March 26, 2014

SITE OPERATIONS PLAN

149 Kent Avenue
Site Number C224159

Prepared for

KENT & WYTHE OWNERS LLC
149 Kent Avenue
Williamsburg
Kings County, New York

Prepared by

Roux Associates, Inc. / Remedial Engineering, P.C.
Kent & Wythe Owners LLC
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TABLE OF CONTENTS

TABLE OF CONTENTS

(Continued)

TABLE OF CONTENTS

(Continued)

FIGURES

APPENDICES

PLATE

1.0 INTRODUCTION

This Contractor's Site Operations Plan (SOP) for the implementation of the remedial action construction and portions of the redevelopment construction at 149 Kent Avenue, Brooklyn, New York (Site). A Site location map is provided as Figure 1 has been prepared collaboratively by the following entities:

- Remedial Engineering, P.C. and Roux Associates, Inc. (also referred to as the Remedial Engineer);
- Kent & Wythe Owners LLC;
- Congress Builders LLC; and
- Soil Solutions, Inc.

This SOP provides a description of the governing documents and the proposed work activities to be conducted to meet the requirements outlined in the following documents:

- Remedial Action Work Plan (RAWP) for the Site, dated December 7, 2013
- NYSDEC RAWP approval letter dated December 9, 2013;
- February 11, 2014 "Request for Modification of Listed Hazardous Waste Boundaries" letter from Roux Associates to the New York State Department of Environmental Conservation (NYSDEC) and associated NYSDEC approval letter dated February 19, 2014.

This SOP satisfies the submittal requirements in the RAWP for various contractor plans. This SOP has been reviewed by the Remedial Engineer and is in accordance with the requirements of the RAWP.

The implementation of the remedial action construction and portions of the redevelopment construction described in the RAWP to be performed at the Site represents a coordinated effort by the General Contractor, several contractors, and consultants working together to achieve the goals for the remediation and redevelopment of the Site in a safe and expeditious manner. Once all elements of the remedial action construction and portions of the redevelopment construction described in the RAWP are complete, implementation of the requirements of the SOP are no longer required.

The remainder of the SOP is organized as follows:

- Section 2.0: describes the Site, its history, and the results of previous environmental investigations;
- Section 3.0: provides a summary of the work;
- Section 4.0: describes the governing plans for implementation of the remedial action construction and portions of the redevelopment construction; ;
- Section 5.0: describes record keeping and reporting requirements; and
- Section 6.0: presents the project schedule.

Included with this SOP are the following appendices, as defined and required by the RAWP:

- Appendix A: Health and Safety Plan (HASP) including Community Air Monitoring Plan (CAMP)
- Appendix B: Construction Schedule
- Appendix C: Quality Assurance Project Plan (QAPP)
- Appendix D: Emergency Contact List

2.0 SITE LOCATION, DESCRIPTION, AND HISTORY

This section provides pertinent background information, including a description of the Site and its setting, the known history of the Site, and the results of environmental investigation work conducted at the Site. Additional details can be found in the RAWP.

2.1 Site Location

The Site is located in the Williamsburg section of Brooklyn adjacent to the East River in the Borough of Brooklyn, City, and State of New York, and is identified as Section 3, Block 2333, Lot 1 on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle map (Figure 1) shows the Site location.

2.2 Site Description

The Site includes approximately 40,000 square feet (0.92 acres) bounded by multi-use commercial/residential buildings to the north, North 5th Street to the south, Kent Avenue to the west and Wythe Avenue to the east (Figure 2). A single building constructed of concrete block, exposed steel beams and exposed aluminum sheeting roof formerly encompassed the entire Site until demolition activities were completed in late 2013. The building was a slab on grade structure.

2.3 Site History

Based on a review of available data, the Site operated as a rail terminal for approximately 100 years prior to becoming a warehouse in 1988. The warehouse (i.e., the recently-demolished building) was used as a storage warehouse for carpet and flooring. The previous warehouse owner/operator has confirmed that no industrial or manufacturing operations were performed at the Site.

A former rail loading dock existed on the northwestern side of the Site from 1942 to 1979. Sanborn maps from 1965 to 1995 identify the operation at the adjacent 135 Kent Avenue property (on the northwestern corner of Kent Avenue) as “Dry Cleaners Supplies.” Based on a review of the Sanborn maps, discussions with the prior owners of both 149 Kent Avenue and 135 Kent Avenue, and the previous investigation results, the former rail loading dock is on the property line and was associated with the operations at 135 Kent Avenue. There were no other structures on

149 Kent Avenue at the time (1942 to 1979) that could have made use of the former rail loading dock and the presence of doors between the two properties confirm that the loading dock served the building at 135 Kent.

The current adjacent property owner and former leasee/operator at 135 Kent Avenue, Mr. Lester Cohen, stated during a June 17, 2013 meeting/conference call at the NYSDEC offices that his operation (dating back to 1958) used the former rail loading dock, but did not receive bulk chemical shipments by rail and that the former rail loading dock was not used to transfer chemicals from rail cars to their building (but it was used for storage). The data suggest, however, that what the NYSDEC considers to be "source material" is present in the immediate area of the former rail loading dock. Furthermore, the extremely high detections of tetrachloroethene (PCE) in soil vapor samples taken from the upgradient side of the 135 Kent Avenue property, over 100 feet from the property boundary between 149 and 135 Kent Avenue, strongly point to the likely presence of additional source material on the 135 Kent Avenue site.

2.4 Results of Previous Environmental Investigations and Selected Remedial Action

The Remedial Investigation (RI) activities were completed between February and August 2013. The results of the RI were presented in the Remedial Investigation Report (RIR) dated August 5, 2013 and are discussed briefly below.

Soil Results

Soil sample results confirm the 135 Kent Avenue property line/former rail loading dock area to be a contributing source for onsite CVOC contamination in soil. Soil sample results also indicate that PCE is the primary constituent of concern in Site soil, with lesser detections of trichloroethylene (TCE) and other PCE breakdown products. The soil sample results indicate that the highest concentrations of PCE detected in Site soil is primarily limited to the property boundary area near the former rail loading dock, with concentrations decreasing significantly with increased distance from the 135 Kent Avenue property line and with depth. A significant portion of the most heavily impacted soil in the property line/former rail loading dock area will be removed during the anticipated excavation planned as part of the proposed work. In this SOP, the property line/former rail loading dock area is referred to as the "hot spot".

Soil sample results from the remainder of the Site indicate limited semivolatile organic compounds (SVOC), pesticide, and metal detections attributable to historic fill used to level and bring the Site to its current grade. There are some pesticides in soil, presumably from use during railroad operations. PCBs were not detected in any of the soil samples collected during this investigation, although historical investigations reported PCB contamination in shallow soil. The majority of this historic fill will be removed during the anticipated excavation planned as part of the proposed work.

Groundwater Gauging Results

Depth to water at the Site has ranged from approximately 9 to 13 feet below the existing floor slab (bfs) (or from approximately 2.8 to 6.7 foot elevation relative to the Brooklyn Borough Datum) between April and July 2013. The regional groundwater flow direction is southwest. Local groundwater flows generally toward the west-southwest based on water level information collected during the RI.

Groundwater Results

Groundwater sample results indicate that the northwestern area of the Site in the vicinity of the 135 Kent Avenue property line/former rail loading dock is a contributing source for the PCE contamination in groundwater on the Site; and the contamination is concentrated in the western portion of the Site in the vicinity and downgradient of the property line with 135 Kent Avenue former rail loading dock area. Groundwater sample results indicate that PCE is the primary constituent of concern in Site groundwater, with lesser detections of TCE and other PCE breakdown products. The PCE concentrations detected in Site groundwater generally decrease with increased distance from the former rail loading dock area. A significant portion of the most heavily impacted soil in the former rail loading dock area that is acting as one of the contributing sources of groundwater contamination will be removed during the anticipated excavation planned as part of the proposed work.

Limited and localized detections of other CVOCs in groundwater collected from MW-4 are not detected in soil samples collected from the three soil borings surrounding this well, and are not detected in upgradient monitoring wells MW-6 and MW-13. The CVOC detections in this monitoring well may be from an offsite source.

The limited detection of benzene in groundwater collected from MW-5 is attributed to an offsite source. There are no other detections of benzene in Site monitoring wells (with the exception of an estimated detection below the AWQSGV in nearby well MW-4), no exceedances of benzene in Site soil and no historical record of any petroleum storage or use at the Site. Therefore, remediation is not required at MW-5, as described in the RAWP.

Soil Vapor Results

Soil vapor sample results indicate elevated CVOCs in soil vapor near the former rail loading dock area, and also beneath the sidewalk along both Kent Avenue (adjacent to the Site) and North 6th Street (adjacent to the 135 Kent Avenue property).

SV-1 is located on the upgradient side of the 135 Kent Avenue site, over 100 feet from the property boundary between 149 and 135 Kent Avenue. The PCE result from the initial soil vapor sample collected from SV-1 on April 2, 2013 was 15,400,000 µg/m3. SV-1 was sampled a second time (confirmation sample) on April 23, 2013 and the result was 25,300,000 µg/m3. SV-1 is located near the truck loading dock of 135 Kent Avenue and according to the property owner that is where they purportedly received their PCE deliveries. The extremely high detections of PCE in SV-1 soil vapor strongly point to the likely presence of source material on the 135 Kent Avenue site. It should be noted that the concentrations of PCE, 1,1,1 trichloroethane (111-TCA), TCE, cis 1,2-dichloroethylene (1,2-DCE) and trans 1,2-DCE are orders of magnitude higher in SV-1 than in the other sampling locations.

With regard to onsite (SS-6 and SS-7) and near-Site (SV-2 and SV-3) soil vapor results, PCE is the primary contaminant, with lesser detections of PCE breakdown products and other CVOCs contained within the NYSDOH Guidance Matrices. It is important to note that soil borings RA-14 and RA-16, adjacent to SS-7 and SS-6, respectively, had non-detect to low concentrations (orders of magnitude lower than the unrestricted SCOs) of the compounds identified in soil vapor at SS-6 and SS-7. This indicates that the source of the soil vapor impacts at these locations is not the soil in the immediate vicinity of the sample locations. Potential contributing sources are soil, groundwater, and/or other source material that may exist below the 135 Kent Avenue property and/or onsite soil/groundwater impacts in the vicinity of the property line with 135 Kent Avenue/former rail loading dock. A significant portion of the most heavily impacted soil in the

property boundary with 135 Kent Avenue/former rail loading dock area that is a contributing source of onsite soil vapor contamination will be removed during the anticipated excavation planned as part of the proposed work.

Based on the findings of the subsurface investigations, Roux Associates, on behalf of the Volunteer, prepared the Remedial Action Work Plan dated December 7, 2013, which sets forth a remedial approach to address impacted groundwater, soil and soil vapor at the Site. The Preferred Remedy for the Site consists of the following combination of remedial alternatives for soil, groundwater, and soil vapor.

Soil Remedy

The Preferred Remedy for Soil is the Track 4 alternative described briefly below.

(a) Excavation and offsite disposal of soil exceeding the Protection of Groundwater SCOs for VOCs at any depth above or below the water table in areas in the vicinity of the northern property line with 135 Kent Avenue/former rail loading dock operations (referred to herein as the hot spot area), and in the vicinity of RA-7; (b) backfill of excavated areas with soil/fill meeting the Restricted Residential SCOs; (c) installation of a site cover system comprised of building foundation, mud slab, waterproofing membrane and vapor barriers; and (d) implementation of institutional controls to address remaining contamination above the Unrestricted Use SCOs (including a Site Management Plan and Environmental Easement).

Groundwater Remedy

The Preferred Remedy for groundwater is a combination of the three alternatives described briefly below:

- Temporary dewatering and water treatment during building construction
- *In situ* zero valent iron (ZVI) injections in the vicinity of MW-4
- Permeable reactive barrier (PRB) treatment wall in the southwest corner of the Site

Soil Vapor Remedy

The Preferred Remedy for soil vapor is a combination of the three alternatives described briefly below:

- Foundation construction and waterproofing/vapor barrier
- Ventilated parking garage

- Active sub-slab depressurization system (SSDS)

The Preferred Remedy for the Site is consistent with the approach for a Track 4 Restricted Residential use scenario described in the Part 375 Regulations.

3.0 Remediation Objective and Detailed Project dEscription

As described in Section 3.8 of 6NYCRR Part 375 and in accordance with the RAWP, "The remedy shall be fully protective of public health and the environment including, but not limited to, groundwater according to its classification pursuant to ECL 17-0301, drinking water, surface water and air (including indoor air), sensitive populations, including children and ecological resources, including fish and wildlife. In addition, a remedy will be selected upon consideration of the following:

(1) A remedial program that achieves a permanent cleanup of a contaminated site, including the restoration of groundwater to its classified use, is preferred over a remedial program that does not do so;

(2) The selection of a remedy will take into account the current, intended, and reasonably anticipated future land uses of the site and its surroundings."

All work shall be conducted in accordance with this SOP and associated plans (e.g., HASP, CAMP, CQAP, and ESCP).

3.1 Summary of the Work

Soil exceeding the Protection of Groundwater Soil Cleanup Objectives (SCOs) for VOCs discussed in the RAWP will be excavated and disposed. Groundwater impacts will be addressed as a result of temporary dewatering and water treatment during building construction, *in situ* ZVI injections in the vicinity of MW-4, and permeable reactive barrier (PRB) treatment wall installation in the southwest corner of the Site. Soil vapor impacts will be addressed as a result of the installation of waterproofing/vapor barrier for the building foundation, installation and continued operation of a ventilated parking garage, and installation and operation of an active sub-slab depressurization system. The Site will be excavated to an average depth of approximately 12 feet bfs to accommodate the construction of the proposed building foundation and cellar areas, with greater depths in certain areas (e.g., hot spot area, etc.) and as required for installation of utilities, etc.

The following is a list of the major elements of the work subject to this SOP, with additional detail regarding select elements of the work provided below:

1. Obtain all necessary permits, insurance, bonds, and licenses required to complete all work and pay all necessary fees for the permits obtained.

2. Mobilization to the Site and site preparation.
3. Demolition (in phases) of existing concrete sidewalks and slab;
4. Installation of support of excavation (SOE) around three sides of the Site;
5. Excavation, dewatering, and disposal of impacted soil and backfilling excavations in phases.
6. Installation of guide wall and secant pile wall installation for support of deeper hot spot excavations;
7. Installation of all required footings, caissons, foundation slab, and waterproofing/vapor barrier in coordination with excavation activities.
8. PRB treatment wall construction in the southwest corner of the Site
9. Installation of active SSDS.
10. Final site restoration and demobilization from the Site.

3.1.1 Mobilization and Site Preparation

The mobilization/site preparation phase of the project will include:

- mobilization of equipment and materials;
- implementation of traffic control measures;
- provision of health and safety services for the contractors' employees in accordance with the HASP (Appendix A);
- work zone demarcation;
- construction of facilities for collection, storage, and management of pumped groundwater and runoff.
- installation and maintenance (during construction) of signs and perimeter fencing.
- utility location identification and "OK" demarcation;
- utility relocation or removal as necessary;
- provision of site security measures;
- installation of erosion control measures;
- installation of perimeter air monitoring system;

- setup and maintenance of decontamination areas, staging areas (if required), erosion control measures, and dust suppression measures;
- installation of sanitary facilities for onsite workers; and
- installation of temporary facilities.

3.1.2 Demolition (in Phases) of Existing Concrete Sidewalks and Slab/Footings

Concrete sidewalks surrounding the Site and the existing building slab and footings will be demolished in phases as the work progresses.

3.1.3 Installation of SOE on Three Sides of the Site

Along Kent Avenue, North 5th Street and Wythe Avenue, SOE will consist of soldier beams and lagging. Soldier beams will either be drilled or driven, depending upon site conditions and distance to adjacent structures. The SOE will be installed approximately three feet outside the property line (in the sidewalk), in order to facilitate excavation of the entire Site footprint to the required depths. The driven soldier piles shall be installed by mobilizing a track mounted pile driving rig with a maximum rated energy of approximately 32,000 foot-pounds. The drilled soldier piles shall be installed by mobilizing a track mounted drill rig. The process will entail advancing a temporary casing with an outside diameter of 30 inches and an inside diameter of 26 inches. After the temporary drill casing is advanced to the specified soldier pile tip depth, the soldier pile will be placed in the hole and the hole will be backfilled with flowable fill. Soldier beam installation will occur after a general cut of the site is completed so that the solid and liquid spoils can be more easily contained. Drilling spoils will be containerized, covered and allowed to settle. The liquid contents will be treated with the water treatment system and the solids will be stockpiled for later disposal as non-hazardous waste.

3.1.4 Excavation and Disposal of Impacted Soil and Backfilling in Phases

<u>Excavation and Disposal</u>

Prior to excavation, areas designated as U210 listed hazardous waste, areas of characteristic hazardous waste and areas to be excavated to 35 ft bfs, as shown on Plate 1, will be surveyed and staked in the field to provide visual reference. Stakes or flags will be maintained to the extent practicable and will be re-surveyed and replaced, as necessary, as the work proceeds.

Soil from the areas designated as hazardous waste, will be segregated and stockpiled separately from non-hazardous waste and stockpiles will be labeled accordingly. Comingling of hazardous waste with non-hazardous soil will be avoided to the extent practicable through the maintenance of the concrete slab during the initial phases of excavation, use of tarps/liners over areas not identified to have hazardous waste present adjacent to areas with hazardous waste. If comingling of waste occurs the resulting waste will be considered hazardous waste for disposal purposes.

The proposed limits and depths of excavation (Plate 1) to address exceedances of the Part 375 protection of groundwater SCOs are as follows:

- the hot spot area near the northern property boundary with 135 Kent Avenue will be excavated in two depth ranges (0-10 feet bfs, and 0-35 feet bfs); and
- a 25 foot by 32 foot area around RA-7 will be excavated to 35 feet bfs.

In the hot spot area and in the vicinity of RA-7, in order to reach the target depths of up to 35 feet and maintain stability of the adjacent building, soil will be removed by excavating trenches, which will be simultaneously backfilled with a bentonite/slurry mix. The slurry mass will be constructed by installing multiple 42-inch wide slurry trenches that adjoin one another to cover the required area. The work will be performed in a staggered pattern that allows the previously installed slurry trenches to "set-up" before digging adjacent to them. The cement-bentonite mixture will be mixed adjacent to the hot spot location in a batch plant. The final wet slurry mixture in each trench has a high specific gravity and "cakes" to the excavated side walls below the water table to allow each temporary trench to remain stable.

The entire Site will be excavated to a minimum of 12 feet bfs to facilitate construction of the building's basement slab. Localized deeper excavations for construction of footings and elevator pits will be required. Excavation depths are approximately nine inches below the bottom of the concrete (slab or footing) to allow for placement of six inches of gravel and a two-inch mud slab. This first cut for the building will extend beyond the property boundary on the south, east and west sides by a maximum of five feet in order to install SOE consisting of soldier piles and lagging.

Along portions of the north wall of the proposed building, outside of the hot spot (that will have the secant pile wall SOE as described above), underpinning of adjacent structures may not be possible due to the elevation of the footings relative to the water table elevation. In these areas, either the secant pile wall may be extended or a wedge of soil may be left in place to support adjacent structures. If selected as the construction method, the wedge of soil will start approximately at the elevation of the bottom of the adjacent footing and the wedge will extend inward into the at a one foot horizontal to one foot vertical slope.

Therefore, the estimated volume of soil to be removed will be approximately 23,500 cubic yards. Of this total, approximately 2,200 cubic yards is considered to be hazardous waste (either U210 listed hazardous waste or characteristic hazardous waste). The remaining soil (21,300 cubic yards) is assumed to be non-hazardous and may be sent for recycling, beneficial reuse, landfill cover, or direct landfilling at a Subtitle D facility, depending on waste characterization sample results. All waste transportation and disposal will be completed in accordance with applicable local, state and federal regulations.

Backfilling

When excavation and removal of the impacted soil is complete, the excavation will be backfilled and compacted using certified clean fill material meeting Protection of Public Health SCOs for Restricted Residential Use. Backfill may be common fill gravel/ crushed stone or lean concrete (flowable fill) or bentonite slurry mix, depending on the soil removal method used. The backfill material will be free of extraneous debris or solid waste. If the NYSDEC agrees that the material originated from a virgin source, then a minimum of one sample will be collected and analyzed per source. If the source is not virgin, the sampling frequency will comply with DER-10 Table 5.4(e)10 shown below:

DER-10 Table 5.4(e)10 Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	**VOCs**	**SVOCs, Inorganics and PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
1000	Add an additional 2 VOC and 1 composite for each additional 1,000 Cubic yards or consult with DER		

The source of the offsite fill must be documented by the supplier, including the location where the fill was obtained and a brief history of the site that is the source of the fill. Analytical results will be submitted to the NYSDEC prior to use of the backfill.

In accordance with DER-10, the following material may be imported, without chemical testing (but still requires source description and history), to be used as backfill beneath pavement, buildings or as part of the final site cover, provided that it contains less than 10% by weight material which would pass through a size 80 sieve and consists of:

- gravel, rock or stone, consisting of virgin material from a permitted mine or quarry; or
- recycled concrete or brick from a DEC registered construction and demolition debris processing facility if the material conforms to the requirements of Section 304 of the New York State Department of Transportation *Standard Specifications Construction and Materials Volume 1* (2002).

Lean concrete (flowable fill) or bentonite slurry mix may be used as backfill in some locations onsite, to be determined by the Contractor's means and methods. Sampling of this material will not be required.

3.1.5 Dewatering and Water Treatment

Dewatering may be required in order to accomplish the anticipated excavation planned as part of work. The dewatering system will be operated by a subcontractor that specializes in dewatering and will include localized dewatering sumps Unless water is disposed of offsite, treatment of the dewatering water to the NYCDEP sewer discharge limits will also be required, which will be provided by an onsite water treatment system with discharge to the New York City sewer system.

3.1.6 Installation of Guide Wall and Secant Pile Wall for Support of Hot Spot Excavation

Prior to constructing the secant pile wall, a concrete guide wall must be constructed in order to ensure stability of the wall, to control tolerances, and to achieve the correct center-to-center pile spacing in the secant wall. The guide wall will be constructed by Soil Solutions.

Prior to constructing the guide wall, existing utilities entering and or leaving the Site will be located, marked and removed, relocated and/or cut and sealed, as appropriate.

In the hot spot area, SOE consists of a secant pile wall constructed of overlapping bored structural concrete piles such that the minimum wall thickness will be a minimum of 20 inches with the outer edge of the secant pile wall being approximately 18 inches from the property line/adjacent structure. This type of wall consists of alternating primary and secondary bored shafts. The primary shafts will consist of low-strength concrete while the secondary shafts will consist of W10x77 core beams and 4,000 psi concrete. A temporary guide wall will be constructed at the top of the secant wall to help with the installation of the bored shafts.

3.1.7 Construction Site Cover System

This section details the construction of the proposed building foundation, with comprises the Site Cover System described in the RAWP. The Site Cover System is required to cover soil exceeding the restricted residential criteria. The Site Cover System consists of the concrete slab/footings/basement walls (nine inches minimum), waterproofing membrane [W.R. Grace

Preprufe], approximately six inches of clean gravel, and a two-inch mud slab installed below the concrete slab/footings. The Site Cover System will be a minimum thickness of 17 inches and will be thicker where footings are located.

Construction of the building foundation will begin immediately after completion of the secant pile wall and the hot spot excavations. The tasks involved include soil excavation, concrete footing construction, pressure slab construction, and waterproofing/vapor barrier installation.

3.1.8 Installation of PRB Treatment Wall

A PRB is proposed for installation at the southwest corner of the Site where Kent Avenue and North 5th Street meet. The PRB will be situated downgradient of areas with known CVOC groundwater contamination (i.e., near monitoring well MW-1) on the western third of the Site in order to prevent, to the extent practicable, offsite migration of contaminated groundwater from beneath the Site. The PRB design currently anticipated includes a 150 foot wall installed in an "L" shape along the property line as described below:

- One side of the "L" will head north along Kent Avenue beginning at the corner of Kent Avenue and N. 5th Street for approximately 60 feet; and
- One side of the "L" will head east along N. 5th Street beginning at the corner of Kent Avenue and N. 5th Street for approximately 90 feet.

At the southwest corner of the property, two rows of injection points approximately 60 feet in length (30 feet in each direction) will be installed to treat relatively high concentrations of CVOCs observed groundwater near monitoring well MW-1. The remainder of wall length noted above in each direction will be comprised of a single row of injections. It is anticipated that the spacing between injection points will be 16 foot-on-center with an assumed radius of influence of 8 feet. The depth of the wall is anticipated to be between approximately 35 and 45 feet, which is the depth at which concentrations of CVOCs in onsite groundwater have been observed to significantly decrease, depending on sample location.

3.1.9 Installation of Active SSDS

As part of the soil vapor remedy, a subslab depressurization system (SSDS) will be installed to address the two areas along the northern property line in the "void" space between the adjacent property building and proposed foundation, as described in the RAWP. The two areas that require

the SSDS are on the far eastern and western sides of the proposed building adjacent to the proposed commercial/commercial storage spaces. The following key components will comprise the SSDS:

- the installation of sub-slab suction trench totaling up to 120 feet, which includes 4-inch perforated PVC piping, gravel bedding and filter fabric wrap;
- the installation of two vertical steel riser pipes along the inside of the exterior wall up to (but not including) a roof penetration; and
- the installation of two vacuum blowers and vapor phase treatment (i.e., carbon drums), if necessary, on the roof. (The results of samples collected from the SSDS will confirm whether it is necessary to purchase the carbon.)

The SSDS installation may require coordination with the architect and mechanical, electrical and plumbing engineers.

3.1.10 Final Site Restoration and Demobilization

Site construction activities are expected to occur concurrently with or immediately after remedial action activities are completed. The excavations will therefore not be completely backfilled and will be left open for construction of the building foundation. Considering the potential for upgradient sources of soil vapor and groundwater impacts, the Contractor is responsible for implementing all necessary measures to control odors while earth disturbance activities are occurring and/or the potential for exposure to environmental contaminants in onsite and/or immediately adjacent offsite soil, groundwater and soil vapor exists.

The contractor is responsible for Site control, including all fencing, barricades, signage, etc., required when open excavations are present onsite in accordance with applicable regulations. Following the completion of the remedial action activities, remedial construction equipment will be decontaminated in the onsite decontamination area and removed from the Site or used for the building construction.

4.0 Governing Documents

In accordance with the RAWP, the following are the governing documents related to the remedial activities and associated foundation construction activities.

4.1 Construction Quality Assurance Plan (CQAP)

Quality assurance/quality control procedures for all construction activities associated implementation of the remedial action construction and portions of the redevelopment construction are established in the Construction Quality Assurance Plan (CQAP), which is included in this section of the SOP. The CQAP has been prepared in accordance with the RAWP for the Site. The CQAP describes the site-specific construction quality assurance and control measures that will be performed during remediation and related construction activities that will be implemented at the Site in accordance with the RAWP. The CQAP includes a program for construction observation and testing to verify performance of the remedial construction in accordance with the design specifications. General construction-related Quality Assurance/Quality Control (QA/QC) (e.g., load testing, concrete testing, construction material verification, etc.) will be managed via the overall site development quality control program being implemented by the General Contractor and the Owner and is not a component of this CQAP.

In general, the work to be addressed by this CQAP consists of the excavation and proper management/disposal of impacted soils and associated construction waters and the concurrent installation of the foundation and engineering controls for the proposed building to be constructed at the Site.

4.1.1 Organization/ Personnel

The implementation of the remedial action construction and portions of the redevelopment construction activities will be sequenced based on construction requirements, environmental considerations, and logistic limitations posed by the small size of the Site and proximity of adjacent structures. The project team is comprised of the Owner [Kent & Wythe Owners LLC], contractors, and consultants specializing in one or more critical aspects of the project. It is understood by the project team that close coordination and proper sequencing of all activities occurring on the Site will be crucial to the success of the remediation and foundation construction.

The project team and associated responsibilities are as follows. If changes are made the project team, the SOP will be amended.

4.1.1.1 Kent & Wythe Owners LLC (Owner) – Site Redevelopment and Regulatory Interaction

Tell Metzger, Remediation Oversight and Project Quality Assurance

As Site owner, Kent & Wythe's Project Manager for the Site, Mr. Tell Metzger, will coordinate communications with regulatory agencies and will provide general oversight of all aspects of the remediation and redevelopment project. Kent & Wythe will attend and participate in weekly meetings, as necessary, and other remediation-related meetings with the project team. In addition, Kent & Wythe will be responsible for the review and submission of all documents, reports, correspondence, etc., required by the RAWP and or Kent & Wythe's Brownfield Cleanup Agreement (BCA) with the NYSDEC dated August 21, 2012.

Kent & Wythe's Project Manager will be responsible for community notifications and addressing concerns with the adjacent property owners and local community on all remediation-related issues. Kent & Wythe will be immediately notified by the onsite team of any complaints or concerns regarding the work raised by the adjacent property owners and or the general public.

4.1.1.2 Congress Builders LLC – General Contractor/ Construction Manager

Josh Elkin, Project Quality Assurance Manager/ Site Safety and Health Officer (SSO)

Congress Builders LLC (Congress Builders) is the General Contractor/ Construction Manager for the overall project development and, as such, will be responsible for the quality assurance of all of the tasks being implemented. Congress Builders will insure that all components of the Site activities are conducted according requirements of the RAWP and design specifications. Congress Builders will be responsible for verifying that the daily Site construction activities are in compliance with all of the safety requirements and regulations governing the site activity, however, each subcontractor is responsible for the health and safety of their own personnel. In consultation with the Roux Associates' Field Manager, office/ corporate technical and health and safety staff, Josh Elkin of Congress Builders will be the Site Safety and Health Officer (SSO) for

the Site. Congress Builders shall be responsible for the transportation and disposal of all contaminated waste and materials generated during the construction, including:

- fill/soil;
- contaminated concrete, bricks or other construction debris
- personal protective equipment and other miscellaneous debris; and
- construction wastewater

Congress Builders will also have the responsibility of coordinating all other trades that will be involved during the foundation construction phase of work, including plumbers, electricians, lathers, etc.

Congress Builders will also implement the Site-specific CAMP. In accordance with the CAMP, daily monitoring of the upwind and downwind perimeter will be conducted to ensure the protection of the surrounding community. Congress Builders will provide ambient air quality monitoring for VOCs and particulates during all intrusive site activities. Meteorological conditions will also be measured continuously during intrusive activities. CAMP monitoring data will be reported daily the SSO and will be maintained onsite. Action level exceedances will be reported to the SSO and the Roux Associates project manager and appropriate communication and action taken.

4.1.1.3 Remedial Engineering, P.C./Roux Associates, Inc. – RAWP and Environmental Monitoring Compliance

Noelle Clarke, P.E., Remedial Engineer/ Quality Assurance Officer
David Bligh, P.E., Quality Control Project Manager
Ron Lombino, Field Manager

Remedial Engineering and Roux Associates will coordinate all Site activities being implemented to achieve the remedial objectives defined in the RAWP. Remedial Engineering and Roux Associates will provide continual review of all quality control measures implemented by the contractors to ensure compliance with the Site's remedial objectives. As such, Remedial Engineering and Roux Associates will provide full-time oversight services for the duration of soil removal activities and part time oversight during foundation construction, waterproofing/vapor barrier installation and SSDS installation. Remedial Engineering/Roux Associates will also be

responsible for subcontracting with ARS Technologies, Inc. for installation of the ZVI treatment wall in the southwest portion of the Site and for providing oversight/quality control during the installation.

Remedial Engineering and Roux Associates will ensure that all Site activities conform to and follow the environmental provisions of the HASP, CAMP, ESCP, CQAP, and this SOP and will communicate with all project team members as necessary to achieve the remediation goals. All onsite quality control persons identified in the CQAP will provide daily briefings and/or reports to Remedial Engineering and Roux Associates onsite personnel, identifying the tasks completed, the remedial measures achieved, and any other issues of concern. Roux Associates will also advise the SSO as needed and will perform breathing zone air monitoring as required by the Site-specific HASP (Appendix A of the SOP). Additionally, Ms. Noelle M. Clarke, the "Remedial Engineer", a professional engineer licensed in the State of New York, will be responsible for certifying that the remediation construction was completed in substantial conformance with the approved RAWP and/or any NYSDEC-approved field changes.

