDE OF 46TH ROAD, 364 FEET 11-1/8 INCHES TO THE CORNER FIRST ABOVE MENTIONED TO THE POINT OR PLACE OF BEGINNING.

AS TO LOT 12:

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY SIDE OF 47TH AVENUE (F/K/A EIGHTH STREET), DISTANT 297.30 FEET WESTERLY FROM THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF 47TH AVENUE (F/K/A EIGHTH STREET) AND THE WESTERLY SIDE OF VERNON BOULEVARD (F/K/A VERNON AVENUE);

RUNNING THENCE NORTHERLY PARALLEL WITH VERNON BOULEVARD, 100 FEET;

THENCE WESTERLY PARALLEL WITH 47TH AVENUE 40.76 FEET;

THENCE SOUTHERLY AND AGAIN PARALLEL WITH VERNON BOULEVARD 100 FEET TO THE NORTHERLY SIDE OF 47TH AVENUE; AND

THENCE EASTERLY ALONG THE NORTHERLY SIDE OF 47TH AVENUE 40.76 FEET TO THE POINT OR PLACE OF BEGINNING.

AS TO LOT 15:

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING AT LONG ISLAND CITY, IN THE BOROUGH OF AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, COMPRISING ALL OF LOT 15 AND THE WESTERLY 12 FEET 8 1/4 INCHES OF LOT 14, IN BLOCK 17, AS SAID LOTS ARE SHOWN AND DESIGNATED ON A CERTAIN MAP ENTITLED "MAP OF THE HUNTER AND VAN ALST FARMS MADE BY PETER G. VAN ALST, DATED AUGUST 17, 1861", AND MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY SIDE OF 47TH AVENUE (FORMERLY) WEST EIGHTH STREET DISTANT EASTERLY 225.01 FEET FROM THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF 47TH AVENUE WITH THE EASTERLY SIDE OF 5TH STREET;

RUNNING THENCE NORTHERLY AT RIGHT ANGLES TO 47TH AVENUE 99.99 FEET;

THENCE EASTERLY AND PARALLEL WITH 47TH AVENUE 37.69 FEET;

THENCE SOUTHERLY AND AGAIN AT RIGHT ANGLES TO 47TH AVENUE 99.99 FEET TO THE NORTHERLY SIDE OF 47TH AVENUE;

THENCE WESTERLY ALONG THE NORTHERLY SIDE OF 47TH AVENUE 37.69 FEET TO THE POINT OR PLACE OF BEGINNING.

AS TO LOT 17:

ALL THAT CERTAIN LOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING AT LONG ISLAND CITY IN THE FIRST WARD OF THE BOROUGH OF QUEENS, CITY OF NEW YORK, COUNTY OF QUEENS AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY SIDE OF 47TH AVENUE, FORMERLY EIGHTH STREET, DISTANT 174.98 FEET EASTERLY FROM THE CORNER FORMED BY THE INTERSECTION OF SAID NORTHERLY SIDE OF 47TH AVENUE WITH THE EASTERLY SIDE OF FIFTH STREET, FORMERLY WEST AVENUE;

RUNNING THENCE NORTHERLY PARALLEL WITH FIFTH STREET, 100 FEET;

THENCE EASTERLY PARALLEL WITH 47TH AVENUE, 50.02 FEET;

THENCE SOUTHERLY PARALLEL WITH FIFTH STREET, 100 FEET TO THE NORTHERLY SIDE OF 47TH AVENUE; AND

THENCE WESTERLY ALONG SAID SIDE OF 47TH AVENUE, 50.02 FEET TO THE POINT OR PLACE OF BEGINNING.

AS TO LOT 18:

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHERLY SIDE OF 47TH AVENUE, FORMERLY 8TH STREET, DISTANT 100 FEET EASTERLY FROM THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF 47TH AVENUE WITH THE EASTERLY SIDE OF 5TH STREET, FORMERLY WEST AVENUE;

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 3

Environmental Easement

FINANCE
NEW • YORK
THE CITY OF NEW YORK
DEPARTMENT OF FINANCE

October 28, 2010

SIVE, PAGET & RIESEL
460 PARK AVE
10TH FLOOR
NEW YORK, NY 10022

RE: Submitted Transaction Successfully Recorded

Dear SIVE, PAGET & RIESEL:

Document Identification Number 2010101501040001 which was submitted for Recording on 10/26/2010, was successfully recorded on 10/26/2010 at 5:10 PM.

Below summarizes the status of these documents.

Documents and Recording & Endorsement Cover Pages Enclosed Herewith

2010101501040001

If you have any questions or require further information, please email me at acrishelp@finance.nyc.gov and a member of my staff will get back to you, or contact one of the offices below.

Thank you very much.

Sincerely,

Annette Hill
City Register

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

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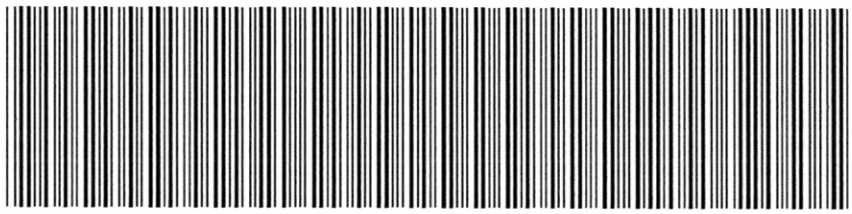

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RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 10**

Document ID: 2010101501040001 Document Date: 09-01-2010 Preparation Date: 10-22-2010
Document Type: EASEMENT
Document Page Count: 9

PRESENTER:
SIVE, PAGET & RIESEL, P.C.
460 PARK AVENUE
10TH FLOOR
NEW YORK, NY 10022
212-421-2150
mbogin@sprlaw.com

RETURN TO:
SIVE, PAGET & RIESEL
460 PARK AVE
10TH FLOOR
NEW YORK, NY 10022
212-421-2150
mbogin@sprlaw.com

PROPERTY DATA

Borough	Block	Lot		Unit	Address
QUEENS	28	21	Entire Lot		5-20 46TH ROAD
Property Type: NON-RESIDENTIAL VACANT LAND Easement					
Borough	**Block**	**Lot**		**Unit**	**Address**
QUEENS	28	38	Entire Lot		N/A 46TH ROAD
Property Type: NON-RESIDENTIAL VACANT LAND					

CROSS REFERENCE DATA

CRFN_____ *or* Document ID_____ *or* _____ Year____ Reel ___ Page ____ *or* File Number_____

PARTIES

GRANTOR/SELLER:
OCA LONG ISLAND CITY, LLC
5-20 46TH ROAD
LONG ISLAND CITY, NY 11101

GRANTEE/BUYER:
STATE OF NEW YORK DEC
625 BROADWAY
ALBANY, NY 12233

FEES AND TAXES

Mortgage		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	85.00
Affidavit Fee:	$	0.00

Filing Fee: $ 100.00
NYC Real Property Transfer Tax: $ 0.00
NYS Real Estate Transfer Tax: $ 0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 10-26-2010 17:10
City Register File No.(CRFN):
2010000358498

City Register Official Signature

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

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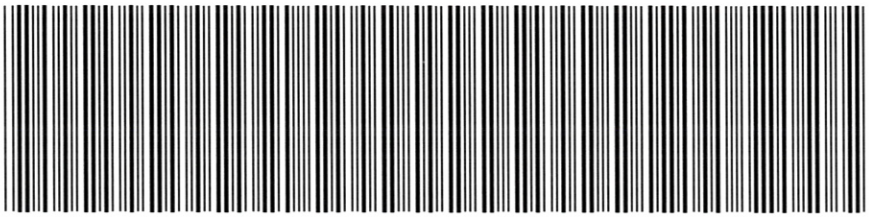


2010101501040001004EE7EF

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 10**

Document ID: 2010101501040001 Document Date: 09-01-2010 Preparation Date: 10-22-2010
Document Type: EASEMENT
Document Page Count: 9

PRESENTER:	**RETURN TO:**
SIVE, PAGET & RIESEL, P.C. 460 PARK AVENUE 10TH FLOOR NEW YORK, NY 10022 212-421-2150 mbogin@sprlaw.com	SIVE, PAGET & RIESEL 460 PARK AVE 10TH FLOOR NEW YORK, NY 10022 212-421-2150 mbogin@sprlaw.com

PROPERTY DATA

Borough	Block	Lot		Unit	Address
QUEENS	28	21	Entire Lot		5-20 46TH ROAD
Property Type:	NON-RESIDENTIAL VACANT LAND				Easement
Borough	**Block**	**Lot**		**Unit**	**Address**
QUEENS	28	38	Entire Lot		N/A 46TH ROAD
Property Type:	NON-RESIDENTIAL VACANT LAND				

CROSS REFERENCE DATA

CRFN_____ *or* Document ID_____ *or* _____ Year____ Reel ___ Page ____ *or* File Number_____

PARTIES

GRANTOR/SELLER:	**GRANTEE/BUYER:**
OCA LONG ISLAND CITY, LLC 5-20 46TH ROAD LONG ISLAND CITY, NY 11101	STATE OF NEW YORK DEC 625 BROADWAY ALBANY, NY 12233

FEES AND TAXES

Mortgage		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	85.00
Affidavit Fee:	$	0.00

Filing Fee:		
	$	100.00
NYC Real Property Transfer Tax:		
	$	0.00
NYS Real Estate Transfer Tax:		
	$	0.00

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 1st day of September, 2010, between Owner(s) OCA Long Island City, LLC, having an office at 535 Madison Avenue, 23rd floor, New York, 10022, County of New York, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 5-20 46th Road in the City of Long Island City, County of Queens and State of New York, known and designated on the tax map of the County Clerk of Queens as tax map parcel numbers: Section 4 Block 28 Lot 21 and 38, commonly known as the OCA-LIC Fifth Street Mixed-Use Housing Project, being the same as that property conveyed to Grantor by deed dated December 22, 2006 and recorded in the City Register of the City of New York in Instrument No. or CRFN No. 2007000017486, comprising approximately 1 ± acres, and hereinafter more fully described in the Land Title Survey dated April 22, 2010 prepared by Montrose Surveying Co., LLP, City and Land Surveyors, which will be attached to the Site Management Plan. The property description (the "Controlled Property") is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of human health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the

terms and conditions of BCA Index No.: A2 – 0584 - 0307, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP.

(4) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(5) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(6) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(7) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.

(8) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP.

(9) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for raising livestock or producing animal products for human consumption, and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Regional Remediation Engineer
NYSDEC – Region 2
Division of Environmental Remediation
One Hunter's Point Plaza, 47- 40 21st Street
Long Island City, NY 11101-5407,
Phone: (718) 482 - 4900

or

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved b the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5 the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a

defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C 241098
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

OCA Long Island City, LLC

BY: OCA LIC Member, LLC, a Delaware limited liability company, its sole member

BY: O'Connor Associates, L.P,, a Delaware limited partnership, its sole member

J.W. O'Connor & Co., Incorporated, a Delaware corporation, its general partner

By: _____

William Q. O'Connor

Title: Senior Vice President Date: 8/24/2010

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____

Dale A. Desnoyers, Director
Division of Remediation

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 24th day of August, in the year 2010 before me, the undersigned, personally appeared William O'Connor personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public - State of New York

CATHERINE AKERS
Notary Public, State of New York
No. 01AK6183163
Qualified in Westchester County
Certificate Filed in New York County
Term Expires March 10, 2012

SEAL

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Albany)

On the 1ST day of September, in the year 2 010 before me, the undersigned, personally appeared Dale Desnoyers, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2014

SEAL

SCHEDULE "A" PROPERTY DESCRIPTION

5-20 46th Road
Long Island City, NY
Block 28 Lot 21 and 38

ALL that certain plot, piece or parcel of land situate, lying and being in the Borough and County of Queens, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the easterly side of 5th Street (60 feet wide) with the southerly side of 46th Road (60 feet wide);

RUNNING THENCE easterly, along the southerly side of 46th Road, 364.93 feet to a point;

RUNNING THENCE southerly, at right angles to the southerly side of 46th Road, 100 feet to a point;

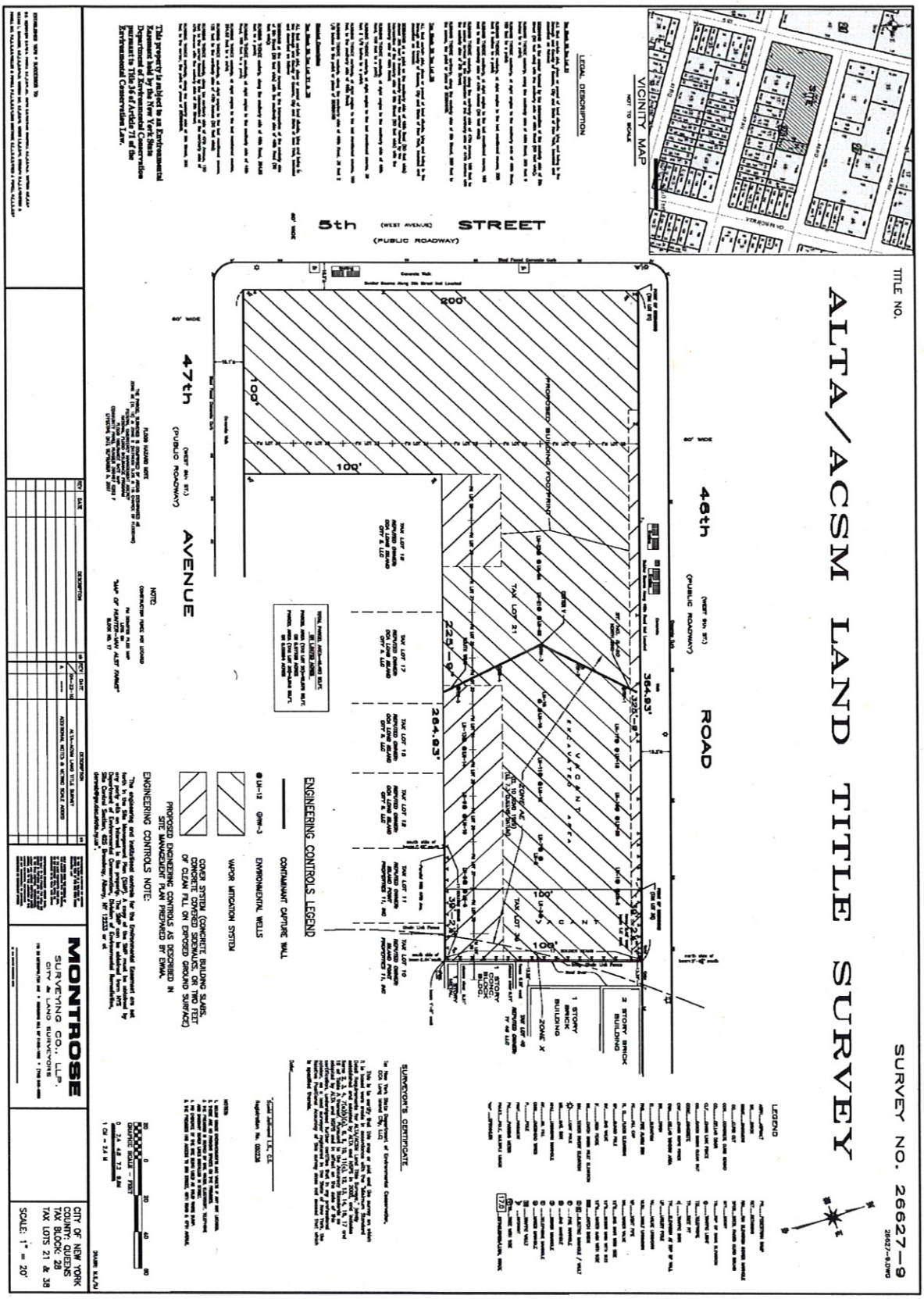
RUNNING THENCE westerly, at right angles to the last mentioned course, 264.93 feet to a point;

RUNNING THENCE southerly, at right angles to the last mentioned course, 100 feet to the northerly side of 47th Avenue (60 feet wide);

RUNNING THENCE westerly, along the northerly side of 47th Avenue, 100 feet to the corner formed by the intersection of the northerly side of 47th Avenue with the easterly side of 5th Street;

RUNNING THENCE northerly, along the easterly side of 5th Street, 200 feet to the corner , the point or place of BEGINNING.

SURVEY


ALTA/ACSM LAND TITLE SURVEY
SURVEY NO. 26627-9
TITLE NO.
VICINITY MAP
NOT TO SCALE
LEGAL DESCRIPTION
This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.
5th (WEST AVENUE) STREET
(PUBLIC ROADWAY)
48th ROAD
(PUBLIC ROADWAY)
47th AVENUE
(PUBLIC ROADWAY)
PROPOSED BUILDING FOOTPRINT
TAX LOT 21
TAX LOT 34
364.93'
284.93'
225'-9"
200'
100'
1 STORY BRICK BUILDING
2 STORY BRICK BUILDING
CONC. BLOCK BUILDING
ZONE X
LEGEND
ENGINEERING CONTROLS LEGEND
CONTAINMENT CAPTURE WALL
ENVIRONMENTAL WELLS
VAPOR MITIGATION SYSTEM
COVER SYSTEM (CONCRETE BUILDING SLABS, CONCRETE/ASPHALT CAPS OR TWO FEET OF CLEAN FILL ON IMPOSED GROUND SURFACE)
PROPOSED ENGINEERING CONTROLS AS DESCRIBED IN SITE MANAGEMENT PLAN PREPARED BY EMAL
ENGINEERING CONTROLS NOTE:
SURVEYOR'S CERTIFICATE
NOTES
GRAPHIC SCALE - FEET
MONTROSE SURVEYING CO., LLP.
CITY & LAND SURVEYORS
CITY OF NEW YORK
COUNTY: QUEENS
TAX BLOCK: 28
TAX LOTS 21 & 38
SCALE: 1" = 20'

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 4

Health and Safety Plan

FORMER ACCURATE ASSOCIATES RCRA SITE
5-20 46TH ROAD
LONG ISLAND CITY, NY 11101
Job # 250583 & 250689-05

Health & Safety Plan

Scope of Service:

1. **Soil Excavation**
2. **Soil Sampling**
3. **Groundwater sampling/Well Installation**
4. **LNAPL Product Recovery**

Contaminants of Concern:

Soil results indicate the following:
VOCs, including isopropylbezene, PAHs, Metals
Ground water results indicate the following:
VOCs, including isopropylbezene, PAHs, linseed oil

Approved On: July 31, 2015

Prepared by

100 Misty Lane, P.O. Box 5430
Parsippany, NJ 07054
www.ewma.com

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P: 973-560-1400
F: 973-560-0400

Parsippany, NJ Lawrenceville, NJ New York, NY

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ATTACHMENTS

CLIENT NAME:	O'Connor Capital Partners
CLIENT ADDRESS:	535 Madison Avenue, 23rd Floor New York, NY 10022
CLIENT CODE:	20OC017
EWMA PROJECT No.:	250583 & 250689-05 (205490, 207266, 250595, 250632, & 250638)
PROJECT NAME:	O'Connor Capital Partners / 5-20 46th Road
LOCATION/ADDRESS:	5-20 46th Road Long Island City, NY 11101
EWMA PROJECT MANAGER(s):	Don Richardson Richard Arnold
EWMA SITE MANAGER:	Jacob Strauss
EWMA SITE SAFETY OFFICER:	Jacob Strauss
PLAN VALID FROM: REVISED:	March 19, 2007 May 20, 2008 January 14, 2009 March 31, 2009 December 9, 2009 October 18, 2010 August 31, 2011 December 10, 2012 July 31, 2015
PLAN EXPIRES:	**Plan shall be revised periodically upon discovery of new contaminants of concern or significant increases in health or safety hazards**

- End of Section -

SECTION 2.0
INTRODUCTION

The purpose of this Health and Safety Plan (HASP) is to identify, evaluate and control health and safety hazards, and to provide for emergency response during field activities. All employees of Environmental Waste Management Associates, LLC (EWMA), as well as its contractors and subcontractors who have agreed to abide by this HASP and who are involved in field activities on this project will be bound by these provisions. Contractors and subcontractors who abide by this HASP, but whose work activities are not covered by this HASP must develop and follow their own site specific HASP. As an example, tank removal and cleaning as well as confined space entry work will be performed by subcontractors. As such, these tasks are not specifically covered by this HASP, and the subcontractors performing these tasks must develop and follow their own site specific HASP

This site-specific HASP is based on a review and evaluation of the potential hazards and risks associated with this project. It outlines the health and safety procedures, and the equipment required, needed to minimize the potential for harm to field personnel and site visitors. Since work activities, site conditions and exposures to various combinations of contaminants which may be present are variable, the potential for adverse health effects associated with field activities on this site cannot be predicted with confidence.

2.1 SITE DESCRIPTION & HISTORY

The property was initially developed prior to 1898 for use as an ink factory and a varnish works. Other previous building occupants and uses identified at the subject property included: George L. Fenner (ink factory), Toch Bros. (Manufacturer of paints & varnishs), Thibaut & Walker Co. (varnish works), I. Wohl Inc. (cleaners and dryers), a dry cleaning and spotting facility and Accurate Metal Casting Co. Inc. These identified building occupants and uses are types of businesses that would be expected to involve the storage and use of significant quantities of toxic or hazardous materials, and generate significant quantities of toxic or hazardous wastes in conjunction with daily operations, including, but not limited to, industrial solvents, lubricating and cutting oils, metal polishing materials, plating bath solutions, paint and painting products, and dye products. Pursuant to the Order, the owner undertook certain removal, investigative, and remedial activities at the premises. The remedial activities included the encapsulation of contaminated soil beneath portions of the building floor and encapsulation of contaminates located in portions of the concrete floor and walls. Lead, arsenic, and selenium are encapsulated beneath portions of the floor and within portions of the walls of the premiums. Remedial excavation from December 2009-May 2010 has removed these materials to a depth of 7’ below surface grade (bsg). The site currently has an engineered cap consisting of approximately two feet of virgin quarry process underlain by a layer of orange mirafi filter fabric.

See the List of Attachments for a site location map, and a street map identifying the location and possible routes to the nearest hospital.

2.2 KEY PERSONNEL

2.2.1 EWMA Project Manager(s): Don Richardson
Richard Arnold

The EWMA Project Manager has the following responsibilities:

- To provide the EWMA Health and Safety Officer (HSO) with project-related health and safety information.
- To have a site-specific Health & Safety Plan (HASP) prepared.
- To implement the HASP.
- To see that the project is performed in a manner consistent with applicable local, state and federal regulations.
- To monitor compliance with the HASP.

The EWMA Project Manager has the authority to take the following actions:

- To suspend field activities, if the health and safety of field personnel are endangered, pending further consideration by the EWMA HSO.
- To suspend an individual from field activities for infractions of the HASP, pending further consideration by the EWMA HSO.

2.2.2 EWMA Health and Safety Officer: Gary Schwartz

The EWMA HSO has the following responsibilities:

- To consult with the EWMA Project Manager in project-related matters of health and safety.
- To monitor compliance with the HASP.
- To assist the EWMA Project Manager in complying with the terms of this HASP, and applicable regulations.
- To verify that on-site personnel are properly trained and medically qualified to carry out their duties.

The EWMA HSO has the authority to take the following actions:

- To suspend work or otherwise limit personnel exposure if a HASP appears to be unsuitable or inadequate.
- To direct personnel to modify any work practices that are deemed to be hazardous to health and safety.
- To remove field personnel from the project if their physical actions or mental condition endangers their own health and safety, or that of their coworkers.

2.2.3 EWMA Site Safety Officer: Jacob Strauss

The EWMA Site Safety Officer (EWMA SSO) and EWMA Alternate Site Safety Officer(s) (Alternate EWMA SSO) have the following responsibilities:

- To direct on-site health and safety activities as they relate to EWMA's project responsibilities.
- To report safety-related incidents to the EWMA Project Manager and EWMA HSO.
- To assist the EWMA Project Manager in all aspects of implementing the HASP.
- To maintain an adequate supply of health and safety equipment on-site, as specified in the HASP.
- To observe on-site health and safety activities, as specified in the HASP, and report results to the EWMA Project Manager and the EWMA HSO.

The EWMA SSO has the authority to take the following actions:

- To suspend field activities, if the health and safety of field personnel are endangered, pending further consideration by the EWMA HSO.

- To suspend an individual from field activities for infractions of the HASP, pending further consideration by the EWMA HSO.

- End of Section -

3.1 PERSONNEL MEDICAL CLEARANCE

Prior to working at this site, EWMA assigned employees must: 1) have been certified by a licensed, EWMA-approved physician as being physically able to perform their assigned field work, and to use the Personal Protective Equipment (PPE) which will be required for this project, in accordance with the provisions of OSHA Regulation 29 CFR 1910.120(f)(2) have successfully completed an EWMA 40-hour basic health and safety training course (Level C) for field personnel or its equivalent, and 3) passed a Qualitative Respirator Fit Test. Site managers and supervisors must have successfully completed an 8-hour managers' health and safety course, in addition to the other clearance requirements.

EWMA subcontractor employees must also have similar medical, training, and respirator fit clearances and they will be required to provide proof of clearance before beginning work.

3.2 HAZARD TRAINING

All personnel working on-site who have potential exposures to health or safety hazards shall be thoroughly trained as specified in OSHA Regulations 29 CFR 1910.120(e). This training will include: (1) Attendance at an initial 40-hour basic health and safety training course off the Site; (2) At least three days of actual field experience under the direct supervision of a trained, experienced supervisor; (3) On-site, site-specific training; and (4) an 8-hour annual update in the basic health and safety training course. EWMA personnel may also receive specific topic training throughout the year. This training may include blood-borne pathogen training, low-level radioactivity safety, ergonomics updates, and newsletters/bulletins with pertinent or applicable information.

In addition to the above, on-site Managers and supervisors who are directly responsible for, or who supervise employees engaged in hazardous waste operations must also receive: (1) 8-hours of site supervisor training; and (2) additional training at the time of job assignment on such topics as, but not limited to, the company's safety and health program and the associated employee training program; personal protective equipment program; spill containment program; air quality monitoring; emergency response; monitoring equipment usage and calibration; and, health hazard monitoring procedures and techniques, as per 1910.120(e)(4.

At the time of job assignment, special training will be provided to on-site personnel who may be exposed to unique or special hazards not covered by the initial 40-hour basic health and safety course. If unique or special hazards are unexpectedly encountered, specialized training will be provided before work proceeds.

3.3 INCIDENT REPORTING

An EWMA Health & Safety Incident Report will be filed for any incident involving personnel working at this Site. Situations covered by this policy include, but are not limited to, fires, explosions, illnesses, injuries and motor vehicle collisions. These reports must be sent to the EWMA HSO within 24 hours of the incident. Worker's Compensation Insurance reports for EWMA employees must be filed within 48 hours of each incident or illness which results from work-related activities and requires medical attention. See the Attachment List for a copy of the EWMA Health & Safety Incident Report. The EWMA SSO or Project Manager will complete this form if needed.

3.4 ILLUMINATION, SANITATION AND CONFINED SPACE ENTRY

3.4.1 Illumination

All major work tasks are expected to occur during daylight hours. The illumination requirements set forth by OSHA Regulations 29 CFR 1910.120 (m) will be met.

3.4.2 Sanitation

The sanitation requirements regarding potable and non-potable waters, toilet facilities and washing facilities will be followed as set forth in OSHA Regulations 29 CFR 1910.120(n).

3.4.3 Confined Space Entry

Confined Space Entries are not anticipated.

3.5 RESPIRATOR MAINTENANCE, FITTING AND DECONTAMINATION

Respirators, if used, will be cleaned daily according to procedures described below. Cartridges will be replaced either daily or if breakthrough is detected at any time while in use. The following checks will be performed daily, in addition to the above:

- Exhalation valve - pull off plastic cover and check valve for debris or for tears in the neoprene valve, which could cause leakage.
- Inhalation valves - screw off both cartridges and visually inspect neoprene valves for tears. Make sure that the inhalation valves and cartridge receptacle gaskets are in place.
- Make sure a protective lens cover is in place.
- Make sure you have the correct cartridges.
- Make sure that the facepiece harness is not damaged. The serrated portion of the harness can fragment which will prevent proper face seal adjustment.
- Make sure the speaking diaphragm retainer ring is hand tight.

NOTE: <u>The respirator MUST be Leak-Tested before each use</u>.

Test the respirator for leakage by using both the positive- and the negative-pressure method. Lightly place your palm over the exhalation valve cover. Exhale gently. The body of the respirator should bulge slightly outward from your face. If any leakage is detected around the face seal, readjust the head harness straps and repeat the test until there is no leakage. If leakage is detected other than in the face seal, the condition must be investigated and corrected before another test is made. The negative pressure test must also be made. Lightly place your palms or some impervious material, like Saran Wrap® over the cartridges or filter holders. Inhale gently. The face-piece should collapse against the face. The respirator must pass these two tightness tests before the respirator is used. The respirator will not furnish protection unless all inhaled air is drawn through suitable cartridges or filters. **NOTE: Respirators provide no protection in oxygen-deficient atmospheres! But only air purifying features.**

After use, follow these steps to clean your respirator:

- Wash with Alconox® solution and brush gently. (This step will remove any soil/solid particulate matter that may have been collected on the respirator during field activities.)
- Rinse with distilled/de-ionized water, making sure that the inhalation and exhalation valves are clean and unobstructed.
- Rinse with distilled/de-ionized water.
- Wipe with sanitizing solution. (This step will assure the sterility of the respirator.)
- Allow your respirator to air dry.
- Place the respirator inside a sealed bag or a clean area away from extreme heat or extreme cold.

3.6 EWMA PROJECT MANAGER NOTIFICATION

All field personnel must inform the EWMA SSO or the Alternate EWMA SSO before entering the Site.

IF ANY PREVIOUSLY UNIDENTIFIED POTENTIAL HAZARDS ARE DISCOVERED DURING ANY FIELD WORK, LEAVE THAT AREA OF THE SITE IMMEDIATELY AND CONTACT THE EWMA SSO FOR FURTHER INSTRUCTIONS.

3.7 OSHA INFORMATION AND STATE WAGE AND INFORMATION POSTERS

In accordance with the Occupational Safety and Health Act of 1970, a copy of the OSHA information poster must be present at the Site. It will be posted at full size (11" x 17") in a permanent structure or temporary field office, or be distributed to on-site personnel by way of this HASP. Appropriate state of New Jersey wage and employment posters will also be posted in accordance with state laws.

3.8 PROHIBITIONS

Smoking, eating, drinking, chewing tobacco or toothpicks, applying cosmetics, storing food or food containers, and having open fires will be permitted only in designated areas that will be established by the EWMA SSO. Under no circumstances will any of the above activities be permitted within the Exclusion or Contamination Reduction Zones. Good personal hygiene should be practiced by field personnel to avoid ingesting contaminants.

3.9 INITIAL SITE SAFETY MEETING AND SIGNING THE HEALTH AND SAFETY PLAN COMPLIANCE AGREEMENT

The EWMA SSO will hold an initial site safety meeting with EWMA, subcontractor and contractor field personnel before work activities begin at the Site. At this meeting, it will be verified that all personnel have been provided with or have reviewed a HASP for the work activities to be performed at this Site. For EWMA personnel, its subcontractor's personnel, and contractor personnel whose employer(s) have adopted this HASP, the HASP shall be reviewed, discussed and questions will be answered. Signed Health and Safety Plan Compliance Agreement Forms of personnel who will be following this HASP will be collected by the EWMA SSO and filed. Individuals refusing to sign the Form will not be allowed to work on the Site.

3.10 DAILY SITE SAFETY BRIEFINGS

During field operations, site safety briefings will be held at the start of each day by the EWMA SSO to review and plan specific health and safety aspects of scheduled work. All field personnel who are following this HASP are required to attend these briefings. These meetings and their content shall be documented by the EWMA SSO or Project Manager. Potential subjects that may be discussed are presented below:

1. Preliminary
    - Medical clearances.
    - Training requirements.
    - Written HASP availability.
    - Designation of responsibilities for on-site personnel.
    - Identification of on-site personnel trained and certified to administer First Aid.
2. Training topics
    - Review of HASP including: types of hazards; pathways of exposure; levels of protection; contamination avoidance; prohibitions; work procedures; confined space entry; work zones; emergency response procedures; and, specific on-site area/work tasks of concern.
    - Decontamination.
    - Personnel Protective Equipment.
    - Air Quality Monitoring Program
    - Air sampling with hands on use and calibration of direct reading instruments such as a PID, and pDR-1000 dust monitors, and LEL,H_2S, O_2/CO-4-gas monitors.
    - Questions and Answers.

