SITE CHARACTERIZATION WORK PLAN

For

CLEM PROPERTIES, INC.
(aka, FORMER E.W. BLISS PROJECTILES)
29 53RD Street
Brooklyn, New York 11232
Settlement Index # R2-20161205-431

Prepared for:

Clem Properties
29 53rd Street
Brooklyn, New York 11232

Prepared by:

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2 June 2017
Revised 17 August 2017
Revised 12 January 2018
100373202

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CERTIFICATIONS

I, Robert Y. Koto, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Site Characterization Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

Robert Koto	1-17-18	
Name	Date	Signature

1.0 INTRODUCTION

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) has prepared this *Site Characterization Work Plan* (SCWP) to summarize the proposed investigation designed to further evaluate the soil and groundwater contamination beneath the site located at 29 53rd Street in Brooklyn, New York ("subject property" or "property"). The contamination was originally identified by AEI Consultants Environmental & Engineering Services (AEI) and confirmed by Langan during investigations that are documented in our 10 February 2017 *Records Search Report*.

An Administrative Consent Order was executed between the property owner, Clem Properties, and the New York State Department of Environmental Conservation ("NYSDEC") to address contamination beneath the subject property (Order on Consent Index # R2-20161205-431).

The proposed investigation described in this SCWP is consistent with the procedures defined in the NYSDEC's *Technical Guidance for Site Investigation and Remediation* (DER-10) and complies with all applicable standards, criteria and guidance. The investigation is being proposed to address comments raised by the NYSDEC Project Manager, Bryan Wong, in correspondences dated 19 April 2017, 18 July 2017, and 2 October 2017 and a 9 November 2017 meeting between the NYSDEC case team and Clem Properties representatives. The comments were in regards to Langan's 10 February 2017 *Site Characterization/Remedial Investigation/Feasibility Study Work Plan* and 2 June 2017 (revised 17 August 2017) *Site Characterization Work Plan*.

1.1 Subject Property Location and Description

The subject property's address is 29 53rd Street in the Borough of Brooklyn, Kings County, New York (Figure 1). It consists of about 0.69 acres designated as Tax Block 803, Lot 41. It is located on the northern side of 53rd Street (aka, Whale Square), about 600 feet west of the intersection of 1st Avenue and 53rd Street. A one-story warehouse occupies the entire subject property. The building's floor consists of an approximately one-foot thick concrete slab. An asphalt-paved parking lot leased from the City of New York by the current property owner is located immediately north of the building.

1.2 Subject Property Use and History

Clem Properties, Inc. began its occupancy of the warehouse in 1977. Since that time, the building has been used as a storage and distribution warehouse for package-dry snack foods. Clem Properties will continue these operations with no plans for redevelopment or change in use.

The subject property is located in an M3 designated district, which is an area with heavy industries. Current surrounding properties include a Consolidated Edison oil storage yard, which contains above ground oil storage tanks (AST); Consolidated Edison Gas Turbine Generator Barges; a New York City Department of Transportation lot used for automobile storage; and, a Brooklyn Sanitation Department facility, which includes several storage tanks.

Prior to 1977, the property was used mainly for industrial purposes from sometime before 1906. Previous tenants include Southern Power Station BHRR; EW Bliss Projectile Department; EW Bliss Company Ordnance Works; Empire Electric Company; B.M.T. Heating Plant; Kings County Lighting Company, which included several ASTs containing oil; Morse Dry Docks/Bethlehem Steel Company: Ship Building Division; Universal Terminal and Stevedoring Corporation; Bush Terminal Building; and, Kings County Manufactured Gas Plant, which included fuel oil ASTs with over nine million gallons of capacity.

Sanborn Fire Insurance Maps dated between 1906 and 1942 depict two oil storage tanks adjacent to the southwestern exterior wall of the warehouse. These tanks are not believed to be associated with the subject property or its former operations. The Sanborn Maps did not note whether the tanks were located above or below ground, however; Sanborn Fire Insurance maps usually depict subsurface features utilizing dotted lines, but these two storage tanks were drawn with solid lines indicating ASTs. In addition, a subsurface investigation conducted by Eder Associates in 1997 in the area of the former tanks noted support structures (i.e., cement and wood pilings) within the top two feet of the subsurface. These supporting features may have been associated with ASTs.

1.3 Geological Conditions

The subject property is relatively flat, however; it does slope slightly to the west, towards the Upper New York Bay. Langan's investigations identified light brown to dark brown sand and silt beneath the one-foot thick concrete slab of the warehouse. Some fine to medium gravel was observed in the boreholes, which were advanced to 20 feet below the concrete slab. In addition, brick and concrete were noted in several of the boreholes at approximately 15 feet below grade. This debris represents the filling of the subject property in the 1900s.

Based on Langan's investigation, the top of the groundwater table is approximately 12 feet below the top of the building's concrete slab. According to a 4 January 2013 Supplemental Investigation Work Plan by Arcadis of Melville, New York, groundwater in the area of the subject property is not used for drinking purposes and residents are connected to the New York City Public Water Supply System. The nearest body of water is the Upper New York Bay, which is located a few hundred feet to the west of the subject property. It is expected that groundwater beneath the subject property is tidally influenced, with groundwater generally flowing to the west, towards the bay.

1.4 Contamination Conditions

1.4.1 On-Site Contamination

The soils beneath the subject property contain the volatile organic compounds (VOCs) cis-1,2-dichloroethene, vinyl chloride, trichloroethene (TCE), and tetrachloroethene (PCE) and the semi-volatile organic compounds (SVOCs) benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, and chrysene at concentrations slightly above the NYSDEC Soil Cleanup Objective (SCO) for unrestricted use. These contaminants are commonly associated with historic urban fill. The groundwater contains VOCs (i.e., TCE, PCE, vinyl chloride, and cis-1,2-dichloroethene) at concentrations above the NYSDEC Water Quality Standards (WQS). Neither the vertical or horizontal extent of the soil or groundwater contamination has been

determined since nearly all of these compounds have been identified in the groundwater at upgradient sites.

In addition, "free product" (i.e., (Light Non-Aqueous Phase Liquid (LNAPL)) was observed in several of the boreholes near the top of the groundwater table. Laboratory analysis revealed the free product's "characteristics are consistent with highly weathered blended petroleum products such as No. 4, No. 5, or No. 6 fuel oils, Bunker C fuels, or by the Pacific Specification of PS-400. The estimated age of release for this material was calculated to be more than 20 years ago."

A 23 September 2016 investigation by Langan identified several VOCs, most notably the solvents TCE and PCE, in the soil gas beneath the warehouse's concrete floor slab. A sub-slab vapor mitigation system is proposed to address this contamination.

1.4.2 Off-Site Contamination

The subject property and the surrounding area have been utilized for industrial purposes at least as far back as 1906. A 1997 Phase II soil investigation conducted by Eder in the parking lot to the immediate north of the subject property and within 53rd Street, which is located to the immediate south, resulted in the identification of SVOCs at concentrations above the SCO in four of the nine boreholes and total xylenes at a concentration above the SCO in one of the nine boreholes. Eder stated that "the levels are not high enough to constitute a major environmental concern considering the industrial nature of the subject property and the lack of potable groundwater receptors in the area."

According to investigations by LiRo Engineering, Miller Environmental Group, Arcadis, and EA Engineering, groundwater in the area upgradient of the subject property, and which may extend beneath the subject property, is impacted by LNAPL and VOCs. These possible sources include a groundwater plume emanating from the Empire Electric Company that contains PCE, TCE, and cis-1,2-dichloroethene; the New

York City Department of Sanitation Brooklyn West 7, which has a free-phase groundwater plume consisting of a mixture of No. 2 fuel oil, motor oil, and lubricating oil, along with VOC and SVOC impacts; a Con Edison Oil Storage Yard, which has LNAPL consisting of No. 2 fuel oil and groundwater contamination consisting of TCE, PCE, and cis-1,2-dichloroethene; the Kings County Manufactured Gas Plant, which has recovery wells for LNAPL collection; and, the former Bush Terminal Building, which is impacted by VOCs, SVOCs, metals, a pesticide, and PCBs. The table below summarizes some of the potential off-site sources of the subject property's contamination.

Potential Off-Site Sources of Contamination

Contaminant Identified on Subject Property	Matrix	Was Contaminant Identified on Surrounding Site Above Standards			
		Narrows Generating Station	Empire Electric Company	Kings County MGP Site	New York City Department of Sanitation Brooklyn West 7
TCE	Ground Water	**Yes**	**Yes**	Not Specified	Not Analyzed
PCE		**Yes**	**Yes**	Not Specified	Not Analyzed
cis-1,2-dichloroethene		**Yes**	**Yes**	Not Specified	Not Analyzed
LNAPL		**Yes**	No	**Yes**	**Yes**

2.0 DESCRIPTION OF PREVIOUS INVESTIGATIONS

A brief discussion of previous investigations of the property follows. The investigations are further discussed in Langan's 10 February 2017 *Records Search Report*.

2.1 Eder's 1997 Investigation

In 1997, Eder Associates conducted an investigation of the asphalt-paved parking lot located immediately north of the subject property. This investigation

consisted of the collection of subsurface soil samples from six boreholes advanced in the parking lot and three boreholes advanced along the southern side of the warehouse within 53rd Street. Staining of the soil was noted in several boreholes near the top of the water table. The investigation resulted in the identification of SVOC and VOC contamination in isolated areas.

2.2 AEI's 2012 Investigation

AEI's November 2012 subsurface investigation was performed to evaluate potential impacts from the two former oil storage tanks located adjacent to the southwestern side of the warehouse. Only three of the planned six boreholes were completed due to the thickness of the concrete building slab. The investigation identified TCE, cis-1,2-dichloroethene, vinyl chloride, benzo(a)anthracene, and chrysene at concentrations above their respective SCO for unrestricted use. In addition, free-phase product was observed in all three boreholes at a depth of about 14 feet below grade, which is the same depth the top of the groundwater table was encountered.