4.1.1.4 Soil Solutions, Inc. – Excavation Construction Contractor

Personnel To Be Determined, Excavation Construction Quality Control

Soil Solutions, Inc. (Soil Solutions) is responsible for the excavation of the Site to the required depths, coordination with the General Contractor for disposal of the contaminated excavated materials, contaminated construction and demolition debris and all other contaminated wastes generated, transportation and disposal of non-contaminated construction and demolition debris, installation of the secant pile wall, and decontamination of trucks and heavy equipment. The primary environmental obligations of Soil Solutions include safely managing all excavated materials encountered during the excavation for the building foundation, preventing the contaminated Site soils from leaving the site, and decontamination of haul vehicles and heavy equipment.

4.1.1.5 To Be Determined. – Foundation Construction Contractor

Personnel To Be Determined, Foundation Construction Quality Control

The foundation contractor has not yet been selected. The SOP will be amended when the foundation contractor is selected. The foundation contractor is responsible for the foundation

construction, installation of the mud slab, construction of the pressure slab, installation of the waterproofing/vapor barrier and the SSDS. The primary environmental obligations of the foundation contractor include ensuring the proper installation and protection of the waterproofing/vapor barrier and installation of the below grade portions of the sub-slab depressurization system.

4.1.1.6 AMC Engineering, PLLC – Water Treatment Consultant

Ariel Czemerinski, P.E, Water Treatment and Quality Control

AMC Engineering, PLLC (AMC) is responsible for design and specification of the water treatment system for onsite treatment of extracted groundwater during foundation construction, decontamination water and any other contaminated construction water to the "contained-in action levels" for chlorinated solvents and the NYCDEP sewer discharge limits for other parameters, with discharge to the New York City sewer system.

AMC is also responsible for sampling the discharge to the sewer system in accordance with the New York City Department of Environmental Protection (NYCDEP) discharge permit and confirming compliance with the discharge criteria prior to and during discharge in accordance with the RAWP.

4.1.1.7 Environmental Laboratory

The need for an environmental laboratory is specific to excavated soil waste characterization analysis, backfill sampling and construction water discharge and/or waste characterization analysis. The potential also exists for chemical-specific air sampling and analysis, though not currently planned. Alpha Analytcal, Inc. (Alpha), will be utilized for all remediation construction-related analytical requirements. Alpha is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory. All results will be reported in electronic format deliverables.

4.1.1.8 Geotechnical Laboratory

If necessary, a geotechnical laboratory will be contracted for foundation condition verification purposes. Quality assurance related to the structural components of the foundation (e.g., secant pile wall, etc.) is not an obligation of this CQAP, and therefore is not discussed further.

4.1.1.9 Surveying Firm

A New York State-licensed surveying firm will be subcontracted by Congress Builders to provide lines, grades, boundaries, benchmarks, topographic surveys, as-built drawings, and any other survey work required for the proper execution and documentation of the work as required by the specifications.

4.1.1.10 Waste Disposal Facilities

Hazardous materials and other facility-acceptable waste from the Site will be transported to either:

- Envirosafe Services of Ohio, Inc. located at 876 Otter Creek Road in Oregon, OH; or
- Horizon Environmental, Inc. located at 120, Route 155, Grandes-Piles, Quebec, Canada.

Nonhazardous materials and other facility-acceptable waste from the Site will be transported to either:

- Gloucester County Improvement Authority located at 493 Monroeville Road (Rt. 694) in South Harrison Township, NJ; or
- Clean Earth, Inc. located at 24 Middlesex Avenue in Carteret, NJ.

All non-impacted construction debris will be transported to a permitted construction and demolition disposal facility. Additional waste disposal facilities may be used as required, based on the nature of the material being removed from the Site and the volume of material each facility will accept on a daily basis.

4.1.2 Submittals

Submittals (e.g., waterproofing/vapor barrier design details) will be made to Congress Builders and Remedial Engineering in a timely manner for review and approval prior to use. All submittals must be provided electronically. Hard copies may be provided in addition to the electronic deliverables.

A Submittal Register will be developed and maintained, which details submittal requirements for this Project. The Submittal Register will track the dates of submission, action taken, and date of return. The Submittal Register will be used to control and track all required submittals. Data that will be provided in the Submittal Log will include:

- Submittal identification number;
- Name of company and individual preparing the submittal;
- Description of shop drawings and submittal;
- Date of submittal;
- Submittal return date;
- Action taken; and
- Re-submittal (if necessary).

Submittals will be made as specified in the Contract Specifications.

Copies of all submittals will be maintained onsite for reference by the project managers, project team, and NYSDEC and NYSDOH.

The following additional quality control submittals will be required by the identified contractor.

4.1.2.1 Waste Transporter and Disposal Facility Qualifications

Congress Builders and/or Soil Solutions shall submit a qualifications package for each vendor contracted to transport waste from the Site to the designated soil disposal facilities and each designated disposal facility. The package shall include the following:

- proof of insurance and all current necessary waste transport permits for the waste type(s) being transported.
- Letters of Commitment from all waste haulers and from all transfer, treatment, storage and disposal facilities to be used for the project. The letters of commitment shall specifically identify the types and quantities of waste that the facility will be able to accept, the permit numbers for all facilities at which the waste will be accepted and all waste characterization requirements, if additional to waste characterization samples already collected. In the event that a facility (such as a privately owned treatment works) is prohibited from issuing a letter of commitment without a sample of the waste, a conditional type letter will be

acceptable. Such a conditional letter shall specifically state what types and quantities of waste the facility will accept.

- For each waste hauler.
  - Name and federal and state identification numbers, as applicable.
  - Address.
  - Name of responsible contact for the hauler.
  - Telephone number for the contact.
  - List of types and sizes of all transport vehicles and equipment to be used.
  - A description of proposed transportation route, method and procedures for hauling waste material, including type of vehicles that will be used for each type of waste.
  - Copies of any and all necessary permits and authorizations for each type of waste transported.
- For each transfer, treatment, storage and disposal facility, the Contractor shall submit the following information.
  - Facility name and federal and state identification numbers
  - Facility location
  - Name of responsible contact for the facility
  - Telephone number for contact
  - Signed letter of agreement to accept waste as specified in this Contract
  - Unit of measure utilized at facility for costing purposes
  - Copies of all permits, licenses, letters of approval, and other authorizations to operate, held by the proposed facility as they pertain to receipt and management of waste derived from this Contract

4.1.2.2 Waterproofing/ Vapor Barrier Quality Control Package

The foundation contractor, in conjunction with the waterproofing/vapor barrier manufacturer, shall submit a comprehensive package detailing the means of installation and methods of quality control to protect the membrane during all construction activities and verify optimum performance.

4.1.2.3 Water Treatment Quality Control Data and Discharge Permitting

Offsite disposal and/or onsite treatment and discharge to the NYCDEP sewer system under a NYCDEP permit will be performed based on site conditions and logistical considerations. AMC shall submit the proposed water storage /treatment system design and all data that was used for the design basis prior to mobilizing the equipment to the Site to the NYCDEP in order to obtain the required permit. The portable storage or treatment system will need to be equipped with an approved means of secondary containment as added control protection in the event that a spill occurs. Copies of the submitted NYCDEP Sewer Discharge application, NYCDEP-issued permits, and initial treatment sampling results shall also be submitted to the Remedial Engineer for their files and use in preparing the Final Engineering Report (FER). If offsite disposal of waste is required, copies of all waste characterization sampling results and the wastewater disposal facility requirements shall be submitted for review prior to disposal and use in preparation of the FER.

4.1.2.4 Environmental Laboratories

Roux Associates shall provide formal laboratory qualifications and QA/QC information packages for Alpha and any other analytical laboratories proposed for the project to the NYSDEC or disposal facilities, as required.

4.1.3 Construction Quality Control Testing

Implementation of quality control testing and measurement will be performed by the contractors conducting the specific site tasks. The quality control officers, defined in Section 4.1.1, will be responsible for providing documentation of all testing and measurement results to Remedial Engineering/Roux Associates. Remedial Engineering/Roux Associates will be responsible for verifying that all quality control testing has been conducted in compliance with the RAWP and as specified herein.

Prior to initial quality control testing procedures:

1. Verify that the testing procedures are within the manufacturer’s recommendations.
2. Verify that the facilities and testing equipment are available and comply with testing standards.
3. Check testing instrument calibrations against certified standards.

4. Verify the recording forms, including all the test documentation requirements have been prepared.

Qualifications of all independent environmental testing firms and laboratories will be submitted to Roux Associates and Congress Builders for approval prior to any quality control testing and/or lab analysis as an obligation of this CQAP.

Specific task-driven testing/certification obligations as they relate to environmental aspects of the project are as follows:

- A New York State-licensed surveyor will conduct all of the necessary measurements and provide associated documentation to verify that the excavation limits are achieved. Final excavation limit obligations and documentation will be dictated by the final foundation design requirements (as determined by the Project's structural engineer).

- Concrete mix testing will be performed in the field by Soil Solutions in accordance with the SOP requirements. All results will be recorded and submitted to Congress Builders for review each day.

- The waterproofing/vapor barrier installation will be certified by the approved applicator that all work was performed in accordance with the manufacturer's recommendations on each day of installation. All barrier sections shall be re-inspected by the applicator following all installation of steel and concrete formwork and certified that no damage is present prior to pouring of concrete.

- All excavated soil and construction-generated water will require waste characterization analyses prior to disposal. The majority of *in situ* characterization sampling and analysis has been conducted prior to excavation as the excavated impacted soils will be direct-loaded for waste transport and disposal, to the extent practicable. Waste characterization analysis parameters and frequency for any additional samples are determined by the waste disposal facility's acceptance requirements. As required, excavated soils will be tested in accordance with the soil disposal facility's analytical acceptance requirements that will be provided and amended to the SOP when available. Results will be provided to the disposal facility for review.

- The CAMP requires continuous real-time monitoring of VOCs and particulates during all intrusive site activities. This monitoring equipment will be inspected periodically throughout each day to check and manually record the concentrations of VOCs and particulates and to ensure that the equipment is working properly. The equipment will be repaired, recalibrated, or replaced, as necessary. The periodic measurements will be used to identify any potential risks of offsite migration. This monitoring data will be collected and logged for review daily by Roux Associates and made available for regulatory agency review. Action Limit Reports will be completed to document any and all action level exceedances, as defined in the CAMP.

- The HASP requires continuous real-time monitoring of VOCs and particulates in the breathing zone of workers that will potentially be exposed to onsite contaminants during all intrusive site activities in order to identify and mitigate potential exposure risks to onsite workers. The real time air monitors will have a remote readout and alarm that will be monitored by Remedial Engineering/Roux Associates outside of the exclusion zone. This monitoring equipment will be inspected periodically throughout each day to ensure that the equipment is working properly. The equipment will be repaired, recalibrated, or replaced, as necessary.

All testing data will be managed in accordance with the above requirements and will be included in the FER to be prepared by Remedial Engineering and Roux Associates upon completion of all remedial objectives defined in the RAWP.

4.1.4 Project Coordination

During implementation of the remedial action construction and portions of the redevelopment construction described in the RAWP, a weekly progress meeting will be conducted to assess the prior week's progress, overall progress to date, quality control requirements, environmental and construction health and safety requirements, and future progress expectations. Those in attendance will include representatives from the Kent & Wythe (as required), Congress Builders, Soil Solutions, Remedial Engineering/Roux Associates and other subcontractors, as necessary. The NYSDEC and NYSDOH will attend the weekly meetings at their discretion.. This will provide the opportunity for all site tasks to be integrated and discussed collectively and provide for coordination of all Site activities to maintain the overall construction schedule (Appendix B). The construction schedule may be modified, if necessary, based on the weekly project progress. Weekly meeting summaries, prepared by Congress Builders will be distributed and maintained as part of the permanent project record. Routine task meetings will also be conducted on an as-needed basis to insure proper communication between the contractors, tradesman, and supervisory personnel. After all elements of the RAWP are completed, weekly meetings may continue to be held at the discretion of Kent & Wythe, but are not required.

A weekly progress meeting during implementation of the remedial action construction and portions of the redevelopment construction described in the RAWP shall be conducted to review work procedures, assess the prior week's progress, overall progress to date, and coordinate future work tasks.

4.2 Health and Safety Plan (HASP)

All construction activities will be performed in a manner consistent with 29 CFR 1910 and 1926. The Site-specific HASP that relates to environmental conditions onsite is provided as Appendix A. A HASP that incorporates all potential construction related hazards associated with the construction work (i.e., excavation safety, confined space entry, physical hazards, etc.) shall be prepared and maintained onsite.

4.3 Community Air Monitoring Program (CAMP)

The CAMP is established to provide an added level of health and safety protection for the community surrounding the Site. A site specific CAMP is included within the HASP in Appendix A. Roux Associates will be responsible for implementing the CAMP during all intrusive work activities at the Site. General CAMP provisions require continuous air monitoring at the Site's downwind perimeter for VOCs and particulates. Refer to the CAMP included in the HASP (Appendix A of the SOP) for a detailed summary of the CAMP procedure and requirements. During the course of the work, Soil Solutions will be responsible for mitigating vapor (e.g., VOCs emissions) and airborne particulates identified through the CAMP monitoring via suppression techniques defined in the CAMP and as discussed in Section 4.9.

4.4 Quality Assurance Project Plan (QAPP)

The Quality Assurance Project Plan (Appendix C) includes procedures to be followed for sampling and analysis. The QAPP includes all requirements outlined in DER-10 Section 2.4.

4.5 Erosion and Sediment Control Plan (ESCP)

In accordance with the RAWP, this Erosion and Sediment Control Plan (ESCP) includes all necessary measures to temporarily control erosion during implementation of the remedial action construction and portions of the redevelopment construction described in the RAWP. These measures will comply with all requirements of the specifications and the requirements in the New York Guidelines for Urban Erosion and Sediment Control. This ESCP identifies measures that will be implemented by Soil Solutions to minimize erosion and sedimentation during remediation, construction, and foundation installation activities at the Site.

The primary objective of temporary soil erosion and sediment control measures is to control soil erosion to the extent practicable, commensurate with reasonable and economical construction practices. All temporary soil erosion and sedimentation control measures will be in place prior to any construction operations and will be maintained until construction is complete and the disturbed areas stabilized. Figures 3 and 4 show Site Plans identifying the locations of soil erosion and sediment controls during excavation of the western one third of the Site (Phase 1 excavation) and the eastern two thirds of the Site (Phase 2 excavation), respectively.

4.5.1 Soil Erosion and Sediment Control Measures

Temporary erosion and sedimentation control will be accomplished by silt fences, hay bales, stone cover material, dust suppression and stockpile management. If determined to be necessary, ditches, berms, dikes, dams, sediment collection pits, or basins will be constructed. The surface areas of erodible material exposed by excavation activities will be kept to a minimum. All materials and methods of construction will be in accordance with all applicable state and local standards. Below is a description of each of the erosion and sediment control measures.

4.5.1.1 Surface Water Control

The rate of runoff from the construction Site will be mechanically retarded and controlled, if necessary. Temporary diversion ditches and berms will be created, as necessary, to prevent storm runoff from entering adjacent sewer catch basins, drop inlets, and existing excavations.

4.5.1.2 Silt Fence/ Hay Bales

Hay bales and/or silt fencing shall be placed at locations upgradient of excavation areas to minimize water flow and soil from entering excavations, and downgradient of excavation areas and/or soil stockpiles (if any) to prevent soil from migrating to other areas.

4.5.1.2.1 Silt Fence

Where appropriate, Soil Solution anticipates using prefabricated silt fence. In cases of severe silt fence loading, Soil Solutions may elect to erect wire backed silt fence. In either case, the fences will meet the general material and construction specifications described below.

Material

The silt fence fabric will be a woven polypropylene geotextile manufactured for such purposes. The fabric shall have a minimum permeability of 02 centimeters per second (ASTM D 4991) and a maximum Apparent Opening Size of 0.25 millimeters (ASTM D 4751). Fence posts shall be either metal or wood and of sufficient thickness to permit driving into the ground to a depth of at least 18 inches, and to resist the lateral forces of silt and water accumulation.

Construction

Silt fence posts will be driven to at least eighteen inches below grade, with at least two feet protruding aboveground. The posts will be either steel or wood, spaced no more than eight feet apart. An anchor trench will be excavated along the upslope side of the fence line, if possible. The geotextile will be attached to the posts with double stitching of heavy-duty cord or prefabricated clips, and embedded in the anchor trench below original grade. To the extent practicable, the anchor trench shall be backfilled to secure the geotextile in the trench.

4.5.1.2.2 Hay Bales

Hay bales will be placed as needed. The main function of the hay bale is to reduce runoff velocity and effect deposition of the sediment. The anticipated design life for hay bale check dams is three to six months. Hay bales will be placed in a row with ends tightly butted. Each bale will be anchored in place, to the extent practicable, by two stakes driven through each bale. The first stake in each bale shall be driven toward the previously laid bale to force the bales together. Where the slope is five percent or greater and at outlets of surface ditches, two rows of hay bales with staggered ends will be provided. Bales will be straw or hay securely tied. Anchor stakes shall be wood or steel reinforcement bar. Anchor stakes will be of sufficient length to securely anchor each bale. Hay bales that become excessively clogged with sediment will be replaced with new bales.

4.5.1.3 Stabilized Construction Entrance

Existing concrete sidewalks and roadways will be maintained, to the extent practicable, during the course of the work. If necessary, stabilized construction entrances will be installed for remediation traffic exiting the Site to minimize the amount of Site soils tracked onto public roadways. For

additional details about the locations of entrances/ exits at the Site, see the Traffic Control Plan included in Section 4.6 of this SOP.

4.5.1.4 Soil Stockpiling/ Staging Area

For additional details pertaining to soil stockpiling, see the Soil/ Materials Management Plan, specifically Section 4.7, of this SOP.

4.5.1.5 Dust Suppression

The Contractor is responsible for dust (airborne particulate matter) control at the Site, in accordance with the NYSDOH CAMP (Appendix A) and all Federal, State and local requirements. For additional details pertaining to dust suppression, see the Dust Suppression Plan included in Section 4.9 of this SOP.

4.5.1.6 Work Stoppage/ Changes

In the event that adverse weather conditions affect the proper performance of existing erosion and sediment control measures, work should be stopped until appropriate modifications are made.

4.5.2 Maintenance

Remedial Engineering/Roux Associates will inspect erosion control devices on a regular basis and document inspections in the field book and alert the SSO of any problems. Soil Solutions will be required to repair and/or replace them as necessary. The inspections will includes checking for tears, breaks or clogging of barriers. The inspections will also include looking at the adequacy of erosion controls. Problems will be promptly corrected.

The need for any additional erosion control measures will be determined by Remedial Engineering/Roux Associates during construction on an as-needed basis, and shall be implemented and maintained by Soil Solutions. Each inspection or corrective action will be noted in the daily report.

4.5.3 Site Restoration

Soil Solutions will remove all temporary soil erosion and sediment control measures at the completion of the remedial action construction and portions of the redevelopment construction

described in the RAWP, , unless installed measures are deemed necessary for the future construction phases. As appropriate, all disturbed areas will be graded as necessary to facilitate proper drainage.

4.6 Traffic Control Plan

In accordance with the RAWP, the following Traffic Control Plan describes traffic control procedures to be implemented during the work.

All construction work will occur between 7 A.M. and 6 P.M. from Monday to Friday. Congress Builders may work longer hours and/or weekends, as permitted by the proper authorities. If work beyond these hours or on weekends is required, the proper authorities will be notified. Disturbances to the local community will be minimized to the extent practical.

Proposed truck routes for ingress and egress to the Site are shown in Figure 5.

Truck transport routes to/from the nearest main artery are as follows:

- Inbound Truck Route (shown in green on Figure 5)
  1. I-278 (Brooklyn Queens Expressway) toward Exit 30
  2. Take Exit 30 toward Flushing Avenue
  3. Merge onto Classon Avenue
  4. Turn left onto Kent Avenue (destination will be on the right)
- Outbound Truck Route (shown in red on Figure 5)
  1. Head southeast on N5th street.
  2. Turn right on Wythe.
  3. Turn left on Metropolitan.
  4. Turn right on Marcy Ave.
  5. Merge onto I-278 West via the ramp on the left to Brooklyn Queens Expressway/Staten Island

All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. These are the most appropriate route and takes into account: (a) limiting transport

through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility, to the extent practicable; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

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

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

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

The contractors operating on the Site will be responsible for providing all necessary personnel and materials (i.e., traffic lanes, safety cones, etc.) to control traffic entering and exiting the Site and for coordinating traffic control measures with the New York City Police Department, as necessary. Contractors operating on the Site shall be responsible for all applicable NYCDOT traffic control and notification requirements and incorporating those elements into this Traffic Control Plan.

4.7 Soil/ Materials Management Plan (SoMP)

In accordance with the RAWP, the following Soil/ Materials Management Plan (SoMP) describes soil/ materials management procedures to be implemented during the work.

4.7.1 Soil Screening Methods

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional (Remedial Engineering/Roux Associates Field manager) during all remedial construction and portions of the redevelopment construction activities at the Site during which earth disturbance activities are occurring and/or the potential for exposure to environmental contaminants in onsite and/or immediately adjacent offsite soil, groundwater and soil vapor exists. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion (COC).

Soils will be segregated based on previous environmental data and screening results into material that requires offsite disposal and material that requires testing.

4.7.2 Stockpile Methods

All impacted materials will be stockpiled in a designated area onsite, unless material can be direct loaded into trucks for disposal based on *in situ* waste characterization. Materials known to be hazardous waste will be staged separately from non-hazardous waste and stockpiles will be labeled accordingly. Material suspected to be hazardous (if any is encountered outside of the existing areas identified) will be stockpiled separately for waste characterization and stockpiles will be labeled as "results pending". The Remedial Engineer or her designee will be responsible for overseeing the waste segregation process and confirming that waste is segregated and stockpiled in the appropriate locations onsite. Soil Solutions will be responsible for installation, operation, and maintenance of the staging area and Roux Associates/Remedial Engineering onsite personnel will be responsible for inspection and monitoring of the staging area and for recommending any corrective actions should issues be identified. In general, stockpiles will be constructed by Soil Solutions to provide a 12-mil polyethylene base liner below the excavated soil. Stockpiles will be kept covered at all times with appropriately anchored tarps of 12 mil thickness or greater. Stockpiles will be routinely inspected by Roux Associates/Remedial Engineering onsite personnel and damaged tarp covers will be promptly replaced by Soil Solutions.

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

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

Stockpiles will be inspected daily (during the work week) and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

4.7.3 Materials Excavation and Load Out

The Remedial Engineering/Roux Associates Field Manager will oversee all invasive work and the excavation and load-out of all excavated material.

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

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

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

A truck wash will be operated onsite. The Remedial Engineering/Roux Associates Field Manager will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete.

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

The Remedial Engineering/Roux Associates Field Manager will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

4.7.4 Materials Transport Off-Site

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

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

All trucks will be washed prior to leaving the Site. Unless water is disposed of offsite, treatment of the truck wash water to the "contained-in action levels" for chlorinated solvents and the NYCDEP sewer discharge limits for other parameters will also be required, which will be provided by an onsite water treatment system with discharge to the New York City sewer system.

Truck transport routes are described in Section 4.6

4.7.5 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations.

If disposal of soil/fill from this Site is proposed for unregulated offsite disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated offsite management of materials from this Site will not occur without formal NYSDEC approval.

Offsite disposal locations for excavated soils will be identified based upon the *in situ* waste characterization sampling described in Section 6.3.1 of the RAWP. NYSDEC will be provided with a pre-excavation notification, including estimated quantities and a breakdown by class of disposal facility if appropriate, i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, Beneficial Use Facility, permitted recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report and in the FER. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, in accordance with 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited

from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

4.7.6 Materials Reuse On-Site

Chemical criteria for onsite reuse of material have been approved by NYSDEC and are listed in Table 16 of the RAWP. Remedial Engineering/Roux Associates will ensure that procedures defined for materials reuse in the RAWP are followed and that unacceptable material does not remain onsite.

Any demolition material proposed for reuse onsite will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing onsite will not be performed without prior NYSDEC approval.

4.7.7 Fluids Management

All liquids to be removed from the Site, including excavation dewatering and groundwater monitoring well purge and development waters, will be treated onsite or handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, but will be treated to the "contained-in action levels" for chlorinated solvents and the NYCDEP sewer discharge limits for other parameters, by an onsite water treatment system with discharge to the New York City sewer system or disposed of offsite in accordance with all applicable regulations.

The first batch of treated water will be held in the effluent storage tank or recycled back the head of the system until sample results indicate that the treated water meets the NYCDEP sewer discharge limits. The results will be provided to NYSDEC/NYCDEP for review and approval prior to discharge. If the action levels or permit requirements are not met, the water will be pumped back to the head of the system, treated, and tested again to determine compliance. If necessary, modifications to the treatment system components will be made to meet the required discharge limits and a description of the modifications will be submitted to NYSDEC and/or NYCDEP.

After the initial sampling and approval by the NYSDEC and/or NYCDEP, discharge would occur continuously, with sampling conducted on the frequency required by NYSDEC and/or NYCDEP. If an exceedance of discharge limits is noted during continuous discharge, discharge will be halted and the water in the effluent storage vessel(s) will be pumped back into the influent storage vessel(s) for additional treatment and a confirmatory sample will be collected. The confirmatory sample will be analyzed for those parameter(s) that exhibited an exceedance. After the exceedances have been remedied and confirmed by analytical results, the treated water will be discharged and operations will resume as described above (i.e., continuous discharge with sampling on the required frequency).

4.7.8 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the Remedial Engineering/Roux Associates and will be in compliance with provisions in the RAWP prior to receipt at the Site.

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

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 16 of the RAWP. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

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

4.7.9 Heavy Equipment Decontamination

This section of the SOP covers the decontamination of equipment that may become contaminated by potentially impacted soil and/or groundwater. Personnel decontamination will be conducted in accordance with the HASP.

All equipment used for excavation and other earthwork activities which comes in contact with potentially contaminated materials will be decontaminated prior to: crossing areas of the Site which do not require remediation or have already been remediated; handling clean fill materials; and leaving the Site.

The use of water for decontamination purposes will be minimized to the extent practicable. Dry brushes shall be used to decontaminate excavators, paving equipment, trucks, trailers and drill rigs. Any dry decontamination must be performed in accordance with the Dust Suppression Plan.

Prior to equipment leaving the Site, the final decontamination of heavy equipment will be capable of effectively removing all soil, residues and other debris adhering to equipment. Additives to the wash water may be used when necessary and approved by Remedial Engineer to enhance decontamination to levels acceptable to Remedial Engineer.

Decontamination waters will be collected and managed as construction water (i.e., treated onsite and discharged to the New York City sewer system under a NYCDEP sewer permit).

Erosion control measures necessary to prevent any migration of decontamination washwaters into uncontaminated areas of the Site, or off-Site will be installed.

A temporary decontamination pad (truck wash) will be installed to decontaminate trucks and other vehicles/equipment that may come into contact with impacted soil or groundwater. The decontamination pad wil be constructed such that any liquids will be contained and managed onsite or disposed of offsite. The decontamination pad will be sized to accommodate the largest construction vehicle to be used, and located adjacent to the waste staging area.

Any leakage, spillage, or contamination of soil or equipment caused by the decontamination activities will be cleaned up promptly.

Non-impacted soil contaminated by decontamination activities, if any, will be excavated and disposed in accordance with all governing regulatory agencies.

After completion of the Work and upon approval by the Remedial Engineer, the decontamination pad will be removed in accordance with applicable local, state and federal laws and regulations. Any material from beneath the decontamination pad which has become contaminated as a result of the decontamination operations will be removed and disposed offsite.

All safety equipment and other equipment used during decontamination procedures will be either decontaminated and salvaged, or contained and disposed of in accordance with applicable regulatory requirements.

4.8 Odor Control Plan

In accordance with the RAWP, this section includes the Odor Control Plan for the Site. The objective of this odor control plan is to control emissions of nuisance odors offsite and onsite. Specific odor control methods to be used on a routine basis will include backfilling excavations within the hot spot area in a timely manner to the extent practicable, and maintaining covers over stockpiled impacted soils. If nuisance odors are identified, work in the particular affected work area will be halted and the source of odors will be identified and corrected. Work will not resume in this area until nuisance odors have been abated (work may continue in other, unrelated areas.). NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Roux Associates/Remedial Engineering, will be present during intrusive work and will monitor for nuisance odors and recommend measures for odor control, including but not limited to halting the work temporarily, as necessary to evaluate options. Soil Solutions will be responsible for implementing all odor controls recommended by Remedial Engineering/Roux Associates, including halting the work.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. Tarps will be employed to suppress vapor and odors from stockpiled soil in the staging area. Foam will also be used to suppress vapors and odors, if necessary. The foam unit, such as a Rusmar PFU-400, includes a self-contained 400-gallon tank for mixing foam concentrate. If needed, foam will be applied to stockpiled soil and excavation sidewalls. All necessary means will be employed to prevent onsite and offsite nuisances. If odors develop and cannot be otherwise controlled, additional means to eliminate nuisance odors will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

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

In summary, if an odor complaint is received, the following procedure will be implemented:

1. Work in the affected area will be halted, and the source of odors will be identified.
2. NYSDEC, NYSDOH, and the Volunteer will be notified of the odor complaint.
3. Nuisance odors will be abated through the use of tarps to cover stockpiles, backfilling open excavations within the hot spot area in a timely manner, to the extent practicable; and/or use of a foam unit or other appropriate measures.
4. Work will resume in the affected area when the nuisance odors have been abated, as determined by the Roux Associates/Remedial Engineering onsite personnel.

4.9 Dust Suppression Plan

In accordance with the RAWP, this section includes the Dust Suppression Plan for the Site. All invasive work will be completed in accordance with the CAMP that is included within the HASP

in Appendix A. This Dust Suppression Plan addresses dust management during invasive onsite work and includes, as needed, any or all of the items listed below:

- Dust suppression may be achieved through the use of a dedicated hydrant connection for road wetting.
- Gravel may be used on roadways to provide a clean and dust-free road surface.

Onsite truck routes may be limited to minimize the area required for water truck sprinkling. Soil Solutions will be required to maintain all excavations, stockpiles, access roads, and all other work areas to minimize dust that would cause a hazard or nuisance to others. Dust will be monitored in accordance with the requirements of the HASP and the CAMP (both provided in Appendix A). Based on the results of the monitoring, Soil Solutions will implement necessary measures to control dust to acceptable levels, including one or more of the following measures:

1. applying water on the haul roads;
2. misting equipment and excavation faces;
3. hauling materials in tarped containers;
4. reducing speed of vehicles moving through areas of the Site;
5. covering excavated areas and material after excavation activity ceases; and
6. if necessary, temporarily stopping work until one or more of the above measure have been successfully implemented and or the condition has been mitigated.

The contractor will have access to a local hydrant (with associated hydrant use permit) equipped with the necessary water distribution equipment dedicated to dust suppression available onsite at all times.

In addition, existing concrete sidewalks and asphalt roadways will be maintained at each entrance/egress point, to the extent practicable. As necessary, a "Stabilized Construction Entrance" will be installed for the purpose of keeping trucks and equipment clean of soil and other materials during site remediation and redevelopment.

4.10 Construction Contingency Plan (CCP)

In accordance with the RAWP, this section includes the Construction Contingency Plan for the Site.

4.10.1 Unexpected Conditions

Unanticipated subsurface obstructions/conditions that may be encountered include building footings and foundations, and large pieces of demolition debris. This material, if encountered, will be managed as described below and disposed of in accordance with all federal, state, and local regulations.

If encountered within the excavation area, these materials will be cut or broken into lengths or pieces suitable for offsite disposal in accordance with approved disposal facility requirements. If this type of debris is not visually impacted, it will be disposed as construction and demolition debris at the approved licensed construction and demolition debris disposal facility. If the debris is visually impacted, it will be either decontaminated (if possible) and managed as non-impacted construction and demolition debris or disposed of at an appropriate approved facility. Any part of the old foundation or demolition debris that extends below the depth of the proposed excavation will be cut off and capped prior to construction of the pressure slab.

Unanticipated conditions may include underground storage tanks (USTs), buried drums, and previously unidentified grossly contaminated petroleum- or CVOC-impacted soil. If encountered, these materials will be excavated within the limits of the proposed excavation, stockpiled separately, sampled for disposal purposes and disposed of offsite in accordance with applicable regulations and guidance.

4.10.2 On-Site Release

This section of the CCP discusses protocols to be followed for an onsite liquid or solid release.