3.11 UNDERGROUND STRUCTURES

Caution will be exercised whenever the possibility of encountering subsurface obstructions exists. Before beginning intrusive activities, all available sources of information (such as site utility drawings, public utility drawings, construction drawings, and discussions with former employees) will be reviewed. If underground obstructions are unexpectedly encountered, the area will be excavated using manual equipment until the nature of the obstruction is discerned.

- End of Section -

An assessment of the known or suspected chemical, physical and biological hazards have been made for each of the activities specified below.

4.1 APPROVED WORK ACTIVITIES

Work activities which may be performed under this HASP are limited to the following:

1. **Soil Excavation**
2. **Soil Sampling**
3. **Groundwater Sampling/ Well Installation**
4. **Water and LNAPL Product Recovery**

This HASP does not cover any site activities beyond those specifically listed above. Work activities not described above may be conducted only after an appropriate Addendum to this HASP has been issued by the EWMA HSO.

4.2 HAZARDS

4.2.1 Chemical Agents

The following chemical hazards have been identified, based on documented prior site uses and/or initial site investigations.

Soil results indicate the following:
VOCs, including benzne, isopropylbenzene, Polycyclic Aromatic Hydrocarbons (PAH), Metals
Plant Based Solvents (linseed oil, etc)

Ground water results indicate the following:
VOCs, including isopropylbenzene, PAHs, Metals

4.2.1.1 Chemical Exposure Controls

Contaminants usually enter the body through the mouth (ingestion), the lung (inhalation) or by absorption through the skin and mucous membranes. Chemical exposure through these routes will be controlled by limiting eating, drinking, and smoking to uncontaminated areas; through the use of hygiene practices and decontamination procedures; and by the use of appropriate engineering controls and personal protective equipment (PPE). There are four levels of personal protection (Levels A, B, C, and D), according to the degree of protection they afford, with Level A providing the greatest degree of protection. The initial level of personal protective equipment to be used while performing activities at the Site will be based on the hazard assessment performed for this project.

Initially, Level D will be used while sampling the environment to determine what hazards are present, and in what quantities, EWMA employees will need to upgrade to Level C if the results of initial sampling (first few minutes of direct read measurements) suggests it is appropriate to do so.

4.2.2 Physical Agents

Physical agents include noise, electro-magnetic fields, ionizing and non-ionizing radiation, and thermal stress. There is also a risk of physical injury when working in the field with sampling tools, and when near heavy equipment, operating machinery and vehicular traffic. Field personnel should be able to recognize these hazards and take steps to avoid injurious contact with them.

Noise Exposure

Work at the site may be conducted with high noise levels from equipment such as excavators, pumps and drill rigs. EWMA standards require that hearing protection be used when noise levels exceed 85 dBA, averaged over an 8-hour day. Hearing protection will be required at this site for noise exposures greater than 85 dBA for **any** length of time. In the absence of a noise meter, an appropriate rule of thumb is that when normal conversation is difficult to hear or understand at a distance of three feet, hearing protection is required. EWMA and subcontractor personnel shall have hearing protection on-site and available for use at all times.

Thermal Stress

Depending on the altitude, geographic location and the season, the use of required PPE may cause heat or cold related stress on the wearer. The Heat Stress Casualty Prevention Plan as specified in Attachment-F will be referred to for dealing with this health hazard during warm weather. The Plan outlines heat stress identification, treatment, prevention and monitoring. Fluids will be provided at all times during work periods, in order to maintain adequate body fluid levels for field personnel. Attachment-F also contains the Cold Exposure Casualty Prevention Plan for this project.

4.2.2.1 Controls for Physical Agents

No physical hazards known or believed to be present. Buried and over-head power lines. Be sure minimum clearance of 10-feet is maintained for drill rig to over-head power lines.

4.2.3 Biological Agents

Biological agents may be viral, fungal, bacterial, or of higher orders: insects (including ticks and stinging insects), wild animals (especially snakes) and domesticated animals. Any mammal encountered on-site should be considered potentially rabid. In many parts of the northeast United States, tick-borne diseases pose a significant health risk during warm months (see Attachment-J, Ticks and Tick-Borne Diseases). Field personnel are encouraged to use insect repellents before donning PPE. To avoid snake bites, check for snakes before walking through grassy or debris strewn areas. The presence of medical waste suggests the possibility that pathogenic micro-organisms may be present. A fully-stocked first aid kit, insect and tick repellent must be available for use in the field.

4.2.3.1 Biological Agent Controls

No Biological Agent controls to be used.

4.2.4 Safety Hazards

The hazards and appropriate safety procedures associated with drilling and excavation activities are discussed in Attachment-I, Safety Guidelines for Excavations. The physical hazards associated with performing field sampling are described in the safety procedures listed in Attachment-H.

Use of safety-toed work boots, safety glasses or goggles, and hard hats will be required when in an Exclusion Zone. Personnel should be aware that when PPE such as respirators, gloves, and protective clothing are worn, visibility, hearing, and manual dexterity are impaired.

4.2.4.1 Drilling, Pile Driving and Excavation

The hazards involved with the use of drill rigs and excavation equipment are significant and include pinch points, entrapment in machinery, impact from moving parts, electrocution from contact with overhead wires or buried utilities, and improper operations. Use of hand tools, moving the rigs/equipment, and conducting required repairs can increase physical risks. Working with and around a drill rig can involve a high risk of serious injury or death. In order to reduce the risk, proper safety precautions must be observed at all times. Safety procedures are included in Attachment-H.

4.2.4.2 Excavated Drums

a. During the course of excavation activities, a potential exists for buried drums or other types of containers to be uncovered. If, because of labels, the appearance of chemical materials, the size and shape of the container, or for any other reason, there is a likelihood that a hazardous material container has been uncovered, immediately cease operations in the area and inform the EWMA SSO.

b. Activities may not resume until the container's contents have been sufficiently identified to determine the hazard it poses and to provide the controls necessary to remove or significantly reduce the identified risks.

4.2.4.3 Odors

During the course of excavation, odorous gases may escape from the ground. Most hazardous and/or foul-smelling gases can be controlled or eliminated with an enzyme product available from Nature Plus, 555 Lordship Blvd., Stratford, CT 06497 (203/380-0316): Don Mitchell. The EWMA SSO will determine the most effective means of applying this material, when needed. An initial supply shall be on hand whenever a project may entail the probable release of noxious gases.

4.2.5 Contaminated Dust

Contaminated surface soils may become a source of dust. Inhaling contaminated dust may result in adverse health effects from exposure to the contaminant(s) on the dust particles.

The M.I.E. company's miniRAM dust monitor may be used to estimate the contaminant concentration in air, by measuring the total dust level.

Soil samples are reported as mg contaminant per kilogram of soil. The miniRAM reads mg of dust per cubic meter of air. To convert from kilograms of soil (dust) to milligrams of dust (from soil), divide kilograms by 1 million (1,000,000 or 10^{-6}). In order to maintain proportions, milligrams of contaminant must also be divided by 1 million (resulting in milligrams of contaminant times 10^{-6} per mg soil (dust).

As an example, assume that soil sampling shows 750 mg aluminum per kilogram of soil. Dust, generated from this soil, was measured to be 3 mg dust (total) per cubic meter of air. Dividing by 1 million, we have 0.00075 mg aluminum for each milligram of dust. Since we have 3 mg dust in each cubic meter of air, we have 3 x 0.00075 mg or 0.00225 mg aluminum per cubic meter of air. The OSHA Time-Weighted Average, Permissible Exposure Limit is 10 mg/m3 micrograms of Aluminum dust per cubic meter of air. Therefore, a sustained, full-shift exposure to this aluminum -contaminated soil will not produce an unacceptable exposure to Aluminum dust.

Appendix I (attached) provides relevant information concerning dust contaminants.

- End of Section -

SECTION 5.0
AIR QUALITY MONITORING AND MEASURES
FOR THE CONTROL OF EMISSIONS

5.1 AIR QUALITY MONITORING INSTRUMENTATION

Air quality will be measured to determine exposure potentials prior to the start of work, and at various times during the course of the project. Instruments which may be used to monitor air quality are discussed below:

- **Photoionization Detector**

  The HNu Systems Model PI-101 Photoionization Detector (PID) or equivalent will be used to detect trace concentrations of certain organic gases and a few inorganic gases in the air. Methane, ethane, and the major components of air are not detected by the HNu PID. PID readings reflect total (readable) vapors in the air. PID readings must be given as "PID units", rather than "ppm". The PID detects mixtures of compounds simultaneously. PID readings do not measure concentrations of any individual compound when a mixture of compounds is present.

  The PID will be calibrated twice each day (before start of work and after the conclusion of work) using an isobutylene standard (molecular weight = 56.2) for calibration. Calibrations will be logged. PID readings should be measured in the breathing zone of the most highly exposed worker (i.e., the person who is closest to the source of known or suspected contamination) at least hourly.

- **Combustible Gas Indicator/Oxygen/Hydrogen Sulfide Meter**

  An approved Combustible Gas Indicator/Oxygen Meter, which may have a separate hydrogen sulfide detector, may be used, at the discretion of the EWMA SSO, to measure the concentration of flammable vapors and gases, oxygen, and hydrogen sulfide in the air during field activities. Flammable gas concentrations are measured as percentages of the Lower Explosive Limit (LEL). Oxygen content is measured as a percentage of air. Hydrogen sulfide concentration (which includes sulfur dioxide) is measured in parts per million.

- **Aerosol/Particulate Air Monitoring**

  An approved real-time aerosol monitor will be used by the EWMA SSO, to measure mass concentrations of airborne dust, smoke, mist, haze, and fume in the air during field activities. The monitor will be equipped with an onboard datlogger to maintain a record of the data for future analysis. Aerosol readings should be measured in the breathing zone of the most highly exposed worker (i.e., the person who is closest to the source of known or suspected contamination) at least hourly. The monitor will be zeroed each morning using an air-tight bag. The aerosol monitor readings do not measure concentrations of any individual compounds within the particulate when a mixture of compounds is present at the site.

5.2 AIR QUALITY RESPONSE LEVELS

The EWMA SSO will decide when EWMA personnel will change protection levels in response to air monitoring results. The EWMA HSO will be notified of any upgrades from initial protection levels, as soon as is practical. EWMA Action Levels for this project are described in detail in Table 5-1, at the end of this Section. These Action (Response) Levels apply to the work activities covered by this HASP.

5.3 MONITORING GUIDELINES

5.3.1 Background Organic Vapor Monitoring

Background organic vapor and combustible gas readings (when applicable) will be taken at least twice daily: before the start, and after the conclusion of, work activities. Background levels will be taken at a location which is unaffected by on-site work. Once work at the Site begins, reselection of the original background location may be required.

5.3.2 Air Monitoring Protocol

During intrusive work activities (i.e., drilling, excavation), at least one series (series=Organic Vapor, Toxic gas, Combustible gas, and Oxygen) of readings will be taken every 30 minutes. During non-intrusive work activities, one series will be performed at the start of work, one series at some point during the work, and one near the conclusion of the work. This will be in addition to the background monitoring described in the previous section.

5.3.3 Documenting Monitoring Results

A calibration log will be kept for each of the monitoring instruments used, which describes the calibration method(s) used, and the readouts obtained. Should work at the Site require respiratory protection, the need for a personal exposure monitoring program will be evaluated by the EWMA HSO. Details of this program and any monitoring equipment required for its implementation will be specified in an Addendum to this HASP prepared by the EWMA HSO. Records of exposure measurements will be maintained in the Health and Safety file for this project.

5.4 EMISSION CONTROL MEASURES

Vapor or dust emissions resulting from field operations do not usually exceed either regulatory or EWMA action levels. If the action levels are significantly exceeded, measures to suppress the responsible emissions should be investigated. Appropriate measures would include cessation of operations until the exact cause of the emission is identified and corrected. Vapor control may include the use of vapor suppression foams, covering exposed soil piles with plastic sheeting and/or spraying exposed soil piles and drilling sites with water or enzyme solutions. Fugitive dust emission control may require water spraying. In addition, calcium chloride may be needed.

TABLE 5-1

EWMA RESPONSE ACTIONS

EWMA Air Quality Measurements and Response Actions

Air Quality Measurement[1,2,3]	
The contaminants of concern are VOCs, specifically isopropylbenzene, linseed oil, PAHs, and Metals in soil and/or groundwater. They can possibly be released during any one of the following work tasks: soil excavation, sampling, groundwater sampling, and LNAPL product recovery found just above the peat and clay layer and typically about two or three feet below the excavation floor. Soil and ground water contaminants are present & many exceed current NYSDEC applicable standards. Therefore, be conservative and treat airborne dust as less than 1 mg/m^3 per ACGIH dust level. Use benzene as reference as less than 0.87 ppm representing the varied PAHs and VOCs. *Black coal tar creosote is a strong skin irritant, please be careful not to get it on any exposed skin.*	1. Level D Protection ensemble or Modified above background (averaged over 15 minutes and/or 8 Hr. TWA) 2. No respirator needed
• PID reading greater than background (sustained over one minute in OBZ) but less than 0.87 ppm. • If PID measures 0.87 ppm or greater, immediately change to benzene detector tubes to evaluate concentration of benzene in air. • CGI reading greater than 10% LEL • Oxygen meter reading less than 19.5% • Greater than 1 mg/m3 of dust	Level C Protection level ensemble, ½ face-piece up to 8.7 ppm and 10 mg/m^3 , then full face-piece with a combination OVA/P100 up to 43.50 ppm PID equivalents and 50 mg/m^3. ½ face respirator has a OSHA assigned protection factor of 10 and full face piece is 50. **All dust release events must be suppressed immediately via decision made by the HSO. Continue until dust levels are below 1 mg/m3.**
• PID reading is **greater than 43.5 ppm** maximum use concentration for using full face respirator • CGI reading greater than 10% LEL • Oxygen meter reading less than 19.5% • Dust **greater than 50 mg/m^3** maximum use concentration when using full face respirator	**Suspend all work activities** in immediate work zone and notify EWMA HSO and EWMA Project Manager. Continue air monitoring until readings are below noted air quality threshold levels.

(1) All Air Quality Measurements, with the exception of CGI measurements for flammable vapors and gases, should be made in the breathing zone of personnel who, in the opinion of the EWMA SSO, are most exposed to airborne contaminants. Measurements of flammable vapor and gas levels should be made in the vicinity of the nearest ignition source. (2) The ACGIH denotes American Conference of Governmental Industrial Hygienists (ACGIH) which serves to characterize 8 hour time weighted averages as a threshold level value, short term exposure limits and ceiling limits. The values are based on the most current edition of the ACGIH TLV booklet and OSHA PELs. (3) Be aware that these airborne concentration guidelines are based on assuming with uncertainty that the soil or ground water contaminants are at high concentrations. This is the case unless it is known about the soil or ground water concentration profile in advance.

PLEASE HEED GOOD HYGIENE PRACTICES AS THE IDENTIFIED COMPOUNDS ARE HIGHLY TOXIC AT HIGH INHALATION EXPOSURE CONCENTRATIONS OR IF ACCIDENTALLY INGESTED.

6.1 DESCRIPTION OF LEVELS OF PROTECTION

The personal protection equipment specified in this HASP will be available to all field personnel. EWMA contractors and sub-contractors are required to provide the specified equipment (or its equivalent) to all of their exposed employees. The following requirements will also be met, in accordance with OSHA regulations:

1. Facial hair may not interfere with the proper fit of respirators;
2. Contact lenses will not be worn on-site; without exception.
3. Eyeglasses that interfere with the proper fit of full-face respirators will not be worn; and,
4. No eating, drinking or smoking will be allowed in any area where respiratory protection is required.

Level D Personal Protective Equipment

- Hard hat
- Safety glasses with side shields or goggles
- ANSI-safety-toed leather or rubber work boots

Modified Level D Personal Protective Equipment

- Hard hat
- Safety glasses with side shields or goggles
- ANSI-safety-toed leather work boots
- Rubber overboots, safety-toed rubber boots, or disposable "booties"
- Butyl rubber outer gloves for protection against MEK in soil dermal exposure
- Nitrile surgical gloves (to be work underneath outer gloves)
- Polyethylene coated or Saranex impregnated Tyvek coveralls(1) (taped at cuffs)

  (1) Optional, at the discretion of EWMA SSO.

Level C Personal Protective Equipment

- Hard hat
- Half-face Air-Purifying Respirator with applicable chemical cartridge combined with a P-100 filter
- ANSI-safety-toed leather work boots
- Rubber overboots, safety-toed rubber boots, or disposable "booties"
- Nitrile-butadiene rubber outer gloves
- Nitrile surgical gloves (to be worn underneath outer gloves)
- Polyethylene coated or Saranex impregnated Tyvek coveralls (taped at cuffs)

A first aid kit, multi-purpose dry chemical UL Class 10A-10B-C fire extinguisher, eye wash station, appropriate barricades and alarm horns will be present and maintained at the Site.

Selection of the PPE specified for this project is based on a review of known or suspected hazards, routes of potential exposure (inhalation, skin absorption, ingestion, and skin or eye contact) and the effectiveness of personal protective equipment in providing a barrier to these hazards. In addition, PPE has been selected to match the work requirements and task-specific conditions of the job, and to provide adequate protection without causing unnecessary discomfort or physical impairment to the worker.

6.2 INITIAL PPE LEVELS FOR SPECIFIC WORK TASKS

The selection of Initial Levels-of-Protection takes into consideration the physical, biological and chemical hazards posed by the site as well as those posed by the various pieces of personnel protective clothing. Initial Levels-of-Protection are established so as to obtain acceptable levels of protection while not imposing an unacceptable level of physical stress on the wearer.

The following initial PPE levels have been established for the tasks described in Section 4.1, Approved Work Activities:

Work Activity	Level of Protection
1. Soil Excavation	Level-C*
2. Soil Sampling	Level D
3. Groundwater sampling/ Well Installation	Level D
4. Water and LNAPL Product Recovery	Level D

- End of Section –

SECTION 7.0
DESIGNATION OF WORK ZONES

This section of the Health & Safety Plan applies to excavation projects where contaminated soils are exposed and may release their contaminants to the air, or come in contact with field personnel. To minimize the migration of contaminants from the Site to uncontaminated areas, three work zones will be set up:

Zone 1: Exclusion Zone
Zone 2: Contamination Reduction Zone
Zone 3: Support Zone

The Exclusion Zone is the area where contamination occurs or could occur. Initially, the Exclusion Zone should extend a distance of 25 ft from the edge of intrusive activity unless conditions at the Site warrant either a larger or smaller distance as determined by the EWMA SSO. All persons entering the Exclusion Zone must wear the applicable level of protection as set forth in Section 6.1, Personal Protective Equipment and Section 6.2, Initial PPE Levels for Specific Work Tasks. It is anticipated that work zones will be established at each individual area of intrusive work rather than encompass the entire Site.

The Support Zone is the area of the Site where significant exposure to contamination is not expected to occur during non-intrusive activities. The Support Zone is considered to be the "clean area" of the Site.

Between the Exclusion Zone and Support Zone is the Contamination Reduction Zone, which provides a transition zone between the contaminated and clean areas of the Site. The Contamination Reduction Zone will be located directly outside of the Exclusion Zone. All personnel must decontaminate when leaving the Exclusion Zone. A Contamination Reduction Zone (decontamination area) will be established adjacent to each individual area of intrusive work.

For a detailed map identifying the various work zones, see Attachment A.

- End of Section -

SECTION 8.0
DECONTAMINATION PROCEDURES

Personnel who have been in contact with contaminated materials will decontaminate themselves in the following manner:

- Deposit contaminated equipment on plastic drop cloths.
- Stand in wash tub containing Alconox® and water, wash boots and outer gloves with long handled brush.
- Rinse boots and outer gloves with long handled brush in a wash tub containing clear water or use a sprayer to rinse off boots and gloves.
- Remove ankle and wrist tapes; place in disposal drum.
- Remove outer gloves and place in disposal drum.
- Remove Tyvek® suit and place in disposal drum.
- Remove respirator and place on table to be decontaminated.
- Remove inner gloves and place in disposal drum.
- Wash hands and face.

All tools or equipment which have been in contact with contaminated materials, must be decontaminated after leaving the Exclusion Zone. This decontamination is to be performed using a high pressure/hot water "steam type" cleaner or a spray/rinse decontamination sequence as described in Section 3.6, Respirator Maintenance, Fitting and Decontamination, as appropriate.

Contaminated liquids from the decontamination area and contaminated clothing should be disposed of in accordance with site protocols.

- End of Section -

9.0 EMERGENCY RESPONSE

Emergencies addressed by this plan include:

- Fire;
- Chemical over-exposures; and,
- Physical injuries to site personnel.

The EWMA HSO and Project Manager must be notified as soon as possible of any on-site emergency or potential emergency including fire, explosive conditions or OSHA-recordable physical injury.

9.1 EMERGENCY RECOGNITION AND PREVENTION

9.1.1 Fires

Fires are possible whenever oxygen and flammable gases or vapors are mixed together in proper proportions and an ignition source is present. Construction equipment provides an ignition source. To prevent fires and explosions, a CGI as specified in Section 5.0 will be used to detect flammable or explosive atmospheres. Ignition and other sources which produce electrical sparks will be turned off and the area evacuated if vapors or gases reach 10% of the Lower Explosion Limit (LEL) as measured by the CGI. Work will not resume until the EWMA SSO observes CGI readings below 10% of the LEL for at least five (5) consecutive minutes.

9.1.2 Chemical Exposures

Work should always be performed in a manner that minimizes exposure to contaminants through skin or eye contact, inhalation or ingestion. Work practices to reduce the risk of chemical exposure include:

- PPE, as specified in Section 6.0, will be used by all field personnel covered by this HASP. A formal revision to the HASP must be made by the EWMA HSO to modify the PPE specifications.
- Keep hands away from the face during work activities to avoid ingestion.
- Minimize all skin and eye contact with contaminants.

Early recognition of the signs and symptoms of chemical exposure is essential for the prevention of serious chemical exposure incidents. Symptoms of exposure to the compounds present at the Site include the following: fatigue, weakness; eye, nose, and/or throat irritation; dizziness; nausea; vomiting; malaise; tremors; aggressive confusion; cyanosis (blue color to skin); anemia; and muscle spasms. If a person experiences any of these symptoms, or recognizes any of them in a fellow worker, the person experiencing the symptoms will stop work immediately and report to the EWMA SSO. If the symptoms persist or affect performance in any way, the EWMA

SSO will arrange for medical treatment. If the symptoms are serious, or affect several people, work activities in the exposure area will be discontinued until more is known about the cause(s). Incident reporting procedures as specified in Section 3.3 will be initiated.

9.1.3 Physical Injuries

Site personnel should be on the lookout for potential safety hazards such as holes or ditches; improperly positioned objects, such as drums or equipment that may fall; sharp objects, such as nails, metal shards, and broken glass; protruding objects at eye or head level; slippery surfaces; steep grades; unshored steep entrenchments, uneven terrain or unstable surfaces, such as walls that may cave in or flooring that may give way. Site personnel should inform the EWMA SSO of any potential hazards observed so that corrective action can be taken.

9.2 EMERGENCY ALERTING PROCEDURES

The EWMA SSO will alert the appropriate work groups when an emergency occurs. The communication method(s) will be established by the SSO with the approval of the Project Manager. The EWMA SSO and any isolated work group will carry radios if direct contact cannot be maintained. If direct contact cannot be maintained, an air horn will be used to signal workers to stop work and assemble in the Contamination Reduction Zone. If evacuation of the Site is necessary, a pre-arranged signal from the air horn will be sounded.

9.3 EVACUATION PROCEDURES AND ROUTES

Normally, personnel should evacuate through the Contamination Reduction Zone, and from there, to the Support Zone. Evacuation from the Contamination Reduction Zone will proceed in an upwind direction from the emergency. If evacuation to the Support Zone does not provide sufficient protection from the emergency, personnel will be advised to evacuate the Site proper.

9.4 TELEPHONE NUMBERS FOR EMERGENCY SERVICES

The telephone numbers of local emergency services are given below:

Emergency Service	Telephone Number
Ambulance	911
Fire Department **10-40 47th Avenue, Long Island City, NY**	**911 or (718) 847-6600**
Long Island City Police Department **5-47 50th Avenue, Long Island City, NY**	**911 or (718) 784-5411**
New York University Medical Center **560 1st Avenue, NY, NY 10016**	**911 or (212) 263-7300**
Poison Control Center	(800) 222-1222
USEPA National Response Center	(800) 424-8802
EWMA Project Manager(s)/ Don Richardson	**973-560-1400**
Richard Arnold	**908-334-0976**

These telephone numbers must be verified by the EWMA SSO before the start of field work.

9.5 EMERGENCY RESPONSE PERSONNEL

The EWMA SSO will have the primary role in responding to all emergencies at the Site. The EWMA SSO, or the Alternate EWMA SSO, will be present at the Site during all work activities. If any emergency such as a fire, chemical exposure, or physical injury occurs, the EWMA SSO shall be notified immediately. The EWMA SSO will direct all site personnel in cases of emergency.

After an emergency has occurred at the Site, the causes and responses to that emergency shall be thoroughly investigated, reviewed and documented by the EWMA Project Manager and EWMA SSO; this documentation is to be submitted to the EWMA HSO within 48 hours of the incident.

9.6 DECONTAMINATION PROCEDURES DURING AN EMERGENCY

Decontamination of an injured or exposed worker or during a site emergency shall be performed only if decontamination does not interfere with essential treatment or evacuation.

If a worker has been injured or exposed and decontamination can be done: Wash, rinse, and/or cut off protective clothing and equipment.

If a worker has been injured or exposed and cannot be decontaminated:

- Wrap the victim in blankets, plastic or rubber to reduce contamination of other personnel;
- Alert emergency and off-site medical personnel to potential contamination; and,
- Have the EWMA SSO or other personnel familiar with the incident and contaminants at the Site accompany the victim to the hospital. If possible, send a copy of the appropriate MSDS(s) with the victim. Refer to Appendix K for site specific MSDS sheets.

9.7 EMERGENCY MEDICAL TREATMENT AND FIRST AID PROCEDURES

Emergency medical treatment or First Aid may be administered at the Site by the EWMA SSO or other personnel who have been certified in First Aid.

General emergency medical and First Aid procedures are as follows:

- Remove the injured or exposed person(s) from immediate danger.
- Render First Aid as needed; decontaminate affected personnel, if necessary.
- Call an ambulance for transport to local hospital immediately. <u>This procedure shall be followed even if there is no apparent serious injury.</u>
- Evacuate other personnel at the Site to safe places until the EWMA SSO determines that it is safe for work to resume.
- Report the accident to the EWMA HSO immediately.

Emergency Medical Treatment and First Aid Procedures are presented in Attachment-G.

9.8 DIRECTIONS TO THE HOSPITAL FROM SITE

The route and/or directions to the hospital from the Site are in Attachment-B.
The directions to the hospital from the Site must be verified by the EWMA SSO prior to the start of field work.

- End of Section -

10.1 PROJECT PERSONNEL

EWMA personnel authorized to enter the Site and work on this project, subject to compliance with provisions of the HASP, are:

EWMA Project Manager(s)	Don Richardson 973-560-1400 Richard Arnold 908-334-0976
EWMA Site Manager (s)	Jacob Strauss 201-446-2038
EWMA Site Safety Officer (s)	Jacob Strauss
EWMA Health and Safety Officer	Gary Schwartz

Other personnel, who meet HASP requirements, including training and participation in a medical surveillance program, may enter and work on the Site subject to compliance with provisions of the HASP.

10.2 PROJECT SAFETY RESPONSIBILITIES

Personnel responsible for implementing this Health and Safety Plan are the EWMA Project Manager and the EWMA Site Safety Officer. Their specific responsibilities and authority are described in the EWMA Health and Safety Manual.

- End of Section -

SECTION 11.0
HEALTH AND SAFETY PLAN APPROVALS

The authorized signatures below verify that this Health and Safety Plan has been read and approved for the work to be performed at the subject site:

EWMA Project Name: Former Accurate Associates/5-20 46th Road, Long Island City, NY

EWMA Project Number: 250583 & 250689-05 (formerly 205490, 207266, 250595, 250632, & 250638)

_____ _____
EWMA Project Manager Date

_____ _____
EWMA Health and Safety Officer Date

SECTION 12.0

HEALTH AND SAFETY PLAN COMPLIANCE AGREEMENT

I have reviewed a copy of the Health and Safety Plan for Former Accurate Associates/5-20 46th Road, Long Island City, NY dated July 31, 2015. I have read the HASP, understand it, and agree to comply with all of its provisions. I understand that I could be prohibited from working on the project for violating any of the safety requirements specified in the Health and Safety Plan.