2.3 Langan's 2013 and 2016 Investigations

Langan's March and July 2013 investigations identified cis-1,2-dichloroethene, vinyl chloride, PCE, TCE, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, 2-methylnaphthalene, indeno(1,2,3-cd)pyrene, and chrysene at concentrations above the SCO. Cis-1,2-dichloroethene, vinyl chloride, TCE, and PCE were identified in the groundwater at concentrations above the WQS. In addition, LNAPL was identified at the top of the water table. Fingerprint analysis revealed the LNAPL's "characteristics are consistent with highly weathered blended petroleum products such as No. 4, No. 5, or No. 6 fuel oils, Bunker C fuels, or by the Pacific Specification of PS-400. The estimated age of release for this material was calculated to be more than 20 years ago."

A 23 September 2016 investigation by Langan consisted of the collection of samples from 14 sub-slab soil gas sampling ports located throughout the 30,000-square foot warehouse. The investigation identified several VOCs, most notably

TCE and PCE, in the soil gas beneath the warehouse's concrete floor slab. The concrete slab of the warehouse is over one foot in thickness and free of major cracks.

3.0 NYSDEC COMMENTS

On 19 April 2017, 18 July 2017, and 2 October 2017 Langan received comments from the NYSDEC regarding its 10 February 2017 *Site Characterization/Remedial Investigation/Feasibility Study Work Plan* and its 2 June 2017 (revised 17 August 2017) *Site Characterization Work Plan.*

3.1 19 April 2017 NYSDEC Comments

Below is each of NYSDEC's comments followed by a Langan response.

1. Data from previous investigations at the site identified petroleum contamination within the site boundary; however, the extent of the petroleum has not yet been delineated. Additional investigation will need to delineate the on-site petroleum. Note that boring logs from Langan's 2013 and AEI's 2012 investigation reported petroleum at around 15-20 feet below grade in LB-5, LB-6, LN-7, AEI-B1, and AEI-B2, and the soil vapor investigation shows elevated petroleum constituents. Specifically, elevated sub-slab soil vapor concentration of xylene (up to 146,000 ug/m3) and ethylbenzene (up to 16,000 ug/m3) were detected in one of the sub-slab soil sampling location within the building.

   Response: A work plan to delineate the extent of the free product on site is outlined in Section 4.

2. Elevated sub-slab soil vapor concentration for PCE and TCE were detected on-site; however, there have been no shallow soil samples collected within the site to assess if there is an onsite source of these contaminants.

   Response: A work plan to evaluate the shallow soils in the areas of the elevated PCE and TCE sub-slab soil vapors is outlined in Section 4.

3. The work plan recommends that a sub-slab depressurization system (SSDS) be installed onsite to mitigate the potential vapor intrusion; however, the Work Plan did not provide any details on the design and/or implementation of the SSDS. The Department recommended that an IRM

Work plan be submitted for review and approval detailing the implementation of the SSDS, including the SSDS design criteria.

Response: Obar Systems, Inc. of Newfoundland, New Jersey installed the sub-slab soil gas sampling points and they will be contracted to design and install the SSDS. Since the cost for designing the site-specific SSDS was quoted as $10,000, this phase of the project was put on hold until the NYSDEC agreed that no further subsurface investigation was necessary and the installation of a SSDS would alone be an acceptable remedial action for the identified contamination.

4. Were any indoor air samples collected at the site?

   Response: No indoor air samples were collected. Since three of the four VOCs (i.e., TCE, PCE, cis-1,2-dichloroethene, and vinyl chloride) identified in the site's soil and groundwater were also identified in the sub-slab soil gas at concentrations above the New York Department of Health's Sub-Slab Soil Gas (SSSG) criteria and/or the EPA's Vapor Intrusion Screening Level SSSG criteria, there was no need to perform any additional sampling. Based on the results of the sub-slab soil gas samples alone, a SSDS would be installed at the site to address the contamination.

5. In accordance with the DER-10, all work plans and reports submitted to the Department must be completed and certified by a PE or QEP as defined in 6 NYCRR 375.

   Response: All future submittals will be certified by a PE licensed in New York.

3.2 2 June 2017 NYSDEC Comments

Below is each of NYSDEC's comments followed by a Langan response.

1. In accordance with the DER-10 section 3.3(a)(4), the SCWP must include a Health and Safety Plan (HASP) and Community Air Monitoring Plan.

   Response: Appendix A contains a HASP and Appendix B contains a Community Air Monitoring Plan.

2. The SCWP must include a site specific Quality Assurance Project Plan (QAPP) developed in accordance with DER-10 section 2.3.

   Response: Section 5 outlines a site specific QAPP.

3. Please include a detailed schedule for all activities, including timelines and target dates for the start and completion of all field activities and submission of reports.

   Response: Figure 3 outlines the project schedule.

4. The SCWP must include a discussion of the management and handling of investigation-derived waste in accordance with DER-10 section 3.3.

   Response: Section 4 discusses the management and handling of investigation-derived waste.

5. Please include a summary table of proposed sampling locations and analysis consistent with all applicable items listed in DER-10 section 3.3(b)(3) in the work plan.

   Response: Table 1 summarizes the samples to be collected.

6. Based on the elevated chlorinated volatile organic compounds (CVOCs) detected in soil vapor samples VP-5, VP-4 and VP-2, please include at least one additional soil boring in the vicinity of VP-4 and VP-2 to help delineate any potential CVOC or non-aqueous phase liquid source(s).

   Response: A soil boring (SB-12) will be added in the area of VP-2 and VP-4 (Figure 2).

7. All data collected during the site characterization must be submitted in NYSDEC's environmental information management system format for electronic data deliverables (EDD).

   Response: All data collected during the site characterization will be submitted in NYSDEC's environmental information management system format for EDDs.

3.3 3 August 2017 NYSDEC Comments

Below is each of NYSDEC's comments followed by a Langan response.

1. The department request that the emerging contaminants PFCs and 1,4-dioxane be sample and test under the remedial investigation. Please also update the QAPP to incorporate the analytical methods and procedure for these emerging contaminants (PFCs and 1,4-dioxane).

Response: The soil analytical program will include PFCs and 1,4-dioxane. The QAPP will be updated to include the methods and procedures for sample analysis.

During the 9 November 2017 meeting with the NYSDEC, it was agreed that PFCs and 1,4-dioxane would not be part of the investigation since there was no evidence these compounds were ever used on the subject property.

3.4 2 October 2017 NYSDEC Comments

Below is each of NYSDEC's comments followed by a Langan response.

1. In accordance with the DER-10 section 3.3(a)4, the SCWP is required to be prepared and certified by a Qualified Environmental Professional (QEP) as defined in part 375.

   The SCWP was prepared by two New Jersey Licensed Site Remediation Professionals (LSRP). According to Part 375, a QEP must "be a site remediation professional licensed or certified by the Federal government, a state or a recognized accrediting agency, to perform investigation or remediation tasks consistent with department guidance, and have the equivalent of three years of full-time relevant experience." Under this definition, an LSRP qualifies as a QEP. In addition, the SCWP will be certified by a QEP once it is approved by the NYSDEC. Each submittal to NYSDEC has been reviewed by a NYS PE.

2. Section 1.4.1 stated that neither the vertical or horizontal extent of the soil or groundwater contamination has been determined. The SCWP proposed additional soil sample to further delineate the extent of contamination in soil, however, there is no discussion about the delineation for the groundwater contamination at all in this work plan. Please revise the work plan to include groundwater sampling to delineate extend of groundwater contamination.

   Langan has reviewed reports regarding several contaminated sites in the area of the Former E.W. Bliss Projectiles site and it appears that there is a regional groundwater problem. Groundwater, which is about 14 feet below ground surface, tidally influenced, and not a source of drinking water, has been negatively impacted by several grossly contaminated sites in the immediate area of the Former E.W. Bliss Projectiles site. Therefore, groundwater contamination beneath the Former E.W. Bliss Projectiles site is likely emanating from off-site sources. As outlined below and in previous reports submitted to the NYSDEC, the Empire Electric Company site, Con Edison Oil Storage Yard, New York City Department of Sanitation Brooklyn

West 7 site, Kings County Manufactured Gas Plant, and the former Bush Terminal Building, which are located in the immediate area and hydraulically upgradient of the Former E.W. Bliss Projectiles site, all have confirmed soil and groundwater contamination related to on-site sources. Nearly all of the contaminants identified in the groundwater beneath the Former E.W. Bliss Projectiles site are found in the groundwater plumes emanating from these surrounding sites. Groundwater contamination beneath the Former E.W. Bliss Projectiles site is most likely a regional issue. Based on a review of reports pertaining to these surrounding sites, it appears that none of the plumes have been fully delineated, with some responsible parties having yet to investigate groundwater quality in the area of the Former E.W. Bliss Projectiles site, which is located downgradient of their properties. Therefore, the responsibility to delineate the groundwater contamination should fall to the responsible parties of these upgradient sites.

The following is a summary of the surrounding known contaminated sites that are believed to be the source(s) of the groundwater contamination beneath the Former E.W. Bliss Projectiles site.

Empire Electric Company: A groundwater plume emanating from this site contains PCE, TCE, and cis-1,2-dichloroethene, all of which were identified in groundwater samples collected at the Former E.W. Bliss Projectiles site.

Con Edison Oil Storage Yard (aka, Astoria Generating Company): Free-phase product (i.e., LNAPL) has been identified at this facility and within the groundwater table. It has reportedly migrated with the prevailing groundwater flow direction, which is predominantly to the west toward New York Bay and the Former E.W. Bliss Projectiles site. Data collected from two off-site downgradient wells, appear to show that the plume has not reached the bay. An investigation has not yet been performed to determine if the plume is present beneath 53rd Street, which is immediately adjacent to the Former E.W. Bliss Projectiles site and in the area where free-phase product was identified by AEI and Langan. The source of the LNAPL on the Con Edison Oil Storage Yard was identified as a No. 2 fuel oil above ground storage tank. In addition to the LNAPL, Arcadis noted TCE, PCE, and cis-1,2-dichloroethene groundwater contamination at the Con Edison site. These compounds were identified in groundwater samples collected by Langan at the Former E.W. Bliss Projectiles site. Arcadis reported these exceedances in on-site wells located upgradient of the free-phase product. This led Arcadis to conclude the source of this VOC contamination was off-site and upgradient, which would put it to the west of 1st Avenue.

New York City Department of Sanitation Brooklyn West 7: A free-phase groundwater plume consisting of a mixture of No. 2 fuel oil, motor oil, and lubricating oil has been identified on this site. Soil and groundwater samples collected after the closure of several USTs in 1997 indicted VOC and SVOC impacts. A multi-phase extraction system was constructed in April 2000 to address the free product, contaminated groundwater, and contaminated soil.