4.10.2.1 Liquid Spill

Site personnel are required to report any onsite reportable spill or release of liquid to Congress Builders and Remedial Engineering/Roux Associates onsite field manager, and to commence an Incident Investigation.

The use of conventional construction equipment during remediation activities (excavators, loaders, compactors, generators, etc.) presents the potential for spill scenarios. These include the leakage of fuel, motor oil, or hydraulic fluid during operation, refueling, and equipment maintenance. To prevent equipment leakage during operation, the following measures will be implemented during construction activities:

- Spill control and clean-up materials will be staged onsite in a known location and will be available for use in the event of a spill.
- Small spill control kits will be placed on each piece of equipment for use in the event of a spill.
- All leaks or spills, regardless of size, will be cleaned up immediately.
- All equipment used onsite will be in good working condition and be inspected daily for leaks. Any equipment observed to be leaking when arriving onsite will be denied entry. Any equipment observed to be leaking while onsite will immediately be relocated to a designated equipment staging area for repair.
- All absorbent material used to clean up leaks and spills will be disposed of in accordance with applicable regulations.
- All collected liquids resulting from spills will be stored separately from construction waters for subsequent testing and disposal.

All spills of one (1) gallon or larger will be reported to Congress Builders and Remedial Engineering/Roux Associates onsite field manager. The *de minimis* criteria for reporting spills to the NYSDEC, **for petroleum only,** are (1) less than 5 gallons; (2) onto an impervious surface; and (3) cleaned up within two hours of discovery. If the spill does not meet all three of these criteria, the spill will be reported to NYSDEC Spill Hotline Number and other appropriate agencies. Only Hazardous Waste Operations and Emergency Response (HAZWOPER) trained personnel will be used to handle minor spills encountered during project construction activities.

4.10.2.2 Solid Spill

Spill clean-up procedures for truck spills that occur onsite will include consolidation of spilled soil and reloading onto the truck. In the event of a spill, the incident will be promptly reported to Congress Builders and Remedial Engineering/Roux Associates onsite field manager, and cleanup of the spilled soil will be performed immediately. Spilled materials will be recovered using hand tools, to the extent practicable. If a large spill occurs, a small front-end loader may be used. If a

spill occurs in a high traffic area, traffic cones, flares, signs, and flag persons will be mobilized, as necessary, to direct and control traffic. The spill will be reported by contacting the NYSDEC Spill Hotline Number within 2 hours of the incident. The report will provide details of the location, date, and time of the spill, the volume of soil spilled, the response actions taken, and precautions that will be implemented to avoid future spills. Depending on the amount of spilled material, appropriate notification to local emergency management personnel will be provided.

Spills or leaks that may occur within a lined staging area will be addressed by first inspecting the area for evidence of leaks or damages in the liner system. If the liner is damaged or leaking, material will no longer be added to the lined staging area and the leakage will be contained. If needed the liner system will be repaired or replaced.

4.10.3 Off-Site Release

Prior to beginning transportation and disposal activities, transport drivers will be advised to strictly observe the designated transport routes and immediately report any spills or soil accumulations attributable to Site transport to Congress Builders and Remedial Engineering/Roux Associates onsite field manager. Spill clean-up procedures for truck spills that occur during transport between the Site and the disposal facility will include the following:

- The transporter will secure the area, determine the extent of injuries, if any, and implement emergency first aid, if required;
- The transporter will notify local authorities, fire, police, etc., and the transporter's headquarters;
- The transporter will immediately dispatch a spills response contractor to the scene of the incident;
- A response contractor will mobilize to the scene of the incident;
- The transporter will notify appropriate federal and state authorities (e.g., United States Environmental Protection Agency, United States Department of Transportation) and notify Congress Builders and Roux Associates; and
- The NYSDEC will be appropriately notified within two hours of the incident.

4.10.4 Spill Control Equipment

The location of the spill control equipment will be discussed with Site personnel during Site orientation. In general, spill control equipment will be stored near the work zones and on the equipment for quick access. The following spill control equipment will be available on site:

- Sorbent Pads;
- Oil-Dri;
- Spill Kits (in equipment); and
- Shovels.

In addition, to the above, onsite spills of solid material may be managed with equipment such as loader and excavators.

4.10.5 Fire Prevention

In the event of a fire or explosion, the local fire department will be summoned immediately and Congress Builders will be notified.

Fire protection, onsite, in the form of portable fire extinguishers meeting or exceeding NFPA-10-1984 requirements will be provided. Fire extinguishers will be tested annually and inspected monthly. A Fire Extinguisher Monthly Inspection form will be used to document inspections.

In the event of a fire that cannot be controlled with available equipment onsite, the local fire department will be summoned immediately by Congress Builders or Remedial Engineering/Roux Associates onsite field manager. The fire department will be informed of the situation and any Site hazards upon their arrival. If firefighters and/ or equipment enter areas with residual contamination, decontamination will be required upon leaving.

In the event of fire or explosion, or if vapor concentrations of explosive vapors or gases approach or exceed 10 percent of the Lower Explosion Limit (LEL), if monitored, personnel will evacuate the area immediately.

4.10.6 Severe Weather Conditions

The assessment of current weather conditions or severe weather report is the responsibility of the Contractor performing intrusive work. Weather extremes, such as high winds, cold temperatures, ice, snow, sleet, and freezing rain, present potential hazards to workers and equipment and therefore require special consideration. Weather reports will be monitored on a regular basis utilizing National Oceanic and Atmospheric Administration (NOAA) radio warnings, local forecasts and regional reports warnings of severe weather.

4.10.6.1 Extreme Temperatures

During the performance of intrusive work, hot and cold weather may be encountered. The Contractor's project specific HASP will address precautions and treatment of heat and cold stress.

4.10.6.2 Rainfall/ Snowfall Event

Rainfall and snow events will be closely monitored during the performance of intrusive work, when performed. Based on current conditions and the forecasted weather, a decision by 6:00 a.m. will be made whether to proceed with normal schedules, delay the day's operation, or cancel operations for the day. In some instances, the decision can be made the preceding afternoon or evening. One of the key factors will be whether associates will be able to travel safely to and from the job site.

Generally, snow and ice management operations will be implemented during major snowstorm activity or after the accumulation of one or more inches of snow and/ or a covering sheet of ice. This generic standard is subject to evaluation relative to the storm in progress at the time control operations are instituted.

In the event a significant rain or snow storm event is predicted, the following preparation activities will be implemented:

- Equipment will be removed and placed in the equipment staging area.
- Contaminated material stockpiles and drying agents (if present) will be covered with polyethylene sheeting and the sheeting will be secured in place with sand bags.
- Erosion controls) will be inspected to ensure they are securely in place and functional.

The following activities will be implemented after a significant storm event:

- Erosion controls will be inspected within 24 hours of the rain/ snow event. Observations will be recorded and repairs made as needed.
- Onsite vehicle access areas will be inspected for wash outs and other weather related damages. Repairs to the roadways will be made as needed.
- Staging area(s) will be inspected for water accumulation. If present, water will be pumped and managed in accordance with Section 4.7.7.

4.10.6.3 Thunderstorms and Lightning

The 30 – 30 Rule for lightning safety will be followed, when applicable. When there is less than 30 seconds between a lightning flash and the following thunder, work will be suspended and personnel will seek shelter. Work will not resume until 30 minutes after the last lightning strike with an interval less than 30 seconds.

4.10.6.4 Tornado Related Weather

A tornado watch defines an area where tornadoes and other kinds of severe weather are possible in the next several hours. It does not mean tornadoes are imminent but that Site personnel must be alert, and to be prepared to go to safe shelter if tornadoes do happen or a warning is issued. During this time the following procedures will be followed:

- Evacuation notification will be by verbal communication on radios;
- Keep upwind of smoke, vapors, or spill location;
- Perform personnel and equipment decontamination, if practical and in a timely manner;
- If the performance of personnel and equipment decontamination cannot occur in a practical or timely manner, site personnel should remove contaminated clothing once they are in a location of safety and leave it near the exclusion zone;
- Tune into NOAA radio;
- Verify location of fellow workers and subcontractors;
- Watch the sky;
- Ensure access to safe shelter is available; and
- Contact all site personnel so they are aware of the weather conditions.

A tornado warning means that a tornado has been spotted, or that Doppler radar indicates a thunderstorm circulation which can spawn a tornado. If a tornado warning is issued for the area, personnel will take immediate cover.

4.10.7 Evacuation Procedures

Evacuation procedures are described in the HASP in Appendix A.

4.11 General Remedial Construction Information

4.11.1 Site Security

Security for the work, equipment, materials, supplies, facilities, personnel, and incidentals will be provided throughout the performance of the work at the Site. The Site will be surrounded by perimeter fencing in accordance with the New York City construction and building code requirements. The fences and gates will be closed and locked when there is no activity on the Site and any breaks or gaps will be repaired immediately. Temporary fencing will supplement the perimeter fencing to delineate and secure the area of ongoing remediation activities within the Site such as soil stockpiles, and health and safety exclusion zones.

All personnel and visitors will be required to sign-in upon entering the Site and sign-out upon leaving. A sign-in/sign-out sheet will be maintained at the Site. To restrict access during remediation activities, warning signs and barrier tape will be installed at certain locations, such as open excavations.

4.11.2 Worker Training and Monitoring

Refer to Section 7.0 of the HASP for worker training requirements.

4.11.3 NYSDEC BCP Signage

A project sign will be erected at the main entrance to the Site prior to the start of any remedial activities. The sign will indicate that the project is being performed under the New York State Brownfield Cleanup Program. The sign will meet the detailed specifications provided by the NYSDEC Project Manager and contained in Appendix E of the RAWP.

4.11.4 Pre-Construction Meeting with NYSDEC

A project kick-off meeting will be conducted with the Volunteer, Roux Associates/Remedial Engineering, NYSDEC and the selected Contractor prior to the commencement of any intrusive remedial activities.

4.11.5 Emergency Contact Information

An emergency contact sheet with names and phone numbers was included in the HASP. Since the contractor had not yet been selected, the emergency contact list has been updated and is included as Appendix D. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

5.0 Record Keeping and REPORTING

The following reporting will be conducted during the course of the implementation of the remedial action construction and portions of the redevelopment construction described in the RAWP.

A tracking system will be created for all documentation required as part of the including:

- field books;
- drawings;
- specifications;
- addenda;
- written field orders and/or instructions;
- daily activity reports;
- field test records;
- photographs;
- manifest and/or bills of lading;
- safety and accident reports; and
- community air monitoring reports.

5.1 Daily Reports

Daily activity reports will be maintained by the various contractors for all construction activities. Daily activity reports will include:

- the date;
- the weather;
- personnel;
- major Equipment onsite;
- work activities; and
- future work activities.

Daily activity reports will be submitted to Congress Builders and Roux Associates electronically prior to the contractor leaving the Site.

In addition, Community Air Monitoring reports will be generated on a daily basis and maintained onsite.

Brief daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day following the reporting period and will include:

- The NYSDEC assigned project number.
- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including excursions;
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAWP or other sensitive or time critical information. However, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to NYSDEC Project Manager via personal communication by Remedial Engineering/Roux Associates.

A Site map that shows a predefined alpha-numeric grid for use in identifying locations described in reports submitted to NYSDEC is attached in Plate 1.

Comprehensive daily activity reports and other above-referenced forms and documents will be included in the Final Engineering Report.

5.2 Monthly Reports

Prior to issuance of the COC by NYSDEC, monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the 10th of the month following the end of the month of the reporting period and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., tons of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,
- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

5.3 Other Reporting

Photographs will be taken during implementation of the remedial action construction and portions of the redevelopment construction described in the RAWP submitted to NYSDEC in digital format with the daily reports and within the FER. Photos will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any Remedial Actions will be provided. Representative photos will be provided of each contaminant source, source area and Site structures before, during and after remediation. Photos will be included in the Final Engineering Report.

Job-site record keeping for all remedial work will be appropriately documented. These records will be maintained on-Site at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

5.4 Final Engineering Report

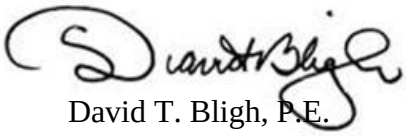
In accordance with the RAWP, a FER will be prepared following completion of all remedial construction activities.

6.0 SCHEDULE

A preliminary schedule for implementation of the remedial action construction and portions of the redevelopment construction described in the RAWP and this SOP is provided in Appendix B.

Respectfully submitted,

ROUX ASSOCIATES, INC.



David T. Bligh, P.E.
Project Engineer

REMEDIAL ENGINEERING, P.C.

Noelle M. Clarke, P.E
Principal Engineer

FIGURES

1. Site Location Map
2. Site Plan
3. Soil Erosion and Sediment Controls During Phase I Excavation
4. Soil Erosion and Sediment Controls During Phase II Excavation
5. Waste Transport Routes

QUADRANGLE LOCATION

SOURCE:
USGS; 1995, BROOKLYN, NY
7.5 Minute Topographic Quadrangle

N

0 1000'

Title:

SITE LOCATION MAP

149 KENT AVENUE
BROOKLYN, NEW YORK

Prepared for:

KENT & WYTHE OWNERS LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: D.T.B.	Date: 28AUG13	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	1
Project Mgr.: J.D.	Project No.: 2158.0002Y000	
File: 2158.0002Y125.01.CDR		

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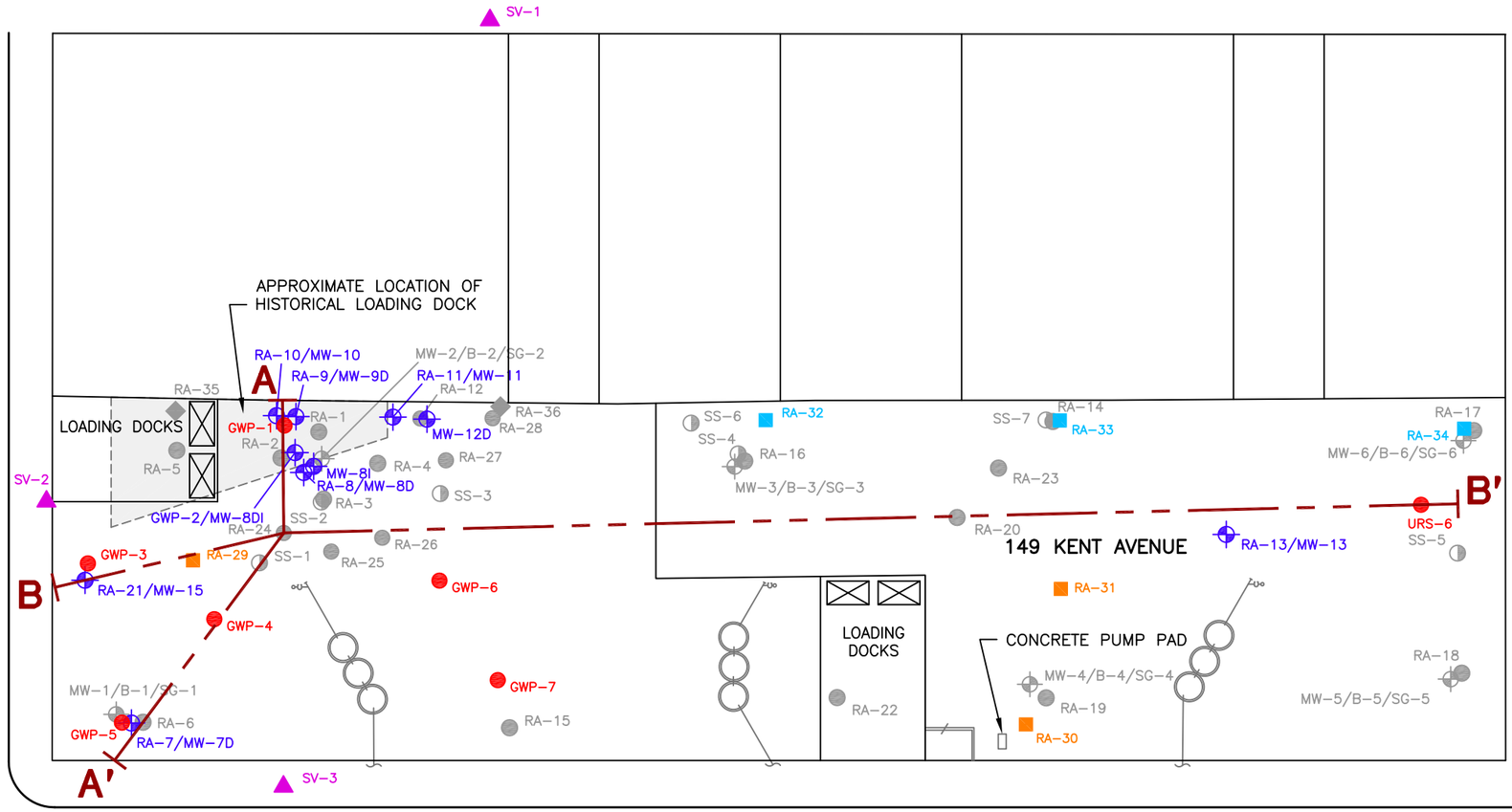

LEGEND

MW-1/B-1/SG-1	GROUND WATER MONITORING WELL/ SOIL BORING/SUBSLAB SOIL VAPOR SAMPLING POINT INSTALLED BY AKRF ENVIRONMENTAL CONSULTANTS
SS-1	APPROXIMATE LOCATION OF SUBSLAB VAPOR SAMPLING POINT INSTALLED BY ROUX ASSOCIATES, INC.
RA-1	LOCATION OF SOIL BORING (COMPLETED FEBRUARY 2013 BY ROUX ASSOCIATES, INC.)
RA-13/MW-13	LOCATION OF SOIL BORING AND MONITORING WELL
SV-1	LOCATION OF SOIL VAPOR SAMPLING POINT
GWP-1	LOCATION OF GROUNDWATER PROFILE BORING
RA-32	LOCATION OF SOIL BORING (RA-32 THROUGH RA-34) (CONTINUOUS SAMPLING TO 6FT BLS)
RA-29	LOCATION OF SOIL BORING (RA-29 THROUGH RA-31) (CONTINUOUS SAMPLING TO WATER TABLE)
	LOCATION OF HYDROGEOLOGIC CROSS SECTION TRANSECT (GENERALIZED CROSS SECTIONS ARE SHOWN ON PLATES 7 & 8)

NOTES

BASEMAP PREPARED BASED ON SURVEY DATA COLLECTED BY ANGLE OF ATTACK LAND SURVEYORS, LLC ON JUNE 1, 2013.

FT BFS – FEET BELOW FLOOR SLAB

40' 0 40'

Title:

SITE PLAN

149 KENT AVENUE
BROOKLYN, NEW YORK

Prepared For:
KENT & WYTHE OWNERS LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: W.M.	Date: 28AUG13	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	2
Project Mgr: J.D.	Project: 2158.0001Y000	
File: 2158.0001Y125.02.DWG		

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SURVEY NO. 45410—4

45410—4 .CRD
45410—4 .DWG

PROVIDE SIGN AT INTERSECTION ON NORTH 6TH ST: "SIDEWALK CLOSED. CROSS HERE TO USE OPPOSITE SIDEWALK."

MAINTAIN 22' ROADWAY CLEARANCE AND BIKE LANE

OCCUPY 8' OF ROADWAY

2 STORY BRICK BUILDING

2 STORY BRICK BUILDING

2 STORY STUCCO BUILDING

2 STORY STUCCO BUILDING

2 STORY BRICK & CONCRETE BLOCK BUILDING

2 STORY BRICK & CONCRETE BLOCK BUILDING

Parapet EL 55.4 (Shaft)
Parapet EL 49.1 (Building)

Parapet EL 47.3

Parapet EL 45.4

Parapet EL 53.2

Parapet EL 50.8

Parapet EL 53.5 (Shaft)
Parapet EL 50.1 (Building)

5'-0" MIN

10'-0"

20'-0"

±15'-0"

8'-0"

22'-0"

MAINTAIN 5' MINIMUM PEDESTRIAN WALK WITH WATER FILLED PLASTIC BARRIERS

(1) 20' SLIDING GATE

10' WIDE EXISTING SIDEWALK

8' HIGH CONSTRUCTION FENCE ALONG CURB LINE

SOE (TYP) ALONG THREE SIDES

REMOVABLE FENCE AROUND HOT SPOT AREA

STABILIZED CONSTRUCTION ENTRANCE

400'
400.33' US

100'
100.08' US

DOWN

TRUCK WASH

10' WIDE EXISTING SIDEWALK

OCCUPY 8'-0" OF ROADWAY

EQUIPMENT FOR DEWATERING

CARBON ABSORBERS

BAG FILTER SKID

MATERIAL STORAGE

SITE SECURITY #1

KENT AVENUE

PEDESTRIAN WALK

WYTHE AVENUE

60' WIDE

NORTH 5TH STREET

DRIVING LANE

(PARKING LANE)

MAINTAIN 22' ROADWAY CLEARANCE

(1) 10' SWING GATE

FRAC TANK TRUCK LOCATION

5' CHAIN LINK FENCE OVER 3' WATER FILLED PLASTIC BARRIERS (TYP ALONG NORTH 5TH ST, KENT AVE AND WYTHE ST.

±40'-0"

(2) 20' SLIDING GATES

10'-0"

8'-0"

±25'-6"

20' SLIDING GATE

±20'-0"

15'-0"

SITE SECURITY #2

PROVIDE SIGN AT BOTH INTERSECTIONS ON WYTHE AVE: "SIDEWALK CLOSED. CROSS HERE TO USE OPPOSITE SIDEWALK."

MATERIAL STORAGE

5' CHAIN LINK FENCE OVER 3' WATER FILLED PLASTIC BARRIERS

BIKE LANE

OFFICE TRAILER

BIKE LANE

DRIVING LANE

(PARKING LANE)

0 8' 16' 32' 64'

LEGEND

PROPOSED LOCATION OF HAY BALES

NOTE

STORMWATER DRAINS IN VICINITY OF THE SITE WILL BE COVERED WITH FILTER FABRIC.

FIGURE 3

DRAWN: RP/AW/EK

CITY OF NEW YORK
KINGS COUNTY
TAX BLOCK 2333
TAX LOT 01

SOIL EROSION AND SEDIMENT CONTROLS DURING PHASE I EXCAVATION

149 KENT AVENUE BROOKLYN, NY

REV	DATE	DESCRIPTION	ck
	03-24-14	Site Logistics Plans	
		Excavation Phase 1	

CONGRESS BUILDERS LLC
1865 PALMER AVE
LARCHMONT, NY 10538
914-833-3000

SURVEY NO. 45410—4

45410—4 .CRD
45410—4 .DWG

PROVIDE SIGN AT INTERSECTION ON NORTH 6TH ST: "SIDEWALK CLOSED. CROSS HERE TO USE OPPOSITE SIDEWALK."

MAINTAIN 22' ROADWAY CLEARANCE AND BIKE LANE

OCCUPY 8' OF ROADWAY

2 STORY BRICK BUILDING

2 STORY BRICK BUILDING

2 STORY STUCCO BUILDING

2 STORY STUCCO BUILDING

2 STORY BRICK & CONCRETE BLOCK BUILDING

2 STORY BRICK & CONCRETE BLOCK BUILDING

5'-0" MIN

10'-0"

20'-0"

±15'-0"

8'-0"

22'-0"

MAINTAIN 5' MINIMUM PEDESTRIAN WALK WITH WATER FILLED PLASTIC BARRIERS

(1) 20' SLIDING GATE

10' WIDE EXISTING SIDEWALK

8' HIGH CONSTRUCTION FENCE ALONG CURB LINE

MATERIAL STORAGE

5' CHAIN LINK FENCE OVER 3' WATER FILLED PLASTIC BARRIERS

BIKE LANE

STABILIZED CONSTRUCTION ENTRANCE

SOE (TYP) ALONG THREE SIDES

CARBON ABSORBERS

BAG FILTER SKID

SITE SECURITY #1

MATERIAL STORAGE

10' WIDE EXISTING SIDEWALK

OCCUPY 8'-0" OF ROADWAY

EQUIPMENT FOR DEWATERING

DOWN

TRUCK WASH

10'-0"

8'-0"

±25'-6"

±40'-0"

(2) 20' SLIDING GATES

20' SLIDING GATE

±20'-0"

15'-0"

KENT AVENUE

PEDESTRIAN WALK

WYTHE AVENUE

OFFICE TRAILER

BIKE LANE

DRIVING LANE

(PARKING LANE)

NORTH 5TH STREET

DRIVING LANE

(PARKING LANE)

(1) 10' SWING GATE

MAINTAIN 22' ROADWAY CLEARANCE

FRAC TANK TRUCK LOCATION

5' CHAIN LINK FENCE OVER 3' WATER FILLED PLASTIC BARRIERS (TYP ALONG NORTH 5TH ST, KENT AVE AND WYTHE ST.

SITE SECURITY #2

PROVIDE SIGN AT BOTH INTERSECTIONS ON WYTHE AVE: "SIDEWALK CLOSED. CROSS HERE TO USE OPPOSITE SIDEWALK."

0 8' 16' 32' 64'

LEGEND

PROPOSED LOCATION OF HAY BALES

NOTE

STORMWATER DRAINS IN VICINITY OF THE SITE WILL BE COVERED WITH FILTER FABRIC.

FIGURE 4

DRAWN: RP/AW/EK

CITY OF NEW YORK
KINGS COUNTY
TAX BLOCK 2333
TAX LOT 01

SOIL EROSION AND SEDIMENT CONTROLS DURING PHASE II EXCAVATION

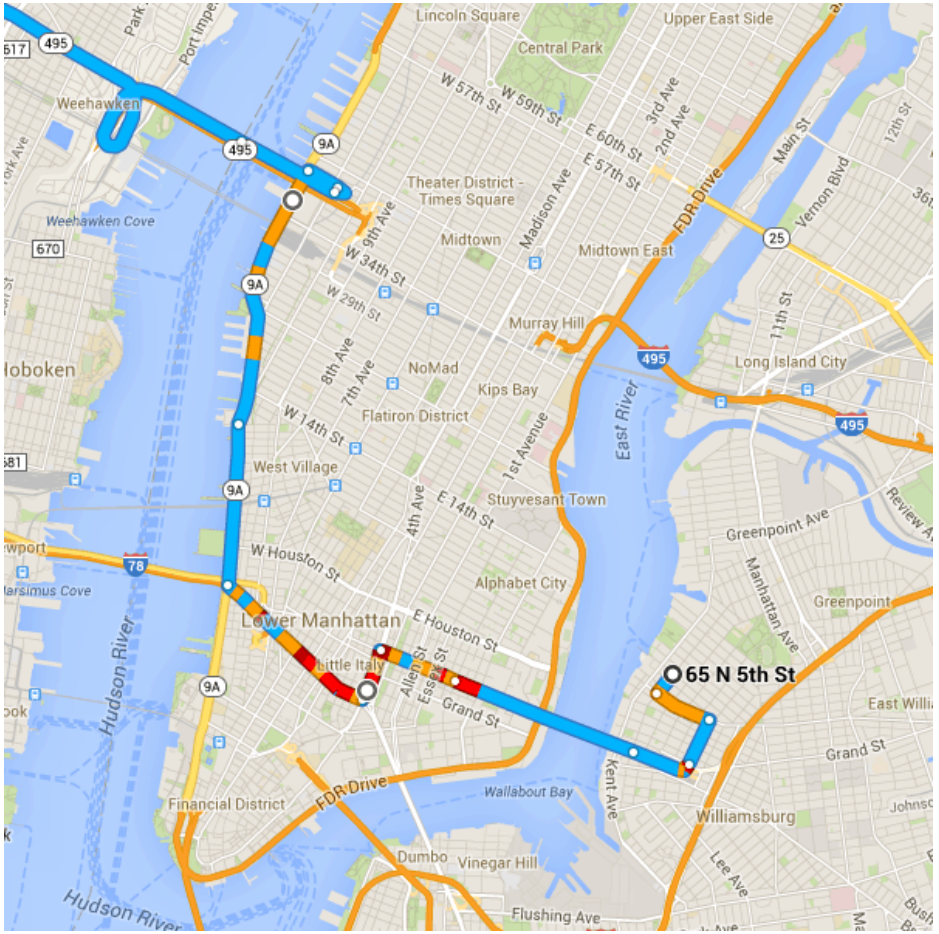
149 KENT AVENUE BROOKLYN, NY

REV	DATE	DESCRIPTION	ck
	03—24—14	Site Logistics Plans	
		Excavation Phase 2	

CONGRESS BUILDERS LLC
1865 PALMER AVE
LARCHMONT, NY 10538
914—833—3000

OUTBOUND TRUCK ROUTE FROM 149 KENT AVE SITE (C224159) TO LINCOLN TUNNEL AND POINTS IN NEW JERSEY

1. Head **southeast** on **N 5th St** toward **Wythe Ave**
   7 ft
2. Take the 1st **right** onto **Wythe Ave**
   0.1 mi
3. Turn **left** at the 3rd cross street onto **Metropolitan Ave**
   0.3 mi
4. Turn **right** onto **Roebling St**
   0.3 mi
5. Take the ramp onto **Williamsburg Bridge**
   0.4 mi
6. Slight **left** to stay on **Williamsburg Bridge**
   1.1 mi
7. Continue onto **Delancey St**
   0.5 mi
8. Turn **left** onto **Bowery**
   0.3 mi
9. Turn **right** onto **Canal St**
   1.0 mi
10. Turn **right** onto **West St**
    0.9 mi
11. Continue onto **11th Ave**
    1.6 mi
12. Turn **right** onto **W 40th St**
    0.2 mi
13. Merge onto **NY-495 W/Lincoln Tunnel** via the ramp to **New Jersey**
    0.1 mi



bing Maps

A **Lincoln Tunnel, New York, NY 10018**

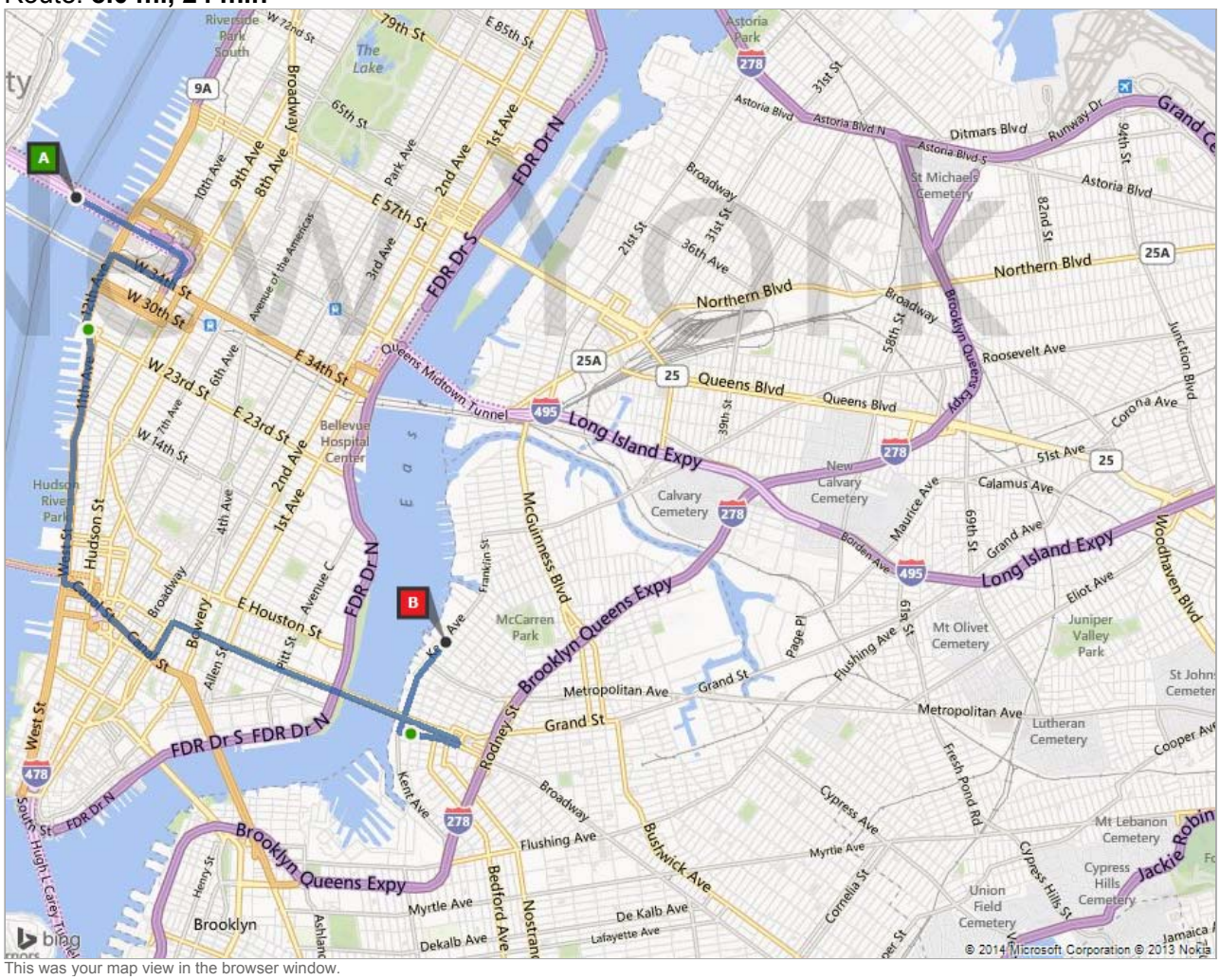
Via: RT-9A S / 12th Ave / West Side Hwy
Via: Broadway