Name	Company
Signature	Date
Name	Company
Signature	Date
Name	Company
Signature	Date
Name	Company
Signature	Date
Name	Company
Signature	Date

APPENDIX I

DETERMINING EXPOSURE TO AIRBORNE DUST CONTAMINANTS FROM SOIL DATA

1. Assume the following hypothetical:

   a) Lead (Pb) is found in soil samples to be 18,000 ppm (mg Pb/kg soil).

   b) Dusty conditions will prevail.

   c) 18,000 mg Pb/kg soil = 0.018 mg Pb

   d) The miniRAM reads mg (soil/dust)/m^3 air. Each mg of soil/dust detected will contain 0.018 mg Pb/m^3 air

      Thus, 1mg/m^3 total dust as read by miniRAM represents 0.018 mg Pb/m^3

      The current OSHA PEL is 0.050 mg Pb/m^3 air, as an 8-HR TIME WEIGHTED AVERAGE (TWA-8)

2. Example: 18,000 mg Pb per kilogram of soil

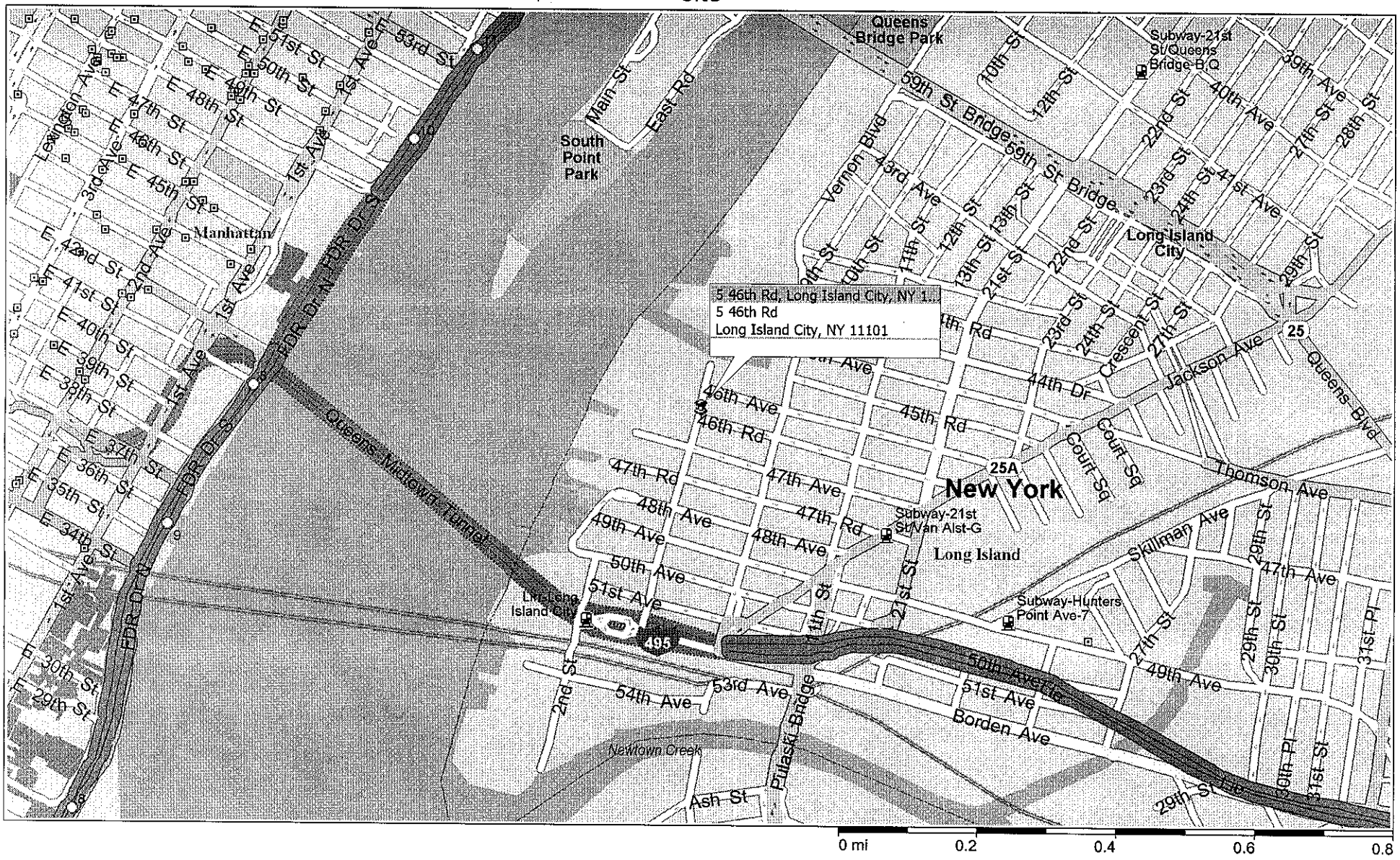
   a) 18,000 mg Pb/kg soil = 0.018 mg Pb/mg soil

   b) miniRAM reads 4.0 mg dust (soil)/m^3 air

   c) $\frac{0.018 \text{ mg Pb}}{\text{mg soil}} \times \frac{4.0 \text{ mg dust (soil)}}{m^3 \text{ air}} = \frac{0.072 \text{ mg Pb}}{m^3 \text{ air}}$

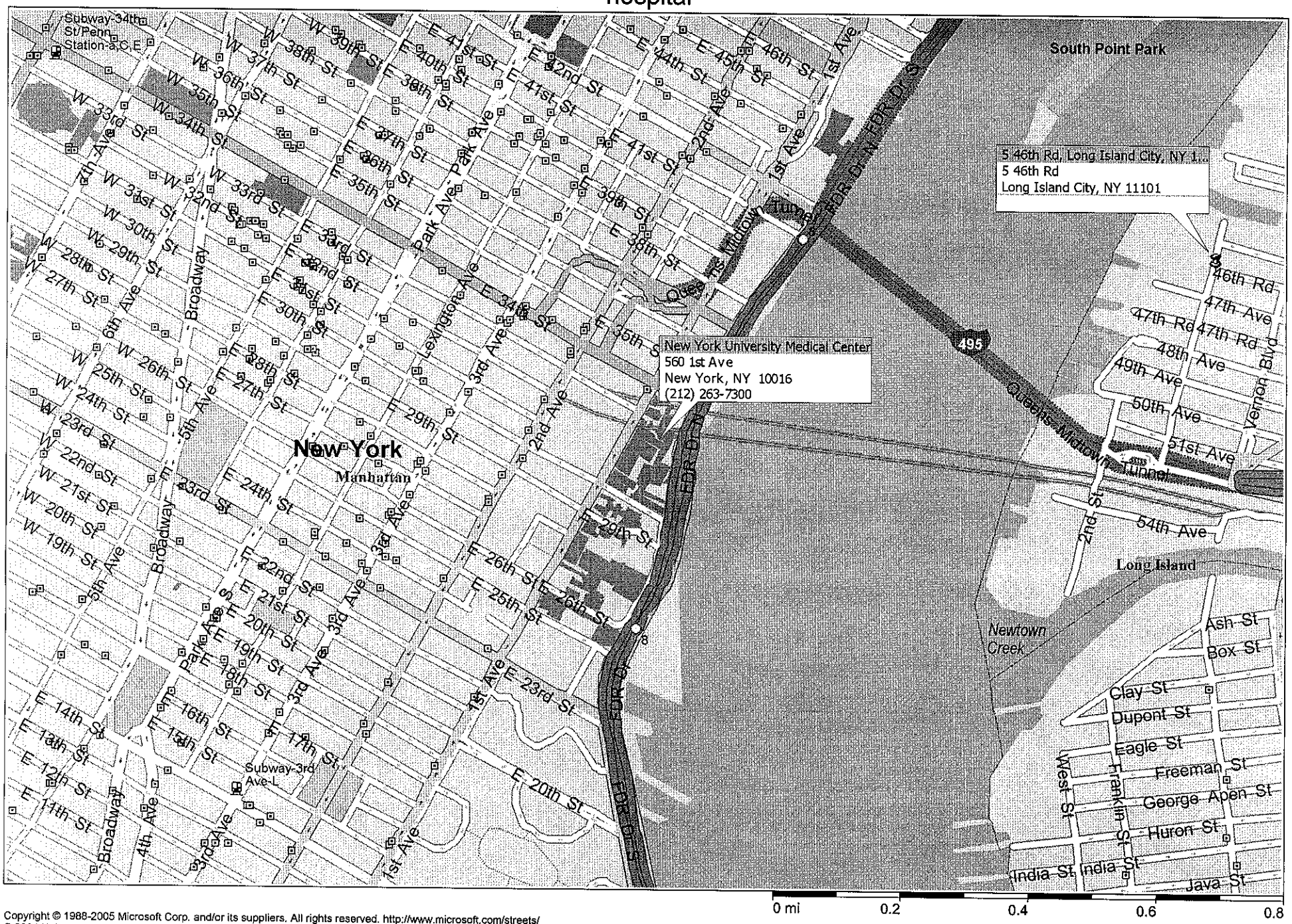
SITE LOCATION MAP

site



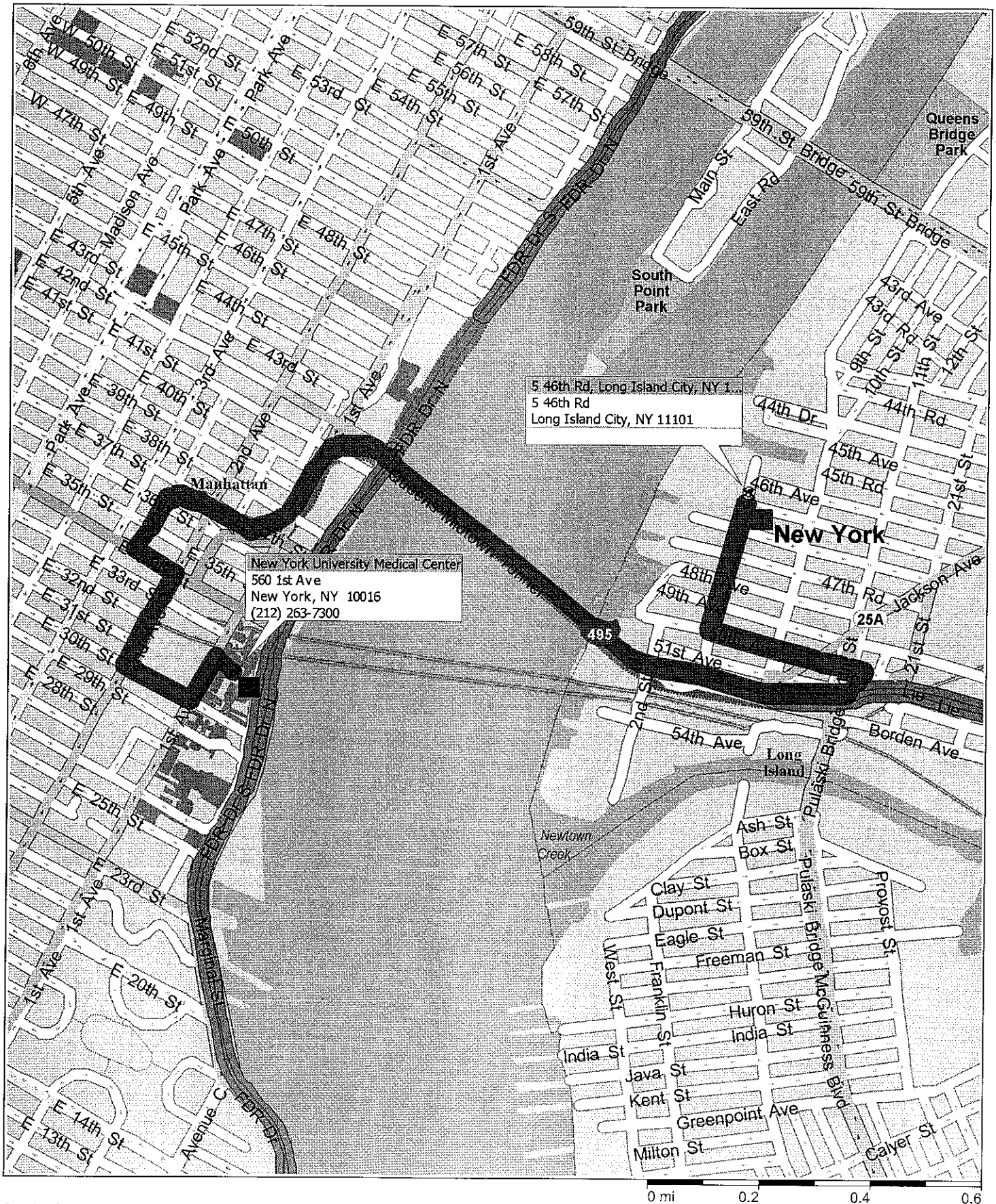
EMERGENCY ROUTE MAP

hospital



site-hospital

2.8 miles; 6 minutes



9:00 AM	0.0 mi	Depart 5 46th Rd, Long Island City, NY 11101 on 5th St (South) for 0.2 mi
9:00 AM	0.2 mi	Turn LEFT (East) onto 50th Ave for 0.3 mi
9:01 AM	0.5 mi	Take Ramp (RIGHT) onto I-495 [Queens Midtown Tunnel Plaza] for 1.4 mi towards Queens Midtown Tunnel
9:03 AM	1.9 mi	Turn off onto Ramp for 0.1 mi
9:03 AM	2.0 mi	Keep LEFT to stay on Ramp for 0.1 mi towards 35 St / 34 St / Downtown
9:03 AM	2.2 mi	Bear RIGHT (South-West) onto Queens Midtown Tunnel Exit [Tunnel Exit St], then immediately turn LEFT (East) onto E 34th St for 0.1 mi
9:04 AM	2.3 mi	Turn RIGHT (South) onto 2nd Ave for 0.2 mi
9:04 AM	2.5 mi	Turn LEFT (East) onto E 30th St for 0.1 mi
9:05 AM	2.6 mi	Turn LEFT (North) onto 1st Ave for 174 yds
9:05 AM	2.7 mi	Turn RIGHT (South-East) onto Local road(s) for 87 yds
9:06 AM	2.8 mi	Arrive New York University Medical Center [560 1st Ave, New York, NY 10016, (212) 263-7300]

ATTACHMENT C

EWMA HEALTH & SAFETY INCIDENT REPORT

EWMA
HEALTH AND SAFETY INCIDENT REPORT FORM

HEALTH AND SAFETY INCIDENT REPORT

Date of Incident: ____/____/____ Time of Incident: _hrs

Location Of Incident_____

DESCRIPTION OF INCIDENT:

Reported by:

_____	_____	_____
Site Safety Officer	Signature	Date

Reviewed by:

_____	_____	_____
Field Supervisor	Signature	Date

Distribution:

___	Project Manager	_____
___	Superintendent	_____
___	Project CIH	_____
___	Owner Representative	_____

HEALTH AND SAFETY INCIDENT REPORT

DESCRIPTION OF INCIDENT (continued):

Anyone Injured? If yes, give names, address and social security #'s of all individuals below:

Full Name	Address	Phone	SS#

Of the above, anyone taken to hospital, If yes, where? Who? Diagnosis?

Actions Taken:

What Follow-Up Actions are recommended?

What will be done to prevent this type of incident from happening again (if possible)?

Samples Collected?

Type: ( ) Air; ( ) Soil; ( ) Water ( ) Other

Analysis of samples; what were samples analyzed for?

Laboratory Used: Name/Address

When are results expected:

Results attached? ( ) Yes ( ) No ( ) Pending due on / /

WITNESSES TO INCIDENT, INCLUDE ALL WITNESSES

Name	Address	Phone#

Prepared By:_____ Date:_____

Signature:_____

Witness to Preparer:_____ Date:_____

Signature:_____

Notary: Signed and sealed this_____ day of _____,

SS:

COPY TO PROJECT FILE, MAIN OFFICE, EMPLOYER OF AFFECTED EMPLOYEES

ATTACH MORE PAGES AS NEEDED. ATTACH LAB REPORTS, DOCTORS REPORTS, EMERGENCY ROOM REPORTS AS APPROPRIATE

ATTACHMENT D

EWMA PROJECT SAFETY LOG

ENVIRONMENTAL WASTE MANAGEMENT ASSOCIATES, LLC

PROJECT SAFETY LOG

Form HS-106

EWMA SSO: _____ **Date:** _____

Weather: _____

Personnel:

Personnel Present	Affiliation:

Work Activities	Level of Protection

PID (ppm)

reading	time	reading	time	reading	time	reading	time

CGI/O_2 (%LEL)

reading	time	reading	time	reading	time	reading	time

CGI/O_2 (O_2%)

reading	time	reading	time	reading	time	reading	time

Colormetric Tubes (ppm)

reading	time	reading	time	reading	time	reading	time

MiniRam (mg/m³)

reading	time	reading	time	reading	time	reading	time

Notes and Comments: _____

OSHA POSTER

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Provisions of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discriminatory action.

Citation

If, upon inspection, OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory civil penalties against employers of up to $7,000 for each serious violation and for optional penalties of up to $7,000 for each nonserious violation. Penalties of up to $7,000 per day may be proposed for failure to correct violations within the proposed time period and for each day the violation continues beyond the prescribed abatement date. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $70,000 for each such violation. A minimum penalty of $5,000 may be imposed for each willful violation. A violation of posting requirements can bring a penalty of up to $7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable by a fine of up to $250,000 (or $500,000 if the employer is a corporation), or by imprisonment for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment. Falsifying records, reports, or applications is punishable by a fine of $10,000 or up to six months in jail or both.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

OSHA has published Safety and Health Program Management Guidelines to assist employers in establishing or perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free assistance in identifying and correcting hazards and in improving safety and health management is available to employers, without citation or penalty, through OSHA-supported programs in each State. These programs are usually administered by the State Labor or Health department or a State university.

Posting Instructions

Employers in States operating OSHA approved State Plans should obtain and post the State's equivalent poster.

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or facsimile) in a conspicuous place where notices to employees are customarily posted.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, GA	(404) 347-3573
Boston, MA	(617) 565-7164
Chicago, IL	(312) 353-2220
Dallas, TX	(214) 767-4731
Denver, CO	(303) 391-5858
Kansas City, MO	(816) 426-5861
New York, NY	(212) 337-2378
Philadelphia, PA	(215) 596-1201
San Francisco, CA	(415) 744-6670
Seattle, WA	(206) 553-5930

To report suspected fire hazards, imminent danger safety and health hazards in the workplace, or other job safety and health emergencies, such as toxic waste in the workplace, call OSHA's 24-hour hotline: 1-800-321-OSHA.

Robert B. Reich, Secretary of Labor

U.S. Department of Labor

Occupational Safety and Health Administration

Washington, DC
1995 (Reprinted)
OSHA 2203

This information will be made available to sensory impaired individuals upon request. Voice phone: (202) 219-8615; TDD message referral phone: 1-800-326-2577

GPO : 1995 O - 163-097 QL 3

THERMAL STRESS GUIDELINES

COLD EXPOSURE CASUALTY PREVENTION PLAN

Persons working outdoors in temperatures at or below freezing may be frostbitten. Extreme cold for a short time may cause severe injury to the surface of the body, or result in profound generalized cooling, causing death. Areas of the body which have high surface area-to-volume ratio such as fingers, toes, and ear, are the most susceptible.

EFFECTS OF COLD EXPOSURE

Two factors influence the development of a cold injury: ambient temperature and the velocity of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10 degrees Fahrenheit with a wind of 15 mile per hour (mph) is equivalent in chilling effect to still air at -18 degrees Fahrenheit.

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

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

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

To administer first aid for frostbite, bring the victim indoors and rewarm the areas quickly in water between 102 degrees Fahrenheit and 105 degrees Fahrenheit. Give a warm drink not coffee, tea or alcohol. The victim should not smoke. Keep the frozen parts in warm water or covered with warm clothes for 30 minutes, even though the tissue will be very painful as it thaws. Then elevate the injured area and protect it from injury. Do not allow blisters to be broken. Use sterile, soft, dry material to cover the injured areas. Keep victim warm and get immediate medical care.

After thawing, the victim should try to move the injured areas a little, but no more than can be done alone, without help.

- Do not rub the frostbitten part (this may cause gangrene).
- Do not use ice, snow, gasoline or anything cold on frostbite.

- Do not use heat lamps or hot water bottles to rewarm the part.

- Do not place the part near a hot stove.

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperature, it symptoms are usually exhibited in five stages; 1) shivering; 2) apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95 degrees Fahrenheit; 3) unconsciousness, glassy stare, slow pulse, and slow respiratory rate; 4) freezing of the extremities; and, finally, 5) death.

As a general rule, field activities should be curtailed if equivalent chill temperature (degrees Fahrenheit) is below zero unless the activity is of an emergency nature. The ultimate responsibility for proposing on delaying work at a site due to inclement weather rests with the EWMA Site Safety Officer.

HEAT STRESS CASUALTY PREVENTION PLAN

Due to the increase in ambient air temperatures and the effects of protective outer wear decreasing body ventilation, there exists an increase in the potential for injury, specifically, heat casualties. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties.

IDENTIFICATION AND TREATMENT

- **Heat Exhaustion**

  Symptoms: Usually begins with muscular weakness, dizziness, nausea, and a staggering gait. Vomiting is frequent. The bowels may move involuntarily. The victim is very pale, skin is clammy, and may perspire profusely. The pulse is weak and fast, breathing is shallow. The victim may faint unless victim lies down. This may pass, but sometimes it remains and death could occur.

  First Aid: Immediately remove the victim to the Contamination Reduction Zone in a shady or cool area with good air circulation. Remove all protective outer wear. Call a physician. Treat the victim for shock. (Make victim lie down, raise feet 6 to 12 inches and keep victim warm but loosen all clothing). If the victim is conscious, it may be helpful to ingest sips of a salt water solution (1 teaspoon of salt to 1 glass of water). Transport victim to a medical facility as soon as possible.

- **Heat Stroke**

  Symptoms: This is the most serious of heat casualties due to the fact that the body excessively overheats. Body temperatures often are between 107 degrees Fahrenheit to 110 degrees Fahrenheit. First there is often pain in the head, dizziness, nausea, oppression, and the skin is dry, red and hot. Unconsciousness follows quickly and death is imminent if exposure continues. The attack will usually occur suddenly.

  First Aid: Immediately evacuate the victim to a cool and shady area in the Contamination Reduction Zone. Remove all protective outer wear and all personal clothing. Lay victim on back with the head and shoulders slightly elevated. It is imperative that the body temperature be lowered immediately. This can be accomplished by applying cold wet towels, ice bags, etc., to the head. Sponge off the bare skin with cool water or rubbing alcohol, if available, or even place victim in a tub of cool water. The main objective is to cool victim without chilling. Give no stimulants. Transport the victim to a medical facility as soon as possible.

PREVENTION OF HEAT STRESS

- One of the major causes of heat casualties is the depletion of body fluids. On the site there will be plenty of fluids available. Personnel should replace water and salts loss from sweating. Salts can be replaced by either a 0.1% salt solution, more heavily salted foods, or commercial mixes such as Gatorade. The commercial mixes are advised for personnel on low sodium diets.

- A work schedule should be established so that the majority of the work day will be during the morning hours of the day before ambient air temperature levels reach their highs.

- A work/rest guideline will be implemented for personnel required to wear Level B protection. This guideline is as follows:

Ambient Temperatures	Maximum Wearing Time
Above 90°F	1/2 hour
80° to 90°F	1 hour
70° to 80°F	2 hours
60° to 70°F	3 hours
<60°F	4 hours

A sufficient period will be allowed for personnel to "cool down." This may require shifts of workers during operations.

HEAT STRESS MONITORING

For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism. Monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. Frequency of monitoring should increase as the ambient temperature increases or if slow recovery rates are indicated. When temperatures exceed 80 degrees Fahrenheit, workers must be monitored for heat stress after every work period.

- Heart rate (HR) should be measured by the radial pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats per minute. If the HR is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period stays the same. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle should be shortened by 33%.

- Body temperature should be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature (OT) at the beginning of the rest period should not exceed 99 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period stays the same. However, if the OT exceeds 99.7 degrees Fahrenheit at the beginning of the next period, the following work cycle should be further shortened by 33%. OT should be measured again at the end of the rest period to make sure that it has dropped below 99 degrees Fahrenheit.

- Body water loss (BWL) due to sweating should be measured by weighing the worker in the morning and in the evening. The clothing worn should be similar at both weighings; preferably the worker should be nude. The scale should be accurate to plus or minus 1/4 pound. BWL should not exceed 1.5% of the total body weight. If it does, workers should be instructed to increase their daily intake of fluids by the weight lost.

Ideally, body fluids should be maintained at a constant level during the work day. This requires replacement of salt lost in sweat as well.

Good hygienic standards must be maintained by frequent change of clothing and daily showering. Clothing should be permitted to dry during rest periods. Persons who notice skin problems should immediately consult medical personnel.

TABLE 202-1

WINDCHILL INDEX[1]

Wind Speed in MPH	ACTUAL THERMOMETER READING (degrees F)									
	50	40	30	20	10	0	-10	-20	-30	-40
	EQUIVALENT TEMPERATURE (degrees F)									
calm	50	40	30	20	10	0	-10	-20	-30	-40
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	-9	-21	-33	-46	-58	-70
15	36	22	9	-5	-18	-36	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-74	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
over 40 (little added effect)	Little Danger (for properly clothed person)				Increasing Danger (Danger from freezing of exposed flesh)			Great Danger		

[1] Source: Fundementals of Industrial Hygiene, Third Edition, National Safety Council

EMERGENCY PROCEDURES

EMERGENCY MEDICAL TREATMENT AND FIRST AID PROCEDURES

If an employee working at the Site is physically injured, emergency medical treatment and/or First Aid procedures will be followed. Depending on the severity of the injury, emergency medical response may be sought. If the employee can be moved, they will be taken to the edge of the work area (on a stretcher, if needed) where contaminated clothing will be removed (if possible), emergency first aid administered, and transportation to local emergency medical facility awaited.

If the injury to the worker is chemical in nature (e.g., overexposure), the following procedures are to be instituted as soon as possible:

- Eye Exposure - If contaminated solid or liquid gets into the eyes, wash eyes immediately at the emergency eyewash stations using large amounts of water and lifting the lower and upper lids occasionally. Obtain medical attention immediately. (Contact lenses are not permitted in the Exclusion Areas.)

- Skin Exposure - If contaminated solid or liquid gets on the skin, promptly wash contaminated skin using soap or mild detergent and water. If solids or liquid penetrate through the clothing, remove the clothing immediately and wash the skin using soap or mild detergent and water. Obtain medical attention immediately if symptoms warrant.

- Breathing - If a person breathes in large amounts of organic vapor, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Obtain medical attention as soon as possible.

- Swallowing - If contaminated solid or liquid has been swallowed and the person is conscious, feed the person large quantities of salt water immediately and induce vomiting (unless the person is unconscious). Obtain medical attention immediately.

First Aid Procedures

- Remove the injured or exposed person(s) from immediate danger.

- Render first aid if necessary, decontaminate affected personnel, if necessary.

- Call an ambulance for transport to local hospital immediately. This procedure should be followed even if there is no apparent serious injury.

- Evacuate other personnel on-site to a safe place until the EWMA Site Safety Officer determines that it is safe for work to resume.

- Report the accident to the EWMA Director of Health and Safety immediately.

SAFETY GUIDELINES FOR DRILLING

ATTACHMENT H

SAFETY GUIDELINES FOR DRILLING

Drill rig maintenance and safety is the responsibility of the drill rig operator. The following is provided as a general guideline for safe drilling practices on-site.

OFF-ROAD MOVEMENT OF DRILL RIGS

The following safety guidelines related to off-road movement:

- Before moving a drill rig, first walk the route of travel, inspecting for depressions, slumps, gullys, ruts and similar obstacles.
- Always check the brakes of a drill rig carrier before traveling, particularly on rough, uneven or hilly ground.
- Discharge all passengers before moving a drill rig on rough or hilly terrain.
- Engage the front axle (for 4x4, 6x6, etc., vehicles or carriers) when traveling off highway on hilly terrain.
- Use caution when traveling side-hill. Conservatively evaluate side-hill capability of drill rigs, because the arbitrary addition of drilling tools may raise the center of mass. When possible, travel directly uphill or downhill.
- Attempt to cross obstacles such as small logs and small erosion channel or ditches squarely, not at an angle.
- Use the assistance of someone on the ground as a guide when lateral or overhead clearance is close.
- After the drill rig has been moved to a new drilling site, set all brakes and/or locks. When grades are steep, block the wheels.
- Never travel off-road with the mast (derrick) of the drill rig in the raised or partially raised position.
- Tie down loads on the drill rig and support trucks during transport.

OVERHEAD AND BURIED UTILITIES

The use of a drill rig near electrical power lines and other utilities requires that special precautions be taken by both supervisors and members of the exploration crew. electricity can shock, it can burn, and it can cause death.

Overhead and buried utilities should be located, noted and emphasized on all boring location plans and boring assignment sheets.

Before raising the drill rig mast (derrick) on a site in the vicinity of power lines, walk completely around the drill rig. Determine what the minimum distance from any point on the drill rig to the nearest power line will be when the mast is raised and/or being raised. In general, the distance between the overhead power line and the boom should be no less than the height of the boom.

Keep in mind that both hoist and overhead power lines can be moved toward each other by the wind.
Keep in mind that electricity from high-voltage lines can "arc" to the rig, completing a circuit.
Keep in mind that rubber tires may not fully insulate the rig.
Keep in mind that the drill itself, and the metal outriggers used to balance the truck, may complete a circuit.

Drilling personnel should double-check any side underground electrical and piping drawings prior to initiating drilling. If an obstruction is encountered during drilling, proceed with extreme caution until the possibility of an exposed electrical line or combustible product pipeline is excluded.

CLEARING THE WORK AREA

Prior to drilling, adequate site cleaning and leveling should be performed to accommodate the drill rig and supplies and provide a safe working area. Drilling should not be commenced when tree limbs, protruding objects, unstable ground or site obstructions or debris cause unsafe tool handling conditions and/or limited, awkward work spaces. An area clear of obstructions or debris should be maintained 180 degrees around the drilling or sampling activities, where practical.

NOTE: In coordination with the drilling crew, the Site Safety Officer will review the precautions taken to insure that the drill rig is leveled and stabilized.

HOUSEKEEPING ON AND AROUND THE DRILL RIG

The first requirement for safe field operations is that the drilling crew safety supervisor understands and fulfills the responsibility for maintenance and "housekeeping" on and the drill rig.

Suitable storage locations should be provided for all tools, materials and supplies so that they can be conveniently and safety handled without hitting or falling on a member of the drill crew or a visitor, without creating tripping hazards, and without protruding at eye or head level.

Avoid storing or transporting tools, materials or supplies within or on the mast (derrick) of the drill rig.

Pipe, drill rods, bit casings, augers and similar drilling tools should be orderly stacked on racks or sills to prevent spreading, rolling or sliding.

Penetration of other driving hammers should be placed at a safe location on the ground or be secured to prevent movement when not in use.

Work areas, platforms, walkways, scaffolding and other access ways should be kept free of materials, obstructions and substances such as ice, excess grease or oil that could cause a surface to become slick or otherwise hazardous.

Keep all controls, control linkages, warning and operation lights and lenses free of oil, grease and/or ice.
Do not store gasoline in any portable container other than a non-sparking, red container with a flame arrester in the fill spout and having the word "gasoline" easily visible.

Welding gas cylinders should be stored in an upright position to avoid gas leaks.

SAFE USE OF HAND TOOLS

There are almost an infinite number of hand tools that can be used on or around a drill rig. "Use the tool for its intended purpose" is the most important rule. The following are a few specific and some general suggestions which apply to safe use of several hand tools that are often used on and around drill rigs.

- When a tool becomes damaged, either repair it before using it again or get rid of it.

- When using a hammer, any kind of hammer, for any purpose, wear safety glasses and require all others near you to wear safety glasses.

- When using a chisel, any kind of chisel, for any purpose, wear safety glasses and require all others around you to wear safety glasses.

- Keep all tools cleaned and orderly stored when not in use.

- Replace hook and heel jaws when they become visibly worn.

- When breaking tool joints on the ground or on a drilling platform, position your hands so that your fingers will not be smashed between the wrench handle and the ground or the platform, should the wrench slip or the joint suddenly let go.

SAFE USE OF WIRE LINE HOISTS, WIRE ROPE AND HOISTING HARDWARE

The use of wire line hoists, wire rope and hoisting hardware should be as stipulated by the American Iron and Steel Institute's Wire Rope User's Manual.

All wire ropes and fittings should be visually inspected during use and thoroughly inspected at least once a week for: abrasion, broken wires, wear, reduction in rope diameter, reduction in wire diameter, fatigue, corrosion, damage from heat, improper weaving, jamming, crushing, bird caging, kinking, core protrusion and damage to lifting hardware and any other feature that would lead to failure. Wire ropes should be replaced when inspection indicates excessive damage according to the wire rope users manual.

If a ball-bearing type hoisting swivel is used to hoist drill rods, swivel bearings should be inspected and lubricated daily to assure that the swivel freely rotates under load.

If a rod slipping device is used to hoist drill rods, do not drill through or rotate drill rods through the slipping device, do not hoist more than 1 ft of the drill rod column above the top of the mast (derrick), do not hoist a rod column with loose tool joints and do not make up, tighten or loosen tool joints while the rod column is being supported by a slipping device. If drill rods should slip back into the borehole, do not attempt to brake the fall of the rods with your hands.

Most sheaves on drill rigs are stationary with a single part line. The number of parts of line should not ever be increased without first consulting with the manufacturer of the drill rig. Wire ropes must be properly matched with each sheave.

The following procedures and precautions must be understood and implemented for safe use of wire ropes and rigging hardware.

Use tool handling hoists only for vertical lifting of tools (except when angle hole drilling). Do not use tool handling hoists to pull on objects away from the drill rig; however, drills may be moved using the main hoist as the wire rope is pulled through proper sheaves according to the manufacturer's recommendations.

When stuck tools or similar loads cannot be raised with a hoist, disconnect the hoist line and connect the stuck tools directly to the feed mechanisms of the drill. Do not use hydraulic leveling jacks for added pull to the hoist line or the feed mechanisms of the drill.
When attempting to pull out a mired down vehicle or drill rig carrier, only use a winch or the front or rear of the vehicle or drill rig carrier and stay as far as possible away from the wire rope. Do not attempt to use tool hoists to pull out a mired down vehicle or drill rig carrier.

Minimize shock loading of a wire rope - apply loads smoothly and steadily.

- Protect wire rope from sharp corners or edges.

- Replace faulty guides and rollers.
- Replace worn sheaves or worn sheave bearings.
- Replace damaged safety latches on safety hooks before using.
- Know the safe working load of the equipment and tackle being used. Never exceed this limit.
- Clutches and brakes of hoists should be periodically inspected and tested.
- Know and do not exceed the rated capacity of hooks, rings, links, swivels, shackles and other lifting aids.
- Always wear gloves when handling wire ropes.
- Do not guide wire ropes or hoist drums with your hands.
- Follow the installation of a new wire rope, first lift a light load to allow the wire rope to adjust.
- Never carry out any hoisting operations when the weather conditions are such that hazards to personnel, the public, or property are created.
- Never leave a load suspended in the air when the hoist is unattended.
- Keep your hands away from hoists, wire rope, hoisting hooks, sheaves and pinch points as slack is being taken up and when the load is being hoisted.
- Safety rules described in OSHA Regulations 29 CFR 1926.552 and guidelines contained in the Wire Rope User's Manual published by the American Iron and Steel Institute shall be used whenever wire line hoists, wire rope, or hoisting hardware are used.
- Never hoist loads over anyone's head.
- The operator and tool handler should establish a system of responsibility for the series of various activities required for auger drilling, such as connecting and disconnecting auger sections, and inserting and removing the auger fork. The operator must insure that the tool handler is well away from the auger column and that the auger fork is removed before starting rotation.
- Only use the manufacturer's recommended method of securing the auger to the power coupling. Do not touch the coupling or the auger with your hands, a wrench or any other tool during rotation.
- Whenever possible, use tool hoists to handle auger sections.
- Never place hands or fingers under the bottom of an auger section when hoisting the auger over the top of the auger section in the ground or other hard surfaces such as the drill rig platform.
- Never allow feet to get under the auger section that is being hoisted.
- When rotating augers, stay clear of the rotating auger and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason whatsoever.
- Never place your hands between the drill rig and an auger, even when attempting to free a damaged or bound Shelby tube from the auger.