Kings County Manufactured Gas Plant: This site is listed as a State Hazardous Waste Site. Reportedly, numerous spills occurred on the site, one of which resulted in the installation of recovery wells for the collection of LNAPL.

Former Bush Terminal Building: This site is listed as a SHWS and is impacted by VOCs, SVOCs, metals, a pesticide, and PCBs.

The presence of the Empire Electric Company site, Con Edison Oil Storage Yard, New York City Department of Sanitation Brooklyn West 7 site, Kings County Manufactured Gas Plant, and the former Bush Terminal Building in the immediate areas are potentially off-site sources.

3. Section 5 – the Quality assurance project plan (QAPP) section was reviewed by DER chemist and below is a list of comments on the QAPP:

    a. An analytical methods table as defined in DER-10 should be included in the QAPP:
        i. matrix type;
        ii. number or frequency of samples to be collected per matrix;
        iii. number of field and trip blanks per matrix;
        iv. analytical parameters to be measured per matrix;
        v. analytical methods to be used per matrix with minimum reporting requirements;
        vi. number and type of matrix spike and matrix spike duplicate samples to be collected;
        vii. number and type of duplicate samples to be collected;
        viii. sample preservation to be used per analytical method and sample matrix;
        ix. sample container volume and type to be used per analytical method and sample matrix; and,

x. sample holding time to be used per analytical method and sample matrix

The above comments were incorporated into the Sample Summary Table (Table 1) accompanies this response letter.

b. DER is now recommending the following list of PFCs:

- Perfluoroalkyl Sulfonates
- Perfluoroalkyl Carboxylates
- Fluorinated Telomer Sulfonates
- Perfluorooctanesulf Onamides
- Perfluorooctanesulfonamidoacetic Acids

During the 9 November 2017 meeting with the NYSDEC, it was agreed that PFCs would not be part of the investigation since there was no evidence these compounds were ever used on the subject property.

c. Precautions for PFC sampling should be taken, such as:

i. acceptable materials for sampling include: stainless steel, high density polyethylene (HDPE), PVC, silicone, acetate and polypropylene

ii. All sampling equipment components and sample containers should not come in contact with aluminum foil, low density polyethylene (LDPE), glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

iii. Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFC materials must be avoided. All clothing worn by sampling personnel must have been laundered multiple times.

As stated above, PFCs are as not part of the investigation.

3.5 9 November 2017 NYSDEC Meeting

During the meeting between the NYSDEC case team and representatives of Clem Properties it was agreed that PFCs and 1,4-dioxane would not be part of the investigation since there was no evidence these compounds were ever used on the subject property. Also, it was agreed that a groundwater investigation would be conducted to determine the extent of the LNAPL. Figure 2 illustrates the locations of the proposed permanent groundwater monitoring wells.

4.0 SITE CHARACTERIZATION WORK PLAN

All remedial work performed under this plan will be in full compliance with governmental requirements, including site and worker safety requirements mandated by Federal OSHA, as well as Langan's corporate Health and Safety policy and a site specific HASP (Appendix A). This SCWP outlines the proposed investigation designed to address the NYSDEC's comments regarding further evaluations of the on-site soils and groundwater. Specifically, the work plan addresses the following NYDECS comments.

1. Data from previous investigations at the site identified petroleum contamination within the property boundary; however, the extent of the petroleum has not yet been delineated. Additional investigation will need to delineate the on-site petroleum. Note that boring logs from Langan's 2013 and AEI's 2012 investigation reported petroleum at around 15-20 feet below grade in LB-5, LB-6, LN-7, AEI-B1, and AEI-B2, and the soil vapor investigation shows elevated petroleum constituents. Specifically, elevated sub-slab soil vapor concentration of xylene (up to 146,000 ug/m3) and ethylbenzene (up to 16,000 ug/m3) were detected in one of the sub-slab soil sampling location within the building.

2. Elevated sub-slab soil vapor concentration for PCE and TCE were detected on-site; however, there have been no shallow soil samples collected within the site to assess if there is an onsite source of these contaminants.

3. Based on the elevated chlorinated volatile organic compounds (CVOCs) detected in soil vapor samples VP-5, VP-4 and VP-2, please include at least one additional soil boring in the vicinity of VP-4 and VP-2 to help delineate any potential CVOC or non-aqueous phase liquid source(s).

4. A groundwater investigation will be performed to delineate the on-site extent of the LNAPL.

4.1 Soil Investigation

In order to further evaluate the on-site soil contamination, Langan will advance up to 12 soil boreholes within the warehouse (Figure 2). Samples collected from these boreholes will be used to evaluate the shallow soils for volatile organic compounds and to delineate the extent of the free product located beneath the southwestern side of the building. The borings will be advanced to no greater than 20 feet below existing grade. Soil cuttings will be screened for VOCs with a photoionization detector (PID) and evaluated for visual and olfactory indications of environmental impacts. Soil descriptions will be recorded in a field log. Soil samples will be collected from each boring as outlined in the table below and on the accompanying Table 1. For the groundwater investigation, three permanent monitoring wells will be installed (Figure 2). As shown on Table 1, groundwater samples will be collected for VOCs and SVOCs. The samples will be collected using the EPA's low flow purging and sampling procedures. Table 1 outlines the quality assurance/quality control (QA/QC) samples that will be collected during the soil and groundwater investigations.

Site Characterization Analytical Program

Soil Boring	Approximate Sample Depth (feet below existing grade)	Analytical Parameters	Notes
SB-1	Shallow, based on field observations	VOCs	During previous investigations, free product was identified at the top of the water table (i.e., about 15 feet below grade).
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-2	Shallow, based on field observations	VOCs	Free product at the top of the water table (i.e., about 15 feet below grade) has been delineated in this area.
SB-3	Shallow, based on field observations	VOCs	During previous investigations, free product was identified at the top of the water table (i.e., about 15 feet below grade).
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-4	Shallow, based on field observations	VOCs	During previous investigations, free product was identified at the top of the water table (i.e., about 15 feet below grade).
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	

Soil Boring	Approximate Sample Depth (feet below existing grade)	Analytical Parameters	Notes
SB-5	Shallow, based on field observations	VOCs	During previous investigations, free product was identified at the top of the water table (i.e., about 15 feet below grade).
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-6	Shallow, based on field observations	VOCs	During previous investigations, free product was identified at the top of the water table (i.e., about 15 feet below grade).
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-7	Shallow, based on field observations	VOCs	To be performed only if free product or high PID readings are identified in SB-3
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-8	Shallow, based on field observations	VOCs	To be performed only if free product or high PID readings are identified in SB-4
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-9	Shallow, based on field observations	VOCs	To be performed only if free product or high PID readings are identified in SB-4
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-10	Shallow, based on field observations	VOCs	To be performed only if free product or high PID readings are identified in SB-5 or SB-6
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-11	Shallow, based on field observations	VOCs	To be performed only if free product or high PID readings are identified in SB-1
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	
SB-12	Shallow, based on field observations	VOCs	NYSDEC requested boring to elevate CVOCs detected in samples VP-5, VP-4 and VP-2. Also, to help delineate any potential CVOC or non-aqueous phase liquid source(s).
	15 – 15.5 (i.e., top of water table)	VOCs and TPH	

Notes:

VOC= Target Compound List of Volatile Organic Compounds + 15 additional compounds via EPA Method 8260

TPH=Total Petroleum Hydrocarbons

Shallow sample to be collected between one and ten feet below grade (i.e., below concrete slab and above water table).

4.2 Groundwater Investigation

A licensed well driller will be contracted to install three permanent groundwater monitoring wells within the warehouse (Figure 2). The wells will be used to determine the on-site extent of the LNAPL observed at the top of the water table and reported beneath adjacent sites and to evaluate CVOCs. The groundwater investigation will be performed in accordance with the DER-10 and the EPA's 19 September 2017 *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*. Samples will be collected for VOCs and SVOCs, along with the required QA/QC samples (Table 1).

4.3 Investigative-Derived Wastes

In accordance with the DER-10, drill cuttings will be managed so as not to contaminate the subject property. Any drill cuttings not containing non-aqueous phase liquid or free product will be returned to the boreholes within the same general strata from which it was removed. Excess drill cuttings, cuttings containing free product, and purge water will be containerized in 55-gallon steel drums and stored on-site until proper disposal can be arranged.

4.4 Community Air Monitoring Plan

In accordance with the DER-10, a Community Air Monitoring Plan (Appendix B) will be implemented at the subject property during the drilling of boreholes and installation of monitoring wells.

5.0 QUALITY ASSURANCE PROJECT PLAN

This section discusses the quality assurance procedures that will be followed during sample collection and analysis. Soil samples are being collected within the unsaturated soils beneath the subject property to delineate the extent of free product identified at the top of the water table and to evaluate the shallow soils for the presence of a

possible source for the VOCs detected within the sub-slab soil gas. Groundwater samples are being collected to delineate the extent of the LNAPL.

5.1 Field Activities

As illustrated on Figure 2, up to 12 soil boreholes will be advanced at the subject property. The performance of several of these borings and the collection of samples is contingent on the field observations and PID reading obtained from initial borings. The rationale for each borehole is summarized on Table 1. Also, three permanent groundwater monitoring wells will be installed and samples to delineate the on-site extent of LNAPL.

Soil Sampling

Samples will be handled by field personnel wearing the proper PPE to eliminate the potential for cross-contamination. The samples will be transferred into laboratory-provided containers and sent to the laboratory as soon as practicable, but no later than 48 hours after sample collection, under standard chain-of-custody procedures. The collection of environmental samples during the investigation will adhere to the appropriate sampling methods, sample preservation requirements, sample holding times, and decontamination procedure for field equipment.

Monitoring Well Installation

A licensed well driller will be contracted to install three permanent groundwater monitoring wells within the warehouse (Figure 2). The two-inch diameter wells will be equipped with ten feet of screen that extends two feet above the top of the water table. The wells will be surveyed by a licensed surveyor.