B **149 Kent Ave, New York, NY 11249**

Route: **8.0 mi, 24 min**

A	**Lincoln Tunnel, New York, NY 10018**	**A–B: 8.0 mi** 24 min
	1. Depart **RT-495 E / Lincoln Tunnel** toward W 36th St *Toll road*	1.0 mi
↑	2. Keep **straight** onto **Dyer Ave**	269 ft
↱	3. Turn **right** onto **W 34th St**	0.4 mi
↰	4. Turn **left** onto **RT-9A S / 12th Ave / West Side Hwy**	2.3 mi
↰	5. Turn **left** onto **Canal St**	0.8 mi
↰	6. Turn **left** onto **Centre St**	0.2 mi
↑	7. Road name changes to **Cleveland Pl**	233 ft
↱	8. Turn **right** onto **Kenmare St**	0.2 mi
↗	9. Bear **right** onto **Delancey St**	0.5 mi
↑	10. Keep **right** onto **Williamsburg Bridge**	1.4 mi
↗	11. Take ramp **right** for **Bway West** toward **Staten Island**	148 ft
↱	12. Turn **right** onto **Broadway**	0.1 mi
↑	13. Keep **left** to stay on **Broadway**	0.3 mi
↱	14. Turn **right** onto **Kent Ave**	0.7 mi
B	15. Arrive at **149 Kent Ave, New York, NY 11249** *The last intersection is N 5th St* *If you reach N 6th St, you've gone too far*	

Route: **8.0 mi, 24 min**



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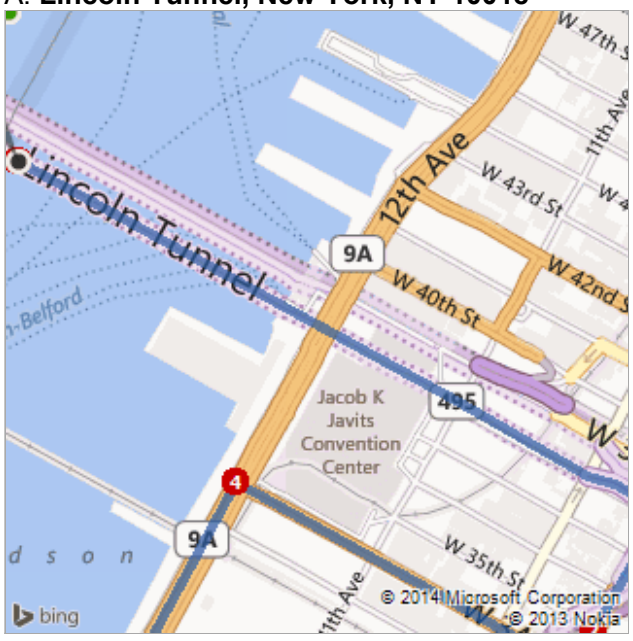
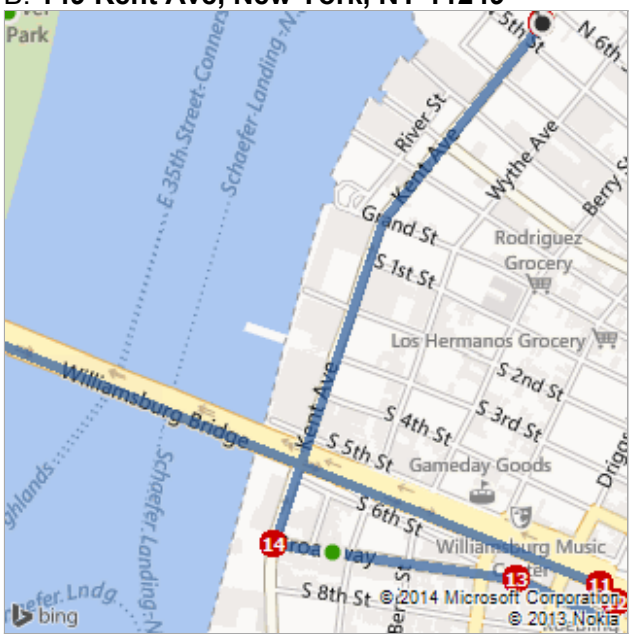
A: **Lincoln Tunnel, New York, NY 10018**



B: **149 Kent Ave, New York, NY 11249**



APPENDICES

A. Health and Safety Plan with Community Air Monitoring Plan
B. Construction Schedule
C. Quality Assurance Project Plan
D. Emergency Contact List

APPENDIX A

Health and Safety Plan with Community Air Monitoring Plan

December 7, 2013

HEALTH AND SAFETY PLAN

149 Kent Avenue
Site Number C224159

Prepared for

KENT & WYTHE OWNERS LLC
149 Kent Avenue
Williamsburg
Kings County, New York

ROUX ASSOCIATES, INC.

Environmental Consulting & Management

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

TABLE OF CONTENTS

TABLE OF CONTENTS

(Continued)

TABLE OF CONTENTS

(Continued)

TABLES

FIGURES

ATTACHMENTS

APPROVALS

By their signature, the undersigned certify that this Health and Safety Plan (HASP) is approved and will be utilized at the project site located at 149 Kent Avenue, Brooklyn, New York.

Gerry Miceli Project Executive Congress Builders LLC (General Contractor)	Date
Joshua Elkin Site Health and Safety Officer Congress Builders LLC (General Contractor)	Date

1.0 INTRODUCTION

This Site-specific Health and Safety Plan (HASP) has been prepared by Roux Associates, Inc. (Roux Associates), on behalf of Congress Builders LLC (General Contractor), in accordance with 29 CFR 1910.120 Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER). This HASP was developed to address potential environmental hazards that may be encountered during the implementation of the remedial action construction and portions of the redevelopment construction activities at 149 Kent Avenue, Brooklyn, New York (Site) (Figure B1), during which earth disturbance activities are occurring and/or the potential for exposure to environmental contaminants in onsite and/or immediately adjacent offsite soil, groundwater and soil vapor exists. Portions of the Site will be established in which the risk of exposure to impacted materials will be minimized by removal of the impacted material and/ or the installation of engineering controls, creating a "remediated zone" (RZ). The level of training for workers within the RZ may be less than that required in non-remediated areas or areas undergoing remediation, as discussed in Section 6. However, Site conditions will be monitored in the RZ to verify that workers are not being exposed to onsite and/or immediately adjacent offsite contaminants. All contractors and subcontractors working at the Site shall be aware that **no earth disturbance activities shall occur unless all provisions of this HASP are met.**

General construction hazards (i.e., excavation, support of excavation, heat stress, cold stress, etc.) are not included in this HASP, but will be addressed by the General Contractor in accordance with applicable regulations. The HASP will be implemented by the General Contractor's Site Health and Safety Officer (SSO) during work at the Site or by a person designated by the SSO. As a note, throughout this HASP the SSO or their designated representative will be referred to as the SSO.

Roux Associates' Field Manager will be onsite during the remediation and portions of the redevelopment. The Roux Associates Field Manager (and office/corporate technical and health and safety personnel, as needed) will assist and consult with the SSO regarding the identification and response to health and safety-related issues on an ongoing basis. Since Site conditions are dynamic and new hazards may appear at any time, personnel must remain alert to existing and potential hazards as Site conditions change and protect themselves accordingly.

Compliance with this HASP is required of all Site workers that will be involved with earth disturbance activities or work that results in the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor. The contents of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results, or changes in the technical scope of work. Any changes proposed must be reviewed and approved by the project executive, with the SSO implementing the changes to the HASP. In accordance with OSHA, each employer is responsible for the health and safety of their workers.

Upon entering the Site, all visitors are required to sign in. All visitors authorized to enter the Contamination Reduction Zone (CRZ) (defined in Section 8.1.2), the Contamination Reduction Corridor (CRC) (defined in Section 8.1.2), or the Exclusion Zone (EZ) (defined in Section 8.1.3) will be required to read and comply with the provisions of this HASP. In the event that a visitor does not adhere to the applicable provisions of this HASP, he or she will be required to leave the Site.

1.1 Scope of Work

The HASP Scope of Work activities occur during the implementation of remedial action construction and portions of the redevelopment construction activities (where the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor exists).

The Scope of Work activities are as follows:

1. Implementation of remedial action consisting of excavation, dewatering, remedial action injections, and portions of the redevelopment construction activities (where the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor exists). The point at which the provisions of the HASP no longer apply will be determined by the SSO, in consultation with Roux Associates based upon the potential for employee exposure, as described in Section 1.3.

2. Mobilization and demobilization.

3. Maintenance of good site housekeeping procedures at all times.

4. Construction of a decontamination pad with proper containment and collection system, if necessary.

1.2 Emergency Numbers

1.2.1 Emergency Phone Numbers

Emergency Medical Service 911

Police: New York City Police Department (NYPD).....911

Fire: New York City Fire Department (NYFD).....911

Hospital: Woodhull Medical Center 718-963-8101

National Response Center.....800-424-8802

Poison Control Center.....800-222-1222

CHEMTREC®.....800-262-8200

Centers for Disease Control.....800-311-3435

USEPA (Region II).....212-637-5000

NYSDEC Emergency Spill Response 800-457-7362

1.2.2 Project Management/Health and Safety Personnel

Title	Contact	Telephone/Cell
General Contractor		
Project Executive	Gerry Miceli	(914) 833-3000 Extension: 156
SSO	Joshua Elkin	(914) 833-3000 Cell – (646) 739-0131
Roux Associates		
Project Principal	Noelle Clarke	(631) 232-2600 Cell – (631) 807-6523
Field Manager	Jeffrey Wills	(631) 232-2600 Cell – (631) 484-3182
Corporate Health and Safety Manager	Joseph Gentile	(856) 423-8800 Cell – (610) 844-6911

1.2.3 Directions to Woodhull Medical Center

760 Broadway
Brooklyn, New York 11206

See Figure B2 for street map

- Start at 149 Kent Avenue, Brooklyn, New York
- Head northeast on Kent Avenue toward North 6th Street
- Turn Right onto North 7th Street
- Turn Right onto Wythe Avenue
- Turn Left onto Metropolitan Avenue
- Turn Right onto Union Avenue
- Turn Left onto Broadway
- Arrive at Woodhull Medical Center on your right.

1.3 Termination of HASP Requirements

Once intrusive activities are completed, and the potential for exposure to onsite or immediately adjacent offsite contaminants in soil, groundwater and soil vapor is minimized to the extent practicable; the provisions of this HASP will no longer apply. The point at which the provisions of the HASP no longer apply will be determined by the SSO, in consultation with Roux Associates based upon the potential for worker exposure.

2.0 HEALTH AND SAFETY STAFF

This section briefly describes Site personnel and their health and safety responsibilities for the remedial action construction and portions of the redevelopment construction work (where the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor exists) to be implemented at the Site. All personnel are responsible for ensuring their compliance with the HASP, and each subcontractor shall be responsible for compliance with the HASP as it relates to any activities performed onsite by that subcontractor.

2.1 General Contractor's Project Executive

- Has the overall responsibility for the health and safety of Site personnel.
- Ensures that adequate resources are provided to the field health and safety staff to carry out their responsibilities as outlined below.
- Discusses issues related to this HASP with the Roux Associates Field Manager and Roux Associates Project Principal, Field Manager and office/corporate health and safety staff, as necessary.

2.2 General Contractor's Site Safety and Health Officer (SSO)

In consultation with the Roux Associates Field Manager, office/corporate technical and health and safety staff, as needed, the SSO:

- Directs and coordinates health and safety monitoring activities.
- Ensures that field teams utilize proper personal protective equipment.
- Conducts initial onsite specific information sessions prior to personnel and/or subcontractors commencing work.
- Conducts and documents periodic safety briefings.
- Ensures that field team members comply with this HASP.
- Completes and maintains Accident Report and Investigation Forms.
- Notifies Project Executive and Roux Associates Field Manager of accident/incidents covered by this HASP.
- Change in level of personal protective equipment (PPE).
- Maintains contact with subcontractors.

- Determines upgrade or downgrade of personal protective equipment (PPE) based on Site conditions, consultation with Roux Field Manager, and/or real time monitoring results.

- Ensures that monitoring instruments are calibrated daily or as manufacturers suggested instructions determine.

- Submits and maintains health and safety field log books, daily safety logs, training logs, air monitoring result reports.

2.3 Roux Associates Project Principal

- Consults with and advises the General Contractor personnel on health and safety issues related to this HASP.

2.4 Roux Associates Field Manager

- Communicates with the Project Principal and other Roux Associates office and corporate technical and health and safety staff (as needed), regarding Site activities and potential health and safety concerns related to this HASP in order to advise the General Contractor on recommended health and safety measures.

- Consults with and advises the SSO on health and safety issues related to this HASP.

2.5 Roux Associates Corporate Health and Safety Manager (CHSM)

- Performs or oversees or confirms site-specific training and approves revised or new safety protocols or field operations.

- Consults regarding the development of new task safety protocols and procedures and resolution of any outstanding safety issues which may arise during the site work.

- Assists General Contractor in reviewing and approving health and safety training and medical surveillance records for personnel and subcontractors.

2.6 Field Personnel and Subcontractors

- Report any unsafe or potentially hazardous conditions to the SSO.

- Additionally, Subcontractors are responsible for:
  - Adherence with this HASP.
  - Development of their own site-specific HASP.
  - Training their employees to meet regulatory requirements.
  - Timely and thoroughly investigating all incident involving their employees or areas of responsibility.

- Maintain knowledge of the information, instructions, and emergency response actions contained in the HASP.

- Comply with rules, regulations, and procedures as set forth in this HASP and any revisions, which are instituted.

- Prevent admittance to work Site by unauthorized personnel.

3.0 SITE LOCATION, DESCRIPTION, AND HISTORY

Descriptions of the Site and surrounding property usage are included in the following sections. The location of the Site is presented in Figure B1.

3.1 Property Location and Description

The Site is located at 149 Kent Avenue, Brooklyn, New York. The Site is comprised of a 0.92-acre parcel located on the north side of North 5th Street, between Wythe Avenue and Kent Avenue. The entire site is currently occupied by a one story former carpet warehouse building. The current building is constructed with concrete block and brick walls, steel frame, and roof on a concrete slab. Two loading and unloading bays are located in the building, one on the west side of the building and one on the south side of the building. The current building is scheduled for demolition in the fall of 2013.

The building is surrounded by concrete public sidewalks along Kent Avenue, North 5th Street and Wythe Avenue. To the north the building is bordered by residential uses and several businesses including a coffee bar, a deli, several clothing stores, music venues and other retail and several vacant buildings. The future use of the property is a seven story mixed use (retail, commercial, residential) building with a ventilated garage located in the basement level and part of the first floor, and retail and/or retail storage in portions of the basement level and on the ground floor.

The Site is currently owned by Kent & Wythe Owners LLC.

4.0 WASTE DESCRIPTION/CHARACTERIZATION

4.1 General

The following information is presented in order to identify the types of materials that may be encountered at the Site. The detailed information on these materials was obtained from:

- SAX's Dangerous Properties of Industrial Materials – Lewis Eight Edition
- Chemical Hazards of the Workplace – Proctor/Hughes
- Condensed Chemical Dictionary – Hawley
- Rapid Guide to Hazardous Chemical in the Workplace – Lewis 1990
- NIOSH Pocket Guide to Chemical Hazards – 2005
- ACGIH TLV Values and Biological Exposure Indices – 2012
- OSHA 29 CFR 1910.1000

4.2 Chemical Data Sheets

Several chemicals may potentially be present in onsite and immediately adjacent offsite soils, groundwater and soil vapor at the Site, based on previous soil, soil vapor and groundwater sampling results and historic operations conducted at the Site and on immediately adjacent properties. The Summary of Toxicological Data is found in Table B1 and is provided for review of chemicals that may be encountered. The Summary of Toxicological Data provides information such as the chemicals characteristics, health hazards, protection, and exposure limits. During the implementation of the remedial action injections, workers may come into contact with zero valent iron. A material safety data sheet for zero valent iron is included in Attachment 1.

4.2.1 Contaminants of Concern

Soil, groundwater and soil vapor contaminants that may be encountered during remedial action construction, and portions of the redevelopment construction (where the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor exists) activities include both organic and inorganic compounds. Prior investigations have indicated detection of Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides.

The toxicological, physical, and chemical properties of potential contaminants are presented in Table B1.

5.0 HAZARD ASSESSMENT

The potential to encounter chemical hazards is dependent upon the work activity performed (intrusive versus non-intrusive) and the duration and location of the work activity. Such hazards could include inhalation and/or skin contact with chemicals/gases that could cause: dermatitis, skin burns, being overcome by vapors or asphyxiation.

5.1 Chemical Hazards

The potential for personnel and subcontractors to come in contact with chemical hazards may occur during the following tasks:

- Personnel and Heavy Equipment Decontamination Activities
- Installation of Support of Excavation
- Excavation
- Dewatering
- Installation of gravel bedding and mud slab below the foundation
- Waterproofing the foundation slab and garage level exterior walls
- Remedial Action Injections

For chronic and acute toxicity data, refer to Summary of Toxicological Data Sheets in Table B1 for further details on compound characteristics.

5.1.1 Exposure Pathways

Exposure to these compounds during ongoing activities may occur through inhalation of contaminated dust particles, inhalation of VOCs and SVOCs, dermal absorption, and accidental ingestion of the contaminant by either direct or indirect cross-contamination activities.

Inhalation of contaminated dust particles (VOCs, SVOCs, PCBs, pesticides and inorganics) can occur during adverse weather conditions (high or changing wind directions) or during operations that may generate airborne dust such as excavation and loading of contaminated soils. Dust control measures such as applying water to driving surfaces and excavations will be implemented where visible dust is generated. Where dust control measures are not feasible or effective,

respiratory protection will be used when necessary (see Section 9.2.2 for monitoring procedures and action levels).

5.1.2 Operational Action Levels

A decision-making protocol for an upgrade in levels of protection and/or withdrawal of personnel from an area based on atmospheric hazards is outlined in Table B2.

TABLE B2

ACTION LEVELS FOR WORKER BREATHING ZONE

Instrument	Action Level *	Level of Respiratory Protection/Action
PID	0 to <25 ppm (one minute sustained)	Level D *
PID	>25 to <50 ppm (one minute sustained)	Utilize air purifying respirator (APR) (Level C; apply foam as necessary)
PID	>50 to <100 ppm (one minute sustained)	Level B (apply foam. as necessary)
PID	>100ppm	Stop work** (ventilate, apply foam)
Dust Monitor	0 – 1.0 mg/m^3, 5-minutes average	Level D
Dust Monitor	>1.0 to 5.0 mg/m^3, 5-minutes average	Level D – Institute dust suppression measures
Dust Monitor	5.0 to <50 mg/m^3, 5-minute average	Level C – Institute dust suppression measures Utilize P100 half-face respirator
Dust Monitor	>50 mg/m^3, 5-minute average	Stop work**

Note: Action levels are based on above background levels.

* Instrument readings will be taken in the breathing zone (BZ) of the workers, unless otherwise indicated.

** Suspend work in immediate area. Conduct air monitoring periodically to determine when work can continue. Implement mitigative measures.

5.1.3 Additional Precautions

Dermal absorption or skin contact with chemical compounds is possible during intrusive activities at the Site. The use of PPE in accordance with Section 8.2 and strict adherence to proper decontamination procedures should significantly reduce the risk of skin contact.

The potential for accidental ingestion of potentially hazardous chemicals is expected to be remote, when good personal hygiene practices are used.

5.2 Hazard Assessment

Task	Hazards	Risk of Exposure
Heavy Equipment and Personnel Decontamination/	Inhalation/Skin Contact	Moderate
Drilling/Sampling/Waste Characterization/Remedial Action Injections/Well Abandonment and Installation	Accidental Ingestion	Low
Installation Support of Excavation/Excavation/Installation of Foundation Components/Waterproofing	Inhalation/Skin Contact	Moderate/High
	Accidental Ingestion	Low

6.0 TRAINING

6.1 General Health and Safety Training

In accordance with 29 CFR 1910.120, the level of training provided for workers must be consistent with the worker's job functions and responsibilities, the toxicity of the materials to which they may be exposed, the levels of exposure and the potential for an emergency to develop. The General Contractor has the responsibility of ensuring that the personnel assigned to this project comply with these requirements. Written certification of completion of the required training will be provided to the General Contractor. Roux Associates will assist the General Contractor in reviewing the documentation provided and determining if all onsite personnel have adequate training.

6.1.1 Training for General Site Workers That May Be Exposed to Hazardous Substances

All general Site workers (as defined in OSHA 1910.120 (e)(3)(i) that will be involved with earth disturbance activities or work that results in the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor, will have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations and meet the medical surveillance requirements found in Section 7.1. At a minimum, the training shall have consisted of instruction in the topics outlined in 29 CFR 1910.120. Personnel who have not met the requirements for initial training will not be allowed to work in any Site activities in which they may be exposed to hazards (chemical or physical). Completion of a 40-hour Health and Safety Training Course for Hazardous Waste Operations or an approved equivalent will fulfill the requirements of this section. In addition to the required initial training, each employee shall receive three days of directly supervised on-the-job training. This training will address the duties the employees are expected to perform.

6.1.2 Training for Occasional Site Workers

In accordance with OSHA 1910.120(e)(3)(ii), workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geophysical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum

of one day actual field experience under the direct supervision of a trained, experienced supervisor.

6.1.3 Training for Workers within Remediated Zones of the Site

Based on the dynamic conditions that will be present at the Site, portions of the Site will be established in which the risk of exposure to impacted materials will be prevented by removal of the impacted material and/ or the installation of engineering controls, creating a RZ. Remediation activities may be occurring on other portions of the Site where the risk for exposure has not been mitigated (non-remediated zone). Forty-hour training will not be required for workers within the RZ, but air monitoring will be performed, as necessary, to assure that the workers in the RZ are not exposed to hazardous levels of material from onsite and/or immediately adjacent offsite sources. No ground disturbance work or work that will potentially expose workers to impacted groundwater or soil vapor will be performed within the RZ while workers without 40-hour training are present. A detailed description of the established procedures for the RZ is provided in Section 8.1.4.

6.2 Manager/ Supervisor Training

In accordance with 29 CFR 1910.120, onsite management and supervisors who will be directly responsible for, or who supervise employees engaged in hazardous waste operations shall receive training as required by Section 6.1 of the HASP and an additional eight hours of specialized training on managing such operation are required prior to job assignment.

6.3 Annual Eight-Hour Refresher Training

Annual 8-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The following topics will be reviewed; toxicology, respiratory protection, including air purifying devices (including self-contained breathing apparatus [SCBA], if anticipated), medical surveillance, decontamination procedures, and personal protective clothing. In addition, topics deemed necessary by the party providing the training may be added to the above list.

6.4 Site-Specific Training

Site personnel will receive training that will specifically address the activities, procedures, monitoring, and equipment for Site operations. It will include Site and facility layout, hazards, work practices by which the employee can minimize risks from hazards, safe use of engineering controls and equipment on the site, first aid equipment locations and emergency services at the Site, and will highlight the provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. The SSO, with assistance from the Roux Associates' Field Manager, will provide or confirm the Site-specific training.

6.5 Onsite Safety Meetings

The SSO, with assistance from the Roux Associates Field Manager, will conduct daily safety meetings each morning to discuss potential safety concerns for the upcoming activities. A copy of completed safety meeting forms will be kept in the General Contractor's administrative trailer onsite.

6.6 First Aid and CPR

The SSO will identify those individuals having first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. The training will be consistent with the requirements of the American Red Cross Association. Certification and appropriate training documentation will be kept with the Site personnel records.

6.7 Subcontractor Training

All subcontractor personnel that will be involved with earth disturbance activities or work that results in the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor shall have completed the 40-hour training requirement (with 8-hour annual refresher training as necessary) and meet the medical surveillance requirements found in Section 7.1. Subcontractor training shall be performed in accordance with 29 CFR 1910.120. In certain unique situations (e.g., mechanical failure of equipment), a non-trained individual performing emergency repairs may be allowed, at the discretion of the SSO, to perform repairs when no intrusive activities are being performed, and provisions have been made to mitigate potential exposure to environmental contaminants in onsite or immediately

adjacent offsite soil, groundwater and soil vapor. Subcontractors are responsible for training of their workers and for providing the General Contractor with documentation of the training.

6.8 Visitors

Forty-hour training will not be required of visitors to the Site. Visitors onsite must be made aware of the hazards in a Site-specific safety briefing and sign a statement indicating they will comply with the applicable requirements of this HASP. Visitors will be escorted by a 40-hour trained person while onsite.

7.0 MEDICAL SURVEILLANCE PROCEDURES

7.1 General

A Medical Surveillance Program has been established as part of this plan. Roux Associates, the General Contractor and subcontractor personnel performing field work and with the potential to be exposed to contaminants above permissible exposure limits for more than 30 days at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f). A physician's medical release for work will be confirmed by the SSO, with assistance from Roux Associates, before an employee can begin Site activities. Such examinations shall include a statement as to the worker's present health status, the ability to work in a hazardous environment (including any required PPE, which may be used during temperature extremes), and the worker's ability to wear respiratory protection.

In the event of a medical emergency involving employees of the General Contractor or any subcontractor, where a medical provider must obtain personal medical information, each employer is responsible for providing medical information regarding its employees in accordance with their own policies. In the event of a medical emergency involving a Roux Associates employee, where a medical provider must obtain personal medical information, the medical provider should contact Roux Associates' Human Resources Director, Jennine Zezima, and Corporate Health and Safety Manager, Joseph Gentile, CHSM, who will coordinate obtaining the necessary information.

8.0 SITE CONTROL, PERSONAL PROTECTIVE EQUIPMENT, AND COMMUNICATIONS

8.1 Site Control

During remedial action and some of the redevelopment construction activities during which earth disturbance activities are occurring and/or the potential for exposure to environmental contaminants in onsite and/or immediately adjacent offsite soil, groundwater and soil vapor exists, the following five-zone approach will be used, in order to prevent the spread of contamination onsite. The SSO, in consultation with the Roux Associates Field Manager, will identify the various zones in the field.

The five zones include: the Exclusion Zone (EZ), the Contamination Reduction Zone (CRZ), Contamination Reduction Corridor (CRC), the Support Zone (SZ) and the Remediated Zone RZ. A stepped remedial approach will be managed, and the zones modified as the work progresses. Each of the areas will be defined through the use of control barricades and/or construction/hazard fencing. A clearly marked delineation between the SZ or the RZ and the remaining three zones, the CRZ and CRC and the EZ will be maintained. The preferred method will utilize high visibility orange fencing and hand driven metal posts, or orange cones. Signage will be posted to further identify and delineate these areas.

8.1.1 Support Zone

The Support Zone (SZ) is an uncontaminated area that will be the field support area for the Site operations. The SZ will contain the temporary project trailers and provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples. Meteorological conditions will be observed and noted from this zone.

8.1.2 Contamination Reduction Zone and Contamination Reduction Corridor

A Contamination Reduction Zone (CRZ) is established between the exclusion zone and the support zone. The CRZ contains the Contamination Reduction Corridor (CRC) and provides an area for decontamination of personnel and equipment. The CRZ will be used for general Site

entry and egress in addition to access for heavy equipment and emergency support services. Personnel are not allowed in the CRZ without:

- Appropriate PPE;
- Medical authorization;
- Training certification; and
- A need to be in the zone.

8.1.3 Exclusion Zone

The area where contamination exists is considered to be the Exclusion Zone (EZ). All areas where activities that involve ground disturbance and/or handling of contaminated materials take place or where the potential exists for exposure to contaminants in onsite and/or immediately adjacent offsite soil, groundwater or soil vapor are considered the EZ. This zone will be clearly delineated by orange high visibility fencing. Safety tape may be used as a secondary delineation within the EZ. The zone delineation markings may be opened in areas for varying lengths of time to accommodate equipment operation or specific construction activities. The SSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- Appropriate PPE;
- Medical authorization;
- Training certification; and
- A need to be in the zone.

8.1.4 Remediated Zone

A RZ is established in portions of the Site where activities that involve ground disturbance have been completed and potential exposure pathways from contaminants in onsite and/or immediately adjacent offsite soil, groundwater or soil vapor have been minimized to the extent practicable, and only general construction work remains to be performed. Setup of the RZ consists of implementing several measures designed to reduce the risk of workers' exposure and preventing workers without 40-hour training from entering the non-remediated zone. Workers without 40-hour training will work only in areas where the potential for exposure has been minimized by

installing a 2-inch mud slab and a minimum 6 mil vapor barrier or waterproofing membrane over any potentially impacted soils in the RZ. The RZ will then be separated from the non-remediated zone by installing and maintaining temporary plywood or other construction fences along the boundary between the two zones. If potentially impacted material is uncovered in the RZ, all workers with 40-hour training will upgrade their PP, as necessary, based on work zone monitoring results. Those without 40-hour training will be removed and the SSO, in consultation with the Roux Associates Field Manager, will assess the potential risks. If, at any other time the risk of exposure increases while workers without 40-hour training are present in the RZ, these workers will be removed. At all times, when workers without 40-hour training are present in the RZ, air monitoring for the presence of VOCs will be conducted in the RZ, as well as at the fence line of the non-remediated zone.

8.2 Personal Protective Equipment

8.2.1 General

The level of protection worn by field personnel will be enforced by the SSO, in consultation with the Roux Associates Field Manager. Levels of protection for general operations are provided below and are defined in this section. Levels of protection may be upgraded at the discretion of the SSO, in consultation with Roux Associates. All decisions on the level of protection will be based upon a conservative interpretation of the information provided by air monitoring results, environmental results and other appropriate information. Any changes in the level of protection shall be recorded in the field logbook.

8.2.2 Personal Protective Equipment Specifications

The minimum level of personal protective equipment is Level D. It is possible that Level C or Level B protection will be necessary.

Level B PPE

For tasks requiring Level B PPE, the following equipment may be used in any combination:

- Positive pressure, full facepiece, self-contained breathing apparatus (SCBA) or positive pressure, supplied air respirator with escape SCBA (NIOSH approved)
- Disposable coveralls (Tyvek, Poly-coated Tyvek, or Saranex)

- Gloves, inner: latex or nitrile
- Gloves, outer: nitrile or neoprene
- Chemical resistant boots over the work boots
- Steel or composite toe work boots
- Hard hat
- Hearing protection (as needed)
- Boot cover (as needed)
- A means of communication (See Section 8.3)

Fit testing will be necessary for all persons using respirators. The criteria for facial hair will be determined by the SSO, in consultation with the Roux Associates Field Manager. In general, the guideline is that facial hair cannot impede the fit of the respirator.

Level C PPE

For tasks requiring Level C PPE, the following equipment may be used in any combination:

- Full-face, air purifying, canister-equipped respirators (NIOSH approved) utilizing Organic Vapor/Acid Gas and P-100 filters (half-face if approved by SSO)
- Disposable coveralls (Tyvek, Poly-coated Tyvek, or Saranex) as required
- Gloves, inner: latex or nitrile as required
- Gloves, outer: nitrile or neoprene as required
- Chemical resistant boots over the work boots as required
- Steel or composite toe work boots
- Hard hat
- Hearing protection (as needed)
- Safety glasses (if half-mask is utilized)
- Boot covers (as needed)
- A means of communication – see Section 8.3

Fit testing will be necessary for all persons using respirators. The criteria for facial hair will be determined by the SSO, in consultation with the Roux Associates Field Manager. In general, the guideline is that facial hair cannot impede the fit of the respirator.