- Never use your hands or feet to move cuttings away from the auger.

- Augers should be cleaned only when the drill rig is in neutral and the augers are stopped from rotating.

SAFETY DURING ROTARY AND CORE DRILLING

Rotary drilling tools should be safety checked prior to drilling:

- Water swivels and hoisting plugs should be lubricated and checked for "frozen" bearings before use.

- Drill rod chuck jaws should be checked periodically and replaced when necessary.

- The capacities of hoists and sheaves should be checked against the anticipated weight of the drill rod string plus other expected hoisting loads. All cables should be inspected daily.

Special precautions that should be taken for safety rotary or core drilling involve chucking, joint break, hoisting and lowering of drill rods:

- Drill rods should not be braked during lowering into the hole with drill rod chuck jaws.

- Drill rods should not be held or lowered into the hole with pipe wrenches.

- If a string of drill rods are accidentally or inadvertently released into the hole, do not attempt to grab the falling rods with your hands or a wrench.

- In the event of a plugged bit or other circulations blockage, the high pressure in the piping and hose between the pump and the obstruction should be relieved or bled down before breaking the first tool joint.

- When drill rods are hoisted from the hole, they should be cleaned for safe handling with a rubber or other suitable rod wiper. Do not use your hands to clean drilling fluids from drill rods.

- If work must progress over a portable drilling fluid (mud) pit, do not attempt to stand on narrow sides or cross members. The mud pit should be equipped with a rough surface, fitted cover panels of adequate strength to hold drill rig personnel.

- Drill rods should not be lifted and leaned unsecured against the mast. Either provide some method of securing the upper ends of the drill rod sections for safe vertical storage or lay the rods down.

- All hydraulic lines should be periodically inspected for integrity and replaced as needed.

START UP

All drill rig personnel and visitors should be instructed to "stand clear" of the drill rig immediately prior to and during starting of an engine.

Make sure all gear boxes are in neutral, all hoist levers are disengaged, all hydraulic levers are in the correct non-actuating positions and the cathead rope is not on the cathead before starting a drill rig engine.

GENERAL SAFETY DURING DRILLING OPERATIONS

Safety requires the attention and cooperation of every worker and site visitor.

Do not drive the drill rig from hole to hole with the mast (derrick) in the raised position.

Before raising the mast (derrick) look up to check for overhead obstructions. (Refer to previous Section on overhead and buried utilities).

Before raising the mast (derrick), all drill rig personnel and visitors (with exception of the operator) should be cleared from the areas immediately to the rear and the sides of the mast. All drill rig personnel and visitors should be informed that the mast is being raised prior to raising it.

Before the mast (derrick) of a drill rig is raised and drilling is commenced, the drill rig must be first leveled and stabilized with leveling jacks and/or solid cribbing. The drill rig should be re-leveled if it settles after initial set up. Lower the mast (derrick) only when leveling jacks are down and do not raise the leveling jack pads until the mast (derrick) is lowered completely.

Before starting drilling operations, secure and/or lock the mast (derrick) if required according to the drill manufacturer's recommendations.

The operator of a drill rig should only operate a drill rig from the position of the controls. The operator should shut down the drill engine before leaving the vicinity of the drill rig.

Do not consume alcoholic beverages or other depressants or chemical stimulants prior to starting work on a drill rig or while on the job.

Watch for slippery ground when mounting and dismounting from the platform.

All unattended boreholes must be adequately covered or otherwise protected to prevent drill rig personnel, site visitors or animals from stepping or falling into the hole. All open boreholes should be covered, protected or backfilled adequately and according to local or state regulations on completion of the drilling project.

"Horsing around" within the vicinity of the drill rig and tool and supply storage areas should never be allowed, even when the drill rig is shut down.

Be careful when lifting heavy objects. Before lifting a relatively heavy object, approach the object by bending at the knees, keeping your back vertical and unarched while obtaining a firm footing. Grasp the object firmly with both hands and stand slowly and squarely while keeping your back vertical and unarched. In other words, perform the lifting with the muscles in your legs, not the muscles in your lower back.

Drilling operations should be terminated during an electrical storm.

The minimum number of personnel necessary to achieve the objectives shall be within 25 ft of the drilling or sampling activity. Back-up personnel should remain at least 25 ft from the drilling or sampling activity, where practical.

Hardhats and steel boots are to be worn by all personnel in the vicinity of the drilling activities. Drilling personnel should not wear loose-fitting or baggy clothing which may be awkward or get caught on equipment. Jewelry, including rings and necklaces, should not be worn around electrical wires or rotating equipment.

SAFETY GUIDELINES FOR EXCAVATIONS

SAFETY GUIDELINES FOR EXCAVATIONS

This procedure contains general safety requirements for excavating and trenching operations and work performed therein. The requirements are consistent with standards established by the Occupational Safety and Health Administration (OSHA) and described in OSHA Regulations 29 CFR 1926, Subpart P. The latter should be consulted for additional information.

RESPONSIBILITY AND APPLICABILITY

The EWMA Project Manager is responsible for ensuring that employees of EWMA and of firms contracted by EWMA comply with these requirements.

These procedures are applicable to all EWMA projects in which trenching or other excavating operations, exclusive of borings, are performed by firms under contract to EWMA. It is also applicable to EWMA projects requiring EWMA personnel or firms under contract to EWMA to enter trenches and other types of excavations.

REQUIREMENTS

When planning any excavating operation, obtain a permit, if required, from the proper authority.

Before digging, determine if underground installations, such as sewer, water, fuel, or electrical lines may be encountered and, if so, determine the exact locations of the lines. Information can be obtained by contacting Underground Service Alert (consult local telephone directory for toll-free number), local utility companies and the owner of the property on which the excavating operations are planned.

Trees, boulders, and other surface encumbrances, located so as to pose a potential hazard to employees must be removed or made safe before the operation begins.

Excavated materials must be placed at least 2 ft from the edge of the excavation and precautions must be taken to prevent the materials from falling into the excavation.

SHORING AND SLOPING

Excavations in which personnel are required to work must be shored or sloped to an angle of repose if the depth of the excavation is 5 ft or more. When a shoring system is used, it shall consist of hydraulic shores or the equivalent, with sheathing or sheet piling as needed. The shoring system must be properly designed and installed to sustain all existing and expected loads. For details on shoring and sloping, consult OSHA Regulations 29 CFR, Subpart P, Section 1926.650 to 1926.653.

ACCESS

When work is to be performed in an excavation, safe access to the excavation must be provided by means of ladders, stairs, or ramps. Trenches greater than 4 ft in depth must have ladders spaced no less than 25 ft apart, and the ladders must extend at least 3 ft above the ground surface.

HAZARDOUS ATMOSPHERES

At sites where oxygen deficiency or hazardous concentrations of flammable or toxic vapors or gases may be encountered in excavations, the atmosphere in the excavations must be tested by the EWMA Site Safety Officer or other qualified person before work in the excavation begins and at appropriate intervals afterward.

INSPECTION OF EXCAVATIONS

Excavations must be inspected daily by the EWMA Site Manager or EWMA Site Safety Officer. If evidence of potential caveins or slides is observed, all work in the excavation must be suspended until necessary steps have been taken to safeguard employees.

OPERATION OF VEHICLES NEAR EXCAVATIONS

When vehicles or heavy equipment must operate near an excavation, the sides of the excavation must be shored or braced as necessary to withstand forces exerted by the superimposed load. Stop logs or other types of secure barriers must be installed at the edges of the excavations.

BARRICADES AND FENCES

Excavated areas must be completely guarded on all sides with barricades or fences, as appropriate. If barricades are used, they must be spaced no more than 20 ft apart and shall not be less than 3 ft high when erected. A yellow or yellow and black tape, at least 1 inch wide, shall be stretched between the barricades.

BACKFILLING

Excavated areas must be backfilled and all associated equipment must be removed from the area as soon as practical after work is completed.

TICKS AND TICK-BORNE DISEASES

TICKS AND TICK-BORNE DISEASES

Field personnel should be aware of an increased occurrence of tick-borne disease in the United States. In the northeast, the most likely carriers are the whitefooted mouse and the white-tailed deer. These animals are most prevalent in areas where suburban environments about open fields or woodlands. Although exposure is increased in these areas, other carriers, such as dogs and horses, can be found in a variety of environments.

All field personnel should take proper precautions to limit exposure to ticks and tick-borne diseases. These include:

- Cinching and taping clothing at the ankles and wrists, especially the ankles. Ticks lie low on grass blades and shrubs. They encounter your feet, ankles or lower legs and then crawl upward.

- Wear light-colored clothing to facilitate spotting the ticks, and check your clothing periodically. Be especially careful in terrain with tall grass, bushes or woods.

- Use a tick repellant on skin or clothing. Always read the labels before using. Clothing repellents should never be used on the skin.

- Recognize the signs of a bite or an infection. It takes several hours for a tick to attach and feed; removing it promptly lessens the chance of being infected.

Pregnant women should be particularly careful since the effects of the most common tick-borne disease in the northeast, Lyme disease, upon the fetus is unknown.

If a tick is discovered on the skin, it is important to remove the entire insect as soon as possible. The most effective method is to grasp the tick as close as possible to the mouth with tweezers or thin, curved forceps. Then, without jerking, pull it upward steadily (a small amount of skin may be removed in the process).

After removing the tick, disinfect the bite with rubbing alcohol or povidone iodine (Betadine). Don't handle the tick; spirochetes could enter the body through breaks in the skin. Dispose of it in alcohol or flush it down the drain. And check the bite occasionally for at least two weeks to see if a rash forms. If it does, you've been infected and should seek treatment promptly.

The rash appears at the bite location from two days to a few weeks after the bite. It usually starts as a small red spot that expands as the spirochetes spread beyond the bite. Most commonly, the rash develops into a reddish circle or oval about two to three inches in diameter. It fades with or without treatment after a few weeks.

Much larger rashes - anywhere from 6 to 20 inches in diameter - may also occur, especially on the back. Despite their size, large rashes may be easy to miss because they're often very faint.

Other variants include a rash with a red perimeter and a clear center and the so-called bull's-eye rash, which consists of several concentric red rings. Rashes may vary in shape, depending on where they occur on the body. Frequent sites are the thigh, groin, and armpits. People often develop a rash in more than one place.

Early symptoms may include profound fatigue, a stiff neck, and flu-like symptoms such as headache, chills, fever, and muscle aches. Since tick bites don't always produce a rash, those symptoms alone may warrant a medical check for possible Lyme infection - especially if they occur in summer and you live in an area that is endemic for Lyme disease.

Without treatment, the spirochetes usually multiply and the disease progressively worsens. The second stage, occurring within weeks to months of the bite, may affect the heart and nervous system. Third is the chronic arthritic stage, which begins up to a year or more after the bite.

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 5

Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

Property Known As:

OCA LIC Fifth Street Mixed-Use Housing
5-20 46th Road
Long Island City, Queens County, New York 11101
BCP Site #C241098

Prepared for:

OCA Long Island City, LLC
c/o O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

June 2016
(Original April 2010)

Submitted by:

EWMA
P. O. Box 5430
Parsippany, New Jersey 07054
EWMA Case No. 209014

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION AND PURPOSE

EWMA has prepared this Community Air Monitoring Plan (CAMP) for implementation during intrusive activities for the property known as the Former Accurate Associates Site, which is located at 5-20 46th Road, Long Island City, New York (subject property and site). EWMA was retained by OCA Long Island City, LLC (OCA) to prepare and implement the RDWP to support compliance with Brownfield Cleanup Program (BCP) requirements.

The purpose of this CAMP is to provide a measure of protection to the surrounding community including residences, businesses, and on site employees from potential airborne releases as a direct result of intrusive activities at the site. This plan is not intended for use in establishing action levels for worker exposure protection, as this is addressed in the site-specific Health and Safety Plan (HASP).

Soil was excavated to 7' below surface grade from the BCP site in RAWP Implemtnation Phases I-IV, geotechnical stabilization and warning fabric was placed on the excavation floor, and the fabric was covered with certified clean imported quarry process fill. This barrier will minimize any potential release of dust and odors. In addition, and if necessary, dust and odor suppression measures including but not limited to use of polyethylene sheeting, biosolve foam, water sprays, etc. Automated CAMP air monitoring stations will be setup and in place during intrusive activities to provide continuous monitoring of dust and organic vapors within the immediate work area and at designated stations at the down wind side of the property. One upwind station will be set up to monitor any dust and organic vapors coming from offsite sources upwind.

2.0 WORK AREA AIR MONITORING PLAN

The work area (i.e. exclusion zone) will be monitored for volatile compounds as outlined in the site specific Health and Safety Plan (HASP).

Real-time air monitoring for volatile compounds and particulate levels at the perimeter of the exclusion zone (i.e. immediate work area) will be performed during intrusive activities to protect the surrounding community including residences, businesses, and on site employees from potential airborne releases as a direct result of the intrusive remedial utility installation work on the site. Volatile compounds will be monitored utilizing properly calibrated photoionization detectors (PIDs). The particulate levels will be monitored using direct read dust monitors. The volatile organic compound and particulate monitoring programs are discussed in detail below in Sections 2.1 and 2.2. A figure depicting the CAMP locations has been enclosed as **Appendix 1**.

2.1 Volatile Organic Compound Monitoring

Volatile organic compounds will be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 parts per million (ppm) above background, work activities will be halted and monitoring continued under the provisions of the Vapor Emission Response Plan (see Section 3.0). All readings will be recorded and be available for state (NYSDEC and NYSDOH) personnel to review.

2.2 Particulate Monitoring

Visual observations will be made during all work activities to monitor for dispersion outside the immediate work area. Dust suppression techniques may include applying water or water with hygroscopic salts to the disturbed soil, reducing the volume and speed of on-site vehicles, and wet sweeping paved areas. All readings will be recorded and be available for state (NYSDEC and NYSDOH) personnel to review.

3.0 VAPOR EMISSION RESPONSE PLAN

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities will resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities will resume provided:

- The organic vapor level 200 feet downwind of the perimeter of the work area, or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emissions do not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

4.0 MAJOR VAPOR EMISSION MONITORING

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the perimeter of the work area, or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to

the nearest residential or commercial property from the work area, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and if organic vapor levels are approaching 5 ppm above background for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect.

However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background, 200 feet downwind or half the distance to the nearest residential/commercial property.

5.0 MAJOR VAPOR EMISSION RESPONSE PLAN

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts, as listed in the Health and Safety Plan (Appendix 9 of the RAWP), will go into effect.

2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30 minutes intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

4. In addition, an attempt to identify the point source of the elevated vapor emission will be made. If identified, suppression activities, i.e. containing or covering the source with a vapor impermeable material, will be carried out to minimize the on-going vapor emission event prior to restarting the work activities.

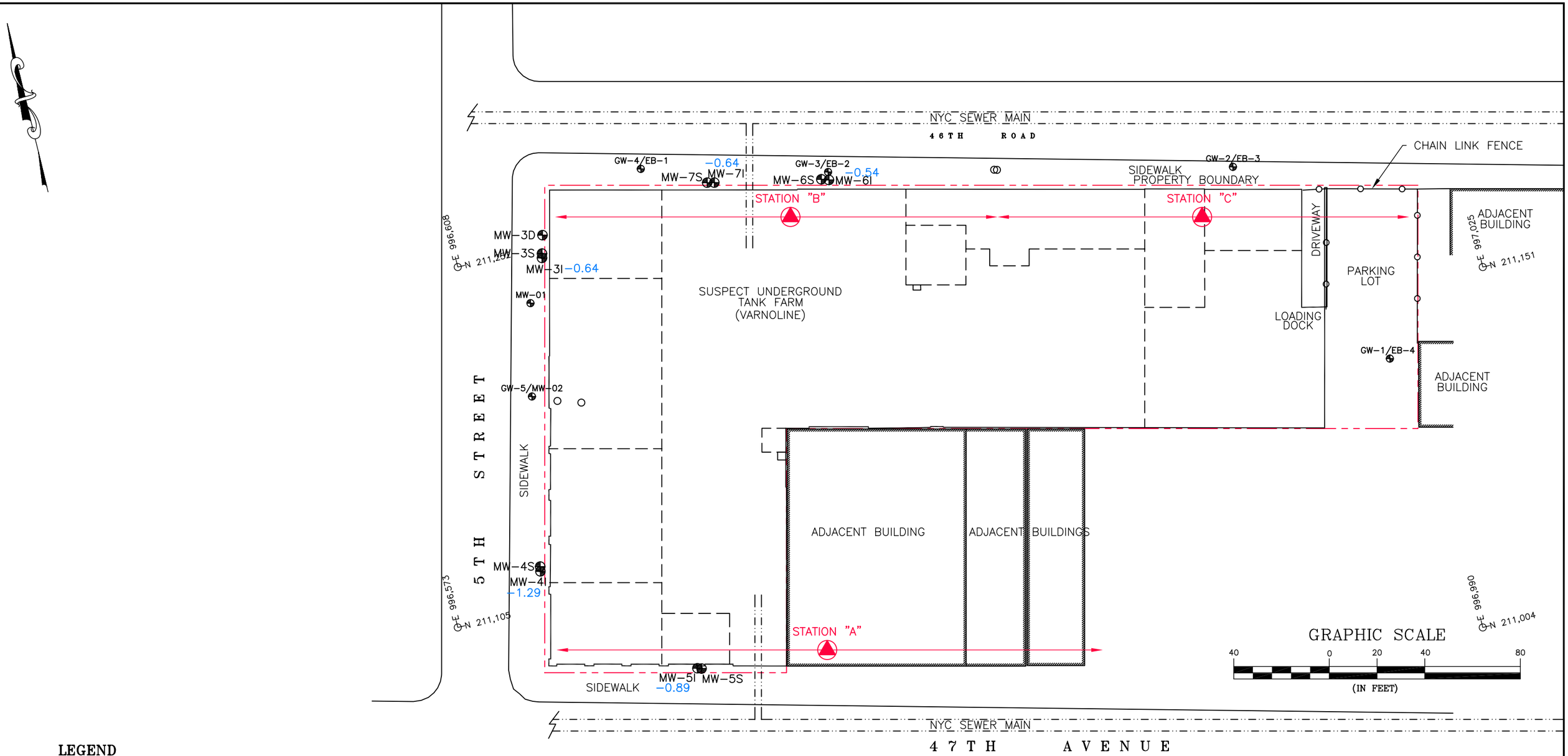
6.0 AIRBORNE PARTICULATE RESPONSE PLAN

If excessive visible dust is observed leaving the work area, then dust suppression methods will be employed. The methods that may be utilized are listed in Section 3.2 above. Work may continue with dust suppression methods as long as no visible dust leaves the work area.

7.0 MAJOR AIRBORNE PARTICULATE RESPONSE PLAN

If the downwind airborne particulate concentration exceeds the background concentration by more than 0.15 mg/m^3 then work will cease and both the work activity and dust suppression techniques re-evaluated to reduce further particulate dispersion. Work will

only resume after the downwind airborne particulate concentration is reduced to below 0.15 mg/m^3 against the background level and no visible dust is observed leaving the work area.



LEGEND

STATION "A" — AIR MONITORING STATION

PROPERTY BOUNDARY

BUILDING OUTER WALL

BUILDING INTERIOR WALL/MULTIPLE STORY WALL

SOURCE: "MONITORING WELL LOCATION PLAN", DPK CONSULTING, LLC, MIDDLESEX, NJ – 4/28/08

Environmental Waste Management Associates, LLC P.O. Box 5430 Parsippany, NJ 07054 Tel: (973) 560-1400	SCALE: AS SHOWN DATE: 6/25/08 DRAWN BY: JM/JS CHECKED BY: DD FILE: k:\drawings\205000\205490\2008JUNE\RAWP\205490f2 11x17.dwg	PROJECT# 205490
COMMUNITY AIR MONITORING STATION LOCATION PLAN OCA LIC FIFTH STREET MIXED-USE HOUSING 5-20 46TH ROAD LONG ISLAND CITY, NEW YORK		APPENDIX# 2

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 6

Stormwater Pollution Prevention Plan

5-20 46th ROAD
SOIL REMEDIATION
LONG ISLAND CITY, QUEENS COUNTY, NY 11101
BLOCK 28, LOTS 12,15,17,18,21&28
STORM WATER POLLUTION PREVENTION PLAN
6/12/09

PREPARED BY:
DEWBERRY-GOODKIND, INC.
15 EAST 26TH STREET, 7TH FLOOR
NY, NY 10010

NARRATIVE

The OCA LIC Fifth Street Mixed-Use Housing Soil Remediation Project is located within an old industrial portion of Long Island City, Queens County, New York. Historically, the entire Property (except for a small parking area at the east end) was covered with buildings. As of June 2008, all the buildings on the property have been demolished to street grade. The site is bordered by Fifth Street to the West, 46th Road to the North, 47th Ave to the South and properties owned by others to the East. The total area of the remediation site is 66,838 sf (1.534 acres). The East River is the closest water body located approximately ¼-mile west of the subject Property. The soils on site are designation number 101 (Pavement and Buildings- wet substratum-Laguardia-Ebbets complex 0%-8% slope), of the New York City Soil and Water Conservation District Soil Survey Map. The complex is nearly level to gently sloping urbanized areas filled with a mixture of natural soil materials and construction debris over swamp, tidal marsh, or water; a mixture of anthropogenic soils which vary in coarse fragment content, with up to 80 percent impervious pavement and buildings covering the surface. The Soil is designated Hydrologic Soil Group "B". (New York City Reconnaissance Soil Survey) Surface drainage from the site will enter a combined sewer system owned by the City Of New York. For a description of the soil remediation site work see the Remedial Action Work Plan prepared by, Environmental Waste Management Associates, LLC of west Windsor, NJ.

An erosion and sediment control plan will be implemented during the soil remediation/construction phase. The plan entails enclosing the entire site limits with silt fence, stabilized construction entrances at the exit/entrance to the site and inlet protection on existing catch basins. Silt fence, stabilized construction entrances and inlet protection shall be installed in accordance with the Erosion and Sediment Control Plan and the New York Standards and Specifications for Erosion and Sediment Controls (August, 2005). Post construction storm water management controls are not required for this project.

LOCATION MAP

LOCATION MAP
1"=500'

Dewberry	DATE 6/12/09	TITLE SITE LOCATION MAP	SHEET NO.
	PROJ. NO. 50022213	PROJECT OCA LIC FITH STREET MIXED USE HOUSING	

Q:\50022213\CAD\Civil\C-EROSION & SEDIMENT CONTROL(rev 6-9-09).dwg, 6/10/2009 10:24:26 AM

NOTICE OF INTENT

3358554733

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR ☐☐☐☐☐☐
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-08-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
OCA Long Island City, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Reddy

Owner/Operator Contact Person First Name
Ravi

Owner/Operator Mailing Address
535 Madison Ave 23rd Floor

City
New York

State: NY Zip: 10022-

Phone (Owner/Operator): 212-546-0832 Fax (Owner/Operator): ---

Email (Owner/Operator)
rreddy@citistructure.com

FED TAX ID
20-5904763 (not required for individuals)

Project Site Information

Project/Site Name

OCA LIC Fith Street Mixed Use Housing

Street Address (NOT P.O. BOX)

5-20 46th Road

Side of Street

○ **North** ● **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

New York

State Zip

NY 11101-

County

Queens

DEC Region

2

Name of Nearest Cross Street

5th

Distance to Nearest Cross Street (Feet)

0

Project In Relation to Cross Street

○ **North** ○ **South** ● **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

28 12

Tax Map Numbers

15 17 18 21 38

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site go to the dropdown menu on the left and choose "Get Coordinates". Click on the center of your site and a small window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

588248

Y Coordinates (Northing)

4511112

2. What is the nature of this construction project?

○ **New Construction**

○ **Redevelopment with increase in imperviousness**

● **Redevelopment with no increase in imperviousness**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Mixed Use

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION

Number of Lots

- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ OTHER

Mixed Use

4. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law ? ○ **Yes** ● **No**

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)? ● **Yes** ○ **No**

6. Is this property owned by a state authority, state agency or local government? ○ **Yes** ● **No**

7. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. Round to the nearest tenth of an acre.

Total Site Acreage	**Acreage To Be Disturbed**	**Existing Impervious Area Within Disturbed**	**Future Impervious Area Within Disturbed**
1.5	1.5	1.5	1.5

8. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ○ **No**

9. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	100 %	%	%

10. Is this a phased project? ○ Yes ● No

11. Enter the planned start and end dates of the disturbance activities. **Start Date** 07/15/2009 - **End Date** 10/15/2009

12. Identify the nearest, natural, surface waterbody(ies) to which construction site runoff will discharge.

Name: Site will discharge to a city owned combined sewer system

12a. Type of waterbody identified in Question 12?

- ○ Wetland / State Jurisdiction On Site (Answer 12b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 12b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ● Other Type Off Site: Sewer system

12b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment in Appendix E of GP-0-08-001? ○ Yes ● No

14. Is this project located in one of the Watersheds identified in Appendix C of GP-0-08-001? ○ Yes ● No

15. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? **If no, skip question 16.** ○ Yes ● No

16. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ● No
If Yes, what is the acreage to be disturbed?
[ ][ ][ ][ ].[ ]

17. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ● No

18. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown
(If No, skip question 19)

19. What is the name of the municipality/entity that owns the separate storm sewer system?
New York City

20. Does any runoff from the site enter a sewer classified as a Combined Sewer? ● Yes ○ No ○ Unknown

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book) ? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes Water Quality and Quantity Control components (Post-Construction Stormwater Management Practices) ○ Yes ● No
(If No, skip questions 23 and 27-35)

23. Have the Water Quality and Quantity Control components of the SWPPP been developed in comformance with the current NYS Stormwater Management Design Manual ? ○ Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer: Dewberry Goodkind Inc.

Contact Name (Last, Space, First): John Miller PE

Mailing Address: 15 East 26 street 7th Floor

City: New York

State: NY Zip: 10010-

Phone: 212-685-0900 Fax: 212-685-2340

Email: jmiller@dewberry.com

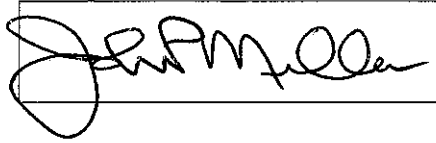
SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-08-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name John **MI**

Last Name Miller PE

Signature



Date 06/11/2009

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Water Quality and Quantity Control

Important: Completion of Questions 27-35 is not required if response to Question 22 is No.

Post-Construction Stormwater Management Practices

27. Indicate **all** Stormwater Management Practice(s) that will be installed/constructed on this site:

Ponds
- ○ Micropool Extended Detention (P-1)
- ○ Wet Pond (P-2)
- ○ Wet Extended Detention (P-3)
- ○ Multiple Pond System (P-4)
- ○ Pocket Pond (P-5)

Filtering
- ○ Surface Sand Filter (F-1)
- ○ Underground Sand Filter (F-2)
- ○ Perimeter Sand Filter (F-3)
- ○ Organic Filter (F-4)
- ○ Bioretention (F-5)
- ○ Other

Alternative Practice
- ○ Rain Garden
- ○ Cistern
- ○ Green Roof
- ○ Stormwater Planters
- ○ Permeable Paving (Modular Block)

Wetlands
- ○ Shallow Wetland (W-1)
- ○ Extended Detention Wetland (W-2)
- ○ Pond/Wetland System (W-3)
- ○ Pocket Wetland (W-4)

Infiltration
- ○ Infiltration Trench (I-1)
- ○ Infiltration Basin (I-2)
- ○ Dry Well (I-3)
- ○ Underground Infiltration System

Open Channels
- ○ Dry Swale (O-1)
- ○ Wet Swale (O-2)

Verified Proprietary Practice
- ○ Hydrodynamic
- ○ Wet Vault
- ○ Media Filter

28. Describe other stormwater management practices not listed above or explain any deviations from the technical standards.

29. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

30. Provide the total water quality volume required and the total provided for the site.

WQv Required ☐☐☐.☐☐☐ **acre-feet**

WQv Provided ☐☐☐.☐☐☐ **acre-feet**

31. Provide the following Unified Stormwater Sizing Criteria for the site.

Total Channel Protection Storage Volume (CPv) - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required ☐☐☐.☐☐☐ **acre-feet**

CPv Provided ☐☐☐.☐☐☐ **acre-feet**

31a. The need to provide for channel protection has been waived because:

○ **Site discharges directly to fourth order stream or larger**

Total Overbank Flood Control Criteria (Qp) - Peak discharge rate for the 10 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

Total Extreme Flood Control Criteria (Qf) - Peak discharge rate for the 100 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

31b. The need to provide for flood control has been waived because:

○ **Site discharges directly to fourth order stream or larger**

○ **Downstream analysis reveals that flood control is not required**

IMPORTANT: For questions 31 and 32, impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s). (Total Drainage Area = Project Site + Offsite areas)

32. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins. ☐☐☐ %

33. Post-Construction Impervious Area - As a percent of the Total Drainage Area, enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction. ☐☐☐ %

34. Indicate the total number of post-construction stormwater management practices to be installed/constructed. ☐☐

35. Provide the total number of stormwater discharge points from the site. (include discharges to either surface waters or to separate storm sewer systems) ☐☐

36. Identify other DEC permits that are required for this project.

DEC Permits

○ Air Pollution Control	○ Navigable Waters Protection / Article 15
○ Coastal Erosion	○ Water Quality Certificate
○ Hazardous Waste	○ Dam Safety
○ Long Island Wells	○ Water Supply
○ Mined Land Reclamation	○ Freshwater Wetlands/Article 24
○ Other SPDES	○ Tidal Wetlands
○ Solid Waste	○ Wild, Scenic and Recreational Rivers
● None	○ Stream Bed or Bank Protection / Article 15
○ Other	

37. Does this project require a US Army Corps of Engineers Wetland Permit? ○ Yes ● No
If Yes, Indicate Size of Impact. [ ]

38. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ Yes ● No
(If No, skip question 39)

39. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ Yes ● No

40. If this NOI is being submitted for the purpose of continuing coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N Y R]

Owner/Operator Certification

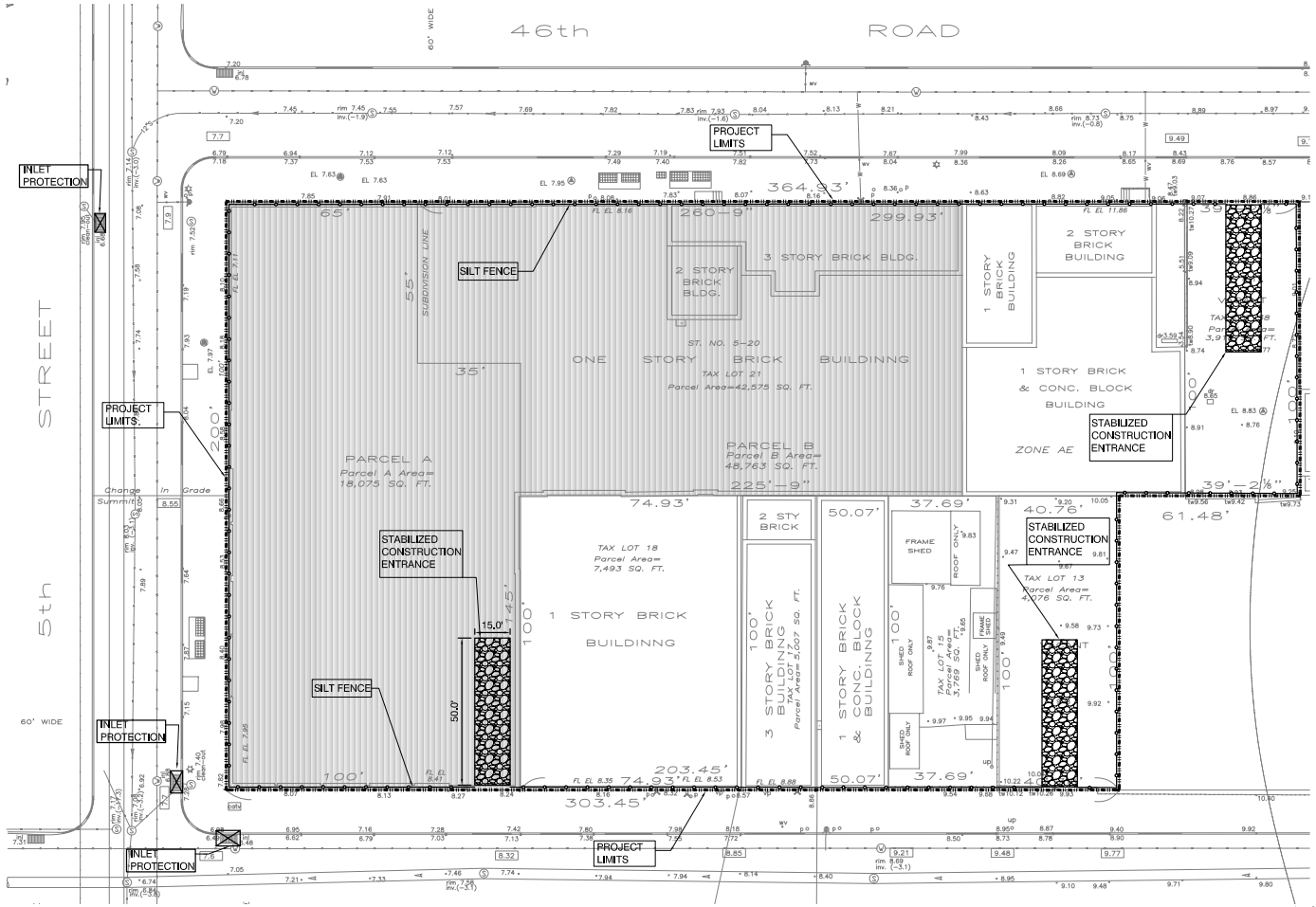
I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name WILLIAM **MI** Q

Print Last Name O'CONNOR

Owner/Operator Signature [signature]

Date 06/25/2009

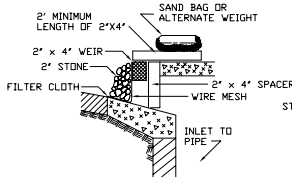


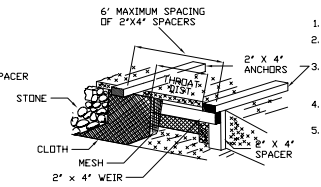
1 EROSION AND SEDIMENT CONTROL

SCALE: 1" = 20'-0"

NOTES:

1. BARRIERS AND HAY BALE CHECKS WILL BE INSTALLED AND INSPECTED ONCE A WEEK AND AFTER EVERY STORM EVENT. RESULTS OF INSPECTIONS WILL BE RECORDED IN A LOGBOOK AND MAINTAINED AT THE SITE AND AVAILABLE FOR INSPECTION BY NYSDEC. ALL NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY.
2. ACCUMULATED SEDIMENTS WILL BE REMOVED AS REQUIRED TO KEEP THE BARRIER AND HAY BALE CHECK FUNCTIONAL. ALL UNDERCUTTING OR EROSION OF THE SILT FENCE TOE ANCHOR SHALL BE REPAIRED IMMEDIATELY WITH APPROPRIATE BACKFILL MATERIALS.
3. MANUFACTURERS RECOMMENDATIONS WILL BE FOLLOWED FOR REPLACING SILT FENCING DAMAGED DUE TO WEATHERING.
4. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED ON THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING STORM SEWER SYSTEM
5. SILT FENCING WILL BE INSTALLED AROUND THE ENTIRE PERIMETER OF THE REMEDIAL CONSTRUCTION AREA.