Monitoring Well Sampling

The groundwater investigation will be performed in accordance with the DER-10 and the EPA's 19 September 2017 *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*. Samples will be collected for VOCs and SVOCs, along with the required QA/QC samples (Table 1). The collection of environmental samples during the investigation will adhere to the appropriate sampling methods, sample

preservation requirements, sample holding times, and decontamination procedure for field equipment.

Due to the likely presence of LNAPL, a peristaltic pump connected to Teflon® or PTFE-lined polyethylene tubing will be used to collect the samples instead of a bladder pump. As specified in the EPA's *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*, a peristaltic pump can be used to collect VOC samples. The inside diameter of the rotor head tubing will match the inside diameter of the tubing installed in the monitoring well. Again, due to the likely presence of LNAPL, the pump intake depth will be within the mid-point of wetted well screen. An oil-water interface probe will be used to check for the presence and thickness of LNAPL before purging begins and to monitor depth to groundwater during purging. A multi-parameter instrument capable of measuring pH, oxidation/reduction potential (ORP), dissolved oxygen (DO), specific conductance, temperature, and coupled with a flow-through-cell will be used to measure indicator field parameters. Turbidity will be measured using a separate instrument before groundwater enters the flow-through-cell. The instrument identification (i.e., manufacturer, and model number), will be recorded.

The indicator field parameters will be monitored to determine when groundwater conditions have stabilized and samples can be collected. Stabilization will be determined by the following:

- Turbidity: 10% for values greater than 5 NTU or if three values are less than 5 NTU
- DO: 10% for values greater than 0.5 mg/L or if three values are less than 0.5 mg/L
- Specific Conductance: 3%
- Temperature: 3%
- pH: ± 0.1 unit
- ORP: ±10 millivolts

Samples will be handled by field personnel wearing the proper PPE to eliminate the potential for cross-contamination. The samples will be transferred into laboratory-provided containers and sent to the laboratory as soon as practicable,

but no later than 48 hours after sample collection, under standard chain-of-custody procedures.

Equipment Calibration

The PID used during the investigation will be calibrated before use and checked in the field by with isobutylene at the beginning of the day to 100 parts per million (ppm). If a reading is suspect, the PID's response will be rechecked, and if necessary, it will be re-calibrated.

Prior to groundwater sampling, the equipment and instruments will be checked to ensure they are working properly. The groundwater quality meters will be calibrated using the EPA's Calibration of Field Instruments (temperature, pH, dissolved oxygen, conductivity/specific conductance, oxidation/reduction [ORP], and turbidity), March 23, 2017, or latest version or from one of the methods listed in 40CFR136, 40CFR141 and SW-846.

Equipment Decontamination

Re-usable equipment employed during the investigation will undergo decontamination procedures to reduce the potential for cross-contamination. Between each borehole, the sampling equipment will be rinsed with an Alconox soap and deionized water solution, wiped clean with paper towels, and then rinsed with deionized water.

5.2 QA/QC Procedures

The following QA/QC procedures will be implemented in order to ensure the validity of the data.

QA/QC Samples

The purpose of the QA/QC samples is to provide control over the collection of environmental data and subsequent validation, review, and interpretation of the analytical results. The QA/QC samples used during the soil and groundwater investigations will include a field blank, trip blank, duplicate samples, and matrix/matrix-spike duplicate (MS/MSD) samples (Table 1).

Field blanks are used as a mechanism of control on sample equipment handling, preparation, storage, decontamination, and shipment. A field blank consists of clean, laboratory-provided bottles that travel and are stored with the environmental samples for the duration of the trip from and back to the laboratory. In the field, laboratory-provided deionized water is dispensed over the dedicated and decontaminated sampling equipment and collected in bottles.

Trip blanks consist of analyte-free water and accompany the sample bottles on their entire journey from the laboratory, out to the site, and back to the laboratory. It is used as a check for cross contamination of samples during their storage and transport to the laboratory.

The collection of duplicate samples enables the evaluation of the laboratory's and field sampling team's performance by comparing the analytical results of two samples from the same location. Duplicate samples will be collected at a rate of one for every twenty environmental samples.

The collection of MS/MSD samples enables the evaluation of the laboratory's performance as it pertains to the specific matrix and analytical method. MS/MSD samples will be collected at a rate of one for every twenty environmental samples.

5.3 Laboratory Analysis

The samples will be transported under standard chain-of-custody protocol to a New York State Department of Health Environmental Laboratory Approval Program (ELAP)-approved laboratory for analysis. Laboratory analyses will be conducted in accordance with EPA SW-846 methods and NYSDEC Analytical Services Protocol (ASP). All data will be submitted in NYSDEC's environmental information management system format for EDDs.

The labs will provide a full category B deliverable. The samples will be analyzed by an environmental laboratory certified by ELAP to use EPA method 537. The analytical results will be subjected to data validation. Laboratory data packages will be reviewed for quality control parameters including, but not limited to,

custody documentation, holding times, reporting limits, surrogate and matrix spike recoveries, duplicate correlation, calibration standard and blank performance, instrument performance, blank contamination, matrix interferences and method compliance.

6.0 REPORTING

After the completion of the investigation activities described in this report, a Remedial Investigation report will be prepared and submitted to the NYSDEC to outline the findings of the investigation activities outlined in this Site Characterization Work Plan. The report will recommend the installation of the sub-slab depressurization system to address the VOC vapors beneath the building.

\\langan.com\data\PAR\data2\100373202\Office Data\Reports\Environmental\NYSDEC Fourth Response\Site Characterization Work Plan-Revised.docx

TABLES

TABLE 1
Sample Summary Table
Clem Properties
Brooklyn, New York
SI Index # R2-20161205-431

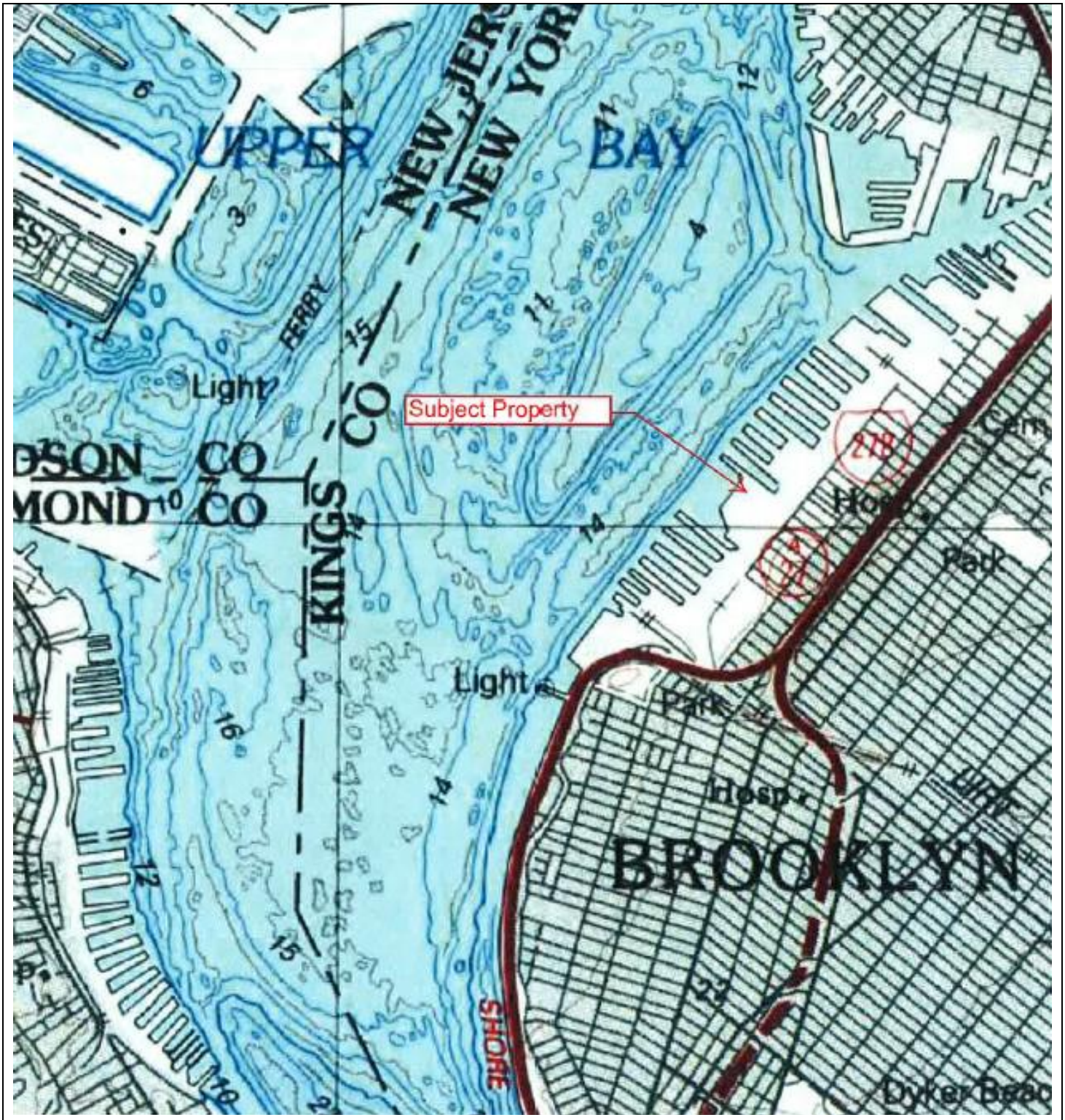
Sample ID	Matrix Type	Number of Samples to be Collected	Sample Rationale	Sample Depth (feet b.g.s.)	Analytical Parameters			Container Volume	Sample Preservation	Holding Time	Analytical Method	Minimum Reporting Requirements
					TCL VOC+10	TCL SVOC +20	Total Petroleum Hydrocarbons					
SB-1	Soil	1	Evaluate Potential On-Site VOC Sources	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1	Delineate Free Product	15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-2	Soil	1	Evaluate Potential On-Site VOC Sources	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
SB-3	Soil	1	Evaluate Potential On-Site VOC Sources	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1	Delineate Free Product	15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-4	Soil	1	Evaluate Potential On-Site VOC Sources	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1	Delineate Free Product	15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-5	Soil	1	Evaluate Potential On-Site VOC Sources	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1	Delineate Free Product	15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-6	Soil	1	Evaluate Potential On-Site VOC Sources	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1	Delineate Free Product	15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-7	Soil	1	To be performed only if free product or high PID readings are identified in SB-3	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1		15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-8	Soil	1	To be performed only if free product or high PID readings are identified in SB-4	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1		15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-9	Soil	1	To be performed only if free product or high PID readings are identified in SB-4	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1		15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-10	Soil	1	To be performed only if free product or high PID readings are identified in SB-5 or SB-6	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1		15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-11	Soil	1	To be performed only if free product or high PID readings are identified in SB-1	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1		15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
SB-12	Soil	1	Evaluate Potential On-Site VOC Sources	Shallow, based on field observations	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
	Soil	1	Delineate Free Product	15 – 15.5 (i.e., top of water table)	X		X	TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
Duplicate Sample	Soil	Dependent	QA/QC - 1 per 20 Samples	Not Applicable	X		X	VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
Matrix/Matrix-Spike Duplicate	Soil	Dependent	QA/QC - 1 per 20 Samples	Not Applicable	X		X	VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								TPH = 100-Gram Glass Jar	TPH = No Preservations	TPH = 14 Days	TPH = EPA 8015B	
Trip Blank	Blank	1	QA/QC - 1 per Event	Not Applicable	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
Field Blank	Blank	1	QA/QC - 1 per Event	Not Applicable	X			VOCs = Three Five-Gram En Cores	VOCs = En Core	VOCs = 48 Hours to Lab Prep/14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels

TABLE 1
Sample Summary Table
Clem Properties
Brooklyn, New York
SI Index # R2-20161205-431

Sample ID	Matrix Type	Number of Samples to be Collected	Sample Rationale	Sample Depth (feet b.g.s.)	Analytical Parameters			Container Volume	Sample Preservation	Holding Time	Analytical Method	Minimum Reporting Requirements
					TCL VOC+10	TCL SVOC +20	Total Petroleum Hydrocarbons					
MW-1	Groundwater	1	Delineate Free Product	To Be Determined	X	X		VOCs = Three 40-mL glass vials	VOCs = HCL	VOCs = 14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								SVOCs = Two 1-Liter glass jars	SVOCs = None	SVOCs = 7 Days	SVOCs = EPA 8270C	
MW-2	Groundwater	1	Delineate Free Product	To Be Determined	X	X		VOCs = Three 40-mL glass vials	VOCs = HCL	VOCs = 14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								SVOCs = Two 1-Liter glass jars	SVOCs = None	SVOCs = 7 Days	SVOCs = EPA 8270C	
MW-3	Groundwater	1	Delineate Free Product	To Be Determined	X	X		VOCs = Three 40-mL glass vials	VOCs = HCL	VOCs = 14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								SVOCs = Two 1-Liter glass jars	SVOCs = None	SVOCs = 7 Days	SVOCs = EPA 8270C	
Duplicate Sample	Groundwater	1	QA/QC - 1 per 20 Samples	To Be Determined	X	X		VOCs = Three 40-mL glass vials	VOCs = HCL	VOCs = 14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								SVOCs = Two 1-Liter glass jars	SVOCs = None	SVOCs = 7 Days	SVOCs = EPA 8270C	
Matrix/Matrix-Spike Duplicate	Groundwater	1	QA/QC - 1 per 20 Samples	To Be Determined	X	X		VOCs = Three 40-mL glass vials	VOCs = HCL	VOCs = 14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								SVOCs = Two 1-Liter glass jars	SVOCs = None	SVOCs = 7 Days	SVOCs = EPA 8270C	
Trip Blank	Blank	1	QA/QC - 1 per Event	Not Applicable	X			VOCs = Three 40-mL glass vials	VOCs = HCL	VOCs = 14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
Field Blank	Blank	1	QA/QC - 1 per Event	Not Applicable	X	X		VOCs = Three 40-mL glass vials	VOCs = HCL	VOCs = 14 Days	VOCs = EPA 8260B	Lab MDLs below the Applicable Cleanup Levels
								SVOCs = Two 1-Liter glass jars	SVOCs = None	SVOCs = 7 Days	SVOCs = EPA 8270C	

NOTES:
Groundwater samples to be collected using the EPA's Low Stress Purging and Sampling Procedures

FIGURES



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Langan International LLC
Collectively known as Langan

Site Location Map
29 53rd Street
Brooklyn, New York

Project	SCALE:	DATE	
100373201	**NTS**	**1995**	**Figure 1**

LEGEND

- SB-1 — Proposed Soil Borehole
- MW-1 — Proposed Groundwater Monitoring Well
- Property Boundary
- Inferred Groundwater Flow

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Langan CT, Inc.
Langan International LLC
Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
CLEM PROPERTIES
29 53rd STREET
BLOCK No. 803, LOT No. 41
KINGS COUNTY **BROOKLYN NEW YORK**

Drawing Title
PROPOSED SAMPLING LOCATIONS

Project No.	100373202
Date	9 May 2017
Scale	1"=20'
Drawn By	X
Checked By	X
Submission Date	X
Drawing No.	2
Sheet	### of ###

Filename: \\langan.com\data\PAR\data2\100373201\Cadd Data - 100373201\SheetFiles\FG01-100373202-N8101-0101.dwg Date: 1/10/2018 Time: 11:47 User: kmcpartland Style Table: Langan.stb Layout: Figure 2

FIGURE 3
PROJECT SCHEDULE
CLEM PROPERTIES
FORMER E.W. BLISS PROJECTILES
29 53RD STREET
BROOKLYN, NEW YORK

Year			2018						
Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July
Task									
NYSDEC									
1) NYSDEC Approves Site Characterization Work Plan			■						
2) NYSDEC Approves Site Characterization Report						■			
3) NYSDEC Approves Remedial Design/Remedial Action Work Plan						■			
SOIL									
1) Langan Implements NYSDEC Requested Soil Delineation			■						
2) Langan Implements NYSDEC Requested Groundwater Investigation				■					
3) Submission of Site Characterization Report					■				
VAPOR									
1) Submission of Remedial Design/Remedial Action Work Plan					■				
2) Diagnostic Testing and Designing of Sub Slab Depressorization System						■	■		
3) Installation of Sub Slab Depressorization System							■	■	
4) Submission of Site Management Plan									■

APPENDIX A

Health and Safety Plan

HEALTH AND SAFETY PLAN FOR ENVIRONMENTAL FIELD ACTIVITIES

CLEM PROPERTIES, INC.
(aka, FORMER E.W. BLISS PROJECTILES)
29 53RD Street
Brooklyn, New York 11232
Settlement Index # R2-20161205-431

Prepared By:

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
300 Kimball Drive
Parsippany, New Jersey 07054
NJ Certificate of Authorization No.: 24GA27996400

2 August 2017
100373202

LANGAN

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By signing below, Langan personnel participating in the field investigations on site indicate they have read, understand and will comply with this Health and Safety Plan.

Printed Name	Signature	Date

1.0 GENERAL

Langan Engineering & Environmental Services (Langan) has prepared this Health and Safety Plan (HASP) for the Clem Properties, Inc. facility ("site") located at located at 29 53rd Street in Brooklyn, New York (Figure 1). The site is designated Tax Block 803, Lot 41. This HASP details the procedures related to the protection of on-site Langan personnel during the implementation of field work. **Any subcontractors conducting work at the site will be required to provide a separate site-specific HASP and/or company health and safety protocol document prior to initiating work. The subcontractor's HASP shall be submitted to Langan for review and comment before start of work. However, Langan does not have the authority to approve or disapprove of a subcontractor's HASP.**

On-site activities may include but are not limited to:

Field Activities (Non-Intrusive)
- Visual assessment / Site Walk (Non-intrusive); and,
- Collection of indoor air and sub-slab soil gas data.

Field Investigations (Intrusive)
- Drilling of soil borings;
- Collection of soil samples;
- Decontamination of drilling and sampling equipment; and,
- Moving containerized drums of investigation derived wastes.

The objective of this HASP is to ensure that working conditions at the site are protective of human health and safety and the environment. These activities are not believed to present a high hazard of contaminant exposure to on-site workers. Nonetheless, the personnel involved in the project must be properly trained to perform site activities and to respond to emergency conditions in a manner that is protective of human health and safety and the environment.

The requirements specified in this HASP may be changed as work progresses. Changes to the HASP will only be made with prior approval of the Health and Safety Supervisor and the field manager.

The procedures in this HASP have been developed based on materials that are expected to be encountered and/or handled during site activities. Additionally, available site and environmental information has been reviewed to properly identify known on-site hazards.

The anticipated work will be performed in accordance with applicable federal, state and local requirements, as well as Langan's standard protocol. The following technical and regulatory documents have been used in the development of this HASP: the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) requirements of *29 CFR 1910 and 1926*, New York Department of Environmental Conservation's (NYSDEC) *Technical Guidance for Site Investigation and Remediation (DER-10)*, the United States Environmental Protection Agency (U.S. EPA) 40 CFR, NIOSH *Pocket Guide to Chemical Hazards*.

Langan employees who will perform work in areas where the potential to come into physical contact with contaminated vapors, soil, and groundwater will be required to have been properly trained in accordance with the requirements of 29 CFR 1910.120 including proof of current annual refresher training.

2.0 HEALTH AND SAFETY PERSONNEL DESIGNATIONS

This section presents information related to the assignment of responsibility for health and safety matters. Operations that involve any exposure to site-specific contaminated materials are subject to this HASP.

Langan personnel will be responsible for continuous adherence to the safety procedures outlined in this document during the performance of the work. In no case may work be performed in a manner that conflicts with the intent of, or the inherent safety and environmental cautions expressed in these procedures. After due warnings, personnel or subcontractors violating safety procedures will be dismissed from the site.

Persons, including subcontractors, working at the site will be properly trained in health and safety regulations associated with handling hazardous materials. As stated above, subcontractors working at the site will be required to provide a separate site-specific HASP and/or company health and safety protocol document prior to initiating work.

Persons must be aware of the fact that there is a HASP developed for the project, and also be familiar with its contents. The HASP will be made available to interested persons. A copy of the HASP will be retained on-site during the project activities.

Avoiding adverse health effects and injuries to the site workers is dependent on the contribution of project participants. The person most responsible for an individual's health and safety is the worker (himself/herself). The following is a summary of the health and safety positions for this project. A complete listing of designated Health and Safety personnel for the site is provided in Table 1.