Level D PPE

The Minimum level of PPE for entry onto the Site is Level D PPE. The following equipment shall be used:

- Work uniform (long pants, sleeved shirt)
- Hard hat
- Steel or composite toe work boots
- Safety glasses
- Boot covers (as needed)
- Hearing protection (as needed)
- Reflective safety vest (as needed)

Modified Level D PPE consists of the following:

- Regular Tyvek coveralls (Poly-coated Tyvek as required)
- Outer gloves: leather, kevlar, cotton, neoprene or nitrile (as required)
- Inner gloves: latex or nitrile (doubled) as required
- Chemical resistant boots over work boots (as required)
- Steel or composite toe work boots
- Hard hat
- Safety glasses
- Hearing protection as needed
- Reflective safety vest

8.2.3 Initial Levels of Protection

Levels of protection for the proposed scope of work may be upgraded or downgraded depending on direct-reading instruments or personnel monitoring. The following are the initial levels of protection that shall be used for each planned remedial action construction and redevelopment construction field activity:

Activity	Initial level of PPE
Mobilization/Demobilization	D
Installation of Support of Excavation	D/C/B (Based on Monitoring)
Excavation	D/ C/B (Based on Monitoring)
Dewatering	D/ C/B (Based on Monitoring)
Concrete Work	D/C/B (Based on Monitoring)
Waterproofing	D/C/B (Based on Monitoring)
Remedial Action Injections	D
Decontamination	D

8.3 Communications

If working in level C/B respiratory protection is required, personnel may find that communication becomes a more difficult task and process to accomplish. Distance and space further complicate this. In order to address this problem, electronic instruments, mechanical devices, or hand signals will be used as follows:

Telephones – Mobile telephones will be carried by designated personnel for communication with emergency support services/facilities.

Radios – Two-way radios will be utilized onsite for communications between field personnel in areas where visual contact cannot be maintained and where hand signals cannot be employed.

Air Horn – Available as posted in the Site trailer or support zone to alert field personnel to an emergency situation. The emergency signal will be the sharp blasts of the air horn.

Hand Signals – This communication method will be employed by members of the field team along with use of the buddy system. Signals become especially important when in the vicinity of heavy moving equipment and when using Level B respiratory equipment. The signals shall

become familiar to the entire field team before Site operations commence, and will be reinforced and reviewed during site-specific training.

Signal	**Meaning**
Hand gripping throat	Out of air; can't breathe
Grip partner's wrist	Leave area immediately; no debate
Hands on top of head	Need assistance
Thumbs up	OK; I'm all right; I understand
Thumbs down	No; Unable to understand you, I'm not all right

9.0 MONITORING PROCEDURES

9.1 General

A Community Air Monitoring Plan ("CAMP") will be implemented onsite, in which VOCs and particulates will be monitored at the perimeter of the work area during ground intrusive activities. The CAMP can be found in Attachment 2. VOCs and particulates will be monitored as a precautionary measure. The design of the CAMP is intended to provide a measure of protection for the onsite workers not directly involved with the subject work activities and for the offsite community from potential airborne contaminant releases as a direct result of remedial work activities.

Work zone monitoring will be performed to verify the adequacy of the Level D respiratory protection, to aid in Site layout, and to document monitoring results. If air monitoring in the work areas indicates the presence of potentially hazardous materials, control measures will be implemented. All monitoring instruments shall be operated by qualified personnel only and will be calibrated prior to use daily or more often, as necessary. The SSO, in consultation with the Roux Associates Field Manager, is responsible for ensuring that appropriate monitoring, levels of protection, and safety procedures are followed.

9.2 Exclusion Zone Monitoring

9.2.1 Instrumentation

The following monitoring instruments will be available for use during field operations as necessary:

- Photoionization Detector (PID) with 10.6 EV probe or Flame Ionization Detector (FID) or equivalent.
- Dust/Particulate Monitor (DM), DR4000 or equivalent

A PID organic vapor meter shall be used to monitor VOCs in active work areas during ground disturbance activities and/or where the potential for exposure to environmental contaminants in onsite or immediately offsite soil, groundwater and soil vapor exists. A particulate monitor shall be used to measure concentrations of dust and particulate matter.

Calibration records shall be documented and recorded daily and included in the daily Health and Safety Briefing Form (Attachment 3) or Site designated field notebook.

9.2.2 Action Levels

Action levels for the upgrading of PPE requirements in the HASP will apply to all Site work during remediation activities at the Site and portions of the development work where the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor exists. Action levels are for known contaminants using direct reading instruments in the Breathing Zone (BZ) for VOCs and particulates. The BZ will be determined by the SSO, in consultation with the Roux Associates Field Manager, but is typically 4 to 5 feet above the work area surface or elevation. The action levels to be utilized for the Site are found in Table B2.

An air horn will be readily available in the General Contractors administrative trailer. An additional air horn will be located in the work area to alert Site workers to an emergency situation. In the event of an emergency or the need to upgrade the level of personal protection, sharp blasts of the air horn will be sounded.

9.2.3 Monitoring During Field Activities

During ground disturbance activities or portions of the development work where the potential for exposure to environmental contaminants in onsite or immediately adjacent offsite soil, groundwater and soil vapor exists, continuous Personal Breathing Zone Air Monitoring will be performed by the SSO. Real-time monitoring for all onsite activities will be accomplished as follows:

- Monitoring of VOCs in the work zones.
- Monitoring for particulates in and around the work zones.

The frequency of monitoring may be modified by the SSO, after consultation with the Roux Associates. The rationale for any modification must be documented in the HASP.

9.3 Meteorological Monitoring

When ground disturbance activities are being conducted (with the exception of during limited intrusive actions such as drilling, sampling, remedial action injections and monitoring well installation/abandonment), the General Contractor or it's designee will obtain, at a minimum, the

daily temperature, wind direction, wind speed and rain accumulations from the onsite meteorological station as part of the CAMP. This information will be used to assist with the determination of daily health and safety measures, and locations of both work zone and perimeter monitoring devices (as part of the CAMP). During drilling, sampling, remedial action injections and monitoring well installation/abandonment, meteorological data will be obtained from an available offsite source. All meteorological data will be kept in a daily record.

10.0 DECONTAMINATION AND DISPOSAL PROCEDURES

10.1 Contamination Prevention

Contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

Personnel

- Do not walk through areas of obvious or known contamination.
- Do not directly handle or touch contaminated materials.
- Make sure that there are no cuts, tears or other signs of deterioration in PPE.
- Fasten all closures in suits; cover with tape, if necessary.
- Particular care should be taken to protect any skin injuries.
- Stay upwind of airborne contaminants.
- Do not carry into or use cigarettes, gum, etc., nor apply cosmetics in contaminated areas.

Sampling/Monitoring

- When required by the SSO, cover instruments with clear plastic, leaving openings for sampling ports.
- Bag sample containers prior to emplacement of sample material.

Heavy Equipment

- Care should be taken to limit the amount of contamination that comes in contact with heavy equipment (tires, contaminated augers).
- If contaminated tools are to be placed on non-contaminated equipment for transport to a decontamination area, plastic should be used to keep the equipment clean.
- Dust control measures including water misting will be used on driving surfaces and excavations inside the Site boundaries.

10.2 Personnel Decontamination

A field wash for equipment and PPE shall be set up and maintained for all persons exiting the EZ. The system will include a gross wash and rinse for all disposable clothing and boots worn in the EZ. As necessary, equipment and facilities will be available for personnel to wash their hands, arms, neck, and face.

10.3 Equipment Decontamination

All potentially contaminated equipment used at the Site will be decontaminated to prevent contaminants from leaving the Site. The decontamination area will provide for the containment of all wastewater from the decontamination process. Respirators and any other PPE that comes in contact with contaminated materials shall pass through a field wash in the decontamination area, and a thorough decontamination at the end of the day. All decontamination rinse water will be collected and managed in accordance with all applicable regulations.

10.4 Decontamination during Medical Emergencies

If emergency life-saving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or omitted. The Site SSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment, or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances and/or medical personnel. Outer garments are then removed at the medical facility. No attempt will be made to wash or rinse the victim, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material, which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems (ambulatory) or injuries, the normal decontamination procedures will be followed. Note that heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing must be promptly removed. Less serious forms of heat stress also require prompt attention and removal of protective clothing immediately. Unless the victim is obviously contaminated, decontamination should be omitted or minimized, and treatment begun immediately.

10.5 Disposal Procedures

A system of segregating all waste including excavated soil, dewatering liquids and spent personal protective equipment will be developed, in accordance with the requirements of the Remedial Action Work Plan.

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left onsite.

All encountered construction waters, storm water, and decontamination water will be collected and managed in accordance with the Remedial Action Work Plan.

11.0 EMERGENCY PLAN

Should an environmental emergency situation occur, the emergency plan, outlined in this section, shall be known by all Site personnel prior to the start of work. The emergency plan will be available for use at all times during Site work. The plan provides the phone numbers for the fire, police, ambulance, hospital, poison control centers, and directions to the hospital from the Site. This information is to be found in Section 1.2 of the HASP.

Various individual Site characteristics will determine preliminary actions taken to assure that this emergency plan is successfully implemented in the event of a Site emergency. Careful consideration must be given to the proximity of neighborhood housing or places of employment, and to the relative possibility of Site release of vapors, which could affect the surrounding community.

The emergency coordinator (SSO) shall initiate the emergency plan whenever conditions at the Site warrant such action. The SSO, with assistance from the Roux Associates Field Manager, will be responsible for coordination of the evacuation, emergency treatment and transport of Site personnel as necessary, and notification of emergency response units and the appropriate management staff.

Site Personnel will endeavor to keep non-essential personnel away from the incident until the appropriate emergency resources arrive. At that time, the responders will take control of the Site. Site personnel may be asked to lend assistance to emergency personnel such as during evacuations, help with the injured, etc.

11.1 Evacuation

Evacuation procedures will be discussed prior to the start of work and periodically during safety meetings. In the event of an emergency situation, such as fire, or explosion, an air horn, automobile horn, or other appropriate device will be sounded for three (3) sharp blasts indicating the initiation of evacuation procedures. The emergency evacuation route shall be known by all site workers. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SSO, with assistance from the Roux Associates Field Manager, must ensure that access for emergency equipment is provided and

that all sources of ignition, such as combustion apparatuses, have been shut down once the alarm has been sounded. All Site personnel will assemble in the designated nearest safe location. Once the safety of all personnel is established, the fire department and other emergency response groups will be notified by telephone of the emergency.

11.2 Personnel Injury

Emergency first aid shall be applied onsite as appropriate. If necessary, the individual shall be decontaminated and transported to the nearest hospital. The SSO will coordinate with medical personnel for any additional necessary information that is needed and will complete the accident/incident reports in accordance with Section 12.4 of the HASP.

The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. However, since some situations may require transport of an injured party by other means, the injured person shall be escorted to the hospital. A map to this facility is shown in Figure B2.

11.3 Incident Reporting

As soon as the needs have been met for first aid and/or emergency response regarding the environmental remediation activity, the following parties are to be contacted by telephone: (Direct contact, no phone messages).

	Office:	**Cell:**
1. General Contractor Project Executive:	(914) 833-3000 Extension: 156	NA
2. Roux Associates Project Principal: Noelle Clarke	(631) 232-2600	(631) 807-6523

3. The employer of any injured worker, if worker is a subcontractor.

The Roux Associates Field Manager will make appropriate notifications in accordance with the Roux Associates HASP.

Written confirmation of verbal reports are to be submitted within one business day. The report form entitled "Notice of Incident or Property Damage Report" (Attachment 4) is to be used for this purpose. If the employee involved is a subcontractor his employer typically receives a copy of the report.

For reporting purposes, the term accident refers to fatalities, lost time injuries, medical treatment cases, spill or exposure to hazardous materials (radioactive materials, toxic materials, explosive or flammable materials), fire, explosion, property damage, or potential occurrence (i.e., near miss) of the above.

Any medical information, which is required to be released by patient consent, is to be filed in the individual's medical record and treated as confidential.

11.4 Personnel Exposure

Skin Contact:	Use copious amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination.
Inhalation:	Move to fresh air and/or, if necessary, decontaminate/transport to hospital.
Ingestion:	Decontamination and transport to emergency medical facility.
Puncture Wound or Laceration:	Decontamination and transport to emergency medical facility.

12.0 LOGS, REPORTS AND RECORD KEEPING

The following is a summary of required health and safety logs, reports, and record keeping for this project.

12.1 Medical and Training Records

Each employer keeps medical and training records for all of their staff. Each subcontractor employer must provide verification of training and medical qualifications to the SSO as required by the HASP. The SSO will keep a log of personnel meeting appropriate training and medical qualifications for Site work, with assistance from the Roux Associates Field Manager. The log will be kept in the project file. Each employer will maintain medical records in accordance with 29 CFR 1910.20.

12.2 Onsite Log

The SSO will keep a log of onsite personnel daily in the designated field book.

12.3 Exposure Records

Any personal monitoring results, laboratory reports, calculations, and air sampling data sheets are part of an employee exposure record. These records will be kept by each employer in accordance with 29 CFR 1910.20and 29 CFR 1910.1020.

12.4 Incident Reports

The Notice of Incident or Property Damage Report" must be completed following procedures given in Attachment 4. The originals will be maintained onsite in the project file with copies sent to the employer of the employees involved.

12.5 OSHA Form 300

An OSHA Form 300 (Log of Occupational Injuries and Illnesses) (Attachment 5) will be kept at the Site for each employer with personnel onsite. All reportable injuries or illnesses will be recorded on this form for each employer. At the end of the project, the original will be sent to each employer for their maintenance. Subcontractor employers must also meet the requirements of maintaining an OSHA 300 form.

12.6 Daily Safety Logs

The Daily Safety Log form in Attachment 3 will be completed daily by the SSO and maintained in the project file.

13.0 FIELD TEAM REVIEW

Each employee of the General Contractor, Roux Associates or subcontractor shall sign this section after site-specific training is completed and before being permitted to work at the Site.

I have read and reviewed the Site Health and Safety Plan prepared for this Site. I understand and will comply with the provisions contained therein.

Site/Project: Kent & Wythe Owners LLC
149 Kent Avenue
Brooklyn, New York

Date	Name	Signature	Company

SSO CERTIFICATION OF HOSPITAL DIRECTIONS

Name of General Contractor's SSO:

Date:_____

This is to certify that on _____, I personally drove the route to Woodhull Medical Center as listed in the HASP. The Map Routing and Directions were/were not as listed in the plan. Listed below were conditions that resulted in different directions.

_____
Site Health and Safety Officer

TABLES

B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site

B2. Action Levels for Worker Breathing Zone (*Embedded in Report Text*)

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,1,1-Trichloroethane	71-55-6	TWA 350 ppm STEL 440 ppm C 440 ppm	C 350 ppm (1900 mg/m^3) [15-minute]	TWA 350 ppm (1900 mg/m^3)	700 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias;	Eyes, skin, central nervous system, cardiovascular system, liver	Colorless liquid with a mild, chloroform-like odor. BP: 165°F UEL: 12.5% LEL: 7.5%
1,1,2-Trichloroethane	79-00-5	TWA 10 ppm	Ca TWA 10 ppm (45 mg/m^3) [skin]	TWA 10 ppm (45 mg/m^3) [skin]	Ca [100 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis; [potential occupational carcinogen]	Eyes, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, chloroform-like odor. BP: 237°F UEL: 15.5% LEL: 6%
1,1-Dichloroethane	75-34-3	TWA 100 ppm	TWA 100 ppm (400 mg/m^3)	TWA 100 ppm (400 mg/m^3)	3000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation skin; central nervous system depression; liver, kidney, lung damage	Skin, liver, kidneys, lungs, central nervous system	Colorless, oily liquid with a chloroform-like odor. BP: 135°F Fl.P: 2°F UEL: 11.4% LEL: 5.4%
1,1-Dichloroethene	75-35-4	TWA 5 ppm	Ca (lowest feasible concentration)	TWA 1ppm	Ca [N.D.]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor. BP: 89°F Fl.P: -2°F UEL: 15.5% LEL: 6.5% Class IA Flammable Liquid
1,2,4-Trimethylbenzene	95-63-6	None established	TWA 25 ppm (125mg/m^3)	None established	N.D.	Inhalation; ingestion; skin and/or eye contact	Eye, skin, nose, and throat, resp syst irritation; bronchitis; hypochromic anemia; headache, drowsiness, weakness, dizziness, nausea, incoordination, vomit, confusion; chemical pneumonitis	Eyes, skin, resp sys, CNS, blood	Clear, colorless liquid with a distinctive, aromatic odor BP: 337°F FL.P: 112°F UEL: 6.4% LEL: 0.9% Class II Flammable liquid
1,2,4-Trimethylbenzene	95-63-6	TWA 25 ppm (125 mg	TWA 25 ppm (125 mg/m^3)	None established	N.D.	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, fatigue, dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system, blood	Clear, colorless liquid with a distinctive, aromatic odor. BP: 337°F Fl.P: 112°F UEL: 6.4% LEL: 0.9% Class II Flammable Liquid
1,2-Dichlorobenzene	95-50-1	TWA 25 ppm STEL 50 ppm	C 50 ppm (300 mg/m^3)	C 50 ppm (300 mg/m^3)	200 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; liver, kidney damage; skin blisters	Eyes, skin, respiratory system, liver, kidneys	Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide] BP: 357°F Fl.P: 151°F UEL: 9.2% LEL: 2.2% Class IIIA Combustible Liquid

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,2-Dichloroethane	107-06-2	TWA 10 ppm	Ca TWA 1 ppm (4 mg/m^3) STEL 2 ppm (8 mg/m^3)	TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]	Ca [50 ppm]	inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eyes, skin, kidneys, liver, central nervous system, cardiovascular system	Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.] BP: 182°F Fl.P: 56°F UEL: 16% LEL: 6.2% Class IB Flammable Liquid
1,2-Dichloroethene (total)	540-59-0	TWA 200 ppm (790 m	TWA 200 ppm (790 mg/m^3)	TWA 200 ppm (790 mg/m^3)	1000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor BP: 118-140°F Fl.P: 36-39°F UEL: 12.8% LEL: 5.6% Class IB Flammable Liquid
1,3,5-Trimethylbenzene	108-67-8	None established	TWA 25 ppm (125mg/m^3)	None established	N.D.	Inhalation; ingestion; skin and/or eye contact	Eye, skin, nose, and throat, resp syst irritation; bronchitis; hypochromic anemia; headache, drowsiness, weakness, dizziness, nausea, incoordination, vomit, confusion; chemical pneumonitis	Eyes, skin, resp sys, CNS, blood	Clear, colorless liquid with a distinctive, aromatic odor BP: 329°F FL.P: 122°F Class II Flammable liquid
1,3,5-Trimethylbenzene	108-67-8	TWA 25 ppm (125 mg	TWA 25 ppm (125 mg/m^3)	None established	N.D	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system, blood	Clear, colorless liquid with a distinctive, aromatic odor. BP: 329°F Fl.P: 122°F Class II Flammable Liquid
1,4-Dichlorobenzene	106-46-7	TWA 10 ppm	Ca	TWA 75 ppm (450 mg/m^3)	Ca [150 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]	Liver, respiratory system, eyes, kidneys, skin	Colorless or white crystalline solid with a mothball-like odor. [insecticide] BP: 345°F Fl.P: 150°F LEL: 2.5% Combustible Solid
2,4-Dimethylphenol	105-67-9	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system, mouth, throat, stomach; dizziness, weakness, fatigue, nausea, headache; systemic damage; moderate to severe eye injury.	Skin, CVS, eyes, CNS	Clear, colorless liquid with a faint ether or chloroform-like odor BP: 178°F

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
2-Butanone (MEK)	78-93-3	TWA 200 ppm (590 mg/m^3) STEL 300 ppm (885 mg/m^3)	TWA 200 ppm (590 mg/m^3) STEL 300 ppm (885 mg/m^3)	TWA 200 ppm (590 mg/m^3)	3000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor. BP: 175°F Fl.P: 16°F UEL(200°F): 11.4% LEL(200°F): 1.4% Class IB Flammable Liquid
Acenaphthene	83-32-9	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system	Eyes, skin, respiratory system	Brown solid
Acetone	67-64-1	TWA 200 ppm STEL 500 ppm	TWA 250 ppm (590 mg/m^3)	TWA 1000 ppm (2400 mg/m^3)	2500 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, mint-like odor BP: 133°F Fl.P: 0°F UEL: 12.8% LEL: 2.5% Class IB Flammable Liquid
Anthracene	65996-93-2	TWA 0.2 mg/m^3	Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m^3 (benzene-soluble fraction)	Ca [80 mg/m^3]	inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue. Combustible Solids
Antimony	7440-36-0	TWA 0.5 mg/m^3	TWA 0.5 mg/m^3	TWA 0.5 mg/m^3	50 mg/m^3 (as Sb	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly	Eyes, skin, respiratory system, cardiovascular system	Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder. BP: 2975°F
Arsenic (inorganic)	7440-38-2 (metal)	TWA 0.01 mg/m3	Ca C 0.002 mg/m3 [15-min]	TWA 0.010 mg/m3	Ca [5 mg/m3 (as As)]	Inhalation; ingestion; skin absorption; skin and/or eye contact	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]	Liver, kidneys, skin, lungs, lymphatic sys	Metal: sliver-gray or tin-white, brittle, odorless solid BP: sublimes
Asbestos	1332-21-4	TWA 0.1 f/cc	Ca 100,000 fibers/m3	TWA 0.1 fiber/cm3	Ca [IDLH value has not been determined]	Inhalation; ingestion; skin and/or eye contact	Asbestosis (chronic exposure), dyspnea, interstitial fibrosis, restricted pulmonary function, finger clubbing, irritation eyes, [potential occupational carcinogen]	Respiratory system, eyes,	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite), fibrous, odorless solids. BP: decomposes
Asphalt fumes	8052-42-4	TWA 0.5 mg/m^3(fumes)	Ca C 5 mg/m3 [15 min]	None established	Ca [IDLH value has not been determined]	Skin absorption; inhalation; skin and/or eye contact	Irritation eyes, resp sys	Eyes, respiratory system	Black or dark brown cement-like substance Combustible solid
Barium	7440-39-3	TWA 0.5 mg/m3	None established	TWA 0.5 mg/m3	None established	Inhalation, ingestion, skin contact	Irritation skin, respiratory system, (	Skin, eyes, respiratory system	Yellow white powder BP: 1640 C
Benzene	71-43-2	TWA 0.5 ppm STEL 2.5 ppm	Ca TWA 0.1 ppm STEL 1 ppm	TWA 1 ppm STEL 5 ppm	Ca [500 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow	Colorless to light yellow liquid with an aromatic odor [Note: Solid below 42 °F] BP: 176°F Fl.Pt = 12°F LEL: 1.2% UEL: 7.8% Class B Flammable liquid

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Benzo[a]anthracene	56-55-3	None established	None established	None established	None established	Inhalation; ingestion; skin absorption; skin and/or eye contact	Irritation eyes, skin, respiratory system, CNS	Skin	Pale Yellow crystal, solid BP: 438 C
Benzo[a]pyrene	50-32-8	None established	TWA 0.1 mg/m3	TWA 0.2 mg/m3	None established	Inhalation; ingestion; skin absorption; skin and/or eye contact	POISON. This material is an experimental carcinogen, mutagen, tumorigen, neoplastigen and teratogen. It is a probable carcinogen in humans and a known human mutagen. IARC Group 2A carcinogen. It is believed to cause bladder, skin and lung cancer. Exposure to it may damage the developing foetus. May cause reproductive damage. Skin, respiratory and eye irritant or burns.	Skin, eye, bladder, lung, reproductive	Yellow crystals or powder [found in cigarette smoke, coal tar, fuel exhaust gas and in many other sources] BP: 495 C
Benzo[b]fluoranthene	205-99-2	None established	TWA 0.1 mg/m3	TWA 0.2 mg/m3	None established	Inhalation; ingestion; skin and/or eye contact	No data were identified on the toxicity of benzo[b]fluoranthene to humans. Based on results of studies in animals, IARC concluded that benzo[b]fluoranthene is possibly carcinogenic to humans	Respiratory system, skin, bladder, kidneys	Off-white to tan powder
Benzo[k]fluoranthene	207-08-9	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory tract, gastrointestinal; fatal if swallowed, inhaled, absorbed through the skin; vomiting, nausea, diarrhea	Lungs, respiratory system	Yellow crystals BP: 480 C
Beryllium	7440-41-7 (metal)	TWA 0.002 mg/m^3	Ca C 0.0005 mg/m^3	TWA 0.002 mg/m^3 C 0.005 mg/m^3 (30 minutes) with a maximum peak of 0.025 mg/m^3	Ca [4 mg/m^3 (as Be)]	inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]	Eyes, skin, respiratory system	Metal: A hard, brittle, gray-white solid. BP: 4532°F
Bis(2-ethylhexyl) phthalate	117-81-7	TWA 5 mg/m^3	TWA 5 mg/m^3 STEL 10 mg/m^3 (do not exceed during andy 15-minute work period)	TWA 5 mg/m^3	None established	inhalation, skin and/or eye contact	Irritation eyes, skin, nose, throat; affect the nervous system and liver; damage to male reproductive glands	Eyes, skin, nose, respiratory system, nervous system, reproductive system, liver	Colorless to light colored, thick liquid with slight odor
Butane	106-97-8	TWA 1000 ppm	TWA 800 ppm (1900 mg/m^3)	None established	None established	inhalation, skin and/or eye contact (liquid)	Drowsiness, narcosis, asphyxia; liquid: frostbite	central nervous system	Colorless gas with a gasoline-like or natural gas odor. BP: 31°F UEL: 8.4% LEL: 1.6% Flammable Gas

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Cadmium	7440-43-9 (metal)	TWA 0.01 mg/m^3	Ca	TWA 0.005 mg/m^3	Ca [9 mg/m^3 (as Cd)]	inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	respiratory system, kidneys, prostate, blood	Metal: Silver-white, blue-tinged lustrous, odorless solid. BP: 1409°F
Carbon Disulfide	75-15-0	TWA 1 ppm	TWA 1 ppm (3 mg/m^3) STEL 10 ppm (30 mg/m^3) [skin]	TWA 20 ppm C 30 ppm 100 ppm (30-minute maximum peak)	500 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Dizziness, headache, poor sleep, lassitude (weakness, exhaustion), anxiety, anorexia, weight loss; psychosis; polyneuropathy; Parkinson-like syndrome; ocular changes; coronary heart disease; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system	Colorless to faint-yellow liquid with a sweet ether-like odor. BP: 116°F Fl.P: -22°F UEL: 50.0% LEL: 1.3% Class IB Flammable Liquid
Chlorobenzene	108-90-7	TWA 10 ppm	None established	TWA 75 ppm (350 mg/m^3)	1000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; in animals: liver, lung, kidney injury	Eyes, skin, respiratory system, central nervous system, liver	Colorless liquid with an almond-like odor BP: 270°F Fl.P: 82°F UEL: 9.6% LEL: 1.3%
Chloroethane	75-00-3	TWA 100ppm	Handle with caution in the workplace	TWA 1000 ppm (2600 mg/m^3)	3800 ppm [10%LEL]	inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	Incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Liver, kidneys, respiratory system, cardiovascular system, central nervous system	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor. BP: 54°F Fl.P: NA (Gas) -58°F (Liquid) UEL: 15.4% LEL: 3.8%
Chloroform	67-66-3	TWA 10 ppm	Ca STEL 2 ppm (9.78 mg/m^3) [60-minute]	C 50 ppm (240 mg/m^3)	Ca [500 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Liver, kidneys, heart, eyes, skin, central nervous system	Colorless liquid with a pleasant odor BP: 143°F
Chromium	7440-47-3	TWA 0.5 mg/m^3 (metal and Cr III compounds) TWA 0.05 mg/m^3 (water-soluble Cr IV compounds) TWA 0.01 mg/m^3 (insoluble Cr IV compounds)	TWA 0.5 mg/m^3	TWA 1 mg/m^3	250 mg/m^3 (as Cr)	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; lung fibrosis (histologic)	Eyes, skin, respiratory system	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid. BP: 4788°F
Chrysene; Phenanthrene; Pyrene; Coal tar pitch volatiles	65996-93-2	TWA 0.2 mg/m3	Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m^3 (benzene-soluble fraction)	Ca [80 mg/m^3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue. Combustible Solids

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
cis-1,2-Dichloroethene	158-59-2	TWA 200 ppm	TWA 200 ppm	TWA 200 ppm	None established	inhalation, skin absorption, ingestion	Harmful if swallowed, inhaled, or absorbed through skin. Irritant. Narcotic. Suspected carcinogen	Skin	Colorless liquid BP: 60 C Fl.P: 4 C UEL: 12.8% LEL: 9.7 %
Copper	7440-50-8	TWA 0.2mg/m^3 (fume) 1 mg/m^3 (dusts and mists)	TWA 1 mg/m^3	TWA 1 mg/m^3	100 mg/m^3 (as Cu)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing	Eyes, skin, respiratory system, liver, kidneys (increase(d) risk with Wilson's disease)	Noncombustible Solid in bulk form, but powdered form may ignite. BP: 4703°F
Dibenzo[a,h]anthracene	53-70-3	None established	None established	None established	None established	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin	Eyes, skin; skin photosensitization.	Colorless crystalline powder BP: 524°C
Diesel Fuel #2	68476-34-6	None established	None established	Designated as an OSHA Select Carcinogen	None established	ingestion, skin and/or eye contact	Kidney damage; potential lung damage; suspected carcinogen; irritation of eyes, skin, respiratory tract; dizziness, headache, nausea; chemical pneumonitis (from aspiration of liquid); dry, red skin; irritant contact dermatitis; eye redness, pain.	Eyes, skin, kidneys	Clear yellow brown combustible liquid; floats on water; distinct diesel petroleum hydrocarbon odor. BP: 356-716°F Fl.P: 154.4-165.2°F LEL: 0.6% UEL: 7.0%
Ethylbenzene	100-41-4	TWA 100 ppm STEL 125 ppm	TWA 100 ppm (435 mg/m^3) STEL 125 ppm (545 mg/m^3)	TWA 100 ppm (435 mg/m^3)	800 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with an aromatic odor. BP: 277°F Fl.P: 55°F UEL: 6.7% LEL: 0.8% Class IB Flammable Liquid
Fluoranthene	206-44-0	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible burns; heart and liver injury, pulmonary edema, respiratory arrest, gastrointestinal disturbances.	Heart, liver, lungs.	Yellow needles.
Fluorene	86-73-7	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Irritation skin, digestive tract	Skin	White crystals BP: 563°F
Fuel Oil #2	68476-30-2	TWA 100mg/m^3 (aerosol and vapor, as total hydrocarbons)	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; CNS effects; nausea, vomiting, headache, cramping, dizziness, weakness, loss of coordination,, drowsiness; kidney, liver damage	Eyes, skin, CNS	Clear or yellow to red oily liquid, kerosene-like odor BP: 347 - 689 °F UEL:5-6% LEL: 0.7-1.0%
Gasoline	8006-61-9	TWA 300 ppm STEL 500 ppm	Carcinogen	None established	Ca [IDLH value has not been determined]	Skin absorption; inhalation; ingestion; skin and/or eye contact	Eyes and skin irritation, mucous membrane; dermatitis; headache; listlessness, blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis; possible liver, kidney damage [Potential occupational carcinogen]	Eyes, skin, respiratory system, CNS, Liver, Kidneys	Clear liquid with a characteristic odor, aromatic Fl.Pt = -45°F LEL = 1.4% UEL = 7.6% Classs 1B Flammable Liquid