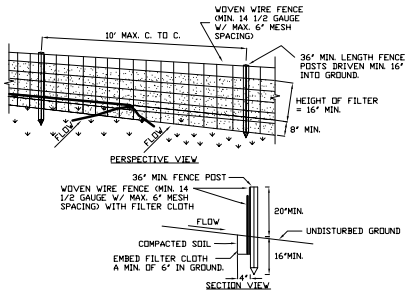
4 INLET PROTECTION

NTS

CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85.
2. WOODEN FRAME SHALL BE CONSTRUCTED OF 2" x 4" CONSTRUCTION GRADE LUMBER.
3. WIRE MESH ACROSS THROAT SHALL BE A CONTINUOUS PIECE 30 INCH MINIMUM WIDTH WITH A LENGTH 4 FEET LONGER THAN THE THROAT. IT SHALL BE SHAPED AND SECURELY NAILED TO A 2" x 4" WEIR.
4. THE WEIR SHALL BE SECURELY NAILED TO 2" x 4" SPACERS 9 INCHES LONG SPACED NO MORE THAN 6 FEET APART.
5. THE ASSEMBLY SHALL BE PLACED AGAINST THE INLET AND SECURED BY 2" x 4" ANCHORS 2 FEET LONG EXTENDING ACROSS THE TOP OF THE INLET AND HELD IN PLACE BY SANDBAGS OR ALTERNATE WEIGHTS.

MAXIMUM DRAINAGE AREA 1 ACRE

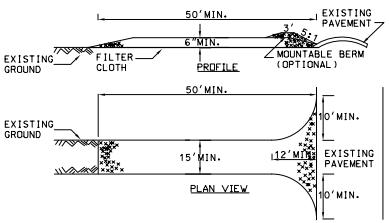


CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

2 SILT FENCE

NTS



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - FIFTEEN (15) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

3 STABILIZED CONSTRUCTION ENTRANCE

NTS

STUDIO V

PROJECT NO.
50012433

5-20 46TH ROAD

OWNER / CLIENT
OCA LIC II-V
535 Madison Ave, 23rd Fl
New York, NY 10022
T: 212.546.0832
F: 212.546.0831

ARCHITECT
Studio V Architecture
44 E 32nd St New York, NY 10016
T: 212.779.2268
F: 212.689.1325

ENGINEER
DEWBERRY
15 E 26th St New York, NY 10010
T: 212.685.0900
F: 212.685.2340

ISSUE	DATE

SEAL

DATE	DRAWN	CHECKED
6/12/09	MMS	JM

SCALE

SHEET TITLE
EROSION AND SEDIMENT CONTROL PLAN

DRAWING NO.
ESC-001

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 7

Quality Assurance Project Plan /
Field Sampling Procedures Plan

QUALITY ASSURANCE PROJECT PLAN (QAPP)

Property Known As:

OCA LIC Fifth Street Mixed-Use Housing
5-20 46th Road
City of New York, Queens County, New York 11101
BCP Site No C241098

Prepared for:

OCA Long Island City, LLC
c/o O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

June 2016

To be updated if needed and as necessary to comply with evolving NYSDEC QAPP protocols. The original QAPP was submitted in December 2008.

Submitted by:

EWMA
100 Misty Lane
Parsippany, New Jersey 07054
EWMA Case No. 209014

TABLE OF CONTENTS

ATTACHMENTS

1.0 PROJECT SCOPE

This Quality Assurance Project Plan (QAPP) document was prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) May 2010 *DER-10 Technical Guidance for Site Investigation and Remediation* and applies to the investigation of soils, and ground water. The following activities are proposed as part of this investigation:

Soils Investigation

(1) Soil samples will be collected to document the soil quality at the vertical and horizontal extent of the excavation.

Ground Water Investigation

(1) EWMA will gauge sample permanent monitoring wells to further investigate ground water and light non-aqueous phase liquid (LNAPL) at the property.

This QAPP provides directions in implementing the activities that would generate data of known and defensible quality. It complies with the September 1992 NYSDEC Division of Water Sampling Guidelines and Protocols ("NYSDEC DWSGP") and the October 2006 New York State Department of Health (NYSDOH) *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (GESVI).

2.0 DATA QUALITY OBJECTIVES

Collection of samples will be performed as described within this document and the NYSDEC DWSGP and NYSDOH GESVI. Soil and ground water samples collected for volatile organic compounds and a forward library search (VO+10) will be analyzed via EPA Method 8260+10. Soil samples collected for semi-volatile organic compounds and a forward library search (BN+20) will be analyzed via EPA Method 8270+20. Soil samples collected for priority pollutant metals (PPM) will be analyzed via EPA Method series SW-846 for the full Inorganic Target Analyte List (23 metals plus total cyanide). Ground water samples collected for BN+20 will be analyzed via EPA Method 625+20. Ground water samples obtained for PPM analysis will be analyzed via EPA 610A Series for the full Inorganic Target Analyte List (23 metals plus total cyanide). Semi-volatiles soil and water analyses by 8270 will include 20 tentatively identified compounds.

Data quality objectives include but are not limited to:

- Defining physical and chemical characteristics of contaminant sources
- Volume and extent of contamination, potential receptors and associated exposure pathways
- Fate and transport of contaminants
- Development and evaluation of remedial alternatives

- Identifying Standards, Criteria and Guidance (SCGs)
- Identifying the need for treatability studies
- Supporting future enforcement or cost recovery activities.

3.0 ANALYTICAL LABORATORY

All soil and ground water samples will be analyzed by the following NYSDOH CLP-Tier ELAP certified laboratory:

Integrated Analytical Laboratories (IAL)
273 Franklin Road
Randolph, NJ 07869
New York Lab ID No. 11402
NYSDOH Certification Serial No. 32868

Laboratory certifications are provided as **Attachment 1** of this QAPP.

4.0 PROJECT COORDINATION

Overall Project Management: Don Richardson, Vice President, EWMA, (973) 560-1400

Sampling Activities Field Manager: Jacob Strauss, Environmental Engineer, EWMA

Quality Assurance Officer: Acting Compliance Services Director, EWMA

Data Validator: Acting Compliance Services Director, EWMA

Laboratory Activities: The personnel will be identified in the laboratory analytical report.

The personnel listed above are subject to change. The Health and Safety Plan will document the actual field personnel that complete the activities at the site.

5.0 ANALYTICAL METHODS / QUALITY ASSURANCE SUMMARY

The Analytical Methods / Quality Assurance Summary table is included as **Attachment 2** of this document.

Collection of samples from the site will be performed following the NYSDEC DWSGP and NYSDOH GESVI. In general, the samples will be collected as described in the January 2008 Field Sampling Procedures Plan (FSPP) included as **Attachment 5**.

Trip blanks and field blanks will be collected for all ground water sampling locations requiring VO+10 analysis as per EPA Method 8260+10. Duplicate samples will be collected during each daily sampling event at a rate of one duplicate sample for each media sampled on that day.

All QA/QC will be consistent with NYSDEC ASP July 2005. Holding times are calculated from the verified time of sample of receipt at the laboratory (except for ambient air sample for which sample Holding Time is calculated from the time of sampling). The sample holding times given in the table included as **Attachment 2** are consistent with the holding times given in NYSDEC ASP Exhibit I.

All air samples will be collected as per Section 2 of the NYSDOH GESVI. In addition to the proposed sub-slab and soil-gas samples, at least one (1) outdoor air sample will be collected during each air sampling event in order to provide ambient or background data.

In general, appropriate QAPP will be followed during all aspects of sample collection and analysis to ensure that sampling error is minimized and high quality data are obtained. Sampling team members will avoid actions (e.g., fueling vehicles, using permanent marking pens, wearing freshly dry-cleaned clothing or personal fragrances, etc.) which can cause sample interference in the field. Portable air monitoring equipment or field instrumentation will be properly maintained, calibrated and tested to ensure validity of measurements. Air sampling equipment will be stored, transported and between samples decontaminated in a manner consistent with the best environmental consulting practices to minimize problems such as field contamination and cross-contamination. Samples will be collected using certified clean sample devices. Steps will be taken to ensure that the gas used by the laboratory to clean the sample device is different from the gas used as a tracer during sampling (e.g., helium). Samples will meet sample holding times and temperatures, and will be delivered to the analytical laboratory as soon as possible after collection. In addition, laboratory accession procedures will be followed, including field documentation (sample collection information and locations), chain of custody, field blanks, field sample duplicates and laboratory duplicates, as appropriate. A Data Usability Summary Report (DUSR) will be required to determine whether or not the data, as presented, meets the site or project specific criteria for data quality and data use. All samples that will be used to make decisions on appropriate actions to address exposures and environmental contamination will be analyzed by IAL, an ELAP-certified laboratory.

6.0 FIELD INSTRUMENTATION

Photo-Ionization Detector Standard Operating Procedure:

The Photovac MicroTIP photoionization detector (PID) must be calibrated in order to display concentration in units equivalent to ppm. First a supply of Zero Gas, which contains no ionizable gases or vapors, is used to set MicroTIP's zero point. Then, Span Gas, containing a known concentration of an ionizable gas or vapor, is used to set the sensitivity. Usually clean outdoor air

will be suitable as Zero Gas. If there is any doubt, use a commercial source of Zero Grade Gas and a second sampling bag. A supply of Span Gas of the desired compound and concentration must be obtained for calibration. Observe proper handling techniques for all gases.

Isobutylene at 100 ppm in air is recommended as Span Gas. To calibrate the instrument use the Calibration Kit as follows:

1) Connect the supplied regulator to the Span Gas cylinder. Hand tighten the fittings.
2) Open the valve on the gas bag by turning the valve stem fully counterclockwise.
3) Attach gas bag adapter nut to the regulator. Hand tighten the fittings.
4) Turn the regulator knob counterclockwise about half a turn to start the flow of gas.
5) Fill the gas bag about half full and then close the regulator fully clockwise to turn off the flow of gas.
6) Disconnect the bag from the adapter and empty it. Flush the bag a few times with the Span Gas and then fill it.
7) Close the bag by turn the valve clockwise.
8) Press SETUP and select the desired Cal Memory with the arrow keys and press ENTER. Press EXIT to leave setup.
9) Press CAL and expose MicroTIP to Zero Gas. Press ENTER and MicroTIP sets its zero point.
10) MicroTIP then asks for the Span Gas concentration. Enter the known Span Gas concentration and then connect the Span Gas adapter to the inlet.
11) Press ENTER and MicroTIP sets its sensitivity.
12) When MicroTIP's display reverts to normal, MicroTIP is calibrated and ready for use. Remove the Span Gas bag from the inlet.

The AIM 600 Detector/Combustible Gas Indicator must be calibrated to ensure the safe operation of your detector. Calibration involves showing your detector a clean air atmosphere as a zero reference, and then showing your detector a known gas concentration. For maximum safety, it is recommended that calibration verification be performed each time you use your detector, particularly when an application is critical.

There are, however, a number of very specific conditions that cause at least the need for calibration verification, and a likely re-calibration. They are:

1. Sensor age. Sensors will expire over time. This means that as the sensor ages, it will not put out as much signal in proportion to a given amount of gas. Also, the sensor's output will decrease more rapidly if it is exposed to extremely high levels of gases.

The act of calibration adjusts the decreasing output of sensors over time. At some point, the sensor output will not be adequate to give a reliable reading. Each sensor has an expected life span to which its reaction or response to known gases is predictable within specified tolerances.

2. Sensor operating conditions. Recalibration, or at least calibration verification, is recommended should your detector display and sense any error conditions for any of the sensors in your detector. They are:

   *ZERO, where a sensor has indicated a zero value during calibration that is out of the desired range for that sensor.

   *SPAN, where a sensor has indicated a span value during calibration that is out of the desired range for that sensor.

   *RNG, where a specific sensor's response range has been exceeded or has been saturated with a gas concentration.

   *CAL, where a sensor' drift or response is showing a concentration lower than the zero value recorded for that sensor. This indicates the need for a calibration adjustment, specifically re-zeroing the sensor.

   *TEMP, where the sensor's operating temperature or acceptable range has been exceeded, which may affect or has already affected the response.

   *FAULT, where a sensor's electrical connections have been compromised and the detector is showing no signal.

7.0 CHAIN OF CUSTODY

Generally, a Chain of Custody (COC) is generated to track the samples from the time of collection and delivery to the laboratory.

Refer to **Attachment 3** for a copy of the field Chain of Custody forms that will be used for the samples. The COC utilized by the analytical laboratory analyzing the samples will be included with the analytical data report.

8.0 LABORATORY STORAGE

Laboratory storage of collected samples will be in accordance with approved procedures as required for certified laboratories as described in the NYSDEC ASP.

9.0 LABORATORY DELIVERABLE FORMAT

Laboratory deliverables will be completed in the format recommended in Appendix A of the NYSDEC DWSGP and Section 2.8 of the NYSDOH GESVI.

A NYSDEC ASP Category B Data Deliverable will be submitted for the sample data. A Data Usability Summary Report (DUSR) as described in DER-10 Appendix 2B will be prepared from the ASP Category B Data Deliverable. The Data Validator Qualifications are attached as **Attachment 4**.

Attachment 1

Laboratory Certifications

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Wadsworth Center The Governor Nelson A. Rockefeller Empire State Plaza P.O. BOX 509 Albany, New York 12201-0509

RICHARD F. DAINES, M.D.
Commissioner

WENDY E. SAUNDERS
Executive Deputy Commissioner

LAB ID: 11402

April 01, 2009

DR. MICHAEL H. LEFTIN
INTEGRATED ANALYTICAL LABS
273 FRANKLIN ROAD
RANDOLPH, NJ 07869

Dear Dr. Leftin,

A new certificate has been generated because of the following change(s):

AppCat	Analyte Name Method Name	Comments	Date
NW - NELAC	Phenols EPA 420.2	Dropped from Approved	03/27/2009
PW - NELAC	Hydrogen Ion (pH) EPA 150.1	Dropped from Approved	03/27/2009

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2010
Issued April 01, 2009

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

DR. MICHAEL H. LEFTIN
INTEGRATED ANALYTICAL LABS
273 FRANKLIN ROAD
RANDOLPH, NJ 07869

NY Lab Id No: 11402
EPA Lab Code: NJ00438

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Drinking Water Trihalomethanes	
Dibromochloromethane	EPA 524.2
Volatile Aromatics	
1,2,3-Trichlorobenzene	EPA 524.2
1,2,4-Trichlorobenzene	EPA 524.2
1,2,4-Trimethylbenzene	EPA 524.2
1,2-Dichlorobenzene	EPA 524.2
1,3,5-Trimethylbenzene	EPA 524.2
1,3-Dichlorobenzene	EPA 524.2
1,4-Dichlorobenzene	EPA 524.2
2-Chlorotoluene	EPA 524.2
4-Chlorotoluene	EPA 524.2
Benzene	EPA 524.2
Bromobenzene	EPA 524.2
Chlorobenzene	EPA 524.2
Ethyl benzene	EPA 524.2
Hexachlorobutadiene	EPA 524.2
Isopropylbenzene	EPA 524.2
n-Butylbenzene	EPA 524.2
n-Propylbenzene	EPA 524.2
p-Isopropyltoluene (P-Cymene)	EPA 524.2
sec-Butylbenzene	EPA 524.2
Styrene	EPA 524.2
tert-Butylbenzene	EPA 524.2
Toluene	EPA 524.2
Total Xylenes	EPA 524.2
Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 524.2

Volatile Halocarbons	
1,1,1-Trichloroethane	EPA 524.2
1,1,2,2-Tetrachloroethane	EPA 524.2
1,1,2-Trichloroethane	EPA 524.2
1,1-Dichloroethane	EPA 524.2
1,1-Dichloroethene	EPA 524.2
1,1-Dichloropropene	EPA 524.2
1,2,3-Trichloropropane	EPA 524.2
1,2-Dichloroethane	EPA 524.2
1,2-Dichloropropane	EPA 524.2
1,3-Dichloropropane	EPA 524.2
2,2-Dichloropropane	EPA 524.2
Bromochloromethane	EPA 524.2
Bromomethane	EPA 524.2
Carbon tetrachloride	EPA 524.2
Chloroethane	EPA 524.2
Chloromethane	EPA 524.2
cis-1,2-Dichloroethene	EPA 524.2
cis-1,3-Dichloropropene	EPA 524.2
Dibromomethane	EPA 524.2
Dichlorodifluoromethane	EPA 524.2
Methylene chloride	EPA 524.2
Tetrachloroethene	EPA 524.2
trans-1,2-Dichloroethene	EPA 524.2
trans-1,3-Dichloropropene	EPA 524.2
Trichloroethene	EPA 524.2
Trichlorofluoromethane	EPA 524.2
Vinyl chloride	EPA 524.2

Serial No.: 39349

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

NELAP Recognized

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2010
Issued April 01, 2009

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

DR. MICHAEL H. LEFTIN
INTEGRATED ANALYTICAL LABS
273 FRANKLIN ROAD
RANDOLPH, NJ 07869

NY Lab Id No: 11402
EPA Lab Code: NJ00438

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Demand	
Carbonaceous BOD	SM 18-20 5210B (01)
Chemical Oxygen Demand	HACH 8000
Haloethers	
4-Bromophenylphenyl ether	EPA 625
4-Chlorophenylphenyl ether	EPA 625
Bis (2-chloroisopropyl) ether	EPA 625
Bis(2-chloroethoxy)methane	EPA 625
Bis(2-chloroethyl)ether	EPA 625
Low Level Polynuclear Aromatics	
Benzo(a)anthracene	EPA 8270C
Benzo(a)pyrene	EPA 8270C
Benzo(b)fluoranthene	EPA 8270C
Benzo(k)fluoroanthene	EPA 8270C
Indeno(1,2,3-cd)pyrene	EPA 8270C
Mineral	
Acidity	SM 18-20 2310B.4a (97)
Alkalinity	SM 18-21 2320B (97)
Chloride	SM 18-20 4500-Cl- C
	SM 18-20 4500-Cl- E (97)
Fluoride, Total	SM 18-21 4500-F C (97)
Hardness, Total	SM 18-20 2340B (97)
	SM 18-20 2340C (97)
Sulfate (as SO4)	SM 15 426 C
Nitroaromatics and Isophorone	
2,4-Dinitrotoluene	EPA 625
2,6-Dinitrotoluene	EPA 625
Nitroaromatics and Isophorone	
Isophorone	EPA 625
Nitrobenzene	EPA 625
Nitrosoamines	
N-Nitrosodimethylamine	EPA 625
N-Nitrosodiphenylamine	EPA 625
Nutrient	
Ammonia (as N)	SM 18 4500-NH3 C
	SM 19-20 4500 NH3-C (97)
	SM 19-20 4500-NH3 G (97)
Kjeldahl Nitrogen, Total	EPA 351.2 Rev. 2.0
Nitrate (as N)	SM 18-21 4500-NO3 F (00)
Nitrite (as N)	SM 18-21 4500-NO2 B (00)
	USGS I-4540-85
Orthophosphate (as P)	SM 18-21 4500-P E
Phthalate Esters	
Benzyl butyl phthalate	EPA 625
Bis(2-ethylhexyl) phthalate	EPA 625
Diethyl phthalate	EPA 625
Dimethyl phthalate	EPA 625
Di-n-butyl phthalate	EPA 625
Di-n-octyl phthalate	EPA 625
Polychlorinated Biphenyls	
PCB-1016	EPA 608
PCB-1221	EPA 608
PCB-1232	EPA 608
PCB-1242	EPA 608

Serial No.: 39350

NELAP Recognized

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2010
Issued April 01, 2009

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

DR. MICHAEL H. LEFTIN
INTEGRATED ANALYTICAL LABS
273 FRANKLIN ROAD
RANDOLPH, NJ 07869

NY Lab Id No: 11402
EPA Lab Code: NJ00438

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Purgeable Halocarbons

1,1,2,2-Tetrachloroethane	EPA 624
1,1,2-Trichloroethane	EPA 624
1,1-Dichloroethane	EPA 624
1,1-Dichloroethene	EPA 624
1,2-Dichloroethane	EPA 624
1,2-Dichloropropane	EPA 624
2-Chloroethylvinyl ether	EPA 624
Bromodichloromethane	EPA 624
Bromoform	EPA 624
Bromomethane	EPA 624
Carbon tetrachloride	EPA 624
Chloroethane	EPA 624
Chloroform	EPA 624
Chloromethane	EPA 624
cis-1,3-Dichloropropene	EPA 624
Dibromochloromethane	EPA 624
Dichlorodifluoromethane	EPA 624
Methylene chloride	EPA 624
Tetrachloroethene	EPA 624
trans-1,3-Dichloropropene	EPA 624
Trichloroethene	EPA 624
Trichlorofluoromethane	EPA 624
Vinyl chloride	EPA 624

Residue

Settleable Solids	SM 18-20 2540 F
Solids, Total	SM 18-20 2540B (97)
Solids, Total Dissolved	SM 18-21 2540C (97)
Solids, Total Suspended	SM 18-20 2540D (97)

Wastewater Metals I

Barium, Total	EPA 200.8 Rev. 5.4
Cadmium, Total	EPA 200.8 Rev. 5.4
Calcium, Total	EPA 200.7 Rev. 4.4
Chromium, Total	EPA 200.8 Rev. 5.4
Copper, Total	EPA 200.8 Rev. 5.4
Iron, Total	EPA 200.7 Rev. 4.4
Lead, Total	EPA 200.8 Rev. 5.4
Magnesium, Total	EPA 200.7 Rev. 4.4
Manganese, Total	EPA 200.8 Rev. 5.4
Nickel, Total	EPA 200.8 Rev. 5.4
Potassium, Total	EPA 200.7 Rev. 4.4
Silver, Total	EPA 200.8 Rev. 5.4
Sodium, Total	EPA 200.7 Rev. 4.4

Wastewater Metals II

Aluminum, Total	EPA 200.8 Rev. 5.4
Antimony, Total	EPA 200.8 Rev. 5.4
Arsenic, Total	EPA 200.8 Rev. 5.4
Beryllium, Total	EPA 200.8 Rev. 5.4
Chromium VI	SM 18-19 3500-Cr D
Mercury, Total	EPA 245.1 Rev. 3.0
Selenium, Total	EPA 200.8 Rev. 5.4
Vanadium, Total	EPA 200.8 Rev. 5.4
Zinc, Total	EPA 200.8 Rev. 5.4

Wastewater Metals III

Cobalt, Total	EPA 200.8 Rev. 5.4
Molybdenum, Total	EPA 200.8 Rev. 5.4
Thallium, Total	EPA 200.8 Rev. 5.4

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RANDOLPH, NJ 07869

NY Lab Id No: 11402
EPA Lab Code: NJ00438

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 8260B
Acrylonitrile	EPA 8260B
Amines	
2-Nitroaniline	EPA 8270C
3-Nitroaniline	EPA 8270C
4-Chloroaniline	EPA 8270C
4-Nitroaniline	EPA 8270C
Carbazole	EPA 8270C
Diphenylamine	EPA 8270C
Benzidines	
3,3'-Dichlorobenzidine	EPA 8270C
Characteristic Testing	
Corrosivity	EPA 9040B
Ignitability	EPA 1010
	EPA 1030
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081A
4,4'-DDE	EPA 8081A
4,4'-DDT	EPA 8081A
Aldrin	EPA 8081A
alpha-BHC	EPA 8081A
alpha-Chlordane	EPA 8081A
beta-BHC	EPA 8081A
Chlordane Total	EPA 8081A
delta-BHC	EPA 8081A
Dieldrin	EPA 8081A

Chlorinated Hydrocarbon Pesticides	
Endosulfan I	EPA 8081A
Endosulfan II	EPA 8081A
Endosulfan sulfate	EPA 8081A
Endrin	EPA 8081A
Endrin aldehyde	EPA 8081A
Endrin Ketone	EPA 8081A
gamma-Chlordane	EPA 8081A
Heptachlor	EPA 8081A
Heptachlor epoxide	EPA 8081A
Lindane	EPA 8081A
Methoxychlor	EPA 8081A
Toxaphene	EPA 8081A
Chlorinated Hydrocarbons	
1,2,4-Trichlorobenzene	EPA 8260B
	EPA 8270C
2-Chloronaphthalene	EPA 8270C
Hexachlorobenzene	EPA 8270C
Hexachlorobutadiene	EPA 8260B
	EPA 8270C
Hexachlorocyclopentadiene	EPA 8270C
Hexachloroethane	EPA 8270C
Chlorophenoxy Acid Pesticides	
2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
Dalapon	EPA 8151A
Dicamba	EPA 8151A

Serial No.: 39351

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All approved analytes are listed below:

Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015 B
Gasoline Range Organics	EPA 8015 B
Phthalate Esters	
Benzyl butyl phthalate	EPA 8270C
Bis(2-ethylhexyl) phthalate	EPA 8270C
Diethyl phthalate	EPA 8270C
Dimethyl phthalate	EPA 8270C
Di-n-butyl phthalate	EPA 8270C
Di-n-octyl phthalate	EPA 8270C
Polychlorinated Biphenyls	
PCB-1016	EPA 8082
PCB-1221	EPA 8082
PCB-1232	EPA 8082
PCB-1242	EPA 8082
PCB-1248	EPA 8082
PCB-1254	EPA 8082
PCB-1260	EPA 8082
Polynuclear Aromatic Hydrocarbons	
Acenaphthene	EPA 8100
	EPA 8270C
Acenaphthylene	EPA 8100
	EPA 8270C
Anthracene	EPA 8100
	EPA 8270C
Benzo(a)anthracene	EPA 8100
	EPA 8270C
Polynuclear Aromatic Hydrocarbons	
Benzo(a)pyrene	EPA 8100
	EPA 8270C
Benzo(b)fluoranthene	EPA 8100
	EPA 8270C
Benzo(ghi)perylene	EPA 8100
	EPA 8270C
Benzo(k)fluoranthene	EPA 8100
	EPA 8270C
Chrysene	EPA 8100
Dibenzo(a,h)anthracene	EPA 8100
	EPA 8270C
Fluoranthene	EPA 8100
	EPA 8270C
Fluorene	EPA 8100
	EPA 8270C
Indeno(1,2,3-cd)pyrene	EPA 8100
	EPA 8270C
Naphthalene	EPA 8100
	EPA 8260B
	EPA 8270C
Phenanthrene	EPA 8100
	EPA 8270C
Pyrene	EPA 8270C
Priority Pollutant Phenols	
2,4,5-Trichlorophenol	EPA 8270C
2,4,6-Trichlorophenol	EPA 8270C
2,4-Dichlorophenol	EPA 8270C
2,4-Dimethylphenol	EPA 8270C

Serial No.: 39351

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

NELAP Recognized

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

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All approved analytes are listed below:

Purgeable Organics	
Carbon Disulfide	EPA 8260B
Isobutyl alcohol	EPA 8015 B
Methyl tert-butyl ether	EPA 8260B
Semi-Volatile Organics	
Dibenzofuran	EPA 8270C
Sample Preparation Methods	
	EPA 1310
	EPA 1311
	EPA 3050B
	EPA 3060A
	EPA 3540C
	EPA 3545
	EPA 3550B
	EPA 3580
	EPA 5035
	EPA 9010B

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RANDOLPH, NJ 07869

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EPA Lab Code: NJ00438

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All approved analytes are listed below:

Chlorinated Hydrocarbons	
1,2,4-Trichlorobenzene	EPA TO-15
Hexachlorobutadiene	EPA TO-15
Miscellaneous Air	
Formaldehyde	EPA TO-11A
Purgeable Aromatics	
1,2,4-Trimethylbenzene	EPA TO-15
1,2-Dichlorobenzene	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-15
1,3-Dichlorobenzene	EPA TO-15
1,4-Dichlorobenzene	EPA TO-15
Benzene	EPA TO-15
Chlorobenzene	EPA TO-15
Ethyl benzene	EPA TO-15
m/p-Xylenes	EPA TO-15
o-Xylene	EPA TO-15
Styrene	EPA TO-15
Toluene	EPA TO-15
Total Xylenes	EPA TO-15
Purgeable Halocarbons	
1,1,1-Trichloroethane	EPA TO-15
1,1,2,2-Tetrachloroethane	EPA TO-15
1,1,2-Trichloroethane	EPA TO-15
1,1,2-Trifluoro-1,2,2-Trichloroethane	EPA TO-15
1,1-Dichloroethane	EPA TO-15
1,1-Dichloroethene	EPA TO-15
1,2-Dibromoethane	EPA TO-15

Purgeable Halocarbons	
1,2-Dichloroethane	EPA TO-15
1,2-Dichloropropane	EPA TO-15
Bromodichloromethane	EPA TO-15
Bromoform	EPA TO-15
Bromomethane	EPA TO-15
Carbon tetrachloride	EPA TO-15
Chloroethane	EPA TO-15
Chloroform	EPA TO-15
Chloromethane	EPA TO-15
cis-1,2-Dichloroethene	EPA TO-15
cis-1,3-Dichloropropene	EPA TO-15
Dibromochloromethane	EPA TO-15
Dichlorodifluoromethane	EPA TO-15
Methylene chloride	EPA TO-15
Tetrachloroethene	EPA TO-15
trans-1,2-Dichloroethene	EPA TO-15
trans-1,3-Dichloropropene	EPA TO-15
Trichloroethene	EPA TO-15
Trichlorofluoromethane	EPA TO-15
Vinyl bromide	EPA TO-15
Vinyl chloride	EPA TO-15
Volatile Chlorinated Organics	
Benzyl chloride	EPA TO-15
Volatile Organics	
1,2-Dichlorotetrafluoroethane	EPA TO-15
1,3-Butadiene	EPA TO-15
1,4-Dioxane	EPA TO-15

Serial No.: 39353

NELAP Recognized

205490

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Technical Support, 11th Floor
625 Broadway, Albany, New York 12233-7020
Phone: (518) 402-9543 • **FAX:** (518) 402-9547
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

March 3, 2009

DR. MICHAEL H. LEFTIN
INTEGRATED ANALYTICAL LABS
273 FRANKLIN ROAD
RANDOLPH, NJ 07869

To Whom It May Concern:

As you may be aware, the New York State Department of Health (DOH) Environmental Laboratory Approval Program (ELAP) is discontinuing approval for the Contract Laboratory Protocol (CLP) tier category effective April 1, 2009. DOH ELAP is currently notifying CLP approved labs, as well as labs seeking CLP approval of this change. The Division of Environmental Remediation has received a number of inquiries relative to how this change affects DER's requirements. The purpose of this correspondence is to make our responses known to all ELAP laboratories.