2.1 Field Manager

The field manager is responsible for field implementation of the HASP, enforcement of the safety rules and regulations, and consultation with the health and safety officer on regulatory or health and safety issues.

2.2 Health and Safety Officer

The Health and Safety Officer is responsible for specifying the health and safety requirements for the job and coordinating its implementation with the field manager. The Health and Safety Officer is to review and approve work plans to assure safe work regulations, policies and procedures. The Health and Safety Officer will approve any changes to the HASP.

3.0 SITE LOCATION AND BACKGROUND

3.1 Location

The Clem Properties facility is located at 29 53rd Street in Brooklyn, New York. It is located on the northern side of 53rd Street (aka Whale Square), about 600 feet west of the intersection of 1st Avenue and 53rd Street (Figure 1). An asphalt-paved parking lot leased from the City of New York by the current site owner is located immediately north of the building. The site is located in an area that is designated as an M3 district, which is an area with heavy industries. Current surrounding properties consist of a Consolidated Edison oil storage yard, which includes above

ground oil storage tanks; Consolidated Edison Gas Turbine Generator Barges; a New York City Department of Transportation lot used for automobile storage; and, a Brooklyn Sanitation Department facility, which includes several storage tanks.

3.2 Background

The site consists of about 0.69 acres and is entirely occupied by a one-story warehouse style building. The building's floor consists of an approximately one-foot thick concrete slab. Clem Properties, Inc. began its occupancy of the warehouse in 1977. Since that time, the building has been used as a storage and distribution warehouse for package-dry snack foods. Clem Properties will continue these operations with no plans for redevelopment or change in use.

Prior to 1977, the site was utilized mainly for industrial purposes from sometime before 1906. Previous tenants include Southern Power Station BHRR; EW Bliss Projectile Department; EW Bliss Company Ordnance Works; Empire Electric Company; B.M.T. Heating Plant; Kings County Lighting Company, which included several above ground oil storage tanks; Morse Dry Docks/Bethlehem Steel Company: Ship Building Division; Universal Terminal and Stevedoring Corporation; Bush Terminal Building; and, Kings County Manufactured Gas Plant, which included above ground fuel oil tanks with over nine million gallons of capacity.

Sanborn Fire Insurance Maps dated between 1906 and 1942 depict two oil storage tanks adjacent to the southwestern exterior wall of the warehouse. These tanks are not believed to be associated with the site or its former operations. The Sanborn Maps did not note whether the tanks were located above or below ground. However, Sanborn Fire Insurance maps usually depict subsurface features utilizing dotted lines, but these two storage tanks were drawn with solid lines indicating above ground storage tanks. In addition, a subsurface investigation conducted by Eder Associates in 1997 in the area of the former tanks noted support structures (i.e., cement and wood pilings) within the top two feet of the subsurface. These supporting features may have been associated with above ground storage tanks.

3.3 Prior Environmental Investigation

The results of prior investigation conducted both on and off-site revealed both soil and groundwater contamination. The following is a discussion of the identified contamination. Table 2 summarizes the contaminants of concern along with corresponding exposure limits.

3.3.1 On-Site Contamination

The soils beneath the site contain the volatile organic compounds (VOCs) cis-1,2-dichloroethene, vinyl chloride, trichloroethene (TCE), and tetrachloroethene (PCE) and the semi-volatile organic compounds (SVOCs) benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, and chrysene at concentrations, which are relatively low, but above the NYSDEC Soil Cleanup Objective (SCO) for unrestricted use. These contaminants are commonly associated with historic urban fill. The groundwater contains VOCs (i.e., TCE, PCE, vinyl chloride, and cis-1,2-dichloroethene) at concentrations above the NYDEC Water Quality Standards (WQS). Neither the vertical or horizontal extent of the soil or groundwater contamination has been determined since nearly all of these compounds have been identified in the groundwater at upgradient sites.

In addition, "free product" was observed in several of the borings near the top of the groundwater table (i.e., (Light Non-Aqueous Phase Liquid (LNAPL)). Laboratory analysis revealed the free product's "characteristics are consistent with highly weathered blended petroleum products such as No. 4, No. 5, or No. 6 fuel oils, Bunker C fuels, or by the Pacific Specification of PS-400. The estimated age of release for this material was calculated to be more than 20 years ago."

A 23 September 2016 investigation by Langan identified several VOCs, most notably the solvents TCE and PCE, in the soil gas beneath the warehouse's concrete floor slab.

3.3.2 Off-Site Contamination

The site and the surrounding area have been utilized for industrial purposes at least as far back as 1906. A 1997 Phase II soil investigation conducted by Eder in the parking lot to the immediate north of the site and within 53rd Street, which is located to the immediate south, resulted in the identification of SVOCs at concentrations above the SCO in four of the nine borings and total xylenes at a concentration above the SCO in one of the nine borings. Eder stated that "the levels are not high enough to constitute a major environmental concern considering the industrial nature of the subject property and the lack of potable groundwater receptors in the area."

According to investigations by LiRo Engineering, Miller Environmental Group, Arcadis, and EA Engineering, groundwater in the area upgradient of the site, and which may extend beneath the site, is impacted by LNAPL and VOCs. These possible sources include a groundwater plume emanating from the Empire Electric Company that contains PCE, TCE, and cis-1,2-dichloroethene; the New York City Department of Sanitation Brooklyn West 7, which has a free-phase groundwater plume consisting of a mixture of No. 2 fuel oil, motor oil, and lubricating oil, along with VOC and SVOC impacts; a Con Edison Oil Storage Yard, which has LNAPL consisting of No. 2 fuel oil and TCE, PCE, and cis-1,2-dichloroethene groundwater contamination; the Kings County Manufactured Gas Plant, which has recovery wells for LNAPL collection; and, the former Bush Terminal Building, which is impacted by VOCs, SVOCs, metals, a pesticide, and PCBs. The table below summarizes some of the potential off-site sources of the site's contamination.

Potential Off-Site Sources of Contamination

Contaminant Identified on Site	Matrix	Was Contaminant Identified on Surrounding Site Above Standards			
		Narrows Generating Station	Empire Electric Company	Kings County MGP Site	New York City Department of Sanitation Brooklyn West 7
TCE	Ground Water	**Yes**	**Yes**	Not Specified	Not Analyzed
PCE		**Yes**	**Yes**	Not Specified	Not Analyzed
cis-1,2-dichloroethene		**Yes**	**Yes**	Not Specified	Not Analyzed
LNAPL		**Yes**	No	**Yes**	**Yes**

4.0 HAZARD ANALYSIS

An evaluation of potential hazards has been conducted utilizing historic documents and a walk-through of the site to ensure that site activities, personnel protection, and emergency response are consistent with the types of contaminants expected to be encountered during project activities. Specific tasks that are covered by this plan include the following:

1. Visual Assessment / Site Walk (non-intrusive)
2. Operation and decontamination of heavy equipment (i.e., Geoprobe)
3. Drilling of soil borings
4. Sampling of soil boring
5. Moving and staging of investigation derived wastes

The hazard analysis presented in this section considers the specific tasks identified above. If contaminants other than those anticipated during the development of this HASP are encountered, personnel will be made fully aware of their hazardous properties and the appropriate procedures, which will be utilized to prevent worker exposure.

4.1 Chemical Hazards

Based on a review of the operational history and the results of previous environmental investigations, there is on-site contamination most likely resulting from the placement of fill and historic operations. The compounds identified on-site that exceed the NYSDEC Soil Cleanup Objectives are summarized in Table 2. Due to the presence of these compounds, field personnel will monitor the soils with a photoionization detector (PID) during intrusive field work.

In order to be protective of human health, if contaminant levels are detected within the breathing zone above background for an extended period of time work will be stopped and the level of protection for the workers will be reevaluated.

Protection of workers from chemical hazards is effected using both engineering controls and the use of personal protective equipment, as covered in Section 5.0.

4.2 Fires and Explosion Hazards

A site-specific example of a fire and explosion hazard is fuel (gasoline and diesel) used to power heavy equipment, vehicles and tools. If a localized fire occurs, dry chemical fire extinguishers will be used to bring the occurrence under control. If necessary and feasible, a fire blanket, or other inert materials will be placed on the burning area to extinguish the flames and minimize the potential for spreading. If appropriate, local fire fighting authorities will be contacted for assistance.

Emergency – 911

Non-Emergency – 311

If an uncontrolled fire develops, releasing potentially toxic gases, persons in the immediate vicinity will be evacuated.

4.3 Physical Hazards

A number of safety hazards are present at the facility. The following are site-specific examples of safety hazards:

- Slippery surfaces;
- Underground/overhead utilities or obstructions;
- Uneven terrain; and,
- Moving equipment and vehicles.

To the greatest extent possible, site personnel shall minimize creating or leaving such hazards at the site. If a hazard cannot be minimized or eliminated, it should be flagged or otherwise marked in order to provide warning for the workers. This is particularly the case in physical hazards (slippery surfaces, uneven terrain, etc.), which shall be properly marked and/or fenced off as soon as practicably possible. Appropriate signs (e.g., "Danger - Authorized Personnel Only") may be used to clearly mark potentially hazardous areas.

Heat Stress Hazard

Care will be taken to avoid heat stress hazards. Heat stress can occur rapidly, within as little as 15 minutes, and can lead to stroke or death. Heat stress can also result in rashes, cramps, discomfort, and drowsiness, all of which can result in impaired mobility.

The Field Manager and Health and Safety Officer will plan and carefully train or instruct personnel to avoid overexertion. Frequent monitoring will also be conducted. Work rest periods and duration will be adjusted as necessary. The rest periods should be outside of work areas in a cooled area. The following heat-related illnesses, symptoms and medical responses are provided in the event that an incident does occur during Site activities.

A. **HEAT STROKE** occurs when the body's system of temperature regulation fails and body temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. Heat stroke is a medical emergency. The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature (e.g., a rectal temperature of 41°C (105.8°F)). If the body's temperature is too high, death can occur.

If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately. The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted, if possible, and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first aid treatment.

Regardless of the worker's protests, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

B. **HEAT EXHAUSTION**. The signs and symptoms of heat exhaustion are headache, nausea, vertigo, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment. Heat exhaustion should not be dismissed lightly for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended, moreover; the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, which is a medical emergency.