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Hexachlorobutadiene	87-68-3	TWA 0.02 ppm	Ca TWA 0.02 ppm (0.24 mg/m^3) [skin]	None established	Ca [N.D.]	inhalation, skin absorption, ingestion, skin and/or eye contact	In animals: irritation eyes, skin, respiratory system; kidney damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, kidneys	Clear, colorless liquid with a mild, turpentine-like odor. BP: 419°F
Hydrogen Sulfide	7783-06-4	TWA (10 ppm) STEL (15 ppm) (adopted values for which changes are proposed in the NIC)	C 10 ppm (15 mg/m^3) [10-minute]	C 20 ppm 50 ppm [10-minute maximum peak]	100 ppm	inhalation, skin and/or eye contact	Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite	Eyes, respiratory system, central nervous system	Colorless gas with a strong odor of rotten eggs. BP: -77°F UEL: 44.0% LEL: 4.0% Flammable Gas
Indeno[1,2,3-cd]pyrene	193-39-5	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible human carcinogen (skin); weakness; affect liver, lung tissue, renal tissue; impairment of blood forming tissue	Skin	Fluorescent green-yellow crystalline solid BP: 536 C
Indeno[1,2,3-cd]pyrene	193-39-5	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible human carcinogen (skin); weakness; affect liver, lung tissue, renal tissue; impairment of blood forming tissue	Skin	Yellowish crystal solid BP: 536 C
Isopropylbenzene	98-82-8	TWA 50 ppm	TWA 50 ppm (245 mg/m^3) [skin]	TWA 50 ppm (245 mg/m^3) [skin]	900 ppm [10%LEL]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sharp, penetrating, aromatic odor. BP: 306°F Fl.P: 96°F UEL: 6.5% LEL: 0.9%
Kerosene	8008-20-6	TWA 200 mg/m^3	TWA 100 mg/m^3	None established	IDLH value has not been determined	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system	Colorless to yellowish, oily liquid with a strong, characteristic odor. BP: 347-617°F Fl.P: 100-162°F UEL: 5% LEL: 0.7% Class II Combustible Liquid
Lead	7439-92-1	TWA 0.05 mg/m^3	TWA (8-hour) 0.050 mg/m^3	TWA 0.050 mg/m^3	100 mg/m^3 (as Pb)	inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid. BP: 3164°F Noncombustible Solid in bulk form

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Manganese	7439-96-5 (metal)	TWA 0.2 mg/m^3	TWA 1 mg/m^3 STEL 3 mg/m^3	C 5 mg/m^3	500 mg/m^3 (as Mn)	inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	respiratory system, central nervous system, blood, kidneys	A lustrous, brittle, silvery solid. BP: 3564°F
Mercury (organo) alkyl compounds (as Hg)	7439-97-6	TWA 0.01 mg/m^3 STEL 0.03 mg/m^3 [skin]	TWA 0.01 mg/m^3 STEL 0.03 mg/m^3 [skin]	TWA 0.01 mg/m^3 C 0.04 mg/m^3	2 mg/m^3 (as Hg)	inhalation, skin absorption, ingestion, skin and/or eye contact	Paresthesia; ataxia, dysarthria; vision, hearing disturbance; spasticity, jerking limbs; dizziness; salivation; lacrimation (discharge of tears); nausea, vomiting, diarrhea, constipation; skin burns; emotional disturbance; kidney injury; possible teratogenic effects	Eyes, skin, central nervous system, peripheral nervous system, kidneys	Appearance and odor vary depending upon the specific (organo) alkyl mercury compound
Mercury compounds [except (organo) alkyls] (as Hg) Mercury	7439-97-6	TWA 0.025 mg/m^3 (elemental and inorganic forms)	Hg Vapor: TWA 0.05 mg/m^3 [skin] Other: C 0.1 mg/m3 [skin]	TWA 0.1 mg/m^3	10 mg/m^3 (as Hg)	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eyes, skin, respiratory system, central nervous system, kidneys	Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.] BP: 674°F
Methyl tert-butyl ether (MTBE)	1634-04-4	TWA 50 ppm	No established REL	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, mucous membrane, respiratory; dizziness, nausea, headache, intoxication	Eyes, skin, mucous membrane, respiratory system, central nervous system	Colorless liquid BP: 55.2 C
Methylene Chloride	75-09-2	TWA 50 ppm, A3 - suspected human carcinogen	Ca	TWA 25 ppm STEL 125 ppm	Ca [2300 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numbness, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, skin, cardiovascular system, central nervous system	Colorless liquid with a chloroform-like odor BP: 104°F UEL: 23% LEL: 13%
Metals Remediation Compound (MRC): Glycerol Tripolylactate Sorbitol Cysteinate Lactic Acid Glycerol	201167-72-8 444618-64-8 50-21-5 56-81-5	None established	None established	None established	None established	inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, skin, respiratory tract	Behavioral (headache), gastrointestinal tract, reproductive system	Viscous amber gel/liquid; strong amine/sulfur odor
Naphtha (coal tar)	8030-30-6	None established	TWA 100 ppm (400 mg/m^3)	TWA 100 ppm (400 mg/m^3)	1000 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; dizziness, drowsiness; dermatitis; in animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Reddish-brown, mobile liquid with an aromatic odor BP: 320-428°F Fl.P: 100-109°F Class II Combustible Liquid

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Naphthalene	91-20-3	TWA 2 ppm STEL 15 ppm	TWA 10 ppm (50 mg/m^3) STEL 15 ppm (75 mg/m^3)	TWA 10 ppm (50 mg/m^3)	250 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	Eyes, skin, blood, liver, kidneys, central nervous system	Colorless to brown solid with an odor of mothballs. BP: 424°F Fl.P: 174°F UEL: 5.9% LEL: 0.9%
n-Butylbenzene	104-51-8	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; CNS depression, lung damage; nausea, vomiting, headache, dizziness, weakness, loss of coordination, blured vision, drowsiness, confusion, disorientation	Eyes, skin,repiratory system, central nervous system	Colorless liquid with a sweet odor BP: 183 C Fl.P: 59 C UEL: 5.8% LEL: 0.8%
Nickel	7440-02-0 (Metal)	TWA 1.5 mg/m^3 (elemental) TWA 0.1 mg/m^3 (soluble inorganic compounds) TWA 0.2 mg/m^3 (insoluble inorganic compounds) TWA 0.1 mg/m^3 (Nickle subsulfide)	Ca TWA 0.015 mg/m^3	TWA 1 mg/m^3	Ca [10 mg/m^3 (as Ni)]	inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Nasal cavities, lungs, skin	Metal: Lustrous, silvery, odorless solid. BP: 5139°F
Nitrobenzene	98-95-3	TWA 1 ppm	TWA 1 ppm (5 mg/m^3) [skin]	TWA 1 ppm (5 mg/m^3) [skin]	200 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; anoxia; dermatitis; anemia; methemoglobinemia; in animals: liver, kidney damage; testicular effects	Eyes, skin, blood, liver, kidneys, cardiovascular system, reproductive system	Yellow, oily liquid with a pungent odor like paste shoe polish. BP: 411°F Fl.P: 190°F LEL(200°F): 1.8%
n-Propylbenzene	103-65-1	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Harmful if swallowed, Irritation eyes, skin, digestive tract, respiratory tract, central nervous system	Eyes, skin, central nervous system, respiratory system	colorless or light yellow liquid BP: 159 C Fl.P: 47 C UEL: 6% LEL: 0.8%
Petroleum hydrocarbons(Petroleum distillates)	8002-05-9	None established	TWA 350 mg/m^3 C 1800 mg/m^3 [15 min]	TWA 500 ppm (2000 mg/m^3)	1,100 [10% LEL]	Inhalation; ingestion; skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, drowsiness, headache, nausea; dried/cracked skin; chemical pneumonitis	CNS, eyes, respiratory system, skin	Colorless liquid with a gasoline or kerosene-like odor BP: 86-460°F Fl. Pt = -40 to -86°F UEL: 5.9% LEL: 1.1% Flammable liquid

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Phenol	108-95-2	TWA 5 ppm	TWA 5 ppm (19 mg/m^3) C 15.6 ppm (60 mg/m^3) [15-minute] [skin]	TWA 5 ppm (19 mg/m^3) [skin]	250 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine; cyanosis; liver, kidney damage; skin burns; dermatitis; ochronosis; tremor, convulsions, twitching	Eyes, skin, respiratory system, liver, kidneys	Colorless to light-pink, crystalline solid with a sweet, acrid odor. BP: 359°F UEL: 8.6% LEL: 1.8%
p-Isopropyltoluene	99-87-6	None established	None established	None established	None established	inhalation, skin absorption, eye contact	Irritation skin	CNS, skin	Colorless, clear liquid, sweetish aromatic odor BP: 350.8°F Class III Flammable liquid
Regenox Part A: Sodium Percarbonate Sodium Carbonate Monohydrate Silicic Acid Silica Gel	15630-89-4 5968-11-6 7699-11-6 63231-67-4	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation respiratory tract, mucous membranes, nose, throat, eyes, skin; gastrointestinal disturbance	Respiratory system, eyes, skin	Odorless, white, powder [Note: Self-accelerating decomposition with oxygen release starts at 50° C]
Regenox Part B: Silicic Acid, Sodium Salt, Sodium Silicate; Silica Gel; Ferrous Sulfate; Water	1344-09-8 63231-67-4 7720-78-7 7732-18-5	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation respiratory tract, mucous membranes, nose, throat, eyes, skin, mouth, esophagus and stomach	Respiratory system, eyes, skin, gastrointestinal tract	Odorless, Blue/Green, liquid [Note: Oxides of carbon and silicon may be formed when heated to decomposition]
sec-Butylbenzene	135-98-8	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, upper airway; central nervous system, headache, dizziness; gastrointestinal disturbance	Respiratory system, central nervous system, eyes, skin;	Colorless liquid BP: 344°F Fl.P: 126 °F UEL: 6.9% LEL: 0.8% Combustible liquid
Selenium	7782-49-2	TWA 0.2 mg/m^3	TWA 0.2 mg/m^3	TWA 0.2 mg/m^3	1 mg/m^3 (as Se)	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	Amorphous or crystalline, red to gray solid. [Note: Occurs as an impurity in most sulfide ores.] BP: 1265°F
Silver	7440-22-4 (metal)	TWA 0.1 mg/m^3 (metal, dust, fumes) TWA 0.01 mg/m^3 (Soluble compounds, as Ag)	TWA 0.01 mg/m^3	TWA 0.01 mg/m^3	10 mg/m^3 (as Ag)	inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	Metal: White, lustrous solid BP: 3632°F
Slop Oil	69029-75-0	None established	None established	None established	None established	Inhalation; ingestion	Irritation eyes, skin, gastrointestinal tract	Eyes, skin, gastrointestinal tract	Clear light to dark amber liquid, with mild hydrocarbon odor. BP: >500°F Fl.P : 250°F

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Sulfuric Acid	7664-93-9	TWA 0.2 mg/m^3	TWA 1 mg/m^3	TWA 1 mg/m^3	15 mg/m^3	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis	Eyes, skin, respiratory system, teeth	Colorless to dark-brown, oily, odorless liquid. BP: 554°F Noncombustible Liquid
tert-Butylbenzene	98-06-6	None established	None established	None established	None established	inhalation, skin absorption, ingestion,	Eye and respiratory irritant; CNS depression; liver or kidney damage	Respiratory system, central nervous system, eyes, liver, kidney	Colorless liquid with an aromatic odor BP: 168 - 169 C Fl.P: 34 C UEL:5.6 % LEL: 0.8 %
Tetrachloroethene	127-18-4	TWA 25 ppm STEL 100 ppm (STEL) listed as A3, animal carcinogen	Ca Minimize workplace exposure concentrations	TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm	Ca [150 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a mild, chloroform-like odor. BP: 250°F Noncombustible Liquid
Toluene	108-88-3	TWA 20 ppm	TWA 100 ppm (375 mg/m^3) STEL 150 ppm (560 mg/m^3)	TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	500 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, pungent, benzene-like odor. BP: 232°F Fl.P: 40°F UEL: 7.1% LEL: 1.1% Class IB Flammable Liquid
trans-1,2-Dichloroethene	156-60-5	TWA 200 ppm	None established	TWA 200 ppm STEL 250 ppm (skin)	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Narcotic. Irritation eyes, skin, respiratory tract, mucous membrane; CNS depression.	Respiratory tract, mucous membrane, eyes, skin, CNS	Colorless liquid with a fruity pleasant odor BP: 48°C Fl.P 6C UEL: 12.8% LEL: 9.7%
Trichloroethene	79-01-6	TWA 10 ppm STEL 25 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	Ca [1000 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system	Colorless liquid (unless dyed blue) with a chloroform-like odor. BP: 189°F UEL(77°F): 10.5% LEL(77°F): 8%
Vinyl Chloride	75-01-4	TWA 1 ppm	Carcinogen	TWA 1 ppm C 5 ppm [15-minute]	Ca [IDLH value has not been determined]	inhalation, skin, and/or eye contact (liquid)	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]	Liver, central nervous system, blood, respiratory system, lymphatic system	Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. BP: 7°F UEL: 33.0% LEL: 3.6% Flammable Gas

Table B1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Xylene (m, o & p isomers)	108-38-3, 95-47-6, 106-42-3	TWA 100 ppm (435 mg/m^3) STEL 150 ppm	TWA 100 ppm (435 mg/m^3)	TWA 100 ppm (435 mg/m^3)	900 ppm	Skin absorption, inhalation, ingestion, skin, and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 282°F, 292°F, 281°F Fl. Pt. 82°F, 90°F, 81°F LEL: 1.1%, 0.9%, 1.1% UEL: 7.0%, 6.7%, 7.0% Classs C Flammable Liquid
Zinc	7440-66-6	TWA 10 mg/m3 (Inhalable fraction)	None established	TWA 10 mg/m3 (for zinc oxide fume)	None established	skin and/or eye contact, inhalation, ingestion	Irritation eyes, skin, respiratory tract; gastrointestinal disturbances	Eyes, skin, respiratory system	Bluish gray solid BP: 1664.6°F Flammable

Table B-1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 149 Kent Avenue, Brooklyn, New York

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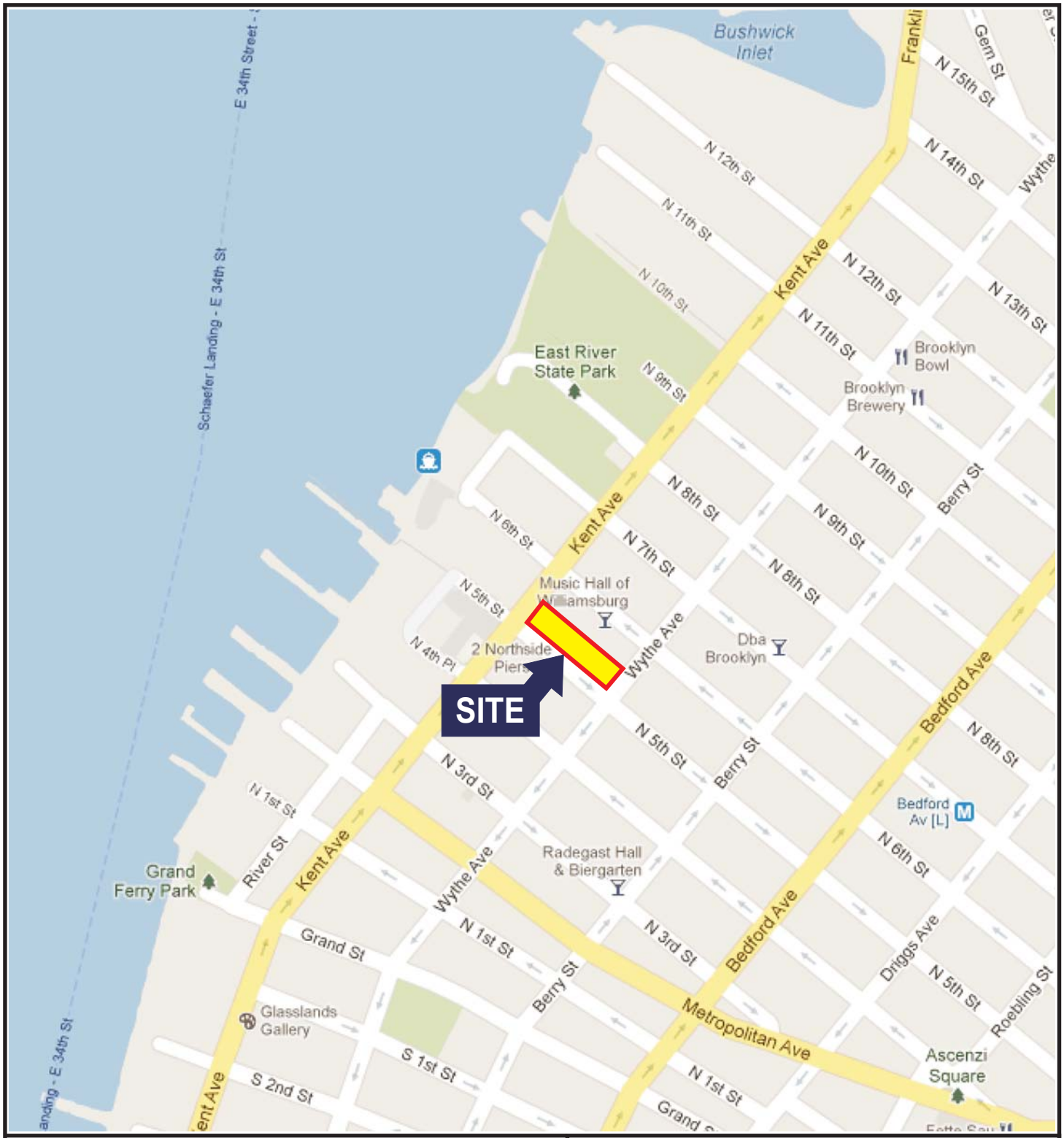
Abbreviations:

ACGIH – American Conference of Governmental Industrial Hygienists.
BP – boiling point at 1 atmosphere, °F
C – Ceiling, is a concentration that should not be exceeded during and part of the working exposure.
Ca - considered by NIOSH to be a potential occupational carcinogen
CAS# Chemical Abstracts Service registry number which is unique for each chemical.
Fl. Pt. – Flash point
IDLH - Immediately Dangerous to Life and Health concentrations represent the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
LEL – Lower explosive (flammable) limit in air, % by volume (at room temperature)
mg/m^3 – Milligrams of substance per cubic meter of air
NIOSH -National Institute for Occupational Safety and Health.
OSHA – Occupational Safety and Health Administration
PEL - OSHA Permissible Exposure Limit (usually) a time weighted average concentration that must not be exceeded during any 8 hour work shift of a 40 hr work week.
ppm – parts per million
REL – NIOSH Recommended Limit indicated a time weighted average concentration that must not be exceeded during any 10 hour work shift of a 40 hr work week
STEL – Short-term exposure limit
TLV -ACGIH Threshold Limit Values (usually 8 hour time weighted average concentrations).
TWA – 8-hour, time-weighted average
UEL – Upper explosive (flammable) limit in air, % by volume (at room temperature)

FIGURES

B1. Site Location Map

B2. Hospital Route Map



QUADRANGLE LOCATION

SOURCE:
GOOGLE MAPS 2012

N

0 600'

Title:

SITE LOCATION MAP

149 KENT AVENUE
BROOKLYN, NEW YORK

Prepared for:

KENT & WYTHE OWNERS LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: D.T.B.	Date: 06DEC13	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	B1
Project Mgr.: J.D.	Project No.: 2158.0001Y000	
File: 2158.0001Y146.01.CDR		

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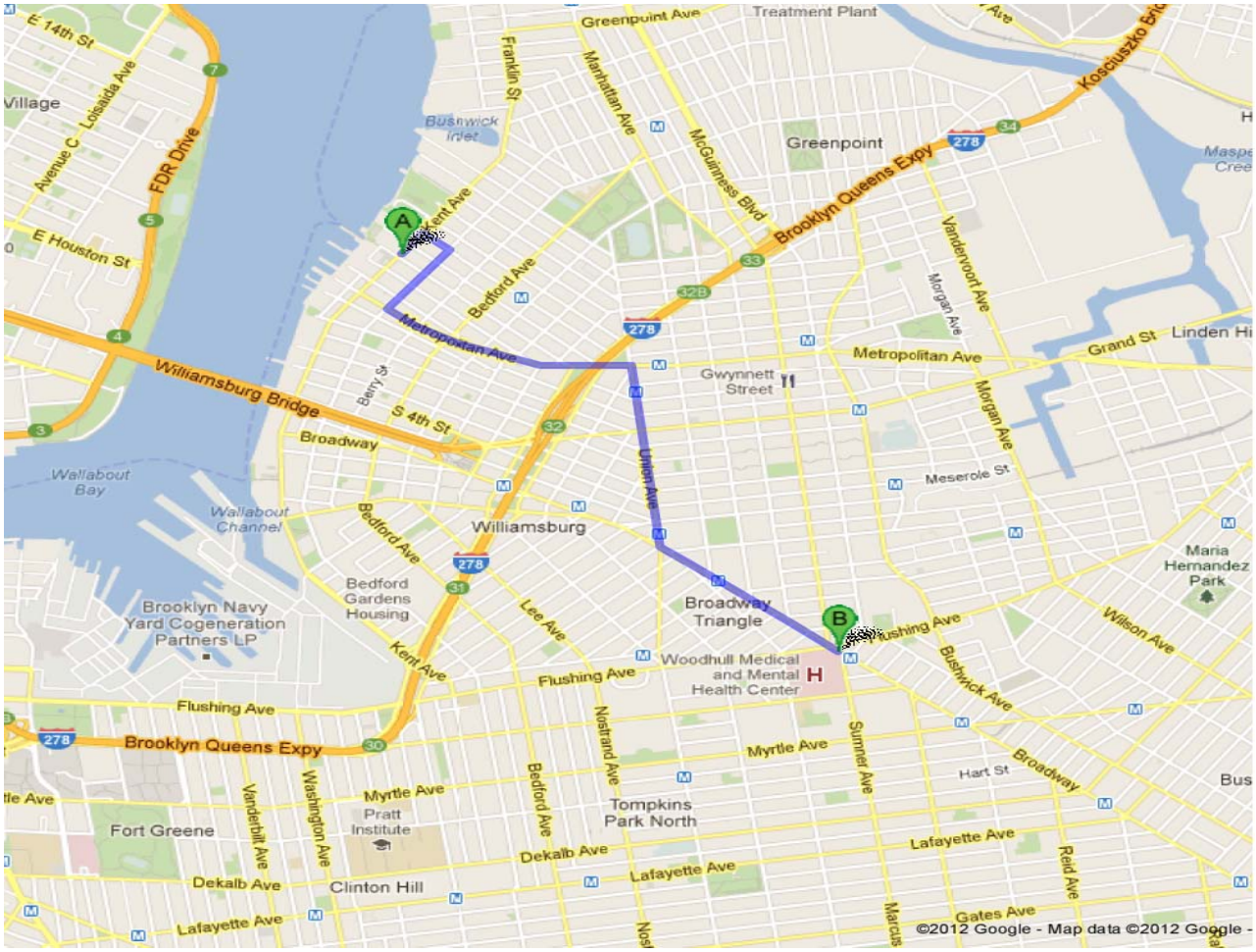


Figure B2. Directions to Woodhull Medical Center

760 Broadway
Brooklyn, New York 11206

- Start at 149 Kent Avenue, Brooklyn, New York
- Head northeast on Kent Avenue toward North 6th Street
- Turn Right onto North 7th Street
- Turn Right onto Wythe Avenue
- Turn Left onto Metropolitan Avenue
- Turn Right onto Union Avenue
- Turn Left onto Broadway
- Arrive at Woodhull Medical Center on your right.

ATTACHMENTS

1. Material Safety Data Sheet for Zero Valent Iron
2. Community Air Monitoring Plan
3. Health and Safety Briefing/Tailgate Meeting Form
4. Notice of Incident or Property Damage Report
5. OSHA 300
6. Job Safety and Health Protection Poster

ATTACHMENT 1

Material Safety Data Sheet for Zero Valent Iron

Hepure Technologies Inc

Committed to Comprehensive Environmental Solutions

DATE ISSUED: 6/13

MSDS: Ferox-Flow™
ZVI Reactive Iron Powder

1. PRODUCT DATA

Chemical Name:	Iron
Chemical Data	Melting Point 1536 C
Bulk Density:	2.68 g/cm^3
Appearance:	Gray color
Synonym:	Cast Iron Powder
Chemical Formula:	Fe

2. CAS NUMBER

Iron Powder fall under
CAS Number as: 7439-89-6+

3. FIRE/EXPLOSION HAZARDS

Iron is not a flammable Product under most conditions. Avoid airborne dispersion of any finely power in an enclosed area to reduce potential dust ignition.

4. EXISTINGUISH MEDIA

Dry Chemical, sand, graphite to smother fire. Use water only in mist/fog application to avoid spreading power/acclimated dust in surrounding area.

5. HAZARDS IDENTIFICATION

Irritating to the skin and eyes on contact. Inhalation will cause irritation to lungs and Mucus membrane. Irritation to eyes will cause watering and redness. Reddening scaling and itching are characteristics of skin inflammation. Follow safe industrial Hygiene Practices.

6. CHRONIC HEALTH EFFECTS

This product has no known chronic effects.

7. CARCINOGENICITY

This product is not carcinogen.

8. FIRST AID FOR EYES

In case of contact immediately flush eyes with plenty of water for at least 15 minutes. Call the physician.

9. FIRST AID FOR SKIN

In case of contact flush skin with water. Wash clothes before reuse. Call a physician if irritation occurs.

10. FIRST AID FOR INHALATION

If inhaled move to fresh air; if not breathing, give artificial respiratory; if breathing is difficult give oxygen. Call a physician.

11. FIRST AID IN INGESTION

If swallowed, call a physician immediately.

12. FIRE AND EXPLOSION DATA

Flammability:	Non-flammable
Flash Point:	Not applicable
Extinguishing Media:	Water spray or choose extinguishing agent most suitable for type of surrounding fire.

13. FIRE FIGHTING PROCEDURE

Wear self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

14. FIRE/EXPLOSION HAZARDS

Fire and explosion hazards are moderate when the material is in the form of a dust and exposed to heat, flames, and chemical reaction or contact which powerful oxidizer.

15. HANDLING AND STORGE

Special Sensitivity:	None
Storage Temperature:	Ambient Temperature

16. DISPOSAL CONSIDERATIONS

Waste disposal should be in accordance with existing federal, state and local environmental regulations.

17. TRANSPORTATION INFORMATION

Proper Shipping Name:	Cast Iron Powder
H.S. Code :	72052910
UN Number:	Not Applicable
Class:	Not Applicable
P.G.:	Not Applicable
Label:	Not Applicable

18. INFORMATION

The product contains no chemicals. Even though reasonable care to be taken during the preparation of the document, we also extending no warranties and make no representations as to the completeness of the information contained and assure no responsibility regarding the suitability of this information. Each person should arrange the determinations as to suitability of information for their specific needs.

ATTACHMENT 2

Community Air Monitoring Plan

December 7, 2013

COMMUNITY AIR MONITORING PLAN

149 Kent Avenue
Site Number C224159

Prepared for

KENT & WYTHE OWNERS LLC
149 Kent Avenue
Williamsburg
Kings County, New York

ROUX ASSOCIATES, INC.

Environmental Consulting & Management

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

TABLE OF CONTENTS

TABLE

APPENDICES

1.0 INTRODUCTION

Remedial Engineering, P.C and Roux Associates, Inc. (collectively referred to herein as Roux Associates), on behalf of KENT& WYTHE OWNERS LLC, (the "Volunteer"), have developed a project specific Community Air Monitoring Plan (CAMP) to implement real time monitoring at 149 Kent Avenue (Site) during soil excavation/foundation construction activities. Based on the results of previous investigations conducted, volatile organic compounds (VOCs) and particulates have been identified as contaminants of potential concern. The monitoring program will screen and analyze ambient air for total VOCs and particulate concentrations at the downwind perimeter of the Site. The monitoring program will be implemented at all times during which earth disturbance activities are occurring and/or the potential for exposure to environmental contaminants in onsite and/or immediately adjacent offsite soil, groundwater and soil vapor exists. The CAMP is designed to provide a measure of protection for the downwind community and onsite workers not directly involved with the subject work activities from potential airborne contaminant releases as a direct result of remedial and construction activities. This plan is consistent with the New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan guidance document.

A portion of the intrusive activities will be conducted in a relatively deep excavation with work below the water table in moist soil. This high moisture content will provide for "natural" dust suppression in these areas. The implementation of direct loading and offsite transport of excavated soils will also minimize particulate issues.

The specifics of the CAMP are presented in the following four (4) sections:

- 1.1 VOC Monitoring Approach
- 1.2 Particulate Monitoring Approach
- 1.3 Meteorological Monitoring Approach
- 1.4 Available Suppression Techniques

1.1 VOC Monitoring Approach

Due to the relatively small size of the Site, it is not practical to monitor individual work areas within the Site. Thus, total VOC concentrations in air will be monitored continuously at the

upwind and downwind perimeters of the Site during all ground intrusive activities and/or when the potential for exposure to environmental contaminants in onsite and/or immediately adjacent offsite soil, groundwater and soil vapor exists. The VOC monitoring equipment will be located at temporary monitoring stations that will be established daily based on Site logistics and weather conditions. The monitoring work will be conducted using MiniRAE 3000 (or equivalent) portable VOC monitors, or similar type monitors, for all VOC monitoring. The equipment will be calibrated at least once daily using isobutylene as the calibration gas. One (1) upwind and one (1) downwind monitor will be deployed each day. Each monitoring unit is equipped with an audible alarm to indicate exceedance of the action levels (as defined below and summarized in Table 1).

The equipment is capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total VOCs at the downwind perimeter of the Site 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.

- If the ambient air concentration of total VOCs at the downwind perimeter of the Site persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of VOCs identified, suppression techniques employed to abate emissions, and monitoring continued. After these steps, work activities can resume if the total organic vapor level at the Site perimeter is below 5 ppm over the background concentration for the 15-minute average. If levels are in excess of 25 ppm above background, identified contributing ground-intrusive activities will be halted and vapor suppression techniques will be evaluated and modified until monitoring indicates VOC levels at the Site perimeter are below 5 ppm over background. Once VOC levels are below 5 ppm at the Site perimeter, work will resume with continued monitoring.

All 15-minute readings will be recorded and be available for State Regulator (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will be recorded. If an exceedance of the action level occurs, an Action Limit Report (ALR) will be completed, identifying the monitoring device location, the measured VOC level, the activity causing the exceedance, meteorological conditions, and the corrective actions taken, as provided in Appendix A. Additionally, the NYSDEC and NYSDOH will be notified within 24 hours of the VOC ALR generation. Daily monitoring equipment locations and meteorological conditions will

also be documented on the daily CAMP Monitoring Location Plan, as shown in Appendix B. All documentation will be kept on file at the Site.

1.2 Particulate Monitoring, Response Levels and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the Site at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action levels (as defined below and summarized in Table 1). Monitoring equipment will be MIE Data Ram monitors or equivalent. A minimum of one (1) upwind and one (1) downwind monitor will be deployed each day, equipped with an omni-directional sampling inlet and a PM-10 sample head. The data logging averaging period will be set to 15-minutes with time and date stamp recording. Alarm averaging will be set at 90 micrograms per cubic meter ($\mu g/m^3$) per 15-minute period. This setting will allow proactive evaluation of Site conditions prior to reaching Action Levels of 100 $\mu g/m^3$ above background. The equipment will be outfitted with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. The monitoring will be used to compare values to the following:

- If the downwind PM-10 particulate level is 100 $\mu g/m^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the Site, 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 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the Site.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped, a re-evaluation of activities initiated, and dust suppression techniques modified. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

All 15-minute readings will be recorded and be available for State Regulator (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will be recorded. If an exceedance of the action level occurs, an ALR will be completed, identifying the monitoring device location, the measured particulate concentration, the activity causing the

exceedance, meteorological conditions, and the corrective actions taken, as provided in Appendix A. Daily monitoring equipment locations and meteorological conditions will also be documented on the daily CAMP Monitoring Location Plan, as shown in Appendix B. All documentation will be kept on file at the Site.

1.3 Meteorological Monitoring

Meteorological data consisting of wind speed, wind direction, temperature, barometric pressure, and relative humidity will be collected. At a minimum, a full set of meteorological parameters will be measured and recorded at the start of each workday, noon of each workday, and the end of each workday. Wind direction readings will be utilized to position the VOC and particulate monitoring equipment in appropriate upwind and downwind locations. A Davis Corporation wireless instrument station or equivalent will be used to measure and log the meteorological monitoring data.

1.4 Available Suppression Techniques

During all intrusive activities, vapor suppression foam will be applied, as needed, to areas where there is active excavation and/or the potential for exposure to environmental contaminants in onsite and/or immediately adjacent offsite soil, groundwater and soil vapor exists. Water misting via controlled fire hose and/or water truck will be utilized, as necessary, to mitigate the potential for particulate/dust release in non-contaminated Site work areas and roadways. Excavation methods and material staging and loading methods will be continually evaluated and modified (as necessary) to alleviate the potential for odor, VOCs, and particulate releases.