ELAP CLP tier approval is no longer required by the Division of Environmental Remediation (DER). DER guidance documents will be revised to reflect this change. Future analytical contracts will not contain the CLP accreditation requirement. However, the Public Health Law still requires that all laboratories that provide environmental data to DER be ELAP accredited in the appropriate category (i.e., Air and Emissions, Non Potable Water, Potable Water, Solid and Hazardous Waste, (TCLP). Further, all data deliverables must be submitted in conformance with the July 2005 Analytical Services Protocol (i.e., Category A, Category Spills, Category B) as required by the DER Project Manager. When a Data Usability Summary Report (DUSR) is required, a full analytical data deliverable (e.g. ASP Category B) is needed.

If you have any questions on the discontinuation of CLP tier approval relevant to work performed for the DER, please contact Tim LeBarron at 518-402-9761 or tllebarr@gw.dec.state.ny.us.

Sincerely,

Timothy L. LeBarron

Timothy L. LeBarron
Quality Assurance Officer
Bureau of Technical Support

Attachment 2

Analytical Methods / Quality Assurance Summary Table

Analytical Methods/Quality Assurance Summary Table

Parameter	Matrix	Sample Container & Volume	Sample Preservation	Maximum Allowable Holding Time from VTSR	Field Duplicate	Analytical Method
Volatiles	Soils	2 oz. glass container with Teflon lined caps	cool, 4°C, dark	14 days	One per matrix	SW846 Test Method 8260B
SemiVolatile	Soils	8oz. glass container with Teflon lined caps	cool, 4°C, dark	14 days extraction, 40 days analysis	One per matrix	SW846 Test Method 8270C
Metals	Soils	2 oz glass continers with Teflon lined caps	cool, 4°C, dark	180 days/Mercury 28 days/Cr^{+6} 1 day	One per matrix	EPA Method 6010B
PCBs	Soils	8oz. glass container with Teflon lined caps	cool, 4°C, dark	5 days extraction, 40 days analysis	One per matrix	EPA Method 8280
Volatiles	Ground Water	2x40ml glass container	cool, 4°C, dark	14 days	One per matrix	SW846 Test Method 8260B
SemiVolatile	Ground Water	2x950ml Amber glass container	cool, 4°C, dark	7 days extraction, 40 days analysis	One per matrix	SW846 Test Method 8270C
Metals	Ground Water	250ml plastic jar	cool, 4°C, dark	180 days/Mercury 26 days/Cr^{+6} 1 day	One per matrix	EPA Method 200.8/245.1
PCBs	Ground Water	2x950ml Amber glass container Teflon lined caps	cool, 4°C, dark	5 days extraction, 40 days analysis	One per matrix	EPA Method 8082
Volatiles	Soil Vapor	6 L Summa Canisters	none	30 days*	One per matrix	EPA Method TO 15

Notes:
VTSR - Verified Time of Sample Receipt
* Ambient air samples holding time is calculated from the time of sampling
New York State Department of Conservation 2005 Analytical Services Protocol (ASP), July 2005 Revisions, Albany, NY.
MS/MSD indicates matrix spike/matrix spike duplicate sample.
PCBs indicate polychlorinated biphenyls that are listed with pesticides in Table 8-4B.

Attachment 3

Chain of Custody (Blank)

Phone # (973) 361-4252
Fax # (973) 989-5288

INTEGRATED ANALYTICAL LABORATORIES
CHAIN OF CUSTODY

273 Franklin Rd
Randolph, NJ 07869

CUSTOMER INFO	
Company:	
Address:	
Telephone #:	
Fax #:	
Project Manager:	
Sampler:	
Project Name:	
Project Location (State):	
Bottle Order #:	
Quote # :	

REPORTING INFO	
REPORT TO:	
Address:	
Attn:	
FAX #	
INVOICE TO:	
Address:	
Attn:	
PO #	

Turnaround Time (starts the following day if samples rec'd at lab > 5PM)

*Lab notification is required for RUSH TAT prior to sample arrival. RUSH TAT IS NOT GUARANTEED WITHOUT LAB APPROVAL. **RUSH SURCHARGES WILL APPLY IF ABLE TO ACCOMMODATE

PHC - MUST CHOOSE

DRO (3-5 day TAT) QAM025 (5 day TAT min.)

SEE BELOW (under comments section for explanation)

Verbal/Fax 2 wk/Std Results needed by:

24 hr* 48 hr* 72 hr* 1 wk*

Hard Copy 3 wk/Std

Other * call for price

Rush TAT Charge **

24 hr - 100%...
48 hr - 75%....
72 hr - 50%....
96 hr - 35%....
5 day - 25%....
6-9 day 10%

Report Format	DISKETTE
Results Only	SRP.dbf format
Reduced	SRP.wk1 format
Regulatory - 15% Surcharge applies	lab approved custom EDD
Other (describe)	NO DISK/CD REQ'D

Cooler Temp _____ °C

SAMPLE INFORMATION

Sample Matrix

DW - Drinking Water AQ - Aqueous WW - Waste Water
OI - Oil LIQ - Liquid (Specify) OT - Other (Specify)
S - Soil SL - Sludge SOL - Solid W - Wipe

ANALYTICAL PARAMETERS

BOTTLES & PRESERVATIVES

Client ID	Depth (ft only)	Sampling Date	Sampling Time	Matrix	# container	IAL #	HCl	NaOH	HNO3	H2SO4	MeOH	Other	None	Encore

Known Hazard: Yes or No Describe:

Conc. Expected: Low Med High

Please print legibly and fill out completely. Samples cannot be processed and the turnaround time will not start until any ambiguities have been resolved.

MDL Req. Old GWQS - 11/05 GWQS - SCC - OTHER (SEE COMMENTS)

Signature/Company	Date	Time	Signature/Company
Relinquished by:			Received by:
Relinquished by:			Received by:
Relinquished by:			Received by:
Relinquished by:			Received by:
Relinquished by:			Received by:

Comments:

DRO (8015B) - used for: Fuel Oil #2/Home Heating Oil #1/#2
QAM-025 (OQA-QAM025) - used for: all other fuel oil and unknown contaminants.

Lab Case #

PAGE: of

LAB COPIES - WHITE & YELLOW; CLIENT COPY - PINK

01/2007 rev

Attachment 4

Data Validator Qualifications

Attachment 5

Field Sampling Procedures Plan

FIELD SAMPLING PROCEDURES PLAN (FSPP)

Property Known As:

OCA LIC Fifth Street Mixed-Use Housing
5-20 46th Road
City of New York, Queens County, New York 11101
BCP Site No C241098

Prepared for:

OCA Long Island City, LLC
c/o O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

June 2016

To be updated as needed and if necessary to comply with evolving NYSDEC FSPP standards. The original FSPP was submitted in January 2008.

Submitted by:

EWMA
100 Misty Lane
Parsippany, New Jersey 07054
EWMA Case No. 209014

TABLE OF CONTENTS

ATTACHMENTS

1.0 PROJECT SCOPE

This Field Sampling Procedures Plan (FSPP) document was prepared by EWMA for use in the remedial investigation of OCA LIC Fifth Street Mixed-Use Housing located at 5-20 46th Road, City of New York, Queens County, New York (subject Property and Site).

The standard operating procedures for the following investigation activities are described:

SUBSURFACE UTILITY CLEARING

All sampling locations within the exterior sidewalk at the site will be hand-cleared down to a depth of five (5) feet utilizing a Utilivac tool. All sampling locations within the interior portions of the site will be cleared using a ground penetrating radar (GPR) and magnetometer subsequent to the demolition and removal of the concrete slab. This procedure will avoid complications from subsurface utilities and ensure the safety of all onsite personal before any subsurface investigation takes place.

SUBSURFACE SOIL INVESTIGATION

Soil borings will be installed to delineate impacted soils and to confirm through field observations and/or the analytical results of soil samples the findings collected during past investigation activities. Test Pits will be installed to investigate through field observations the suspected location of Underground Storage Tanks (USTs).

GROUND WATER INVESTIGATION

EWMA will install and sample temporary and permanent monitoring wells, and sample existing permanent monitoring wells to further investigate ground water at the property.

This FSPP complies with the September 1992 NYSDEC Division of Water Sampling Guidelines and Protocols ("NYSDEC DWSGP").

2.0 SUBSURFACE UTILITY CLEARING

2.1 Utili-Vac/Hand Clearing

1. All personnel will wear the proper personal protective equipment (goggles, gloves and helmets);
2. Sample locations will be located using appropriate measurements assuring so that if re-sampling for further investigation is necessary, the sample locations can be identified at a later date;

3. Using a wet-coring machine for concrete slab or a jack-hammer for sidewalk, the overlaying slab will be removed;

4. A 5' long pipe connected via flexible rubber hose to a vac-truck will be inserted into the exposed soil;

5. As the soil is removed care will be taken to observe any signs of subsurface utilities;

6. If the soils are too compact to effectively utilize the vacuum or small boulders are present, the vacuum pipe and/or a shovel may be carefully used to dislodge recalcitrant materials;

7. If further progress is found to be impossible, the hole will be filled and a new spot in close proximity to the original location will be chosen and the hand clearing will be re-attempted until the nature of the blockage (possible UST or subsurface utility) is revealed or hand clearing is achieved;

8. If hand clearing is not possible due to the presence of a subsurface obstruction, a soil boring in a different location that still fulfills the requirements for the specific AOC may be chosen;

9. Once an area has been hand cleared to five feet a location directly adjacent to the cleared area will be used for the soil boring or monitoring well installation. This ensures safety while allowing proper soil screening and boring/well logging techniques.

2.2 Ground Penetrating Radar (GPR) and Magnetometer Clearing

1. All personal will wear the proper personnel protective equipment (goggles, gloves and hard-hats);

2. Sample locations will be located using appropriate measurements assuring so that if re-sampling for further investigation is necessary, the sample locations can be identified at a later date;

3. The sample locations will be inspected to ensure that the overlying slab has been removed by the demolition contractor prior to investigation (except in areas as noted in the work plan);

4. All inconsequential surface debris (e.g., vegetation, rocks, etc.) will be cleared;

5. A GSSI SIR 2000 GPR unit with 200 megaHertz (mHz) and 400 mHz antennae or other appropriate GPR/Magnetometer will be used by a properly trained technician;

6. Any subsurface anomalies identified will be traced to confirm if they are currently in-use subsurface utilities, out-of-service subsurface utilities, feed-lines, vent-lines, or USTs;

7. Intrusive subsurface investigation in all areas with potential subsurface utilities will be avoided;

8. Larger subsurface anomalies will be further investigated with a test pit or exploratory boring to identify the nature of the anomaly (UST, scrap metal, underground vault, etc);

9. Where necessary the overlaying slab will be replaced and repaired after clearing and subsurface investigation.

3.0 SUBSURFACE SOIL INVESTIGATION

3.1 Soil Boring Installation and Sampling

1. Soil boring installation will take place only after a location has been hand-cleared (required for exterior sidewalk locations) or GPR/Magnetometer cleared;

2. All personnel will wear the proper personal protective equipment (goggles, gloves and hard-hats);

3. Soil borings will be installed either by hand, truck/track mounted Geoprobe Direct-Push), jack-hammer auger, or hand auger;

4. Sample locations will be located using appropriate measurements assuring so that if re-sampling for further investigation is necessary, the sample locations can be identified at a later date;

5. All inconsequential surface debris (e.g., vegetation, rocks, etc.) will be cleared;

6. All down-hole devices will be thoroughly decontaminated;

7. All soil borings located within the exterior side-walk will be hand cleared down to five feet. Soil borings located within the interior of the property will be cleared using Ground Penetrating Radar (GPR) and/or a magnetometer. If a clear geophysical signal is not available the location will be hand cleared down to five feet;

8. Once the desired depth is reached (the lower of 10’ below the water table or 10’ below the proposed development), a decontaminated sampling device (e.g., split spoon or Shelby tube) will be advanced by the drill rig in accordance with ASTM #D1586-84 for

disturbed (split spoon) samples, or, ASTM #D1586-83 for undisturbed (Shelby tube) samples;

9. Upon retrieval the split spoon will be opened, its contents logged, and then, proceeding in the appropriate manner, the sample will be transferred into a sample bottle using a dedicated, disposable, polyethylene scoop;

10. When using a split spoon sampling device, the retaining basket will be in place, preventing the representative interval contained within the spoon from falling back into the bore hole while mechanically raising the spoon to the surface;

11. Once retrieved, the drive shoe and drive head will be removed and the spoon will be struck to open (being cautious to retain all soil in only one split barrel). The volatile fraction will be immediately collected from a discrete six-inch interval;

12. A PID will be used to record the presence of any volatiles. To obtain the most representative monitor reading, a dedicated, disposable, polyethylene scoop will be used to make a cross sectional slice(s) of the soil core to expose a porous surface. Simultaneously the PID probe will be placed into the opened area (being careful not to touch the sample);

13. In addition to soil classification logs, accurate field logs will be prepared for each sampling point. Field logs will include the following: date/time/weather; sampler/geologist/soil scientist name(s); sample point identification (same number used in sampling plan summary table); sketch showing the sampling point location (including reference distances); depth to water and/or bedrock (refusal) when encountered; soil profile with Unified Soil Classification System (USCS), Burmeister or USDA classification system textual classification and blow counts; sample recovery (and portion submitted for analysis); sampling equipment used; field measurements of any monitoring devices, their calibration, and settings; and general comments (e.g., odor, staining, etc.). A sample soil boring log form is provided as **Attachment 1**;

14. When sampling is completed, the tailings from the unused portion of the sample will be placed back down the borehole. Bore holes which extend at or near the water table will be sealed with non-shrinking impermeable material. All bore holes installed through concrete or asphalt will be sealed and capped with either concrete or asphalt, where appropriate;

15. In all cases, samples will be initially collected in discrete six-inch increments. If more or less than a six-inch increment is collected because of poor sample recovery or other field logistical problems, an explanation will be provided in the soil log;

16. Care will be taken in collecting and handling the sample for volatile analysis. The sample will be transferred into the sample bottle as quickly as possible, without mixing and only with the aid of dedicated, disposable polyethylene scoops. This will assure that the volatile fraction is not lost or compromised. Soil samples collected for volatile organics analysis will be placed within wide mouth bottles (4 ounce). The sample will be packed tightly, but not at the risk of creating more volatile loss than necessary. Small rocks or vegetation will be avoided to the extent most practical.

3.2 Test Pit Installation and Sampling

1. Test pit installation will take place at appropriate locations based on the results of the GPR/Magnetometer survey to further investigate suspect USTs;

2. All personnel will wear the proper personal protective equipment (goggles, gloves and hard-hats);

3. A rubber tire back hoe or track excavator will be used to install the test pits;

4. Test pit locations will be located using appropriate measurements assuring so that if for further investigation is necessary, the test pit locations can be identified at a later date;

5. Next, at the desired location, all inconsequential surface debris (e.g., vegetation, rocks, etc.) will be cleared;

6. The back hoe bucket will be thoroughly decontaminated;

7. Field notes and photographs will be taken during excavation activities;

8. Soils will be continuously screened as they are removed from the test pit. A dedicated, disposable, polyethylene scoop will be used to expose the inner soils in the bucket, and simultaneously the PID probe will be placed into the opened area (being careful not to touch the sample);

9. In addition to soil classification logs, accurate field logs will be prepared for each sampling point. Field logs will include the following: date/time/weather; sampler/geologist/soil scientist name(s); sample point identification (same number used in sampling plan summary table); sketch showing the sampling point location (including reference distances); depth to water and/or bedrock (refusal) when encountered; soil profile with Unified Soil Classification System (USCS), Burmeister or USDA classification system textual classification; field measurements of any monitoring devices, their calibration, and settings; and general comments (e.g., odor, staining, etc.);

10. In suspected UST areas extreme care will be taken so as to prevent accidental damage to the UST. If any resistance or suspected USTs are encountered then the excavation will be hand cleared using shovels or appropriate equipment;

11. The UST will be uncovered while ensuring that the UST is not damaged during excavation activities;

12. Photos of the UST condition and measurements of the UST size will be recorded;

13. Any accessible fill or vent port will be used to record product/liquid depth in the tank;

14. A product sample will be collected using a bailer for fingerprint identification;

15. Any impacts to surrounding soil will be noted and if possible excavated and staged on thick plastic for future classification and disposal. If a spill is detected, the spill notification to NYSDEC will be made and appropriate measures will be taken;

16. When test pit excavations are completed, the excavated soils will be returned to the excavation and compacted in place, unless a leaking UST or other conditions make refilling the excavation impossible. If such an event occurs, appropriate barriers and signs will be installed around the excavation area to clearly notify any personnel in the area of the excavation and prevent accidents.

4.0 GROUND WATER INVESTIGATION

4.1 Temporary Monitoring Well Installation Using an SP-16 Sampler

1. Temporary monitoring well installation will take place only after a location has been hand-cleared (required for sidewalk locations) or GPR/Magnetometer cleared;

2. All personnel will wear the proper personal protective equipment (goggles, gloves and hard-hats);

3. SP-16 samplers will be installed either by truck/track mounted Geoprobe, or manually using a slide hammer and retrieval jack;

4. The SP-16 sampler utilizes a stainless-steel screen which is encased in an alloy steel sampler sheath. An expendable drive point is placed in the lower end of the sheath while a drive head is attached to the top. O-rings on the drive head and expendable point provide a watertight sheath which keeps contaminants out of the system as the sampler is driven to depth;

5. All sampler parts will be thoroughly cleaned before and after each use. All metal parts will be scrubbed using a stiff brush and a non-phosphate soap solution and then rinsed with distilled water and allowed to air-dry before assembly;

6. An O-ring will be placed on a steel expendable drive point. The expendable point will be firmly placed in the necked end of a sampler sheath;

7. A PE Grout Plug will be installed in the bottom end of a Wire-wound Stainless Steel Screen and an O-ring will be placed in the groove on the top end of the screen;

8. The screen will be placed inside of the sampler sheath with the grout plug toward the bottom of the sampler;

9. A bottom O-ring will be installed on a Drive Head. The drive head will be threaded into the sampler sheath using an adjustable wrench if necessary to ensure complete engagement of the threads. A Drive Cap will be attached to the top of the drive head;

10. The probe derrick will be extended a little over halfway out of the carrier vehicle when positioning for operation in order to provide adequate room for screen deployment with the Rod Grip Pull System;

11. The assembled sampler will be placed in the driving position beneath the hydraulic hammer of the direct push machine;

12. The sampler will be advanced with the throttle control at slow speed for the first few feet to ensure that the sampler is aligned properly. The sampler will be switched to fast speed for the remainder of the probe stroke;

13. The hammer assembly will be completely raised and the drive cap will be removed. An O-ring will be placed in the top groove of the drive head. Distilled water will be used to lubricate the O-ring if needed. A probe rod (length to be determined by operator) will be added and the drive cap will be reattached to the rod string. The sampler will be driven the entire length of the new rod with the throttle control at fast speed;

14. Step 13 will be repeated until the desired sampling interval is reached;

15. Approximately 12 inches (305 mm) of the last probe rod will extend above the ground surface to allow attachment of the puller assembly. A 12-inch (305 mm) rod may be added if the tool string is over-driven;

16. The drive cap will be removed and the probe derrick will be retracted away from the tool string;

17. A screen push adapter will be threaded on an extension rod of suitable length;

18. A threaded coupler will be attached to the other end of the extension rod. The extension rod will be lowered inside of the probe rod. An extension rod jig may be used to hold the rods;

19. Extension rods will be added until the adapter contacts the bottom of the screen;

20. At least 48 inches (1219 mm) of extension rod will protrude from the probe rod. An extension rod handle will be threaded on the top extension rod;

21. The probe assembly will be maneuvered into position for pulling;

22. The tool string will be raised (pulled) while the screen will be physically held in place with the extension rods. A slight knock with the extension rod string will help to dislodge the expendable point and start the screen moving inside the sheath;

23. The hammer and tool string will be raised about 44 inches (1118 cm). At this point the screen head will contact the necked portion of the sampler sheath and the extension rods will rise with the probe rods;

24. The rod grip handle will be removed, the hammer assembly will be lowered, and the probe derrick retracted. The top extension rod (with handle) and top probe rod will be removed and all extension rods will be extracted;

25. Ground water samples can now be collected with a bladder pump following the ground water sampling from temporary wells with a mechanical bladder pump procedure.

4.2 Ground Water Sampling from Temporary Wells with a Mechanical Bladder Pump

The USEPA Low Flow Purging and Sampling (LFPS) Ground Water Sampling Procedure (**Attachment 3**) will be used as a guide for ground water sampling from temporary monitoring wells. A mechanical bladder pump will be used with PE tubing. The pump will be lowered to the mid-point of the screened interval in each well.

1. Monitoring well sampling will begin at the least contaminated well based on available information. This strategy will minimize cross-contamination;

2. The well headspace will be screened using a PID;

3. Ground water field data will be collected before sampling the well. Any equipment making contact with the ground water and used to obtain data will be decontaminated prior to and after each use. A copy of a blank Monitoring Well LFPS Information is included as **Attachment 4**. It lists the parameters that will be collected in the field;

4. If any product is detected the depth of product will be recorded and a product sample will be collected for fingerprint analysis;

5. Data collected in the field will be recorded in a Field Log Book. Deviation from the sampling protocol and observed events that could affect the samples will be noted in the log book;

6. A mechanical bladder pump will be used at low pressure and flow rates (500 ml/min or less);

7. Parameters (pH, conductivity, redox potential, dissolved oxygen, turbidity, temperature) will be recorded every five minutes by a properly calibrated Horiba water lab;

8. After all parameters have stabilized (+/-0.1 for pH, +/-3% for conductivity, +/-10mv for redox potential, +/-10% for dissolved oxygen and turbidity, a minimum of 15 minutes and three parameter observation events) a sample will be collected at a flow rate between 100 and 250 ml/min;

9. Following the NYSDEC guidance "Policy Regarding Alteration of Ground Water Sample Collected for Metals Analysis (TAGM-4015)" included as **Attachment 5** and as per NYSDEC concurrence, if turbidity is repeatedly (three attempts) detected above 50 NTU an additional field filtered sample will be collected and field preserved from each permanent monitoring well for dissolved metals analysis and semivolatile analysis;

10. The water level will be checked before and after sampling to ensure that drawdown is less than 0.3 feet;

11. The pump will be properly decontaminated in between each monitoring well sampled;

12. The sample jar will be labeled: job/site name, sample ID, sample date, sample time, preservation used, and sampler name/affiliation. It will be stored in a cooler with ice;

13. A Chain of Custody (COC) will be completed for the collected samples. Refer to Attachment 3 of the Quality Assurance Project Plan (QAPP, Appendix 7 of the revised Remedial Investigation Work Plan) for a copy of the COC;

14. The samples will be delivered to the designated laboratory within 48 hours and analyzed within the appropriate holding time (detailed in Attachment 2 of the QAPP).

4.3 Permanent Ground Water Monitoring Well Installation

1. Permanent monitoring well installation will take place only after a location has been hand-cleared (required for sidewalk locations) or GPR/Magnetometer cleared;

2. All personal will wear the proper personnel protective equipment (goggles, gloves and helmets);

3. Monitoring wells will be advanced through the use of hollow-stem auger drill rig using 4.25-inch hollow stem augers;
4. Once the desired well depth has been achieved, 5 feet of 2-inch diameter machine slotted PVC well screen (0.020 inch slot size) will be installed in each borehole;
5. Solid PVC riser will complete the upper portion of each well. The connections between the screen and the riser will be flush-joint screw type with no adhesive required;
6. The wells will be filter packed with clean sand pack from the bottom of each borehole to approximately 2 feet above the top of the screen level;
7. The remainder of the annular space around the upper portion of each well will be grouted using Benseal and cement;
8. Monitoring wells will be completed to grade with locking caps and flushmount manholes.

4.4 Permanent Monitoring Well Ground Water Sampling with a Bladder Pump

The USEPA Low Flow Purging and Sampling (LFPS) Ground Water Sampling Procedure (**Attachment 2**) will be used as a guide for ground water sampling from permanent monitoring wells. A bladder pump will be used with dedicated Teflon tubing. The pump will be lowered to the mid-point of the screened interval in each well.

1. Permanent wells will be sampled no less than one (1) week after installation, to allow the monitoring well to develop naturally;

2. Monitoring well sampling will begin at the least contaminated well based on available information. This strategy will minimize cross-contamination;

3. For the permanent monitoring wells, before removal of the cap, the area directly outside of the well cap will be screened using a PID;

4. Upon removal of the cap, the well headspace will be screened using a PID;

5. Ground water field data will be collected before sampling the well. Any equipment making contact with the ground water and used to obtain data will be decontaminated prior to and after each use. A copy of a blank Monitoring Well LFPS Information is included as **Attachment 3**. It lists the parameters that will be collected in the field;

6. If any product is detected the depth of product will be recorded and a product sample will be collected for fingerprint analysis;

7. Data collected in the field will be recorded in a Field Log Book. Deviation from the sampling protocol and observed events that could affect the samples will be noted in the log book;

8. Low-flow Purging and Sampling (LFPS) procedures will be used in order to minimize inaccuracies in ground water sampling results from sediment perturbations. The EPA March 16, 1998 GW Sampling Standard Operating Procedure (SOP) will be used as a guideline for the LFPS procedure;

9. A bladder pump will be used at low pressure and flow rates to ensure that drawdown is less than 0.3 feet;

10. Dedicated Teflon tubing will be used at each monitoring well;

11. Parameters (pH, conductivity, redox potential, dissolved oxygen, turbidity, temperature) will be recorded every five minutes by a properly calibrated Horiba water lab;

12. After all parameters have stabilized (+/-0.1 for pH, +/-3% for conductivity, +/-10mv for redox potential, +/-10% for dissolved oxygen and turbidity, a minimum of 15 minutes and three parameter observation events) a sample will be collected at a flow rate between 100 and 250 ml/min;

13. Following the NYSDEC guidance "Policy Regarding Alteration of Ground Water Sample Collected for Metals Analysis (TAGM-4015)" included as **Attachment 5** and as per NYSDEC concurrence, if turbidity is repeatedly (three attempts) detected above 50 NTU an additional field filtered sample will be collected and field preserved from each permanent monitoring well for dissolved metals analysis and semivolatile analysis. Prior to the filtered sample collection, the monitoring well will be inspected for proper installation and any damage since the installation;

14. The water level will be checked before and after sampling to ensure that drawdown is less than 0.3 feet;

15. The pump will be properly decontaminated in between each monitoring well sampled;

16. The sample jar will be labeled: job/site name, sample ID, sample date, sample time, preservation used, and sampler name/affiliation. It will be stored in a cooler with ice;

15. A Chain of Custody (COC) will be completed for the collected samples. Refer to Attachment 3 of the Quality Assurance Project Plan (QAPP, Appendix 7 of the revised Remedial Investigation Work Plan) for a copy of the COC;

16. The samples will be delivered to the designated laboratory within 48 hours and analyzed within the appropriate holding time (detailed in Attachment 2 of the QAPP).

4.5 Decontamination Procedures for Non-Dedicated Equipment

Non-disposable sampling equipment, including the pump and support cable and electrical wires which contact the sample, will be decontaminated thoroughly each day before use ("daily decon") and after each well is sampled ("between-well decon"). Dedicated, in-place pumps and tubing will be thoroughly decontaminated using "daily decon" procedures prior to their initial use. All non-dedicated sampling equipment (pumps, tubing, etc.) will be decontaminated after each well is sampled. Soil sampling equipment will be decontaminated using the "Between-Well Decon Procedure".

Daily Decon Procedure:

1. Pre-rinse: Operate pump in a deep basin containing 8 to 10 gallons of potable water for 5 minutes and flush other equipment with potable water for 5 minutes;
2. Wash: Operate pump in a deep basin containing 8 to 10 gallons of a non-phosphate detergent solution, such as Alconox, for 5 minutes and flush other equipment with fresh detergent solution for 5 minutes. Use the detergent sparingly;
3. Rinse: Operate pump in a deep basin of potable water for 5 minutes and flush other equipment with potable water for 5 minutes;
4. Disassemble pump;
5. Wash pump parts: Place the disassembled parts of the pump into a deep basin containing 8 to 10 gallons of non-phosphate detergent solution;
6. Scrub all pump parts with a test tube brush;
7. Rinse pump parts with potable water;
8. Rinse the following pump parts with distilled/ deionized water: inlet screen, the shaft, the suction interconnector, the motor lead assembly, and the stator housing;
9. Place impeller assembly in a large glass beaker and rinse with 1% nitric acid (HNO3);
10. Rinse impeller assembly with potable water;

11. Place impeller assembly in a large glass bleaker and rinse with isopropanol;
12. Rinse impeller assembly with distilled/deionized water.

Between-Well Decon Procedure:

1. Pre-rinse: Operate pump in a deep basin containing 8 to 10 gallons of potable water for 5 minutes and flush other equipment with potable water for 5 minutes;
2. Wash: Operate pump in a deep basin containing 8 to 10 gallons of a non-phosphate detergent solution, such as Alconox, for 5 minutes and flush other equipment with fresh detergent solution for 5 minutes. Use the detergent sparingly;
3. Rinse: Operate pump in a deep basin of potable water for 5 minutes and flush other equipment with potable water for 5 minutes;
4. Final Rinse: Operate pump in a deep basin of distilled/deionized water to pump out 1 to 2 gallons of this final rinse water.

5.0 VAPOR SAMPLING

5.1 Outdoor Air Sampling

Outdoor air samples will be collected as needed to provide ambient or background data.

1. To ensure that air is representative of the locations sampled and to avoid undue influence from sampling personnel, samples will be collected for at least 1 hour;
2. Sample will be collected along the upwind perimeter of the property based on the field determined wind direction on the day of the sampling;
3. Personnel will avoid lingering in the immediate area of the sampling device while samples are being collected;
4. Sample flow rates will conform to the specifications in the sample collection method will be consistent with the flow rates for concurrent outdoor air and sub-slab samples;
5. Samples will be collected, using conventional sampling methods, in a Summa® canisters to be analyzed by using EPA Method TO-15);
6. Outdoor plot sketches will be drawn that include the building site, area streets, outdoor air sampling locations, the location of potential interferences (e.g., gasoline stations, factories, lawn movers, etc.), compass orientation (north), and paved areas. Weather conditions (e.g., precipitation and outdoor temperature) will be reported and any pertinent observations, such as odors, readings from field instrumentation, and significant activities in the vicinity (e.g., operation of heavy equipment or dry cleaners) will be recorded. Any pertinent observations, such as spills, floor stains, smoke tube results, odors and readings

from field instrumentation (e.g., vapors via PID, ppbRAE, Jerome Mercury Vapor Analyzer, etc.), will be recorded;

7. The field sampling team will maintain a sample log sheet summarizing the following:

   a. sample identification,
   b. date and time of sample collection,
   c. sampling height,
   d. identity of samplers,
   e. sampling methods and devices,
   f. depending upon the method, volume of air sampled,
   g. vacuum of canisters before and after samples collected, and
   h. chain of custody protocols and records used to track samples from sampling point to analysis.