Workers suffering from heat exhaustion should be removed from the hot environment and given fluid replacement. They should also be encouraged to get adequate rest.

C. **HEAT CRAMPS** are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused by both too much and too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (±0.3% NaCl), excess salt can build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water, instead; water must be taken every 15 to 20 minutes in hot environments.

Under extreme conditions, such as working for six to eight hours in heavy protective gear, a loss of sodium may occur. Recent studies have shown that drinking commercially available carbohydrate-electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

D. **HEAT COLLAPSE** ("Fainting"). In heat collapse, the brain does not receive enough oxygen because blood pools in the extremities. As a result, the exposed individual may lose consciousness. This reaction is similar to that of heat exhaustion and does not affect the body's heat balance. However, the onset of heat collapse is rapid and unpredictable. To prevent heat collapse, the worker should gradually become acclimatized to the hot environment.

E. **HEAT RASHES** are the most common problem in hot work environments. Prickly heat is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

F. **HEAT FATIGUE**. A factor that predisposes an individual to heat fatigue is lack of acclimatization. The signs and symptoms of heat fatigue include impaired performance of skilled sensorimotor, mental, or vigilance jobs. There is no treatment for heat fatigue except to remove the heat stress before a more serious heat-related condition develops.

Cold Stress Hazard

People who are exposed to lower temperatures are at risk for injuries ranging from frostbite to serious loss of body heat which could result in brain damage or death. The first symptoms of hypothermia are uncontrollable shivering and the sensation of cold. The heartbeat slows and may become irregular, and the pulse weakens. As the condition worsens, severe shaking or rigid muscles may be evident. The victim may also have slurred speech, memory lapses, and drowsiness. Cool skin, slow, irregular breathing, and exhaustion occur as the body temperature drops even lower. This is a serious condition requiring immediate medical attention.

Frostbite can occur without accompanying hypothermia. Frostbite occurs when the fluids around the body's tissues freeze. The most vulnerable parts of the body are the nose, cheeks, ears, fingers, and toes. Symptoms of frostbite include coldness and tingling in the affected part, followed by numbness; changes in skin color to white or grayish-yellow, initial pain which subsides as the condition worsens, and possibly blisters. Frostbite can cause irreversible tissue damage and requires immediate medical attention.

To prevent cold stress, workers at the site will be required to dress appropriately, take an adequate amount of breaks, and attempts will be made to remain dry.

Noise Hazards

Noise hazards are expected to exist for workers involved in implementing this plan. Site-specific noise hazards can result in the startling of workers, physical damage and pain to ears (permanent or temporary), and restricted communication in the work area.

Workers shall wear hearing protection. Proper planning and precautionary measures will be taken to assure that communication is not a problem in high-noise areas.

5.0 CONTROLS FOR CHEMICAL HAZARDS

5.1 Engineering Controls for Chemical Hazards

The Field Manager will be measuring ambient air concentrations with a PID periodically throughout the work shift. If concentrations appear to be rising, the Field Manager may decide to implement changes in work procedures, stop work, or recommend an upgrade of personal protective equipment with the approval of the Health and Safety Officer.

5.2 Personnel Protective Equipment

Employees will be provided with and required to wear protective equipment. The Health and Safety Officer will make decisions regarding the upgrading or downgrading of protective clothing. Equipment for personnel protection will be referenced to the EPA levels of protection as specified in the *Interim Standard Operating Safety Guides.* Workers shall be required to have proper training in the use of equipment, and shall be medically approved and be properly fit-tested prior to using this equipment.

Based on site history, the project will begin in Level D. As the project begins, the Field Manager will monitor and report any elevated PID readings. If the levels are below the instrument action levels (Table 3), the level of protection will remain at Level D. Conversely, should the levels increase; the level of protection will be upgraded to Level C. Levels C and D are discussed in the following paragraphs.

Level C protection will include the following protective equipment:

- Full-face, air-purifying respirator (APR) with Organic Vapor-Acid Gases/HEPA cartridges;
- Tyvek suit, hooded;
- Gloves - outer, Nitrile; inner, disposable Nitrile;
- Hard hat;
- Boots, steel toe, and shank; and,
- Ear protection (personnel within the work area).

Note: Air-purifying cartridges shall be replaced at the end of each shift. Only employees who have been issued qualitative fit tests and annual fit tests thereafter shall be allowed to work in atmospheres where respirators are required. If an employee has demonstrated difficulty in breathing during the fitting test or during use, he/she shall have a physical examination to determine whether the employee can wear a respirator while performing the required duty. Provisions of OSHA Standard 29 CFR 1910.134 will be followed. Further guidelines in the proper use of APR's are included in the *NIOSH/OSHA/USCG/EPA document, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*.

Level D protection will include the following protective equipment:

- Gloves - inner, disposable Nitrile;
- Hard hat;
- Safety glasses;
- Boots, steel toe, and shank; and,
- Ear protection (personnel in work area).

6.0 TRAINING REQUIREMENTS

Employees who are assigned to complete intrusive work (i.e., soil and/or groundwater sampling) shall have completed the following training. This training is designed to meet various OSHA requirements, including hazard communication and the training provisions of

the Superfund Amendments and Reauthorization Act (SARA) of 1986 found in 29 CFR 1910.120.

- Basic Safety Training – Consisting of the completion of an OHSA approved 40 hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) course, an eight hour annual HAZWOPER refresher course, and enrollment in an annual medical monitoring program.

- Hazards and Protection - Identification, recognition, and safe work practices with toxic materials. The use and limitations of applicable protective clothing, respirators, and decontamination procedures.

- Tailgate Safety Meetings - A tailgate safety meeting will be conducted at the beginning of each shift or whenever new employees arrive at the job site once the job commences. This meeting discusses the health and safety considerations for the day's activities and outlines protective equipment necessary.

7.0 EMERGENCY RESPONSE AND ACCIDENT NOTIFICATION

Emergency response procedures have been developed for emergency situations that may occur at the site. These situations include medical emergency, injury of on-site personnel, fire, and chemical release.

The Field Manager, in consultation with the Health and Safety Officer, will be the emergency coordinator for the site. He/she will be responsible for:

- Assuring emergency equipment is on site and in working condition;
- Establishing an emergency plan for the emergency situation that may occur on the site; and,
- Initiating the emergency plan when an emergency situation arises.

Emergency situations will be minimized by the implementation of this HASP and constant vigil by site management and workers of situations that could develop into an emergency situation. If an emergency situation develops, the initial response will be to handle it in a calm, deliberate manner so that it is controlled and the health and safety of the site workers

or surrounding community are not jeopardized. In the event that on-site personnel cannot control an emergency condition, outside assistance will be called. Emergency phone numbers are provided in the Table 1. Directions to NYU Langone Hospital are included in Figure 3. If an injury or illness is the result of a site-specific exposure, this information will be immediately provided to the treating physician and the Health and Safety Officer.

The Health and Safety Officer will inspect the first-aid kit, eyewash, and fire extinguishers that will be available on site.

8.0 SITE MONITORING

Personnel and work area monitoring will be conducted in order to assure that proper engineering controls, work practices, and personnel protection are being utilized. This will help to maintain airborne concentrations and exposures at or below acceptable levels.

During implementation of this project, soils and background levels will be monitored periodically with a PID. Based on the monitoring data, the Health and Safety Officer may elect to upgrade or downgrade the levels of protection, modify the HASP, or cease operations to assure worker or public safety. See Table 2 for action levels.

9.0 EQUIPMENT DECONTAMINATION

Equipment that comes in contact with potentially contaminated soil and groundwater will be decontaminated. This equipment will be visually inspected to determine if any materials have become adhered. Equipment that has been deemed contaminated will undergo decontamination activities prior to leaving the site.

Langan will provide, as needed, an on-site decontamination area that will allow capture of waters from the decontamination activities. Contaminated equipment will be cleaned until visible signs of contaminated material have been removed. Any material used during the decontamination process will be properly packaged and disposed.

END OF HASP

Table 1
Health and Safety Plan
List of Health and Safety Personnel
Clem Properties, Inc.
Former E.W. Bliss Projectiles
29 53rd St., Brooklyn, New York
Order on Consent Index No. R2-20161205-431

Health and Safety Position	Personnel	Description of Health and Safety Duties	Work Phone #	Cell Phone #
Health and Safety Officer	Robert Y. Koto	Specify the health and safety requirements for the job and coordinate its implementation with the field manager. Review and approve all work plans to assure safe work regulations, policies, and procedures. Approve any changes to the HASP.	973-560-4566	201-805-6294
Health and Safety Officer	Keith McPartland	Specify the health and safety requirements for the job and coordinate its implementation with the field manager. Review and approve all work plans to assure safe work regulations, policies, and procedures. Approve any changes to the HASP.	973-560-4659	973-432-3385
Field Manager	Justine Ameye	Responsible for field implementation of the HASP, enforcement of the safety rules and regulations, and consultation with the health and safety officer on regulatory or health and safety issues.	973-560-4267	862-881-2274

Emergency Agencies	Phone #
Fire Department	911
Police Department	911
Non-Emergency	311
NYU Langone Hospital	718-630-7000

TABLE 2
TLV's-TWA for Contaminants of Concern
Clem Properties, Inc.
Former E.W. Bliss Projectiles
29 53rd St., Brooklyn, New York
Order on Consent Index No. R2-20161205-431

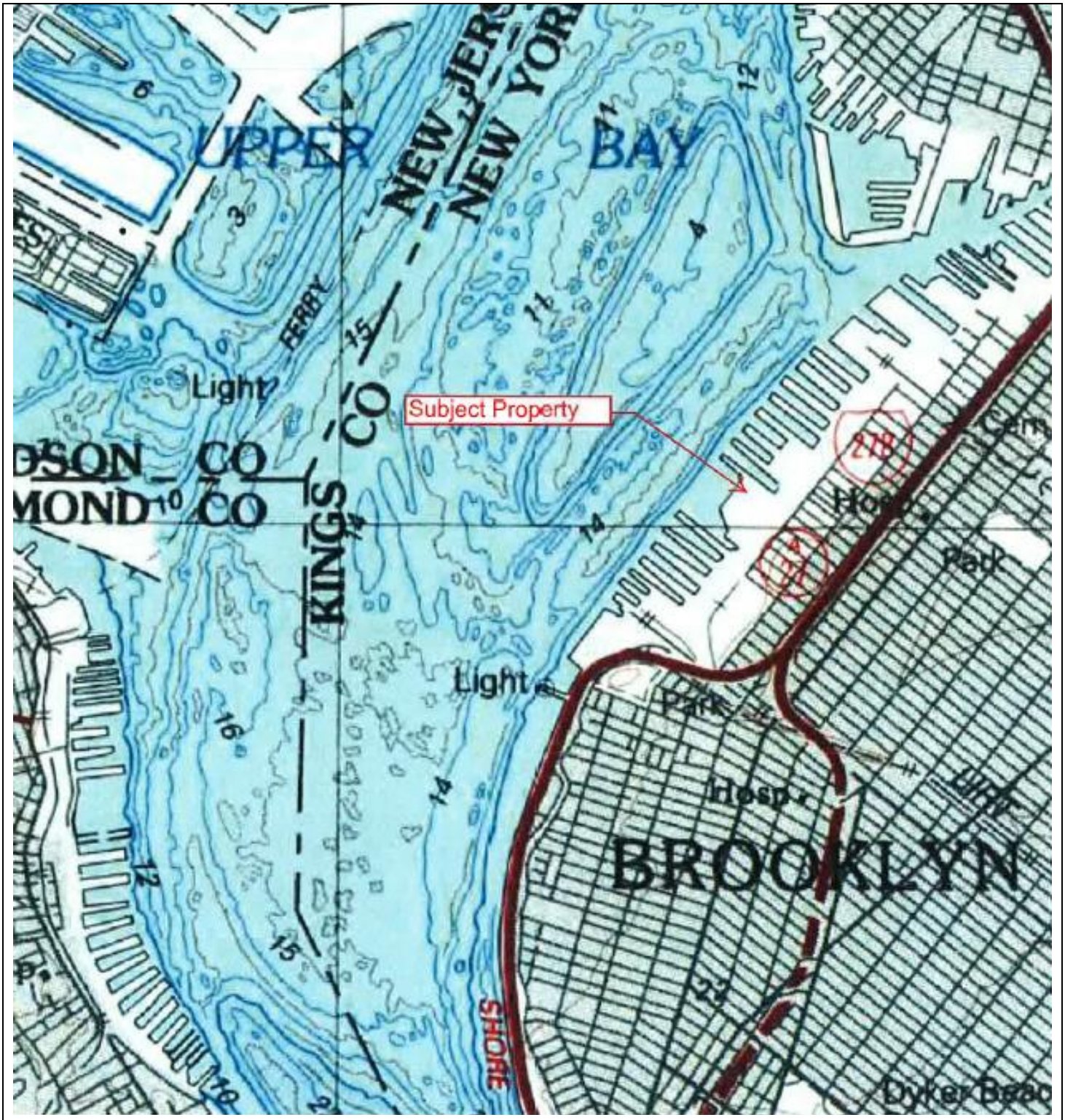
Compound	OSHA : TLV-TWA	NIOSH: TLV-TWA	IDLH
Semi-Volatile Organic Compounds: (includes benzo(a)anthracene, benzo(a)pyrene, benzo(b)flouranthene, indeno(1,2,3-cd)pyrene, and chrysene	0.2 mg/m^3	0.1 mg/m^3	80 mg/m^3
2-Methylnaphthalene	N.D	N.D.	N.D.
cis-1,2-Dichloroethene	790 mg/m3	790 mg/m3	1,000 ppm
Tetrachloroethene	670 mg/m3	lowest feasible	150 ppm
Trichloroethene	535 mg/m3	lowest feasible	1,000 ppm
Vinyl chloride	2.56 mg/m3	lowest feasible	N.D.

Notes: N.D. = Not determined
N.A. = Not applicable
mg/m^3 - milligrams per cubic meter
ppm - parts per million
IDLH - Immediately Dangerous to life and health
eV - electron volts

TABLE 3
INSTRUMENTATION ACTION LEVELS
Clem Properties, Inc.
Former E.W. Bliss Projectiles
29 53rd St., Brooklyn, New York
Order on Consent Index No. R2-20161205-431

Instrument	Action Level	Level of Protection / Action Required
PID*	<= 1 ppm within exclusion zone	Level D
	> 1 ppm and <= 20 ppm (steady state condition)** within AOC zone	Level C
	> 20 ppm (steady state condition) within AOC zone	Stop Work / Suppress Emissions / Evacuate and re-evaluate.
	≥1 ppm sustained for 1 minute at AOC zone boundary.	Stop Work / Backfill source of emissions and re-evaluate.
Total Dust Aerosol Monitor	> 0.150 mg/m^3 above BKD (steady state condition) at perimeter of AOC zone or visible dust.	Stop Work / Implement dust control / Continue dust monitoring as specified in Section 6.0.

BKD = Background concentration
*PID readings are taken at personnel breathing zone height.



LANGAN

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Langan Engineering and Environmental Services, Inc.
Langan International LLC
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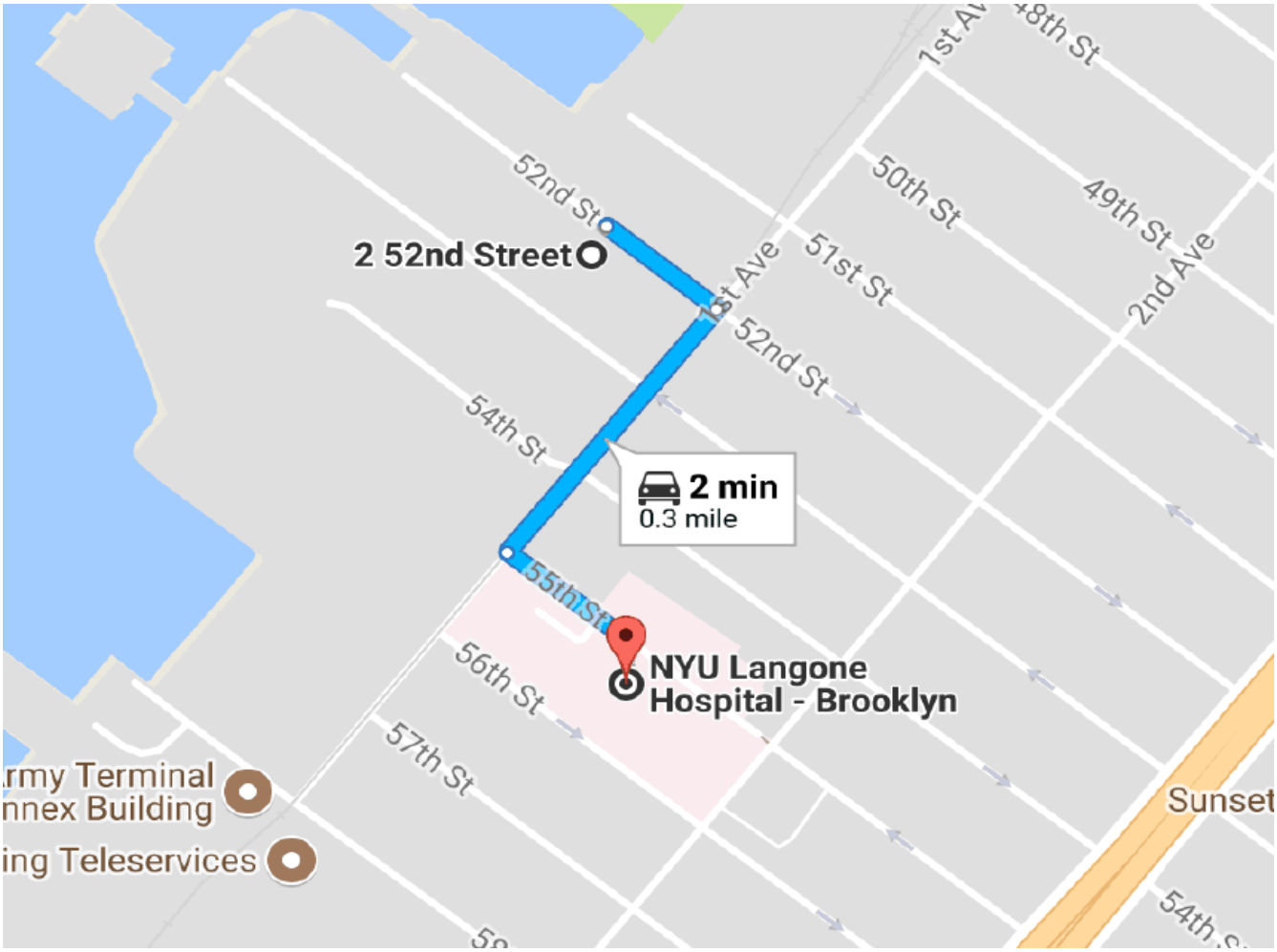
Site Location Map
29 53rd Street
Brooklyn, New York

Project	SCALE:	DATE	
100373201	**NTS**	**1995**	**Figure 1**



Directions to NYU Langone Hospital
150 55th Street Brooklyn, New York

Directions:

		Proceed
1	Exist Clem Properties Facility and turn RIGHT onto 52 Street	0.1 miles
2	Turn RIGHT onto 1st Avenue	0.1 miles
2	Turn LEFT onto 55th Street	350 feet
5	Turn RIGHT into hospital parking lot (150 55th Street)	

Total Estimated Time: **2 minutes** Distance: 0.3 miles

Directions and Route to NYU Langone Hospital
Clem Properties
29 53rd Street
Brooklyn New York

Proj.1000373202	Date 8-2-17	Fig No. 2

APPENDIX B

Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN
CLEM PROPERTIES, INC.
FORMER E.W. BLISS PROJECTILES
29 53RD ST., BROOKLYN, NEW YORK
ORDER ON CONSENT INDEX NO. R2-20161205-431

The soil sampling activities described in the accompanying Site Characterization Work Plan will be completed with a direct-push drilling techniques (i.e., a Geoprobe), which creates very little disturbance to the soils. Therefore, the monitoring of volatile organic compounds (VOCs) will be performed as described below; however, monitoring for particulates (i.e., dust) will not be performed unless a more obtrusive drilling technique is used. In that case, particulates will be monitored as discussed below.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate

levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

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

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.