1.5 Reporting

All recorded monitoring data will be downloaded and field logged periodically, including action limit reports (if any) and daily CAMP monitoring location plans. All records will be maintained onsite for NYSDEC/NYSDOH review. A summary of CAMP findings, including excursions, will be provided in the Daily and Monthly Reports. All CAMP monitoring records will be included in the overall Final Engineering Report that will be submitted to the NYSDEC and NYSDOH and will include all of the CAMP data collected, daily monitoring station location maps, and copies of the ALRs (if any). If an ALR is generated due to VOC exceedances, the NYSDEC and NYSDOH will be notified within 24 hours of the exceedance.

Table 1. Action Limit Summary for VOCs and Particulates, 149 Kent Avenue, Brooklyn, New York

Contaminant	Downwind Action Levels*	Action/Response
Volatile Organic Compounds (VOCs) (Monitoring Via Photoionization Detector and Odor Observation)	< 5 ppm	1. Resume work with continuing monitoring.
	5 ppm < level < 25 ppm	1. Work activities must be temporarily halted, source vapors must be identified, suppression techniques employed to abate emissions and monitoring continued. 2. After these steps, if VOC levels (200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or structure, whichever is less) is below 5 ppm over background, resume work.
	> 25 ppm	1. Identified contributing ground intrusive activities must be halted and vapor suppression techniques must be evaluated and modified until monitoring indicates VOC levels below the action level. 2. After these steps, if VOC levels (half the distance to the nearest potential receptor or structure) are below 5 ppm over background, resume work.
Particulates (Monitoring Via Particulate Meter and Observation)	< 100 ug/m^3	1. If dust is observed leaving the work area, then dust control techniques must be implemented or additional controls used.
	100 ug/m3 < level < 150 ug/m^3	1. Employ dust suppression techniques. 2. Work may continue with dust suppression techniques provided that downwind PM-10 particulate concentration do not exceed 150 ug/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
	> 150 ug/m^3	1. STOP work 2. Re-evaluate activities, modify dust suppression techniques. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

* 15-minute running time-weighted average (twa) above background. Particulate readings are based on the respirable (PM-10) fraction. Background readings are taken at upwind locations relative to Work Areas or Exclusion Zones.

APPENDIX A

Action Limit Report

ACTION LIMIT REPORT

Project Location: 149 Kent Avenue, Brooklyn, New York

Date: _____ Time: _____

Name: _____

Contaminant: PM-10: _____ VOC: _____

Wind Speed: _____ Wind Direction: _____

Temperature: _____ Barometric Pressure: _____

DOWNWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

UPWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

BACKGROUND CORRECTED LEVELS

Monitor ID #: _____ Location: _____ Level Reported: _____

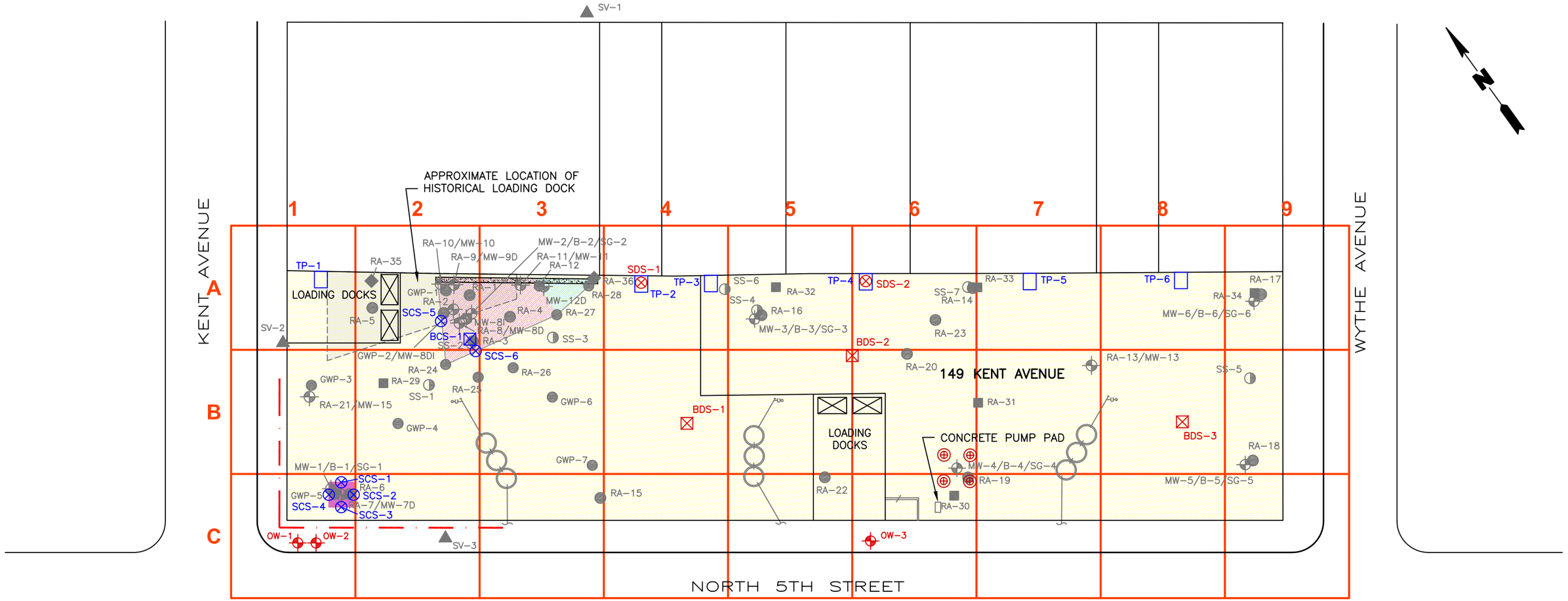
Monitor ID#: _____ Location: _____ Level Reported: _____

ACTIVITY DESCRIPTION

CORRECTIVE ACTION TAKEN

APPENDIX B

Daily CAMP Monitoring Location Plan



LEGEND

- MW-1/B-1/SG-1 — GROUND WATER MONITORING WELL/ SOIL BORING/SUBSLAB SOIL VAPOR SAMPLING POINT INSTALLED BY AKRF ENVIRONMENTAL CONSULTANTS
- SS-1 — APPROXIMATE LOCATION OF SUB SLAB VAPOR SAMPLING POINT INSTALLED BY ROUX ASSOCIATES, INC.
- RA-1 — LOCATION OF SOIL BORING (COMPLETED FEBRUARY 2013 BY ROUX ASSOCIATES, INC.)
- RA-13/MW-13 — LOCATION OF SOIL BORING AND MONITORING WELL
- SV-1 — LOCATION OF SOIL VAPOR SAMPLING POINT
- GWP-1 — LOCATION OF GROUNDWATER PROFILE BORING
- RA-32 — LOCATION OF SOIL BORING (RA-32 THROUGH RA-34) (CONTINUOUS SAMPLING TO 6FT BFS)
- RA-29 — LOCATION OF SOIL BORING (RA-29 THROUGH RA-31) (CONTINUOUS SAMPLING TO WATER TABLE)
- RA-35 — LOCATION OF SUPPLEMENTAL SOIL BORING (RA-35 AND RA-36) COMPLETED ON AUGUST 5, 2013

REMEDIATION LEGEND

- PROPOSED LIMITS OF EXCAVATION TO 10 FT BFS
- PROPOSED LIMITS OF EXCAVATION TO 35 FT BFS
- PROPOSED LIMITS OF COMPOSITE CAP AND EXCAVATION
- PROPOSED SECANT PILE WALL
- PROPOSED PERMEABLE REACTIVE BARRIER TREATMENT WALL
- PROPOSED INSITU ZERO VALENT IRON INJECTIONS AROUND MW-4
- SCS-1 — PROPOSED SIDEWALL CONFIRMATION SOIL SAMPLE
- BCS-1 — PROPOSED BOTTOM CONFIRMATION SOIL SAMPLE
- SDS-1 — PROPOSED SIDEWALL DOCUMENTATION SOIL SAMPLE
- BDS-1 — PROPOSED BOTTOM DOCUMENTATION SOIL SAMPLE
- OW-1 — PROPOSED OFFSITE MONITORING WELL
- TP-1 — PROPOSED TEST PIT
- ALPHA-NUMERIC GRID LINE

GENERAL NOTES

1. THREE SOIL SAMPLES WILL BE COLLECTED FROM SCS-6 IN THREE DEPTH INTERVALS.
2. BASEMAP PREPARED BASED ON SURVEY DATA COLLECTED BY ANGLE OF ATTACK LAND SURVEYORS, LLC ON JUNE 1, 2013.
3. FT BFS – FEET BELOW FLOOR SLAB
4. ALPHA-NUMERIC GRID CELLS ARE SPACED EVERY 50 FEET.

40' 0 40'

Title:

DAILY CAMP MONITORING LOCATION PLAN

149 KENT AVENUE
BROOKLYN, NEW YORK

Prepared For:
KENT & WYTHE OWNERS LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: N.C.	Date: 05DEC13	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	1
Project Mgr: J.D.	Project: 2158.0001Y000	
File: 2158.0001Y152.01.DWG		

V:\CAD\PROJECTS\2158Y\0001Y\152\2158.0001Y152.01.DWG

ATTACHMENT 3

Health and Safety Briefing/Tailgate Meeting Form

HEALTH & SAFETY BRIEFING / TAILGATE MEETING FORM

Site Name / Location _____

Date: _____ Weather Forecast: _____

Names of Personnel Attending Briefing

_____ _____ _____

_____ _____ _____

_____ _____ _____

Planned Work

_____

_____

_____

Instrument Calibration: Instrument/Time/Cal. Gas/Cal. Concentration/Actual Concentration

_____

_____

_____

Items Discussed

_____

_____

_____

_____

_____

Work Permit Type and Applicable Restrictions

_____

_____

_____

Signatures of Attending Personnel

_____ _____ _____

_____ _____ _____

_____ _____ _____

ATTACHMENT 4

Notice of Incident or Property Damage Report

NOTICE OF INCIDENT OR PROPERTY DAMAGE REPORT

Date of Report: _____

Location (Address of Occurrence):

_____

_____

_____

Date of Loss or Damage: _____

Time of Loss or Damage: _____ am/pm

Describe Incident in Detail including names of all people involved and whether or not any were employees at time of incident:
(Circle One: ------ Property Damage,------ Bodily Injury --------- Theft)

_____

_____

_____

_____

_____

_____

_____

Description of Property Lost and/or Damaged:

_____

_____

_____

Estimate of Damages: $_____

Name and Address of Claimant:_____

_____

Claimant's Telephone Number _____

Claimant's DOB:

Claimant's Employer:

Action Taken:

_____

_____

_____

Witnesses: _____ Telephone Number_____

(Name and Address) _____

_____

Signed By: _____ Telephone Number_____

Print Name and Title _____

A copy of this incident report (and photographs, if available) must be immediately faxed the date of the accident to both Kenneth Roberts and Marisa Martin at fax number (914) 833-3092 and immediately thereafter please telephone Marisa at 914-833-3000 x. 127 and inform her that you just faxed the report. In her absence, contact Ken Roberts at x. 112 or Jeff Feldman at x. 153.

ATTACHMENT 5

OSHA 300

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year _____

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

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Form approved OMB no. 1218-0176

Establishment name _____

City _____ State _____

Identify the person			Describe the case			Classify the case											
						CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	Death	Days away from work	Remained at work		Away From Work (days)	On job transfer or restriction (days)	(M) Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
								Job transfer or restriction	Other record-able cases								
						(G)	(H)	(I)	(J)	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)
					Page totals	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
(1)	(2)	(3)	(4)	(5)	(6)

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year _____

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

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of…	(M)		(M)
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Establishment information

Your establishment name _____

Street _____

City _____ State _____ Zip _____

Industry description (e.g., Manufacture of motor truck trailers)

_____

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

____ ____ ____ ____

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

____ ____ ____ ____ ____ ____

Employment information

Annual average number of employees _____

Total hours worked by all employees last year _____

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

_____ Company executive

_____ Title

_____ Phone

_____ Date

OSHA's Form 301
Injuries and Illnesses Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

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

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Repor* t is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by _____

Title _____

Phone _____ Date _____

Information about the employee

1) Full Name _____

2) Street _____

City _____ State _____ Zip _____

3) Date of birth _____

4) Date hired _____

5) ☐ Male
☐ Female

Information about the physician or other health care professional

6) Name of physician or other health care professional

_____

_____

7) If treatment was given away from the worksite, where was it given?

Facility _____

Street _____

City _____ State _____ Zip _____

8) Was employee treated in an emergency room?
☐ Yes
☐ No

9) Was employee hospitalized overnight as an in-patient?
☐ Yes
☐ No

Information about the case

10) Case number from the Log _____ *(Transfer the case number from the Log after you record the case.)*

11) Date of injury or illness _____

12) Time employee began work _____ AM/PM

13) Time of event _____ AM/PM ☐ Check if time cannot be determined

14) **What was the employee doing just before the incident occurred?** Describe the activity, as well as the tools, equipment or material the employee was using. Be specific. Examples: "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."

15) **What happened?** Tell us how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."

16) **What was the injury or illness?** Tell us the part of the body that was affected and how it was affected; be more specific than "hurt", "pain", or "sore." Examples: "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."

17) **What object or substance directly harmed the employee?** Examples: "concrete floor"; "chlorine"; "radial arm saw." If this question does not apply to the incident, leave it blank.

18) **If the employee died, when did death occur?** Date of death

ATTACHMENT 6

Job Safety and Health Protection Poster

You Have a Right to a Safe and Healthful Workplace.

IT'S THE LAW!

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

The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at **www.osha.gov**. If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

1-800-321-OSHA

www.osha.gov

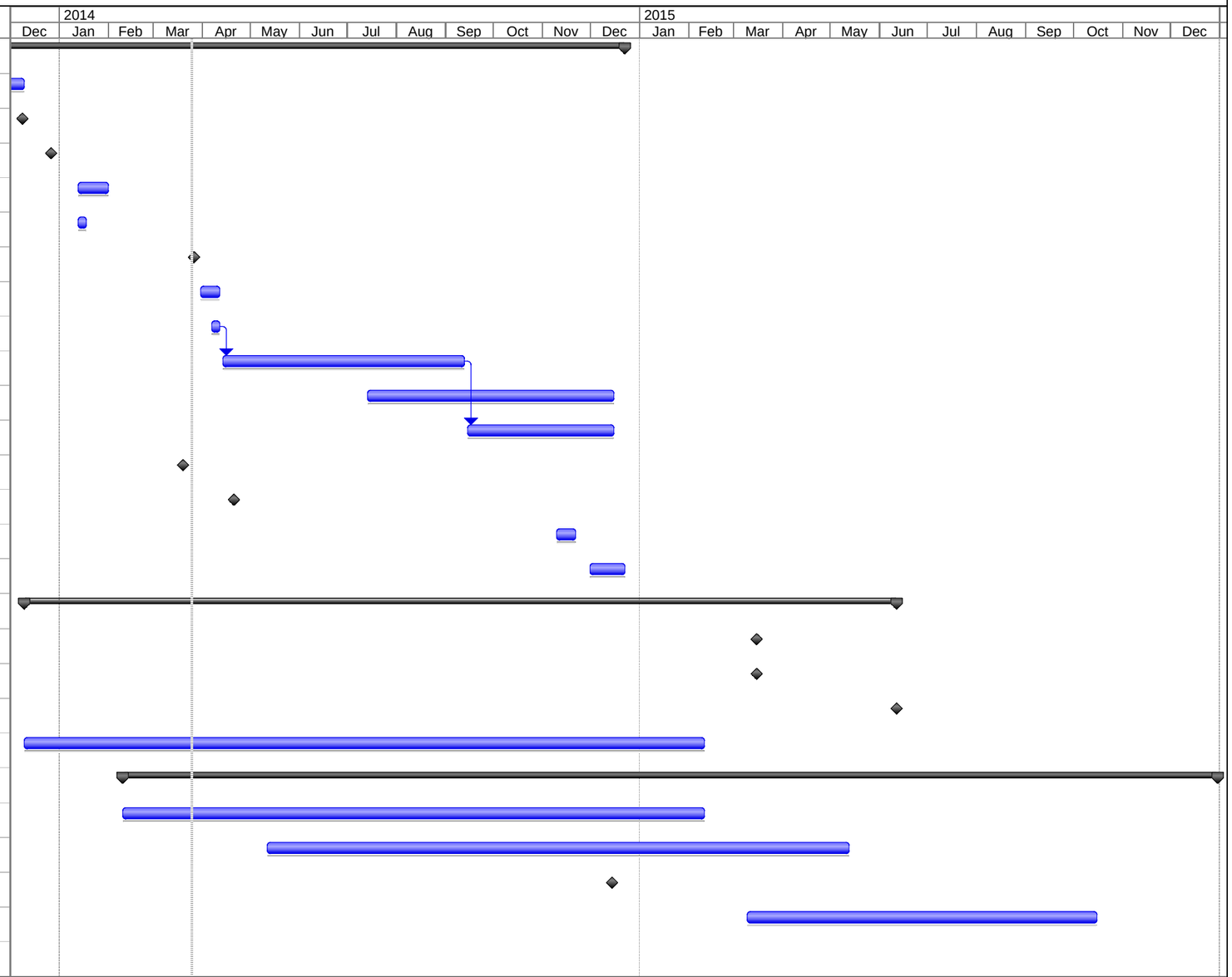
U.S. Department of Labor • Occupational Safety and Health Administration • OSHA 3165

APPENDIX B

Construction Schedule

Figure B-1: Schedule for 149 Kent Avenue

ID	Task Name
1	**Design and Implementation of the Preferred Remedy**
2	RAWP 45 Day Comment Period
3	NYSDEC Approval of RAWP and Issue Final Decision Document
4	Pilot Test Work Plan for ZVI Injections in the Vicinity of MW-4
5	Site Mobilization
6	Complete ZVI Pilot Test Injections in the Vicinity of MW-4
7	Pre-Construction Meeting
8	Install ZVI PRB Treatment Wall Injections
9	Mobilization for Excavation
10	Excavation
11	Dewatering and Water Treatment
12	Foundation Construction
13	Submittal of Design for ZVI PRB Treatment Wall
14	Submittal of Design for SSDS
15	Install Active SSDS
16	Install ZVI PRB Treatment Wall by Backfill Method in Southwest Corner of Site
17	**Reporting/Institutional Controls**
18	Submit FER to NYSDEC
19	Submit SMP to NYSDEC/Environmental Easement Preparation
20	Certificate of Completion
21	Monthly Reporting (until COC is issued)
22	**Post Remedial Operation, Maintenance and Monitoring**
23	Monitoring for MW-4 Area (6 rounds)
24	Monitoring for PRB Treatment Wall (6 rounds)
25	Operation of the Active SSDS (starts after building construction is complete)
26	Quarterly Reporting (after COC is issued)
27	Annual Inspections and Periodic Review Report (report due 45 days prior to the end of certification period); TBD



Project: Schedule for 149 Kent Avenue
Date: Tue 3/25/14

Task | Milestone | Summary | TBD - To be determined

Quality Assurance Project Plan

March 26, 2014

QUALITY ASSURANCE PROJECT PLAN

149 Kent Avenue
Site Number C224159

Prepared for

KENT & WYTHE OWNERS LLC
149 Kent Avenue
Williamsburg
Kings County, New York

ROUX ASSOCIATES, INC.

Environmental Consulting & Management

ROUX

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

TABLE OF CONTENTS

TABLES

ATTACHMENTS

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared to describe the measures that will be taken to ensure that the data generated during performance of the implementation of the Remedial Action Work Plan (RAWP) at 149 Kent Avenue, Brooklyn, New York (Site) are of quality sufficient to meet project-specific data quality objectives (DQOs). The QAPP was prepared in accordance with the guidance provided in New York State Department of Environmental Conservation (NYSDEC) Technical Guidance DER-10 (Technical Guidance for Site Investigation and Remediation), the Brownfield Cleanup Program Guide and the United States Environmental Protection Agency's (USEPA's) Guidance for the Data Quality Objectives Process (EPA QA/G-4).

The QAPP describes in detail the field sampling and quality assurance/quality control (QA/QC) methods to be used during fill material and groundwater sampling tasks performed during the implementation of the RAWP.

The tasks covered by this QAPP are onsite fill material reuse sampling, waste characterization fill material sampling, offsite fill material sampling, and groundwater monitoring. If future development activities necessitate evaluation of potential vapor intrusion, this QAPP will be modified accordingly.

This QAPP was prepared in accordance with the NYSDEC's May 2010, DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) and provides guidelines and procedures to be followed by field personnel during performance of sampling during the site management phase. Information contained in this QAPP relates to:

- sampling objectives (Section 2);
- project organization (Section 3);
- sample media, sampling locations, analytical suites, sampling frequencies and analytical laboratory (Section 4);
- field sampling procedures (Section 5);
- sample handling, sample analysis and quality assurance/quality control (Section 6); and
- site control procedures and decontamination (Section 7).

2.0 SAMPLING OBJECTIVES

The sampling program is designed to meet the data quality objectives (DQOs) set forth in the DER-10. Specifically, analytical parameters selected for each sample, as described in Section 4, are comprehensive, and are intended to meet the following objectives:

- Analyze stockpiled soil, if any, designated for offsite disposal for parameters required by the selected disposal facility.
- Analyze offsite backfill or selected onsite excavated soil for parameters required to evaluate its suitability for use as backfill.
- Analyze groundwater samples to evaluate levels of volatile organic compounds (VOCs).

Sampling procedures are discussed in Section 5 of this QAPP. A discussion of the DQOs and quality assurance/quality control is provided in Section 6.

3.0 PROJECT ORGANIZATION

The overall management structure and a general summary of the responsibilities of project team members are presented below.

Project Principal

Noelle M. Clarke, P.E., of Roux Associates/Remedial Engineering will serve as Project Principal/Remedial Engineer. The Project Principal is responsible for defining project objectives and bears ultimate responsibility for the successful implementation and documentation of the RAWP.

Project Manager

David Bligh, P.E. of Roux Associates/Remedial Engineering will serve as Project Manager. This individual will provide overall management for the implementation of the scope of work and will coordinate all field activities. The Project Manager is also responsible for data review/interpretation and report preparation. Activities of the Project Manager are supported by the Project Quality Assurance Coordinator.

Field Team Leader

Ronald Lombino of Roux Associates/Remedial Engineering will serve as the Field Team Leader. The Field Team Leader bears the responsibility for the successful execution of the field program, as scoped in the RAWP. The Field Team Leader will also assist in the interpretation of data and in report preparation. The Field Team Leader reports to the Project Manager.

Laboratory Project Manager

The Laboratory Project Manager will be determined prior to the start of the Work. The Laboratory Project Manager is responsible for sample container preparation, sample custody in the laboratory, and completion of the required analysis through oversight of the laboratory staff. The Laboratory Project Manager will ensure that quality assurance procedures are followed and that an acceptable laboratory report is prepared and submitted. The Laboratory Project Manager reports to the Field Team Leader.

Quality Assurance Officer

Wai Kwan, Ph.D., P.E., of Roux Associates will serve as the Quality Assurance Officer (QAO) for this project. The QAO is responsible for conducting reviews, inspections, and audits to ensure that the data collection is conducted in accordance with the QAPP. The QAO's responsibilities range from ensuring effective field equipment decontamination procedures and proper sample collection to the review of all laboratory analytical data for completeness and usefulness. The QAO reports to the Project Manager and makes independent recommendations to the Field Team Leader.

4.0 SAMPLE MEDIA, LOCATIONS, ANALYTICAL SUITES, AND FREQUENCY

The media to be sampled may include fill materials and groundwater. Sampling locations, analytical suites, and frequency vary by the type of media to be sampled (i.e., stockpiled soil waste characterization samples, backfill samples and groundwater samples). A discussion of the sampling for each type of media is provided below. Specifics regarding the collection of samples for each type of media are provided in Section 5 of this QAPP.

4.1 Waste Characterization Sampling

In general, all soil to be excavated as part of the implementation of the RAWP and Site redevelopment have been pre-characterized for disposal purposes. However, if additional excavation is required, that waste must be characterized for proper in accordance with all local, State, including 6NYCRR Part 360, and Federal regulations.

One composite sample (comprised of a minimum of three grab samples) per 800 cubic yards (cy), or other frequency required by the selected disposal facility, will be collected from the stockpiled soil for waste characterization. The sample will be analyzed for the following (unless additional parameters are required by the selected disposal facility):

- VOCs and semivolatile organic compounds (SVOCs) according to United States Environmental Protection Agency (USEPA) Methods SW-846 8260 and 8270 for full list compounds, respectively;
- Total petroleum hydrocarbons (TPH) for gasoline and diesel range organics (broken down into two ranges, C10 and C18 and above C18) by USEPA Method SW-846 8015B;
- Reduced target analyte list (TAL) metals by USEPA Method SW-846 6010 (includes cadmium, chromium, lead, nickel, selenium, thallium and vanadium) and USEPA Method SW-846 7471 for mercury;
- Full list of toxicity characteristics leaching procedure (TCLP) analyses;
- Corrosivity;
- Reactivity; and
- Ignitability.

Other parameters may be analyzed as required by the selected disposal facility. QA/QC samples are not required for waste characterization samples.

4.2 Offsite Backfill Sampling and Onsite Reuse Sampling

For offsite fill materials requiring chemical testing (all materials except those listed below) and onsite materials proposed for potential reuse, the following samples shall be collected:

- One sample for pre-qualification chemical testing at the source location (not required for onsite reuse sampling), including the following:

  1. Chemical testing shall be performed at a minimum for the parameters listed in Table 375-6.8(b) of the latest revision of Part 375. Samples will be analyzed by the following analytical methods: Herbicides by USEPA method SW-846 8151A; Pesticides and polychlorinated biphenyls (PCBs) by USEPA methods SW-846 8081A/8082; VOCs by USEPA method SW-846 8260; SVOCs by USEPA method SW-846 8270; Arsenic, barium, beryllium, cadmium, copper, cyanide, lead, manganese, nickel, selenium, silver, and zinc by USEPA method SW-846 6010B; Total mercury by USEPA method SW-846 7471; Total chromium, hexavalent chromium, and trivalent chromium by USEPA method SW-846 7196A.

  2. Materials requiring sampling imported to the Site shall meet the restricted residential use criteria for human health presented in the latest revision of Part 375.

  3. Materials that exceed the criteria presented in the latest revision of Part 375 shall not be imported without prior approval of the NYSDEC.

- Sampling for post-qualification chemical testing for the offsite materials or onsite materials proposed for potential reuse shall be completed according to the following schedule provided in Table 5.4 (e) 10 of DER-10:

DER-10 Table 5.4(e)10
Recommended Number of Soil Samples for Soil Imported To or Exported From a Site

Contaminant	VOCs	SVOCs, Inorganics and PCBs/Pesticides	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	

DER-10 Table 5.4(e)10 Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	**VOCs**	**SVOCs, Inorganics and PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
500-800	6	2	
800-1000	7	2	
1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

1. Chemical testing shall be performed at a minimum for the parameters listed in Table 375-6.8(b) of the latest revision of Part 375. Samples will be analyzed by the following analytical methods: Herbicides by USEPA method SW-846 8151A; Pesticides and polychlorinated biphenyls (PCBs) by USEPA methods SW-846 8081A/8082; VOCs by USEPA method SW-846 8260; SVOCs by USEPA method SW-846 8270; Arsenic, barium, beryllium, cadmium, copper, cyanide, lead, manganese, nickel, selenium, silver, and zinc by USEPA method SW-846 6010B; Total mercury by USEPA method SW-846 7471; Total chromium, hexavalent chromium, and trivalent chromium by USEPA method SW-846 7196A.

The source of the offsite fill must be documented by the supplier, including the location where the fill was obtained and a brief history of the site that is the source of the fill.

QA/QC samples are not required for backfill samples.

In accordance with DER-10, the following materials may be imported, without chemical testing, to be used as backfill beneath pavement, buildings or as part of the site cover, provided that it contains less than 10 percent by weight material that would pass through a size 80 sieve and consists of:

- gravel, rock or stone, consisting of virgin material from a permitted mine or quarry; or
- recycled concrete or brick from a NYSDEC registered construction and demolition debris processing facility if the material conforms to the requirements of Section 304 of the 2002 New York State Department of Transportation Standard Construction and Materials Volume 1.

The following materials may also be imported to the site without chemical testing:

- Lean concrete for backfill of deeper excavations (if applicable);
- Bentonite for slurry to be used for backfill of deep trenches (if applicable). If offsite soil is used in the production of the bentonite slurry, the offsite soil shall be subject to all chemical testing requirements.

4.3 Groundwater Sampling

Groundwater monitoring will take the form of periodic monitoring events. Samples will be collected from offsite monitoring wells using low-flow purging and sampling procedures during each sampling event.

Groundwater samples will be analyzed for VOCs via USEPA method SW-846 8260. QA/QC samples will be collected for groundwater samples.

5.0 FIELD SAMPLING PROCEDURES

This section provides a detailed discussion of the field procedures to be used during sampling of the various media (soil and groundwater) during implementation of the RAWP.

5.1 Fill Material Sampling

All fill material samples will be collected using pre-cleaned stainless steel sampling tools (i.e., trowels, spatulas, etc.). As noted above, waste characterization samples will be collected as required by the selected disposal facility. In general, where composite samples are required for onsite reuse samples or offsite fill material samples, composite samples will be collected from a minimum of three locations across the stockpiled materials. The exception is for VOC samples, which will be collected as grab samples.

5.2 Groundwater Sampling

Prior to sampling, depth to water will be measured at each well using an electronic oil/water level meter with an accuracy of +/-0.01 feet. All wells will then be purged and sampled using a peristaltic pump, or an alternative method, depending on the observed depth to groundwater and logistical issues. Purging and sampling will be performed consistent with USEPA low-flow sampling requirements. Field parameters will be collected and recorded in the field book using a water quality meter with flow-through cell until parameters stabilized before samples are collected. Samples will be analyzed VOCs, dissolved and total iron and manganese, and inorganic parameters (total organic carbon [TOC], sulfate, nitrate, iron, and manganese). Sampling for SVOCs, other metals, pesticides and polychlorinated byphenyls (PCBs) will not be conducted, as these are not constituents of concern onsite..

All groundwater samples will be placed in the laboratory-supplied containers and shipped to the laboratory under chain of custody procedures.

6.0 SAMPLE HANDLING AND ANALYSIS

To ensure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples as well as sample packaging and shipping procedures.

6.1 Field Sample Handling

The number and types of samples will be determined during the implementation of the RAWP. The types of containers, volumes, and preservation techniques for the aforementioned testing parameters are presented in Table C1.

6.2 Sample Custody Documentation

The purpose of documenting sample custody is to confirm that the integrity and handling of the samples is not subject to question. Sample custody will be maintained from the point of sampling through the analysis.

Each individual collecting samples is personally responsible for the care and custody of the samples. All sample labels should be pre-printed or filled out using waterproof ink. The technical staff will review all field activities with the Field Team Leader to determine whether proper custody procedures were followed during the fieldwork and to decide if additional samples are required.

All samples being shipped off-site for analysis must be accompanied by a properly completed chain of custody form (Attachment C1). The sample numbers will be listed on the chain of custody form. When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to/from a secure storage area, and to the laboratory.

Samples will be packaged for laboratory pick up and/or shipment with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and/or secured with strapping tape in at least two locations for shipment to the laboratory.

6.3 Sample Shipment

Laboratory courier services may be used for sample transport on this project. However, in the event that samples are shipped to the laboratory the following procedures will apply. Sample packaging and shipping procedures are based upon USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations. The procedures vary according to potential sample analytes, concentration, and matrix, and are designed to provide optimum protection for the samples and the public. Sample packaging and shipment must be performed using the general outline described below.

All samples will be shipped within 12 hours of collection (when possible) and will be preserved appropriately from the time of sample collection. A description of the sample packing and shipping procedures is presented below:

1. Prepare cooler(s) for shipment.
   - tape drain(s) of cooler shut;
   - affix “this side up” arrow labels and “fragile” labels on each cooler; and
   - place mailing label with laboratory address on top of cooler(s).
2. Arrange sample containers in groups by sample number or analyte.
3. Ensure that all bottle labels are completed correctly. Place clear tape over bottle labels to prevent moisture accumulation from causing the label to peel off.
4. Arrange containers in front of assigned coolers.
5. Place packaging material at the bottom of the cooler to act as a cushion for the sample containers.
6. Arrange containers in the cooler so that they are not in contact with the cooler or other samples.
7. Fill remaining spaces with packaging material.
8. Ensure all containers are firmly packed with packaging material.
9. If ice is required to preserve the samples, ice cubes should be repackaged in double Zip-Lock™ bags, and placed on top of the packaging material.
10. Sign chain of custody form (or obtain signature) and indicate the time and date it was relinquished to Federal Express or other carrier, as appropriate.

11. Separate chain of custody forms. Seal proper copies within a large Zip-Lock™ bag and tape to cooler. Retain copies of all forms.

12. Close lid and latch.

13. Secure each cooler using custody seals.

14. Tape cooler shut on both ends.

15. Relinquish to Federal Express or other courier service as appropriate. Retain airbill receipt for project records. (Note: All samples will be shipped for "NEXT A.M." delivery).

16. Telephone laboratory contact and provide him/her with the following shipment information:
    - sampler's name;
    - project name;
    - number of samples sent according to matrix and concentration; and
    - airbill number.

6.4 Quality Assurance/Quality Control

The primary intended use for the soil data collected during the implementation of the RAWP is to assess the quality of offsite backfill or onsite soil for reuse. The primary intended use for the groundwater data collected during implementation of the RWAP is to evaluate the progress of the groundwater remedy. The primary DQO is that data be accurate and precise, and hence representative of the actual conditions. Accuracy refers to the ability of the laboratory to obtain a true value (i.e., compared to a standard) and is assessed through the use of laboratory quality control (QC) samples, including laboratory control samples and matrix spike samples, as well as through the use of surrogates, which are compounds not typically found in the environment that are injected into the samples prior to analysis. Precision refers to the ability to replicate a value, and is assessed through both field and laboratory duplicate samples.

Sensitivity is also a critical issue in generating representative data. Laboratory equipment must be of sufficient sensitivity to detect target compounds and analytes at levels below NYSDEC standards and guidelines whenever possible. Equipment sensitivity can be decreased by field or laboratory contamination of samples, and by sample matrix effects. Assessment of instrument sensitivity is performed through the analysis of reagent blanks, near-detection-limit standards, and

response factors. Potential field and/or laboratory contamination is assessed through use of trip blanks, method blanks, and equipment rinse blanks (also called “field blanks”).

Table C2 lists the field and laboratory QC samples that will be analyzed to assess data accuracy and precision, as well as to determine if equipment sensitivity has been compromised. Field QC samples are only required for the groundwater sampling events, not for the waste characterization or the offsite/onsite backfill sampling.

All analyses will be performed in accordance with the NYSDEC Analytical Services Protocol (ASP), using USEPA SW-846 methods. The laboratory selected to analyze the field samples collected during the implementation of the RAWP shall maintain a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certification for each of the analyses listed in Section 2.0.

All groundwater sampling laboratory data used to assess remediation progress are to be reported in NYSDEC ASP Category B deliverables and will be delivered to NYSDEC in electronic data deliverable (EDD) format as described on NYSDEC’s website (http://www.dec.ny.gov/chemical/62440.html). A Data Usability Report for groundwater data used to assess remediation progress will be prepared meeting the requirements in Section 2.2(a)1.ii and Appendix 2B of DER-10. Ms. Judy Harry of Data Validation Services has been selected to prepare the Data Usability Reports. A current resume outlining Ms. Judy Harry’s education and data validation experience can be found in Attachment C2.

Waste characterization and backfill characterization laboratory data are to be reported in NYSDEC ASP Category A deliverables and do not require preparation of a DUSR.

7.0 SITE CONTROL PROCEDURES

Site control procedures, including decontamination and waste handling and disposal, are discussed below.

7.1 Decontamination

In an attempt to avoid the spread of contamination, all drilling, construction and sampling equipment must be decontaminated at a reasonable frequency in a properly designed and located decontamination area. Detailed procedures for the decontamination of field and sampling equipment are in the Contractor's Site Operations Plan (SOP). The location of the decontamination area will be determined prior to the start of field operations. The decontamination area will be constructed to ensure that all wash water generated during decontamination can be collected and containerized for proper disposal.

7.2 Waste Handling and Disposal

All waste will be handled in accordance with the procedures outlined in the RAWP and Contractor's SOP.

TABLES

1. Preservation, Holding Times, and Sample Containers
2. Field and Laboratory QC Summary

Table 1. Preservation, Holding Times, and Sample Containers

Analysis	Media	Bottle Type	Preservation[(a)]	Holding Time[(b)]
Soil Samples (Waste Characterization and Backfill)				
Volatile Organic Compounds (VOCs) SW-846 8260B		2 oz. wide-mouth glass w/teflon lined cap	Cool to 4°C	14 days
Semivolatile Organic Compounds (SVOCs) SW-846 8270C		Wide-mouth glass w/teflon lined cap	Cool to 4°C	14 days to extract 40 days for analysis
Total Petroleum Hydrocarbons - Diesel Range Organics (DRO) SW-846 8015B		Wide-mouth glass w/teflon lined cap	Cool to 4°C	14 days
Total Petroleum Hydrocarbons - Gasoline Range Organics (GRO) SW-846 8015B		Wide-mouth glass w/teflon lined cap	Cool to 4°C	14 days
Metals SW-846 6010/7471		Wide-mouth plastic or glass	Cool to 4°C	6 months, except mercury (28 days)
Total Chromium/Hexavalent Chromium/Trivalent Chromium SW-846 7196A		4 oz. wide-mouth glass w/teflon lined cap	Cool to 4°C	28 days
Total Cyanide SW-846 9012B		4 oz. wide-mouth glass w/ teflon lined cap	Cool to 4°C	14 days
Pesticide and PCB Organic Compounds SW-846 8081A/8082		4 oz. wide-mouth glass w/ teflon lined cap	Cool to 4°C	14 days to extract 40 day for analysis
Herbicides SW-846 8151A		4 oz wide-mouth glass	Cool to 4°C	14 days to extract 40 days for analysis

Table 1. Preservation, Holding Times, and Sample Containers

Analysis	Media	Bottle Type	Preservation[(a)]	Holding Time[(b)]
TCLP SW-846 1311 Acid Extractables Base Neutrals Herbicides Metals Pesticides Volatiles		Wide-mouth plastic or glass; 2 oz. wide-mouth glass w/teflon lined cap	Cool to 4°C	14 days: except metals (6 months) and mercury (28 days)
RCRA Characteristics Ignitibility SW-846 1020 Reactive Cyanide SW-846 7332 Reactive Sulfide SW-846 7342 Corrosivity SW-846 9045C		Wide-mouth glass w/teflon lined cap	Cool to 4°C	N/A
Groundwater Samples				
Volatile Organic Compounds (VOCs); SW-846 8260B		Three 40 mL VOA vials	Cool to 4°C; HCL to pH < 2	14 days

[(a)] All samples to be preserved in ice during collection and transport

[(b)] Days from date of sample collection.

Table C2. Field and Laboratory QC Summary

QC Check Type	Minimum Frequency	Use
Field QC[1]		
Duplicate	1 per matrix per 20 samples or SDG*	Precision
Trip Blank	1 per VOC cooler	Sensitivity
Equipment Rinse Blank	1 per day	Sensitivity
Laboratory QC		
Laboratory Control Sample	1 per matrix per SDG	Accuracy
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate*	1 per matrix per SDG	Accuracy/Precision
Surrogate Spike	All organics samples	Accuracy
Laboratory Duplicate	1 per matrix per SDG	Precision
Method Blank	1 per matrix per SDG	Sensitivity

Notes:

* SDG - Sample Delivery Group - Assumes a single extraction or preparation

** Provided to lab by field sampling personnel

1 Field QC samples required for groundwater performance sampling only. Field QC not required for waste characterization or offsite/onsite backfill soil sampling

ATTACHMENTS

1. Chain of Custody Form
2. Résumé of Ms. Judy Harry of Data Validation Services

Chain of Custody Form

NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page
of

Date Rec'd in Lab

ALPHA Job #

Client Information

Client:
Address:
Phone:
Fax:
Email:

Project Information

Project Name:
Project Location:
Project #
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time

Standard ☐ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.

Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ **Done**
☐ **Lab to do**
Preservation
☐ **Lab to do**
(Please Specify below)

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Résumé of Ms. Judy Harry of Data Validation Services

JUDY V. HARRY
P. O. Box 208
120 Cobble Creek Rd.
North Creek, NY 12853

Occupation:	Data Validator/Environmental Technical Consultant
Years Experience:	35
Education:	B.S., Chemistry, Magna cum laude, 1976, Phi Beta Kappa
Certifications:	New York State Woman-Owned Business Enterprise (WBE)

Relevant Work History:

Data Validation Services: September 1989 - present

Sole proprietor of Data Validation Services, a woman owned small business, CCR registered, certified by ORCA, providing consultation/validation services to regulatory and commercial clients.

These services include the review of analytical laboratory data for compliance with respect to specific protocols, accuracy and defensibility of data, verification of reported values, and evaluation of quality parameters for analytical usability of results. Approved by USEPA, NYSDEC, NJDEP, and NYCDEP as a data validator for projects, including USEPA Superfund, Brownfield, and lead sites, and those contracted through the NYSDEC Division of Hazardous Waste Remediation, Division of Solid Waste, and Division of Water Quality.

Performed validation for compliance with laboratory analytical protocols including USEPA OLM, USEPA OLC, USEPA ILM, USEPA DFLM, USEPA SOW3/90, USEPA SOW 7/87 CLP, USEPA SOW 2/88 CLP, USEPA SW846, RCRA, AFCEE, NYS 6 NYCRR Part 360, 40 CFR, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, including TO-15, 1989/1991/1995/2000/2005 NYSDEC ASPs, and 1987 NYSDEC CLP.

Performed validation according to the USEPA National and Regional SOPs and Functional Guidelines, AFCEE requirements, NYSDEC Validation Scope of Work, and NJDEP Division of Hazardous Site Mitigation/Publicly Funded Site Remediation SOPs.

Performed validation for USEPA Superfund Sites including Salem Acres, York Oil, Port Washington L-4 Landfill, Bridgeport Rental and Oil Services, MMR/ OTIS AFB, LCP, and Peter Cooper site; and for USEPA lead sites including SJ&J Piconne, Maska, Bowe System, Jones Sanitation, and Syossett Landfill, involving CLP, RAS, and SAS protocols.

Contracted for NYSDEC Superfund Standby Contracts with LMS Engineers, CDM, Malcolm-Pirnie, Ecology & Environment, HDR, Shaw Environmental, and EC Jordan, involving samples collected at NYS Superfund Sites and analyzed under the NYSDEC ASP.

Performed validation services for NYSDEC Phase II remedial investigations, RI/FS projects, Brownfield sites, and PRP over-site projects for hazardous waste sites.

Performed validation services for clients conducting RI/FS activities involving samples of many matrices, including waste, air, sludges, leachates, solids/sediments, aqueous, and biota.

Clients have included Arcadis Geraghty & Miller, Barton & Loguidice, Benchmark, Bergmann Associates, Blasland, Bouck & Lee, Brown and Caldwell, Camp Dresser & McKee, C&S Consulting Engineers, Clough Harbour & Associates, Columbia Analytical Services, C.T. Male, Dames & Moore, Day Engineering, EA Engineering, Ecology & Environment, EC Jordan, Environmental Chemical Corporation, EHRT, ENSR Consulting, ERM-Northeast, Fagan Engineers, Fanning Phillips & Molnar, FluorDaniel GTI, Frontier, Foster Wheeler Environmental Corp, Frontier Technical, Galson Consultants, Geomatrix Consultants, GZA Environmental, Handex of N, H2M Group, HDR, IT Corp, Jacques Whitford, JTM Associates, Leader Environmental, Langan Engineers, Lockwood, Kessler & Bartlett, LMS Engineers, Malcolm-Pirnie, Metcalf & Eddy, NWEC&C, O'Brien & Gere Engineers, Parsons Engineering-Science, Plumley Engineering, Prescott Environmental, P. W. Grosser, Rizzo Associates, Roux Associates, Sear Brown Group, SECOR, Shaw Environmental, Stantec, ThermoRemediation Inc., TRC Environmental, Turnkey Environmental Restoration, TVGA Engineering, URS Consultants, Wehran Emcon, Weston, YEC, and private industries.

Provided consultation services to laboratories regarding analytical procedures and protocol interpretation, and to law firms for litigation support.

Provided services to firms involving audits of environmental analytical laboratories to determine analytical capability, particularly for compliance with NYSDEC ASP and AFCEE requirements.

Guest speaker on a panel discussing Data Review/Compliance and Usability, for an analysis workshop for the New York Association of Approved Environmental Laboratories, 1993.

Adirondack Environmental Services: June 1987 - August 1989

Senior mass spectroscopist for AES. Responsible for GC/MS analyses of environmental samples by USEPA and NYSDEC protocols, development of the GC/MS laboratory, initiating the instrumental and computer operations from the point of installation, and for implementing the procedures and methodologies for Contract Laboratory Protocol.

CompuChem Laboratories: May 1982 - January 1987

Managed a GC/MS production laboratory; developed, implemented, and supervised QA/QC criteria at three different levels of review; and was responsible for the development and production of the analysis of environmental and clinical samples. Directed a staff of 23 technical and clerical personnel, and managed the extraction and GC/MS labs and data review operations.

Research Triangle Institute: December 1979 - May 1982

Worked as an analytical research chemist responsible for development of analytical methods for the EPA Federal Register at RTI. This involved analysis of biological and environmental samples for priority pollutants, primarily relating to wastewaters and to human sampling studies. Method development included modification and interfacing of the initially developed Tekmar volatile purge apparatus to GC/MS, development and refinement of methods for entrapment and concentration of the air medium for subsequent volatile analysis, and the analysis and resolution/ identification of individual PCB congeners within Aroclor mixtures by capillary column and mass spectra.

Guardsman Chemical Company: February 1977 - November 1979

Performed all quality control functions for the manufacturing plant. Performed research and development on coatings and dyes.

Almay Cosmetics: May 1976 - December 1976

Product evaluation chemist. Responsible for analytical QC of manufactured products.

Emergency Contact List

APPENDIX D

Project Management/Health and Safety Personnel

Title	Contact	Telephone/Cell
Kent & Wythe Owners LLC (Owner)		
Project Manager	Tell Metzger	(212) 233-0638 Extension: 135 Cell – (914) 469-1873
Congress Builders		
Project Executive	Gerry Miceli	(914) 833-3000 Extension: 156
SSO	Joshua Elkin	(914) 833-3000 Cell – (646) 739-0131
Roux Associates		
Project Principal	Noelle Clarke	(631) 232-2600 Cell – (631) 807-6523
Field Manager	Ron Lombino	(631) 232-2600 Cell – (631) 960-2010
Corporate Health and Safety Manager	Joseph Gentile	(856) 423-8800 Cell – (610) 844-6911
Soil Solutions		
Project Manager/Site Supervisor	Ken Gass	(516) 292-6000 Cell – (914) 552-1400
Project Manager/Site Supervisor	Thomas DeJana	(516) 292-6000 Cell – (347) 319-1373

Emergency Phone Numbers

Emergency Medical Service 911

Police: New York City Police Department (NYPD).....911

Fire: New York City Fire Department (NYFD).....911

Hospital: Woodhull Medical Center 718-963-8101

National Response Center.....800-424-8802

Poison Control Center.....800-222-1222

CHEMTREC®.....800-262-8200

Centers for Disease Control.....800-311-3435

USEPA (Region II).....212-637-5000

NYSDEC Emergency Spill Response 800-457-7362

PLATE

1. Revised Preferred Remedy for the Site, Remedial Alternatives S2 for Soil (Track 4-Restricted Residential Use); G1, G2, and G3 for Groundwater; and SV1, SV2 and SV3 for Soil Vapor

RA-10	2/26/13	2/26/13	2/26/13	5/13/13
Depth	10-12	23-25	29-30	34-35
VOCs (µg/kg)				
Acetone	ND	ND	196 JV	ND
Tetrachloroethene	NE	NE	2510	NE
SVOCs (µg/kg)	NE	NO	NA	NA
Metals (mg/kg)	NE	NE	NA	NA

RA-9	2/26/13	2/26/13	2/26/13	3/8/13
Depth	10-12	22-24	29-30	68-70
VOCs (µg/kg)				
Acetone	ND	ND	134 JV	NE
Tetrachloroethene	47500	NE	NE	NE
SVOCs (µg/kg)	NE	NO	NA	NA
Metals (mg/kg)	NE	NE	NA	NA

RA-1	3/19/13	2/11/13	2/11/13	2/11/13
Depth	7-9	10-12	22-24	29-30
VOCs (µg/kg)				
Tetrachloroethene	NE	19500000	25100	NE
SVOCs (µg/kg)	NA	NE	NE	NA
Metals (mg/kg)	NA	NE	NE	NA

RA-11	3/18/13	3/21/13	3/21/13	3/21/13	3/21/13
Depth	10-12	23-25	23-25	33-35	38-40
VOCs (µg/kg)					
Tetrachloroethene	NE	NE	NE	12200 JV	NE
SVOCs (µg/kg)	NO	NO	NO	NA	NA
Metals (mg/kg)	NE	NE	NE	NA	NA

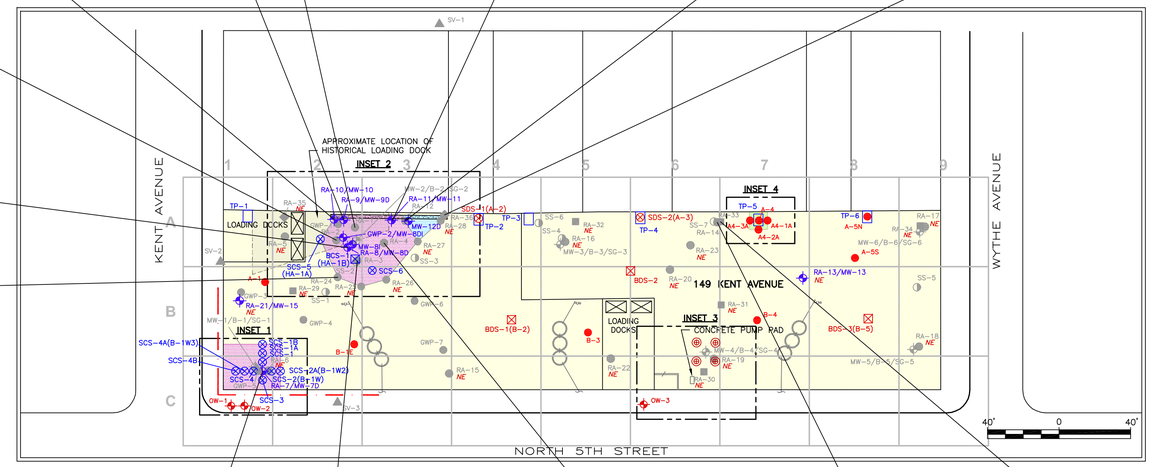
RA-12	2/21/13	2/21/13	2/21/13	3/6/13	3/12/13
Depth	11-12.5	23-25	23-25 DUP	32-34	71.5-73
VOCs (µg/kg)					
Tetrachloroethene	11600	NE	NE	NE	ND
SVOCs (µg/kg)	NE	NO	NO	NA	NA
Metals (mg/kg)	NE	NE	NE	NA	NA

RA-36	8/5/13	8/5/13	8/5/13	8/5/13
Depth	8 - 10	10 - 12	10 - 12 DUP	18 - 20
VOCs (µg/kg)				
Tetrachloroethene	5890	NE	NE	NE
SVOCs (µg/kg)				
Benzo(b)fluoranthene	1200	ND	ND	ND
Indeno(1,2,3-cd)pyrene	748	ND	ND	ND
Metals (mg/kg)	NE	NE	NE	NE

RA-2	2/26/13	2/26/13	2/26/13
Depth	10-12	23-25	33-35
VOCs (µg/kg)			
Tetrachloroethene	1630000	NE	NE
SVOCs (µg/kg)	NE	NE	NA
Metals (mg/kg)	NE	NE	NA

RA-8	2/25/13	2/25/13	3/4/13	3/5/13
Depth	10-12	22-24	28-30	73-75
VOCs (µg/kg)				
Tetrachloroethene	21000	1580	NE	ND
SVOCs (µg/kg)	NE	NO	NA	NA
Metals (mg/kg)	NE	NE	NA	NA

RA-24	3/18/13	3/18/13	3/18/13	3/18/13
Depth	10-12	22-24	30-31	38-40
VOCs (µg/kg)				
Acetone	ND	ND	ND	75.6
SVOCs (µg/kg)	NA	NA	NA	NA
Metals (mg/kg)	NA	NA	NA	NA
Pesticides (µg/kg)	NA	NA	NA	NA



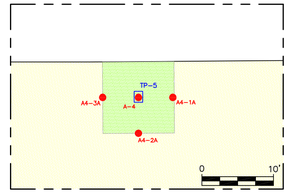
RA-7	2/21/13	2/21/13	3/13/13	5/9/13	3/14/13
Depth	11-12.5	22-24	28-30	34-35	78-80
VOCs (µg/kg)					
Tetrachloroethene	NE	NE	1510	NE	ND
SVOCs (µg/kg)	ND	ND	NA	NA	NA
Metals (mg/kg)	NE	NE	NA	NA	NA
Pesticides (µg/kg)	NE	ND	NA	NA	NA

RA-3	2/25/13	2/25/13	2/25/13
Depth	10-12	23-25	34-35
VOCs (µg/kg)			
Acetone	NO	NO	73.5
cis-1,2-Dichloroethene	2590	NE	NE
Tetrachloroethene	38100	NE	2350
Trichloroethene	1650	NE	NE
SVOCs (µg/kg)	NE	NE	NA
Metals (mg/kg)	NE	NE	NA

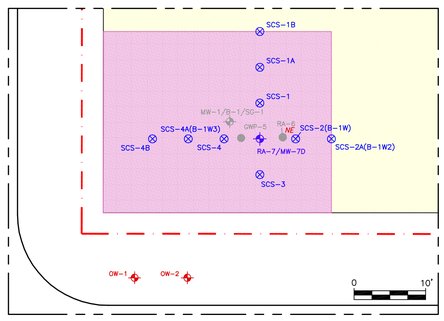
RA-4	2/25/13	2/25/13	2/25/13
Depth	10-12	22-24	33-35
VOCs (µg/kg)			
cis-1,2-Dichloroethene	616	NE	NE
Tetrachloroethene	12800	1370	NE
Trichloroethene	NE	NE	ND
Vinyl chloride	26.2 J	ND	ND
SVOCs (µg/kg)	NE	NE	NA
Metals (mg/kg)	NE	NE	NA

RA-14	2/12/13	2/12/13
Depth	11-13	23-25
VOCs (µg/kg)	NE	NE
SVOCs (µg/kg)		
Benzo(a)anthracene	2970 JV	ND
Benzo(a)pyrene	2630 JV	ND
Benzo(b)fluoranthene	2140	ND
Benzo(k)fluoranthene	1930 JV	ND
Chrysene	2830 JV	ND
Dibenzo(a,h)anthracene	632	ND
Indeno(1,2,3-cd)pyrene	1370	ND
Metals (mg/kg)	NE	NE

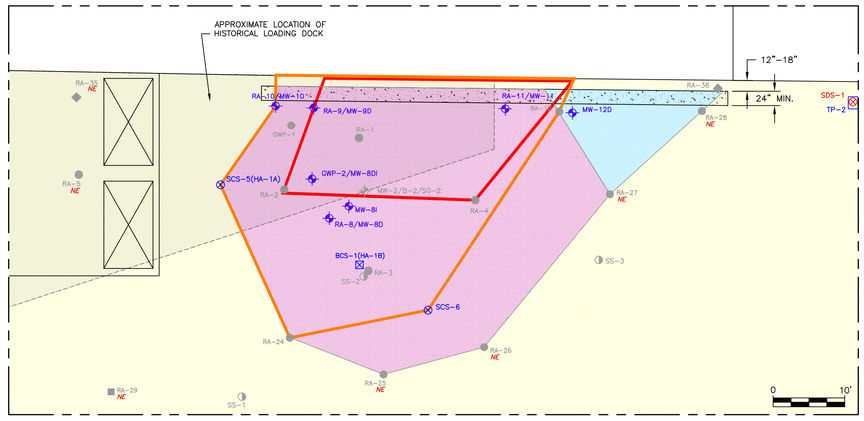
RA-33	4/26/13
Depth	4-6
VOCs (µg/kg)	NE
SVOCs (µg/kg)	
Benzo(a)anthracene	2180
Benzo(a)pyrene	2480
Benzo(b)fluoranthene	2910
Chrysene	2000
Indeno(1,2,3-cd)pyrene	1570
Metals (mg/kg)	
Arsenic	55.3
Chromium, Hexavalent	33.2 JV
Chromium	336



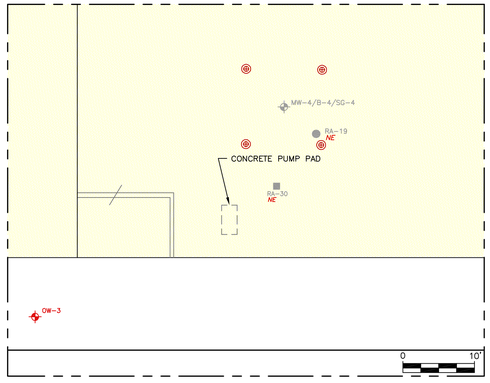
INSET 4 – A–4 AREA



INSET 1 – RA–7 AREA
(SEE REMEDIATION NOTE 3)



INSET 2 – HOT SPOT AREA



INSET 3 – MW–4 AREA

LEGEND

MW-1/B-1/SG-1	GROUND WATER MONITORING WELL/ SOIL BORING/SUBSLAB SOIL VAPOR SAMPLING POINT INSTALLED BY AKRF ENVIRONMENTAL CONSULTANTS
SS-1	APPROXIMATE LOCATION OF SUB SLAB VAPOR SAMPLING POINT INSTALLED BY ROUX ASSOCIATES, INC.
RA-1	LOCATION OF SOIL BORING (COMPLETED FEBRUARY 2013 BY ROUX ASSOCIATES, INC.)
RA-13/MW-13	LOCATION OF SOIL BORING AND MONITORING WELL
SV-1	LOCATION OF SOIL VAPOR SAMPLING POINT
GWP-1	LOCATION OF GROUNDWATER PROFILE BORING
RA-32	LOCATION OF SOIL BORING (RA–32 THROUGH RA–34) (CONTINUOUS SAMPLING TO 6FT BFS)
RA-29	LOCATION OF SOIL BORING (RA–29 THROUGH RA–31) (CONTINUOUS SAMPLING TO WATER TABLE)
RA-35	LOCATION OF SUPPLEMENTAL SOIL BORING (RA–35 AND RA–36) COMPLETED ON AUGUST 5, 2013
NE	NO EXCEEDANCES

REMEDIATION LEGEND

	PROPOSED LIMITS OF EXCAVATION AND BACKFILL TO 10 FT BFS
	PROPOSED LIMITS OF EXCAVATION AND BACKFILL TO 15 FT BFS
	PROPOSED LIMITS OF EXCAVATION AND BACKFILL TO 35 FT BFS
	PROPOSED LIMITS OF SITE COVER SYSTEM AND EXCAVATION (SEE REMEDIATION NOTES 1 AND 2)
	PROPOSED SECANT PILE WALL
	PROPOSED PERMEABLE REACTIVE BARRIER TREATMENT WALL
	2014 INSITU ZERO VALENT IRON INJECTIONS AROUND MW–4
SCS–1	2014 SIDEWALL CONFIRMATION SOIL SAMPLE
BCS–1	2014 BOTTOM CONFIRMATION SOIL SAMPLE
SDS–1	2014 SIDEWALL DOCUMENTATION SOIL SAMPLE
BDS–1	2014 BOTTOM DOCUMENTATION SOIL SAMPLE
OW–1	2014 OFFSITE MONITORING WELL
A–1	2014 WASTE CHARACTERIZATION SOIL SAMPLE
TP–1	2014 TEST PIT
	LIMITS OF SOIL TO BE HANDLED AS U210 LISTED HAZARDOUS WASTE IF EXCAVATED IN THE 0–22 FT BFS INTERVAL BASED ON NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION–APPROVED FEBRUARY 11, 2014 "CONTAINED–OUT" MODIFICATION REQUEST LETTER
	LIMITS OF SOIL TO BE HANDLED AS U210 LISTED HAZARDOUS WASTE IF EXCAVATED BELOW 22 FT BFS BASED ON NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION–APPROVED FEBRUARY 11, 2014 "CONTAINED–OUT" MODIFICATION REQUEST LETTER
	ALPHA–NUMERIC GRID LINE

GENERAL NOTES

BASEMAP PREPARED BASED ON SURVEY DATA COLLECTED BY ANGLE OF ATTACK LAND SURVEYORS, LLC ON JUNE 1, 2013.

FT BFS – FEET BELOW FLOOR SLAB

ONLY VOC, SVOC AND METALS EXCEEDANCES ARE SHOWN. THERE WERE NO PESTICIDE OR PCB EXCEEDANCES.

ALPHA–NUMERIC GRID LINES ARE SPACED EVERY 50 FEET.

REMEDIATION NOTES

1. THE ENTIRE PROPERTY (INCLUDING THE HOT SPOT AREA) WILL BE EXCAVATED AND COVERED BY THE COMPOSITE CAP COMPRISED OF BUILDING FLOOR SLAB/FOUNDATION, TWO TO THREE INCH MUD SLAB AND SIX INCH GRAVEL BASE.
2. EXCAVATION FOR BUILDING CONSTRUCTION EXTENDS FIVE FEET BEYOND THE WESTERN, EASTERN AND SOUTHERN PROPERTY LINES. DEPTH OF EXCAVATION ACROSS THE SITE IS A MINIMUM OF 12 FT BFS. DETAILS REGARDING DEEPER EXCAVATION IN THE VICINITY OF RA–7 AND IN THE HOT SPOT AREA ARE SHOWN IN INSETS 1 AND 2, RESPECTIVELY.
3. THE EXCAVATION REQUIRED IN THE VICINITY OF RA–7 IS IN THE 24 FT BFS TO 35 FT BFS INTERVAL DUE TO THE EXCEEDANCE OF THE PART 375 PROTECTION OF GROUNDWATER STANDARD AT 28 TO 30 FT BFS.

Parameter	Standards*	Standards**
VOCs (µg/kg)		
Acetone	50	100000
cis-1,2-Dichloroethene	250	100000
Tetrachloroethene	1300	19000
Trichloroethene	470	21000
Vinyl chloride	20	900
SVOCs (µg/kg)		
Benzo[a]anthracene	1000	1000
Benzo[a]pyrene	22000	1000
Benzo[b]fluoranthene	1700	1000
Benzo[g,h,i]perylene	1000000	100000
Benzo[k]fluoranthene	1700	3900
Chrysene	1000	3900
Dibenzo[a,h]anthracene	1000000	330
Indeno[1,2,3-cd]pyrene	8200	500
Metals (mg/kg)		
Arsenic	16	16
Chromium, Hexavalent	19	110
Chromium	--	180

- Results shown in black type exceed Part 375 Protection of Groundwater Criteria
- Results shown in red type exceed Part 375 Restricted Residential Criteria
- Results in red type with yellow background exceed both criteria.

µg/kg - Micrograms per kilogram
mg/kg - Milligrams per kilogram
*NYSDEC Part 375 Protection of Groundwater Criteria
**NYSDEC Part 375 Restricted Residential Criteria
NYSDEC - New York State Department of Environmental Conservation
J - Estimated value
DUP - Duplicate Sample
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
NA - Not Analyzed
ND - Not Detected
NE - No Exceedances
V - Qualifier Added by Validator

Title: **REVISED PREFERRED REMEDY FOR THE SITE REMEDIAL ALTERNATIVES S2 FOR SOIL (TRACK 4-RESTRICTED RESIDENTIAL USE); G1, G2 AND G3 FOR GROUNDWATER; AND SV1, SV2 AND SV3 FOR SOIL VAPOR**
149 KENT AVE, BROOKLYN, NEW YORK

Prepared For:
KENT & WYTHE OWNERS LLC

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: N.C.	Date: 05MAR14	PLATE
Prepared by: J.A.D.	Scale: AS SHOWN	1
Project Mgr: J.D.	Project: 2158.0001Y002	
File: 2158.0001Y167.01.DWG		

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