Attachment 1

Sample Soil Boring Log Form

Environmental Waste Management Associates, LLC
PO Box 5430, Parsippany, NJ, 07054
Phone: (973) 560-1400 Fax:(973) 560-0400

EWMA Job #:	
Boring #:	
Install Date:	

Site Name:			
Site Location:			
Completion Date:			
Geologist:		Drilling Co.:	
Driller:		Drill Rig:	
Bit:	Hammer Wt:	Drop:	Total Depth:
Sampler Type:		G.W. Encountered:	
		G.W. Stabilized:	

BORING LOCATION SKETCH (N.T.S)

DEPTH (FT.)	SAMPLE ID AND DEPTH	PID/FID/OUA (METER UNITS)	BLOWS/6.0"	RECOVERY (INCHES)	SOIL TYPE	SOIL/GEOLOGICAL DESCRIPTION	DEPTH (FT.)
1							1
2							2
3							3
4							4
5							5
6							6
7							7
8							8
9							9
10							10
11							11
12							12
13							13
14							14
15							15
16							16
17							17
18							18
19							19
20							20
21							21
22							22
23							23
24							24

Attachment 2

Sample Well Log

Environmental Waste Management Associates, LLC
PO Box 5430, Parsippany, NJ, 07054
Phone: (973) 560-1400 Fax:(973) 560-0400

EWMA Job #:	
Well #:	
Start Date:	

Site:	Well Permit #:
	Completion Date:
Geologist:	Drilling Co.:
Driller/Helper:	Drill Rig:
Drilling Method:	Type of Bit:

WELL LOCATION SKETCH (N.T.S)

Sampler Type:			Solid Riser:	
G.W. Encountered:	G.W. Stabilized:	Well Depth:	Screen Interval/Screen Type:	
Depth to Rim:	Borehole Diameter:	Well Diameter:	Grout:	Sand Pack/Open Borehole:

DEPTH (FT.)	SAMPLE ID AND DEPTH	PID/FID/OUA (METER UNITS)	BLOWS/6.0	RECOVERY (INCHES)	SOIL TYPE	SOIL/GEOLOGICAL DESCRIPTION	DEPTH (FT.)	WELL CONSTRUCTION DIAGRAM (N.T.S)
1							1	
2							2	
3							3	
4							4	
5							5	
6							6	
7							7	
8							8	
9							9	
10							10	
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16							16	
17							17	
18							18	
19							19	
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21							21	
22							22	
23							23	
24							24	

Attachment 3

EPA Low-Flow Purging and Sampling (LFPS) Procedure

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION II

GROUND WATER SAMPLING PROCEDURE
LOW STRESS (Low Flow) PURGING AND SAMPLING

I. SCOPE & APPLICATION

This Low Stress (or Low-Flow) Purging and Sampling Procedure is the EPA Region II standard method for collecting low stress (low flow) ground water samples from monitoring wells. Low stress Purging and Sampling results in collection of ground water samples from monitoring wells that are representative of ground water conditions in the geological formation. This is accomplished by minimizing stress on the geological formation and minimizing disturbance of sediment that has collected in the well. The procedure applies to monitoring wells that have an inner casing with a diameter of 2.0 inches or greater, and maximum screened intervals of ten feet unless multiple intervals are sampled. The procedure is appropriate for collection of ground water samples that will be analyzed for volatile and semi-volatile organic compounds (VOCs and SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and microbiological and other contaminants in association with all EPA programs.

This procedure does not address the collection of light or dense non-aqueous phase liquids (LNAPL or DNAPL) samples, and should be used for aqueous samples only. For sampling NAPLs, the reader is referred to the following EPA publications: DNAPL Site Evaluation (Cohen & Mercer, 1993) and the RCRA Ground-Water Monitoring: Draft Technical Guidance (EPA/530-R-93-001), and references therein.

II. METHOD SUMMARY

The purpose of the low stress purging and sampling procedure is to collect ground water samples from monitoring wells that are representative of ground water conditions in the geological formation. This is accomplished by setting the intake velocity of the sampling pump to a flow rate that limits drawdown inside the well casing.

Sampling at the prescribed (low) flow rate has three primary benefits. First, it minimizes disturbance of sediment in the bottom of the well, thereby producing a sample with low turbidity (i.e., low concentration

of suspended particles). Typically, this saves time and analytical costs by eliminating the need for collecting and analyzing an additional filtered sample from the same well. Second, this procedure minimizes aeration of the ground water during sample collection, which improves the sample quality for VOC analysis. Third, in most cases the procedure significantly reduces the volume of ground water purged from a well and the costs associated with its proper treatment and disposal.

III. ADDRESSING POTENTIAL PROBLEMS

Problems that may be encountered using this technique include a) difficulty in sampling wells with insufficient yield; b) failure of one or more key indicator parameters to stabilize; c) cascading of water and/or formation of air bubbles in the tubing; and d) cross-contamination between wells.

Insufficient Yield

Wells with insufficient yield (i.e., low recharge rate of the well) may dewater during purging. Care should be taken to avoid loss of pressure in the tubing line due to dewatering of the well below the level of the pump's intake. Purging should be interrupted before the water level in the well drops below the top of the pump, as this may induce cascading of the sand pack. Pumping the well dry should therefore be avoided to the extent possible in all cases. Sampling should commence as soon as the volume in the well has recovered sufficiently to allow collection of samples. Alternatively, ground water samples may be obtained with techniques designed for the unsaturated zone, such as lysimeters.

Failure to Stabilize Key Indicator Parameters

If one or more key indicator parameters fails to stabilize after 4 hours, one of four options should be considered: a) continue purging in an attempt to achieve stabilization; b) discontinue purging, do not collect samples, and document attempts to reach stabilization in the log book; c) discontinue purging, collect samples, and document attempts to reach stabilization in the log book; or d) Secure the well, purge and collect samples the next day (preferred). The key indicator parameter for samples to be analyzed for VOCs is dissolved oxygen. The key indicator parameter for all other samples is turbidity.

Cascading

To prevent cascading and/or air bubble formation in the tubing, care should be taken to ensure that the flow rate is sufficient to maintain pump suction. Minimize the length and diameter of tubing (i.e., 1/4 or 3/8 inch ID) to ensure that the tubing remains filled with ground water during sampling.

Cross-Contamination

To prevent cross-contamination between wells, it is strongly recommended that dedicated, in-place pumps be used. As an alternative, the potential for cross-contamination can be reduced by performing the more thorough "daily" decontamination procedures between sampling of each well in addition to the start of each sampling day (see Section VII, below).

Equipment Failure

Adequate equipment should be on-hand so that equipment failures do not adversely impact sampling activities.

IV. PLANNING DOCUMENTATION AND EQUIPMENT

- Approved site-specific Field Sampling Plan/Quality Assurance Project Plan (QAPP). This plan must specify the type of pump and other equipment to be used. The QAPP must also specify the depth to which the pump intake should be lowered in each well. Generally, the target depth will correspond to the mid-point of the most permeable zone in the screened interval. Borehole geologic and geophysical logs can be used to help select the most permeable zone. However, in some cases, other criteria may be used to select the target depth for the pump intake. In all cases, the target depth must be approved by the EPA hydrogeologist or EPA project scientist.

- Well construction data, location map, field data from last sampling event.

- Polyethylene sheeting.

- Flame Ionization Detector (FID) and Photo Ionization Detector (PID).

- Adjustable rate, positive displacement ground water sampling pump (e.g., centrifugal or bladder pumps constructed of stainless steel or Teflon). A peristaltic pump may only be used for inorganic sample collection.

- Interface probe or equivalent device for determining the presence or absence of NAPL.

- Teflon or Teflon-lined polyethylene tubing to collect samples for organic analysis. Teflon or Teflon-lined polyethylene, PVC, Tygon or polyethylene tubing to collect samples for inorganic analysis. Sufficient tubing of the appropriate material must be available so that each well has dedicated tubing.

- Water level measuring device, minimum 0.01 foot accuracy, (electronic preferred for tracking water level drawdown during all pumping operations).

- Flow measurement supplies (e.g., graduated cylinder and stop watch or in-line flow meter).

- Power source (generator, nitrogen tank, etc.).
- Monitoring instruments for indicator parameters. Eh and dissolved oxygen must be monitored in-line using an instrument with a continuous readout display. Specific conductance, pH, and temperature may be monitored either in-line or using separate probes. A nephalometer is used to measure turbidity.

- Decontamination supplies (see Section VII, below).

- Logbook (see Section VIII, below).

- Sample bottles.

- Sample preservation supplies (as required by the analytical methods).

- Sample tags or labels, chain of custody.

V. SAMPLING PROCEDURES

Pre-Sampling Activities

1. Start at the well known or believed to have the least contaminated ground water and proceed systematically to the well with the most contaminated ground water. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations.

2. Lay out sheet of polyethylene for placement of monitoring and sampling equipment.

3. Measure VOCs at the rim of the unopened well with a PID and FID instrument and record the reading in the field log book.

4. Remove well cap.

5. Measure VOCs at the rim of the opened well with a PID and an FID instrument and record the reading in the field log book.

6. If the well casing does not have a reference point (usually a V-cut or indelible mark in the well casing), make one. Note that the reference point should be surveyed for correction of ground water elevations to the mean geodesic datum (MSL).

7. Measure and record the depth to water (to 0.01 ft) in all wells to be sampled prior to purging. Care should be taken to minimize disturbance in the water column and dislodging of any particulate matter attached to the sides or settled at the bottom of the well.

8. If desired, measure and record the depth of any NAPLs using an interface probe. Care should be taken to minimize disturbance of any sediment that has accumulated at the bottom of the well. Record the observations in the log book. If LNAPLs and/or DNAPLs are detected, install the pump at this time, as described in step 9, below. Allow the well to sit for several days between the measurement or sampling of any DNAPLs and the low-stress purging and sampling of the ground water.

Sampling Procedures

9. Install Pump: Slowly lower the pump, safety cable, tubing and electrical lines into the well to the depth specified for that well in the EPA-approved QAPP or a depth otherwise approved by the EPA hydrogeologist or EPA project scientist. The pump intake must be kept at least two (2) feet above the bottom of the well

to prevent disturbance and resuspension of any sediment or NAPL present in the bottom of the well. Record the depth to which the pump is lowered.

10. Measure Water Level: Before starting the pump, measure the water level again with the pump in the well. Leave the water level measuring device in the well.

11. Purge Well: Start pumping the well at 200 to 500 milliliters per minute (ml/min). The water level should be monitored approximately every five minutes. Ideally, a steady flow rate should be maintained that results in a stabilized water level (drawdown of 0.3 ft or less). Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to ensure stabilization of the water level. As noted above, care should be taken to maintain pump suction and to avoid entrainment of air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.

12. Monitor Indicator Parameters: During purging of the well, monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, Eh, and DO) approximately every five minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows (Puls and Barcelona, 1996):

    ±0.1 for pH
    ±3% for specific conductance (conductivity)
    ±10 mv for redox potential
    ±10% for DO and turbidity

    Dissolved oxygen and turbidity usually require the longest time to achieve stabilization. The pump must not be removed from the well between purging and sampling.

13. Collect Samples: Collect samples at a flow rate between 100 and 250 ml/min and such that drawdown of the water level within the well does not exceed the maximum allowable drawdown of 0.3 ft. VOC samples must be collected first and directly into sample containers. All sample containers should be filled with minimal turbulence by allowing the ground water to flow from the tubing gently down the inside of the container.

Ground water samples to be analyzed for volatile organic compounds (VOCs) require pH adjustment. The appropriate EPA Program Guidance should be consulted to determine whether pH adjustment is necessary. If pH adjustment is necessary for VOC sample preservation, the amount of acid to be added to each sample vial prior to sampling should be determined, drop by drop, on a separate and equal volume of water (e.g., 40 ml). Ground water purged from the well prior to sampling can be used for this purpose.

14. Remove Pump and Tubing: After collection of the samples, the tubing, unless permanently installed, must be properly discarded or dedicated to the well for resampling by hanging the tubing inside the well.

15. Measure and record well depth.

16. Close and lock the well.

VI. FIELD QUALITY CONTROL SAMPLES

Quality control samples must be collected to determine if sample collection and handling procedures have adversely affected the quality of the ground water samples. The appropriate EPA Program Guidance should be consulted in preparing the field QC sample requirements of the site-specific QAPP.

All field quality control samples must be prepared exactly as regular investigation samples with regard to sample volume, containers, and preservation. The following quality control samples should be collected during the sampling event:

- Field duplicates
- Trip blanks for VOCs only
- Equipment blank (not necessary if equipment is dedicated to the well)

As noted above, ground water samples should be collected systematically from wells with the lowest level of contamination through to wells with highest level of contamination. The equipment blank should be collected after sampling from the most contaminated well.

VII. DECONTAMINATION

Non-disposable sampling equipment, including the pump and support cable and electrical wires which contact the sample, must be decontaminated thoroughly each day before use ("daily decon") and after each well is sampled ("between-well decon"). Dedicated, in-place pumps and tubing must be thoroughly decontaminated using "daily decon" procedures (see #17, below) prior to their initial use. For centrifugal pumps, it is strongly recommended that non-disposable sampling equipment, including the pump and support cable and electrical wires in contact with the sample, be decontaminated thoroughly each day before use ("daily decon").

EPA's field experience indicates that the life of centrifugal pumps may be extended by removing entrained grit. This also permits inspection and replacement of the cooling water in centrifugal pumps. All non-dedicated sampling equipment (pumps, tubing, etc.) must be decontaminated after each well is sampled ("between-well decon," see #18 below).

17. **Daily Decon**

A) Pre-rinse: Operate pump in a deep basin containing 8 to 10 gallons of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

B) Wash: Operate pump in a deep basin containing 8 to 10 gallons of a non-phosphate detergent solution, such as Alconox, for 5 minutes and flush other equipment with fresh detergent solution for 5 minutes. Use the detergent sparingly.

C) Rinse: Operate pump in a deep basin of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

D) Disassemble pump.

E) Wash pump parts: Place the disassembled parts of the pump into a deep basin containing 8 to 10 gallons of non-phosphate detergent solution. Scrub all pump parts with a test tube brush.

F) Rinse pump parts with potable water.

G) Rinse the following pump parts with distilled/ deionized water: inlet screen, the shaft, the suction interconnector, the motor lead assembly, and the stator housing.

H) Place impeller assembly in a large glass beaker and rinse with 1% nitric acid (HNO_3).

I) Rinse impeller assembly with potable water.

J) Place impeller assembly in a large glass bleaker and rinse with isopropanol.

K) Rinse impeller assembly with distilled/deionized water.

18. **Between-Well Decon**

A) Pre-rinse: Operate pump in a deep basin containing 8 to 10 gallons of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

B) Wash: Operate pump in a deep basin containing 8 to 10 gallons of a non-phosphate detergent solution, such as Alconox, for 5 minutes and flush other equipment with fresh detergent solution for 5 minutes. Use the detergent sparingly.

C) Rinse: Operate pump in a deep basin of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

D) Final Rinse: Operate pump in a deep basin of distilled/deionized water to pump out 1 to 2 gallons of this final rinse water.

VIII. FIELD LOG BOOK

A field log book must be kept each time ground water monitoring activities are conducted in the field. The field log book should document the following:

- Well identification number and physical condition.
- Well depth, and measurement technique.
- Static water level depth, date, time, and measurement technique.
- Presence and thickness of immiscible liquid layers and detection method.

- Collection method for immiscible liquid layers.
- Pumping rate, drawdown, indicator parameters values, and clock time, at three to five minute intervals; calculate or measure total volume pumped.
- Well sampling sequence and time of sample collection.
- Types of sample bottles used and sample identification numbers.
- Preservatives used.
- Parameters requested for analysis.
- Field observations of sampling event.
- Name of sample collector(s).
- Weather conditions.
- QA/QC data for field instruments.

IX. REFERENCES

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Attachment 4

Monitoring Well LFPS Information (Blank Form)

Project Name:
Project Location:
Project Number:
EWMA Personnel:
Weather:
Date:

Water Quality Parameters

		Time 24 Hour	PH	Cond. us / cm	Turbidity NTU	Diss. Ox mg / L	Temp. oC	ORP mv
Depth to Water (initial)								
Depth to Water (final)								
Depth of Well (ft)								
Well Diameter (in)								
Screen Length (ft)								
Casing Type								
PID (initial)								
PID (final)								
Pump Type								
Tubing Type								
Max. Drawdown (ft)								
Purge Start Time								
Purge End / Sample Time								
Purge Rate (LPM)								
Purge Volume (L)								
Depth To Product								
Odor								
Comments:								

Water Quality Parameters

		Time 24 Hour	PH	Cond. us / cm	Turbidity NTU	Diss. Ox mg / L	Temp. oC	ORP mv
Depth to Water (initial)								
Depth to Water (final)								
Depth of Well (ft)								
Well Diameter (in)								
Screen Length (ft)								
Casing Type								
PID (initial)								
PID (final)								
Pump Type								
Tubing Type								
Max. Drawdown (ft)								
Purge Start Time								
Purge End / Sample Time								
Purge Rate (LPM)								
Purge Volume (L)								
Depth To Product								
Odor	None							
Comments:								

Attachment 5

NYSDEC Guidance "Policy Regarding Alteration of Ground Water Sample Collected for Metals Analysis (TAGM-4014)"

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Policy Regarding Alteration Of Groundwater Samples Collected For Metals Analysis (TAGM - 4015)

Issuing Authority: Michael J. O'Toole, Jr.
Title: Director, Division of Environmental Remediation
Date Issued: September 30, 1988

A. Objective

The purpose of this Technical and Administrative Guidance Memorandum (TAGM) is to clarify the New York State Department of Environmental Conservation's (NYSDEC) Division of Hazardous Waste Remediation's policy of non-alteration of groundwater samples collected for metals analysis, as well as provide guidance for situations where the policy may be amended. This TAGM has been developed for the most commonly encountered form of a alteration (as defined in Section B), which is filtration (as defined in Section B), but the policy applies to all forms of groundwater sample alteration which may be encountered.

(*Note: This guidance is for situations involving groundwater samples collected for metals analysis only. It does not apply to surface water, waste or samples at active sites or State Pollution Discharge Elimination System discharges where the proper handling of samples may be dictated by other guidance or protocols.

Department policy regarding water samples collected for the analysis of organic compounds is expressly stated, in an Executive Memorandum dated May 3, 1985, from Commissioner Williams to Executive Staff, Division Directors, and Regional Directors, as follows: "Water samples utilized in the assessment, investigation, remedy, study, construction, monitoring or any other activity shall not be altered prior to analysis.")

B. Definitions

"Alteration" - changing the sample in any way other than adding a preservative, such as nitric acid, to lower pH. Examples of alternation include, but are not limited to: filtering, settling and decanting, centrifuging and decanting, and acid extracting.

"Filtration" - the filtering of a groundwater sample collected for metals analysis, through any membrane, fabric, paper or other filter medium irrespective of pore size, in order to remove

particulates from suspension; it is to be done in the field, at time of collection, prior to preservation.

"Preservation" - the preserving or "fixing" of metal ion constituents in a groundwater sample, so as to avoid precipitation, biodegradation, or loss of the ions from the sample. Methods utilized are as listed in the New York State Contract Laboratory Protocol (NYSCLP). Generally they involve the reduction of sample pH to <2 with HNO3 (nitric acid).

"Well Development" - the application of energy to a newly installed groundwater monitoring well in order to allow the natural hydraulic properties of the screened formation to return, thus allowing water to flow more freely to the well. It may also allow the removal of any formation material that may have infiltrated the sandpack and/or well during installation.

"NTU" - nephelometric turbidity unit; this is the unit by which turbidity is measured and discussed.

"50 NTU maximum" - target turbidity level for development and sampling of groundwater monitoring wells; any higher and the sample may be considered unacceptable. This is the level above which laboratory analysis problems may occur.

"Split Sample" - a single sample divided into aliquots.

"ARAR's" - Applicable or Relevant and Appropriate Requirements, as defined by the Superfund Amendments and Re-authorization Act of 1986 (Section 121).

"RCRA" - Resource Conservation and Recovery Act.

C. Existing Guidance

In accordance with 40 CFR 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; Final Rule and Interim Final Rule and Proposed Rule, Section 40 CFR Part 136.3, Table IB, Note 3, states a sample collected "for the determination of total metals... is not filtered before processing," whereas Section 40 CFR Part 136.3, Table II, Note 7, states for samples collected for dissolved metals analysis "should be filtered immediately on-site before adding preservative...".

Information provided in the RCRA Groundwater Monitoring Technical Enforcement Guidance Document, 1986, USEPA-OWPE, OSWER-9950.1, P. 114, is as follows:

"Metallic ions that migrate through the unsaturated (vadose) and saturated zones and arrive at a groundwater monitoring well may be in the well. Particles (e.g., silt, clay), which may be present in the well even after well evacuation procedures, may absorb or adsorb various ionic

species to effectively lower the dissolved metal content in the well water. Groundwater samples on which metals analysis will be conducted should be split into two portions. One portion should be filtered through a 0.45-micron membrane filter, transferred to a bottle, preserved with nitric acid to a pH less than two, and analyzed for dissolved metals. The remaining portion should be transferred to a bottle, preserved with nitric acid, and analyzed for total metals. Any difference in concentrations between the total and dissolved fraction may be attributed to the original metallic ion content of the particles and any sorption of ions to the particles."

Information provided in the RCRA Comprehensive Groundwater Monitoring Evaluation Document, March 1988, USEPA-OWPE, Directive 9950.2, p.22, is as follows:

"Metals

1. Samples collected for metals analysis should be split into two samples. One portion filtered through a 0.45 micron filter for dissolved metals and the second portion remaining unfiltered for total metals analysis. Samples should be filtered as soon as possible to minimize the impacts of pH and Eh changes."

Present Division guidance on filtering of groundwater samples collected for metals analysis consists of memorandum from N. Nosenchuck, Director, Division of Solid and Hazardous Waste, to P. Buechi, Region 9 Solid Waste Engineer, dated January 21, 1987, in response to a memorandum from P. Buechi to N. Nosenchuck dated December 4, 1986, in which Mr. Buechi inquired about the policy of the Division regarding the filtration of samples collected for metals analysis. The response memorandum stated the Division policy as follows:

"The Division of Solid and Hazardous Waste guidance is that samples submitted for metals analysis not be filtered prior to analysis. This general guidance, however, can be amended on a case-by-case basis, when it can be shown that a compelling reason exists for sample filtration. Such reasons could include the modeling of water treatment processes or the determination and/or elucidation of adsorptive distribution phenomena. Ground and surface water samples collected for the purpose of generating monitoring data or for site investigation must be analyzed whole."

D. Discussion

1) Goals of Site Investigations (Remedial Investigation/Phase II)

Generally, for the State Superfund program, the reasons for taking a groundwater sample at an inactive hazardous waste disposal site are:

1

1. to determine whether or not a significant threat to health or the environment exists;
   to characterize the site from the point of view of past history, present situation and any fu
1. actions that may be necessary;
1. to determine the nature and extent of contamination; and
1. to obtain sufficient data to support the choice of a remedy in the feasibility study.

2) Obtaining These Goals

First, to accomplish the above goals, the results of the sample analysis are compared with standards, guidelines and other ARAR's, as one element of determining whether or not a significant threat to human health or the environment exists. Because Part 703 groundwater standards and the State Health Department's drinking water standards are all based on samples that are not altered, samples from sites must be analyzed in their unaltered state so that a valid comparison can be made.

Second, characterization of the site, determination of the extent of contamination, and preparation of feasibility studies involve broadening the scope of work to include past and future conditions. Groundwater may be used in the future for drinking or irrigation purposes, or it may travel through the ground and intercept a well being used for potable water. Consequently, samples must be analyzed with these possibilities in mind. In order to investigate the significance of future use of groundwater at a site, groundwater monitoring wells must mimic such future use. Since groundwater is almost never filtered before being consumed or otherwise utilized, samples for site characterization must not be filtered as a standard procedure. In other words, analytical results obtained from filtered samples may not be representative of future use of the groundwater resource, and thus would not be particularly useful for evaluating the potential future toxicological impact of site contamination.

A counter-argument that has been raised is that the particulate matter in groundwater travels little distance, if at all, and therefore should not be evaluated as part of the groundwater resource that could be pumped out of the ground. The following is a rebuttal to such a counter-argument:

   desorption caused by a change in water chemistry, and sometimes caused merely by ch
   in the concentrations of constituents, can allow metals on particles to move through
1. groundwater even though particles themselves are remaining stationary; and
   there is recent circumstantial evidence that fine (colloid-size) particles are moving throug
   pores of coarse-grained (sand and gravel) deposits allowing the movement of sorbed
1. contaminants (EPA document number CERI-87-45, "Seminar on Transport and Fate of

1. Contaminants in the Subsurface").

In addition, wells which produce water via secondary permeability (i.e. fractures in bedrock) might produce water which may have substantial suspended sediment within it. This material is not to be filtered out.

E. General Guidance for Alteration of Samples

Non-alteration of groundwater samples collected for metals analysis shall be the standar operating procedure for the Division. It is never to be assumed or written into Phase II or

1. Remedial Investigation workplans that alteration of samples is or will be allowed or expe

In cases where turbidity of water samples collected for metals analysis exceeds the max allowable level for analysis, as allowed by the Division (50 NTU), NYSDEC will review th circumstances to determine the course of action. Samples have a turbidity greater than 5 NTU's are not to be filtered as a standard procedure. Samples below 50 NTU's are neve filtered. The rationale for any proposed filtration must be reviewed and approved by a

1. NYSDEC QA/QC officer prior to it being effected.

When unacceptably turbid groundwater samples are produced from a well, filtration is nc considered unless Division technical staff are certain the well was properly designed, ins constructed, developed, maintained, and samples. Filtration is never to be the "cure" for improperly built/developed wells which produce turbid samples. Attempts should be mad repurge and/or redevelop, or replace, the well as necessary (see: Decision Flow Chart, F 1), and to confirm, with documentation, proper well construction and installation. The Div technical staff who are involved must utilize best professional judgement in such cases t determine if the monitoring well has proper integrity.
(See RCRA TEGD, pp. 93-4, for discussion.) If, after a best effort at continuous developr (as agreed to by NYSDEC), it is apparent the 50 NTU's is unattainable in particular well, decision shall be made on a case-by-case basis to:

install a new well at the same location (this would be based on the conclusion tha assembly, filter pack, seals, and/or grout could be reinstalled so as to significantly

1. turbidity);
1. install a new well in a different (either vertically or horizontally) location; or

1. 1. accept the present well as the best well attainable by reasonable means.

F. Requirements For Allowing Filtration

FIGURE 1 - Decision Flow Chart for Filtration of Groundwater Samples Collected for Metals Analysis

Filtration of properly produced groundwater samples on which analysis for metals is to be performed will be allowed only if samples of unacceptably high turbidity are unavoidable. In this case, the following protocol must be followed:

Filtration as discussed in this context involves filtering as defined in Section B of this TAC should be performed consistent with the methods in the November, 1986, Environmental Protection Agency document entitled "Test Methods for Evaluating Solid Waste " (EPA-

1. SW846).

At no time are filtered samples to be collected without an accompanying unfiltered sampl Groundwater samples are to be collected using a minimally disturbing method (i.e. low ra bladder or peristaltic pumping, bailing, etc.). Two samples will be collected, the first of wh will be preserved immediately in an unaltered state, the second being filtered and preser immediately. The turbidity of the samples should be recorded at the time of collection. If s

1. samples are required, then both the filtered and unfiltered samples should be split.

Due to the relatively long holding time allowed for most metals, the following is recomme

1. Analyze the unfiltered sample first.
1. If the unfiltered sample exceeds ARAR's, analyze the filtered sample.

1. 1. If the unfiltered sample meets ARAR's, there is no need to analyze the filtered sar

Filtration methodology must be such that changes in water chemistry of the sample are minimized. Any precipitates which may form upon removal of the sample from the well (e iron floc) must not be filtered out, but redissolved by acidification/preservation. The methodology to be used must be reviewed and approved by a NYSDEC QA/QC officer p

1. implementation.

Thorough documentation of the procedure(s) used is required, so that analytical results r

1. be properly interpreted.

It may be necessary to design the analytical program to be able to answer the question whether metal contaminants are naturally occurring, or whether they were introduced thr man-made activities, by analyzing upgradient and background wells by this same metho best possible effort should be made for obtaining a "clean" or uncontaminated sample of horizon which is being screened, so as to allow a comparison of contaminant data to nat occurring metal ion concentrations in the aquifer matrix. This may be of critical importanc considering the potentially wide concentration ranges of various elements in native soils

1. (Dragun, 1988).

G. Related Issues

1. Goals Determination

The goals for, and the type of information desired from, the groundwater sampling progra must be determined prior to the commencement of any field work. If well integrity is foun exist, and turbidity is less than 50 NTU, then filtration is not considered. When considerir filtration, adsorptive phenomena must also be taken into account for a proper perspectiv when making this decision. It must not be assumed that the groundwater and aquifer ma are in equilibrium. The reactions between solid, liquid, and solution phases are complex, defined by reduction-oxidation reactions and pH as they affect solubility and exchange reactions (Trela, 1985, Lindsay, 1979). These relationships may be altered by removal o sample from the well, and subsequent exposure to the atmosphere (Stolzenburg and Nic

1. 1985).

Well Development

After allowing sufficient time for well seals and grouts to set (usually 24 hours), wells sho developed as soon as possible because:

if there is a problem with the well warranting replacement, every effort should be r

1. identify this need before the drill rig leaves the site; and

it is faster and easier to develop a well before silts and clays have begun to harde

1. 1. bottom of the screen.

Laboratory Handling

If turbid samples are to be analyzed, the issue of how the laboratory is to prepare the sa must be resolved beforehand. Laboratory procedures should be outlined, with review an

1. approval by a NYSDEC QA/QC officer.

FIGURE 1 - Decision Flow Chart for Filtration of Groundwater Samples Collected for Metals Analysis

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OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 8

Sample Boring Log /
Monitoring Well Construction Diagram

Environmental Waste Management Associates, LLC
PO Box 5430, Parsippany, NJ, 07054
Phone: (973) 560-1400 Fax:(973) 560-0400

EWMA Job #:	
Well #:	
Start Date:	

Site: 5-11 47th Avenue, Long Island City, NY	**Well Permit #:**
	Completion Date:
Geologist:	**Drilling Co.:**
Driller/Helper: Jeremy & Mark	**Drill Rig:** Bobble 312 Auger Rig
Drilling Method:	**Type of Bit:**

WELL LOCATION SKETCH (N.T.S)

Sampler Type: Split Spoon			**Solid Riser:**	
G.W. Encountered:	**G.W. Stabilized:**	**Well Depth:**	**Screen Interval/Screen Type:**	
Depth to Rim:	**Borehole Diameter:**	**Well Diameter:**	**Grout:**	**Sand Pack/Open Borehole:**

DEPTH (FT.)	SAMPLE ID AND DEPTH	PID/FID/OUA (METER UNITS)	BLOWS/6.0	RECOVERY (INCHES)	SOIL TYPE	SOIL/GEOLOGICAL DESCRIPTION	DEPTH (FT.)	WELL CONSTRUCTION DIAGRAM (N.T.S)
1							1	
2							2	
3							3	
4							4	
5							5	
6							6	
7							7	
8							8	
9							9	
10							10	
11							11	
12							12	
13							13	
14							14	
15							15	
16							16	
17							17	
18							18	
19							19	
20							20	
21							21	
22							22	
23							23	
24							24	

OCA LIC Fifth Street Mixed-Use Housing

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Site Management Plan

NYSDEC Site Number: BCP Number: C241098
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June 2016

Prepared for:
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O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 12

Site-Wide Inspection Form

Phone: (609) 799-7300
Fax: (609) 799-0108
An Environmental Consulting & Remediation Firm
www.ewma.com

OCA LIC SITE-WIDE INSPECTION FORM
(FOR OCCASIONAL NON-ANNUAL INSPECTIONS)

To: Project Manager
From: Environmental Observer
Cc: Remediation Engineer
Date: …

RE: Results of OCA LIC Site-Wide Inspection on Recorded Date

In-Out Times:
Communication Summary:
Weather:
Personnel at Sites:
Development Status:
Ongoing Construction Activities:

Specific Inspection Findings:

- Overall Site Conditions;
- Composite Cover Conditions;
- MRH Vapor Instrusion Control System Conditions.

Needed Responses to Encountered Conditions:

- Responses Conducted During Site Visit;
- Responses Requiring Additional Support;
- Immediate Response Requirements.

On-site or Neighborhood Complaints/Concerns:

- Complaints/Concerns from Site Personnel;
- Complaints/Concerns from Regulators;
- Complains/Concerns from the Public.

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 13

USEPA Deed Notice Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

MAR 29 2007

Mr. Dan C. Walsh
Division of Environmental Remediation
New York State Department of Environmental Conservation, Region 2
47-40 21st Street
Long Island City, New York 11101-5407

Re: 5-20 46th Road, Long Island City, New York
RCRA Section 7003 Administrative Order,
Docket No. II-RCRA-7003-91-0201

Dear Mr. Walsh:

The U.S. Environmental Protection Agency ("EPA") has been notified by the New York State Department of Environmental Conservation ("NYSDEC") that the above-referenced property is included in an application to the Brownfields Cleanup Program ("BCP") administered by NYSDEC (Site No. C241098). The subject property represents approximately fifteen percent of the total area to be developed. The applicant developer, OCA Long Island City LLC, proposes to demolish the existing building at the above-referenced address, and in doing so, to remove any hazardous waste from the building site, in accordance with BCP requirements under NYSDEC supervision.

Pursuant to the above referenced RCRA Section 7003 Administrative Order for the property, effective May 29, 1991, the Order's Respondents filed a Notice in Deed in the Queens County City Register on July 14, 1993, No. 47605. The Notice in Deed stated that lead, arsenic and selenium are encapsulated beneath portions of the floor and walls at the premises, and that the RCRA Section 7003 Order required that the encapsulation be maintained. The Notice in Deed was the final action required by Respondents pursuant to the RCRA Section 7003 Order, as all other removal and remediation actions were satisfactorily performed. Accordingly, aside from the Notice in Deed, EPA does not consider the RCRA Section 7003 Order to be an ongoing enforcement action.

The property demolition will be carried out under NYSDEC supervision, pursuant to the proposed BCP Agreement. EPA therefore consents to the suspension of the Notice in Deed, No. 47605, and the termination of that Notice in Deed upon completion of the remedial program carried out pursuant to the BCP. The suspension and termination are contingent upon the Brownfields Cleanup Agreement being filed in the same place and manner as the Notice in Deed, No. 47605, upon execution of the Agreement, together with a copy of this letter.

If for any reason the BCP development project is terminated prior to the demolition of the property at 5-20 46th Road, please advise this office as soon as practicable so that EPA may take such further action as may be warranted.

Please call Leonard Grossman, of my staff, at (212)637-4153, if you have any questions regarding this matter.

Sincerely,

Dore LaPosta, Director
Division of Enforcement and Compliance Assistance

NOTICE IN DEED

The property located at 5-20 46th Road, Long Island City, City of New York, Borough of Queens, County of Queens, Block 28, Lot 21, ("Premises")* was the subject of an Administrative Order, Docket No. II RCRA-7003-91-0201 ("Order") dated May 24, 1991, issued by the United States Environmental Protection Agency ("EPA") pursuant to the Resource Conservation and Recovery Act ("RCRA"), Section 7003.

Pursuant to the Order, the owner undertook certain removal, investigative and remedial activities at the premises. The remedial activities were undertaken by the owner with EPA's approval.

The remedial activities took the form of encapsulation of the contaminated soil beneath portions of the building floor and encapsulation of contaminants located in portions of the concrete floor and walls. Let all who read this be on notice that lead, arsenic and selenium are encapsulated beneath portions of the floor and within portions of the walls of the premises. Any and all renovations at the premises must be undertaken with care so that the integrity of the encapsulation is maintained. Furthermore, any and all operating leases affecting the premises must advise of these same conditions.

*This notice applies to that portion of the premises which is referenced in the survey attached hereto.

The EPA is satisfied with the work undertaken at the premises, provided the encapsulation is maintained and inspected periodically to verify its integrity. The United States Environmental Protection Agency considers that all required activities pursuant to the above-referenced Administrative Order are completed.

By: Accurate Associates

Milton Brodsky

Pres.

Accurate Associates
5-36 46th Road
Long Island City, NY

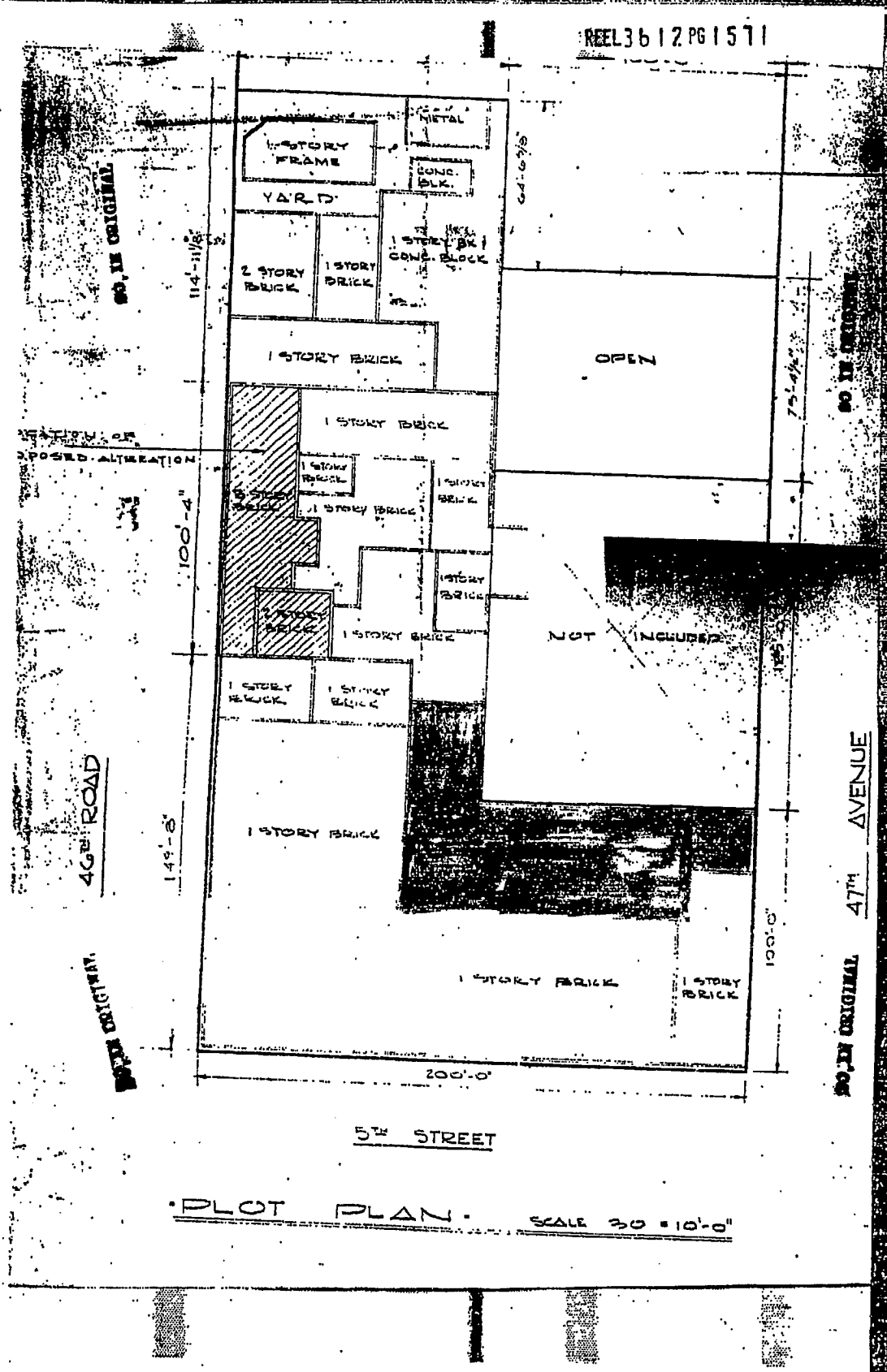
STATE OF NEW YORK)
: SS.:
COUNTY OF QUEENS)

On the 2 day of JULY, 1993, before me personally came MILTON BRODSKY to me known, who, being by me duly sworn, did depose and say that he resides at _____; that he is a partner in the partnership known as Accurate Associates; the entity described in and which executed the foregoing instrument; and that he signed his name thereto by authority of that partnership.

John S. Vitello
Notary Public

JOHN S. VITELLO
Notary Public, State of New York
No. 43-464-1042
Qualified in Richmond County
Commission Expires 4/30/93

REEL 3612 PG 1571



PLOT PLAN. SCALE 30 = 10'-0"

47605

B 23

07-14-93

Q-03 Q-CONV
PAID Q-CONV

810523
$23.00

RECORDED IN QUEENS COUNTY

CITY REGISTER

1993 JUL 14 P 3:16

LEASE PROVISION

The premises was the subject of an Administrative Order Docket No. II RCRA-7003-91-0201, dated May 24, 1991, issued by the United States Environmental Protection Agency ("EPA") pursuant to the Resource Conservation and Recovery Act ("RCRA"), Section 7003. In accordance with EPA's Order, the landlord undertook certain removal, investigative and remedial activities at the premises. The remedial activities were undertaken by the landlord with EPA's approval. The remedial activities took the form of encapsulation of contaminated soil beneath portions of the building floor and encapsulation of contaminants located in portions of the concrete floor and walls.

THEREFORE, the tenant shall not undertake any renovations or other activities which may breach the floor surface or otherwise jeopardize the integrity of the floor. Tenant shall immediately notify landlord if protective encapsulation of the floor and/or walls wears away, becomes damaged or loses its protective quality in any way. Tenant shall not use acids or strong abrasives for cleaning of floors and walls nor use heavy vibrating machinery. Tenant shall periodically inspect the floors and walls to evaluate the condition of the coating.

F:\DMS\VILLANI.DIR\0379083.WP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278-0012

05 NOV 1993

Ms. Miriam E. Villani, Esq.
Rifkin, Radler & Kremer
EAB Plaza
Uniondale, New York 11556-0111

Re: Accurate Associates
Docket No. II RCRA-7003-91-0201

Dear Ms. Villani:

This letter will confirm your notice to EPA by letter dated July 21, 1993, that Accurate Associates has filed the agreed upon Notice In Deed with the Queens County City Register. Such filing occurred on July 14, 1993, and was assigned serial number 47605. In addition, you have confirmed that any and all operating leases signed by Accurate Associates will include the lease provision as agreed.

These activities conclude respondent Accurate Associates' activities under the above-referenced § 7003 Order. Please note, however, that Accurate has an ongoing obligation to protect the encapsulation of the hazardous material at the facility and to insure that lessees do so as well.

Sincerely,

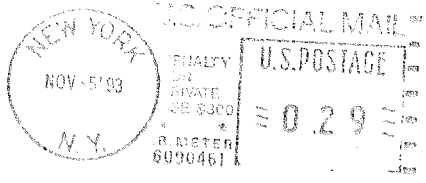
Betsy Donovan
Environmental Scientist

cc: R. Hazen, ORC

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AN EQUAL OPPORTUNITY EMPLOYER



Ms. Miriam E. Villani, Esq.
Rifkin, Radler & Kremer
EAB Plaza
Uniondale, New York 11556-0111

OCA LIC Fifth Street Mixed-Use Housing

Block 28, Lot 21 and 121
LONG ISLAND CITY, NEW YORK

Site Management Plan

NYSDEC Site Number: BCP Number: C241098
EWMA Project No. 209014
June 2016

Prepared for:
OCA LIC, LLC
O'Connor Capital Partners
535 Madison Avenue, 23rd Floor
New York, NY 10022

Appendix 14

Vapor Intrusion Control
Annual Site Inspection Report / Checklist

APPENDIX 14

OCA-LIC FIFTH STREET SITE (Site No. C241098)

2016 ANNUAL SITE INSPECTION REPORT/CHECKLIST

Date:	5/4/2016
Inspector:	Jacob Strauss, EWMA, Environmental Engineer
Reason for Inspection:	2016 Annual Site Inspection Per Inspection Checklist

1. *Is the Site compliant with all Institutional Controls, including Site usage (yes/no)?* Yes. *If no, describe:*

2. *Provide a general evaluation of Site conditions:*
   The site was secure and in good condition. The Student Housing Parcel of the site continues to remain vacant.

3. *Provide a general evaluation of the condition and effectiveness of composite cover systems:*
   A minimum of two feet of quarry process stone is in place across the entire site. The Market Rate Housing Facility is constructed out to the site property boundaries and across the entire western end of the site. The Composite Cover System for that Facility consists of certified clean fill, the vapor intrusion control membrane, and the concrete ground floor slab. The Student Housing Parcel is not yet developed, and extends out to the site property boundaries across the entire eastern end of the site. The Composite Cover System for that Parcel consists of a 2-foot thick cap of certified clean quarry process stone. The entire Composite Cover System was found to be intact and functional during our site inspection visit.

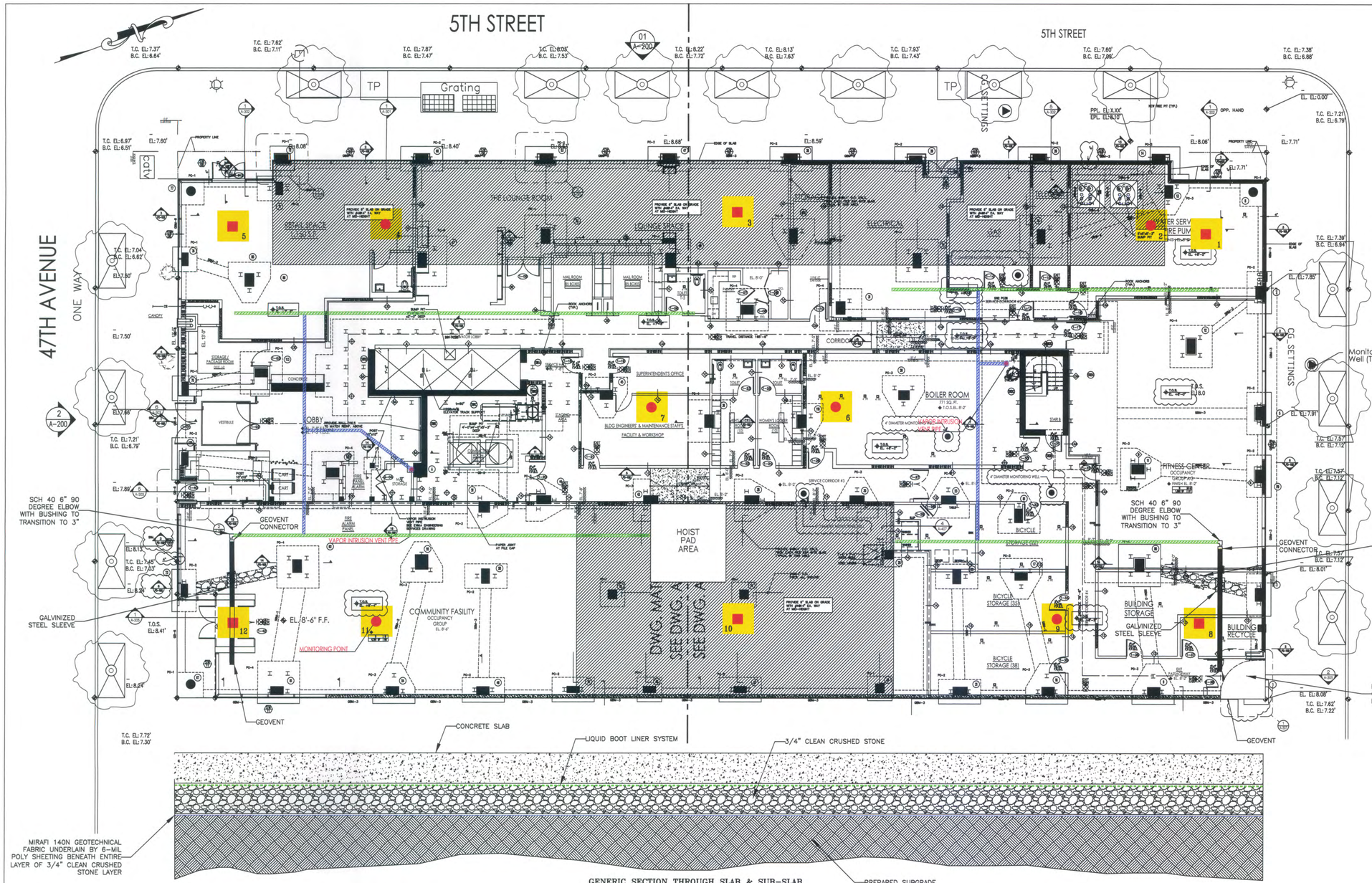
4. *Provide a general evaluation of the condition and effectiveness of Vapor Intrusion Controls:*
   A vapor intrusion control (VIC) system was installed for the Market Rate Housing Facility during construction. The system is an engineering control that consists of a sub-slab collection system with piping, a continuous liquid boot liner under the building ground floor slab, six floor-mounted monitoring ports, two in-building riser pipes, and two roof-mounted suction fans with muffler units, fan-off alarms, and short vent stacks. During the site inspection, system vacuum and flow measurements were obtained and were found to be within normal operating ranges. There were no odors and no photo-ionization detector (PID) measurements of concern adjacent to the stacks. The VIC system was found to be operating quietly and as designed.

5. *Provide a general evaluation of the condition of monitoring wells:*
   All monitoring wells located onsite have been abandoned in accordance with NYSDEC protocol.

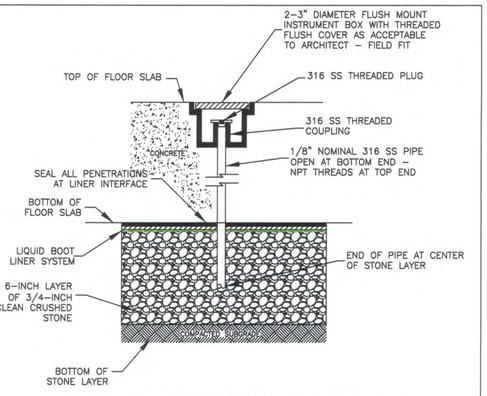
6. *Are Site management activities being conducted according to Site Management Plan (yes/no)?* Yes.
   If no, describe:

7. *Is Site documentation as required by the Site Management Plan up to date (yes/no)?* Yes.
   If no, describe:

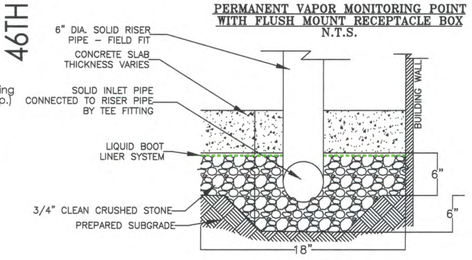
8. *Are any changes to the monitoring program recommended (yes/no)?* No.
   If yes, describe:



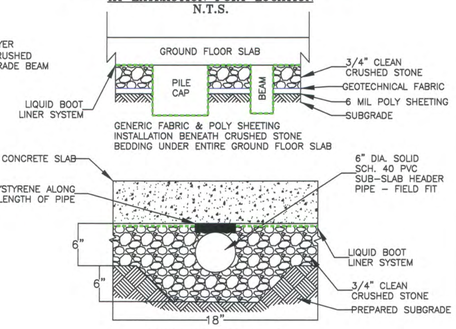
GENERIC SECTION THROUGH SLAB & SUB-SLAB STRUCTURAL AND PIPE CROSSINGS NOT SHOWN
N.T.S.



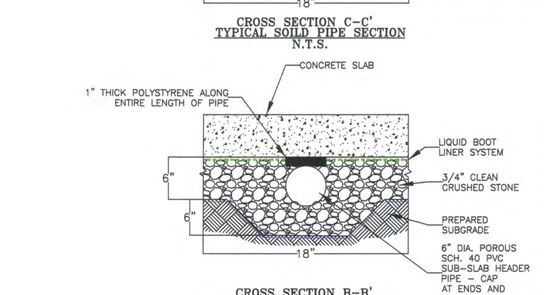
PERMANENT VAPOR MONITORING POINT WITH FLUSH MOUNT RECEPTACLE BOX
N.T.S.



CROSS SECTION D-D'
TRANSFER PIPE CONNECTION TO RISER PIPE AT EXTRACTION PORT LOCATION
N.T.S.



CROSS SECTION C-C'
TYPICAL SOILD PIPE SECTION
N.T.S.



CROSS SECTION B-B'
TYPICAL POROUS PIPE SECTION
N.T.S.

GRAPHIC SCALE
(IN FEET)

LEGEND

- 6" POROUS PIPE - SCH. 35 PVC
- 6" SOLID PIPE - SCH. 40 PVC
- PERMANENT MONITORING POINT SMALL PIPES THROUGH SLAB ONLY
- TEMPORARY MONITORING POINTS CLOSED AS OF 7/31/14

SUMMARY OF AS-BUILT VAPOR INTRUSION CONTROL (VIC) INSTALLATION

CURRENT VIC OPERATING CONDITIONS

1. THE VIC SYSTEM FOR THE MARKET RATE HOUSING FACILITY IS FULLY OPERATIONAL IN COMPLIANCE WITH SMP REQUIREMENTS, NYDOH GUIDELINES, AND GOOD VAPOR INTRUSION CONTROL PRACTICES;
2. EFFECTIVE SYSTEM OPERATION WAS CONFIRMED BY SUB-SLAB VACUUM MEASUREMENTS OBTAINED WITH THE USE OF PERMANENT AND TEMPORARY MONITORING POINTS INSTALLED INTO THE SUB-SLAB AREA FOR THAT PURPOSE; (SEE ADJACENT TABLE)
3. AS-BUILT SYSTEM LOCATIONS AND DETAILS ARE PRESENTED WITHIN THIS DRAWING, AND ARE DESCRIBED BY THE NOTES PRESENTED BELOW;
4. THE KEY COMPONENTS OF THE VIC SYSTEM ARE: 1) TWO CONTINUOUSLY OPERATING ROOF MOUNTED SUCTION FANS WITH INFLUENT PIPING, STACK PIPING, AND MONITORING AND CONTROL APPURTENANCES; 2) TWO 6-INCH DIAMETER VENT RISER PIPES INSTALLED THROUGH THE BUILDING TO GROUND FLOOR SLAB CONNECTION PORTS; 3) SUB-SLAB VAPOR COLLECTION/DEPRESSURIZATION PIPING INSTALLED FROM THE CONNECTION PORTS BENEATH THE SLAB AND WITHIN A 6-INCH THICK LAYER OF CLEAN CRUSHED STONE; 4) 40-MIL CONTINUOUS LIQUID BOOT LINER INSTALLED DIRECTLY UNDER THE SLAB AND STRUCTURAL FOUNDATION ELEMENTS AND OVER THE CRUSHED STONE LAYER; AND 5) GEOTECHNICAL FABRIC INSTALLED DIRECTLY BENEATH THE CRUSHED STONE LAYER AND ON PREPARED SUBGRADE.

ABOVE-SLAB VIC UTILITY INSTALLATIONS

1. **SUCTION FANS** - TWO WEATHERPROOF FANAM CBI 200 SUCTION FANS WITH ¼-HP DAYTON EXPLOSION PROOF MOTORS WERE MOUNTED ON BRACKETS ABOVE THE ROOF, CONNECTED TO THE VIC VENT PIPES, AND CONNECTED TO EXHAUST STACKS THAT TERMINATED 6-FEET ABOVE TOP OF ROOF WITH 10-FEET OF CLEARANCE FROM FRESH AIR INTAKES IN ACCORDANCE WITH CODE;
2. **VENT PIPE AND FAN ACCESSORIES** - THE FANS WERE FITTED WITH ON-OFF ALARMS WIRED REMOTELY TO THE FACILITY MANAGERS OFFICE, AND WERE FITTED WITH LOW-PRESSURE BACKFLOW PREVENTERS TO PREVENT BACKFLOW RE-CIRCULATION IN THE EVENT OF SINGLE FAN STOPPAGE. IN ADDITION, THE INFLUENT VENT PIPES TO THE FANS WILL BE FITTED WITH MEASUREMENT PORTS, VACUUM PRESSURE MANOMETERS AND MANUAL DILUTION VALVES, TO PROVIDE EASY PERFORMANCE CONFIRMATION DURING FUTURE INSPECTION VISITS AND TO PROVIDE A MEANS OF ADJUSTING AND REDUCING LOAD TO THE FANS FOR THE PURPOSE OF EXTENDING THEIR USEFUL LIFE AND REDUCING LONG-TERM POWER CONSUMPTION, IF NECESSARY;
3. **VIC VENT PIPES** - TWO 6-INCH DIAMETER VIC VENT PIPES WERE BROUGHT DOWN THROUGH THE ROOF WITH APPROPRIATE ROOF FLASHING AND ROOF PENETRATION MANAGEMENT, AND DOWN THROUGH THE BUILDING TO CONNECTION PORT LOCATIONS;
4. **CONNECTION PORTS** - TWO 6-INCH DIAMETER VENT PIPE CONNECTION PORTS WERE CONSTRUCTED THROUGH THE GROUND FLOOR SLAB AND FIELD FITTED TO THE LOCATIONS SHOWN ON THE DRAWING. ONE PORT WAS CONSTRUCTED IN THE SOUTH HALF AND ONE IN THE NORTH HALF OF THE BUILDING.

SUBSLAB VIC UTILITY INSTALLATIONS

1. **SUB-SLAB PIPING** - TWO SETS OF 6-INCH DIAMETER SUB-SLAB VAPOR COLLECTION/DEPRESSURIZATION PIPING WERE INSTALLED FROM THE CONNECTION PORTS BENEATH THE SLAB AND WITHIN A CLEAN CRUSHED STONE LAYER BENEATH THE SLAB;
2. **LIQUID BOOT LINER** - A CONTINUOUS 40-MIL LIQUID BOOT LINER WAS INSTALLED DIRECTLY BENEATH THE GROUND FLOOR SLAB AND FOUNDATION ELEMENTS, AND BONDED TO THE CONCRETE SLAB AND FOUNDATION SURFACES;
3. **SUB-SLAB CRUSHED STONE LAYER** - A 6-INCH THICK ¾-INCH CLEAN CRUSHED STONE LAYER WAS INSTALLED DIRECTLY BENEATH THE LIQUID BOOT LINER AND ON A LAYER OF GEOTECHNICAL FABRIC THAT WAS IN TURN PLACED DIRECTLY ON PREPARED SUBGRADE;
4. **MONITORING PORTS** - SIX TEMPORARY MONITORING POINTS WERE INSTALLED AND ARE NOW CLOSED. SIX PERMANENT MONITORING POINTS WERE INSTALLED THROUGH THE GROUND FLOOR SLAB AND WERE FITTED WITHIN FLUSH MOUNTED INSTRUMENT BOXES THAT ARE ACCESSIBLE IN THE FUTURE FOR SUB-SLAB MONITORING IF REQUIRED.

PERFORMANCE STANDARDS

1. DURING TESTING AND MEASUREMENT, THE VIC DESIGN PERFORMANCE STANDARDS WERE CONFIRMED. FLOW RATES THROUGH THE EXTRACTION PIPING WERE FOUND TO BE GREATER THAN 200 FEET PER MINUTE, AND VACUUM LEVELS WITHIN THE EXTRACTION PIPING WERE FOUND TO BE GREATER THAN 4-INCHES OF WATER. SUB-SLAB VACUUM LEVELS WERE FOUND TO BE GREATER THAN THE NYSDOH STANDARD OF 4 PASCALS.

GENERAL INSTALLATION AND DRAWING NOTES:

1. THE BASE DRAWING FOR THE FACILITY PLAN VIEW DISPLAYED ON THIS DRAWING WAS PREPARED BY DESIMONE CONSULTING ENGINEERS, IS TITLED FOUNDATION/1ST FLOOR PLAN, AND IS NUMBERED FO-101.01.
2. THIS VIC DESIGN IS RESTRICTED TO AND SPECIALLY APPLICABLE TO SITE CONDITIONS AT THE MARKET RATE HOUSING PORTION OF THE OCA LIC BROWNFIELD SITE IN LONG ISLAND CITY, NEW YORK, AND IS NOT FOR USE AT OTHER OCA LIC BROWNFIELD SITE FACILITIES OR AT OTHER SITES.
3. THE VAPOR INTRUSION CONTROL SYSTEM COMPONENTS WERE INSTALLED BY EXPERIENCED, QUALIFIED CONTRACTORS WITH QUALIFICATIONS ACCEPTABLE TO THE OWNER, THE PROJECT MEP ENGINEER, AND THE UNDER-SLAB VIC SYSTEM DESIGN ENGINEER.
4. THE INSTALLING CONTRACTORS WERE RESPONSIBLE FOR INSTALLATION MEANS AND METHODS, INCLUDING THE CHOICE AND USE OF INSTALLATION ACCESSORIES, MATERIALS AND SUPPLIES THAT WERE NOT DIRECTLY SPECIFIED.
5. THE INSTALLING CONTRACTORS WERE RESPONSIBLE FOR PLANNING, FIELD FITTING AND INTERFACING THE VIC SYSTEM WITH THE BUILDING SYSTEM, AND FOR PROVIDING LABOR, EQUIPMENT AND MATERIALS AS NEEDED TO CONSTRUCT AN INTEGRATED, EFFECTIVE FINAL PRODUCT ACCEPTABLE TO THE OWNER, BUILDING DESIGN TEAM, AND UNDER-SLAB VIC SYSTEM DESIGN ENGINEER;
6. MINOR VARIANCE REQUESTS WERE SUBMITTED AND APPROVED.

Vapor Intrusion Control System Confirmation Test Data

Monitoring Points: Temporary (T) and Permanent (P)	Pre-Test Before Suction Fan Installation 8/22/2013		Continuous System Operational Measurements 2/3/2014
	South Vent	North Vent	South & North Vents
	Vacuum (inWC)	Vacuum (inWC)	Vacuum (inWC)
T-1	0.163	0.534	N/A
P-2	0.157	0.530	1.629
T-3	0.258	0.246	N/A
P-4	0.038	0.082	0.148
T-5	0.345	0.116	N/A
P-6	0.215	0.408	1.840
P-7	0.355	0.190	0.209
T-8	0.145	0.415	N/A
P-9	0.162	0.500	1.720
T-10	0.086	0.350	N/A
P-11	0.581	0.183	1.967
T-12	0.485	0.144	N/A

NYS Engineering Note:
It is a violation of Article 145 Section 7209(2) of New York State Education Law for any person, unless he is acting under the direction of a New York State licensed engineer, to alter an item of this document in any way. If an item is altered, the altering engineer shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

EWMA ENGINEERING SERVICES, LLL - NYS ENG. CERT # 7617

STATE OF NEW YORK — LICENSED PROFESSIONAL ENGINEER — 7/31/2014 — NYS EW # 076808

REVISIONS No./ID	DATE

An Environmental Consulting & Remediation Firm
100 Misty Lane
P.O. Box 5430
Parsippany, NJ 07054

SCALE:	AS SHOWN
PROJECT#	250689-05
DATE:	7/31/14
DRAWN BY:	RR
CHECKED BY:	RA

CERTIFIED AS-BUILT VAPOR INTRUSION CONTROL INSTALLATION
OCA LIC MARKET RATE HOUSEING
5-11 47TH AVENUE
QUEENS, NEW YORK

FIGURE# VIC-1

APPENDIX #

OCA-LIC FIFTH STREET SITE (Site No. C241098)

[YEAR] ANNUAL SITE INSPECTION REPORT/CHECKLIST

Date:	[Date of Inspection]
Inspector:	[Inspector, Company, Title]
Reason for Inspection:	[Year] Annual Site Inspection Per Inspection Checklist

1. *Is the Site compliant with all Institutional Controls, including Site usage (yes/no)? If no, describe:*

2. *Provide a general evaluation of Site conditions:*

3. *Provide a general evaluation of the condition and effectiveness of composite cover systems:*

4. *Provide a general evaluation of the condition and effectiveness of Vapor Intrusion Controls:*

5. *Provide a general evaluation of the condition of monitoring wells:*

6. *Are Site management activities being conducted according to Site Management Plan (yes/no)?*
   If no, describe:

7. *Is Site documentation as required by the Site Management Plan up to date (yes/no)?*
   If no, describe:

8. *Are any changes to the monitoring program recommended (yes/no)?*
   If yes, describe: