INTERIM REMEDIAL MEASURES WORK PLAN

for

550 Tenth Avenue Redevelopment
New York, New York
NYSDEC BCP No. TBD

Prepared For:
GO Covenant LLC
432 Park Avenue South, 2nd Floor
New York, New York 10016

Prepared By:
Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C.
300 Kimball Drive
Parsippany, New Jersey 07054

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Langan Project No. 100674401
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CERTIFICATION

I, Ronald D. Boyer, P.E., certify that I am currently a NYS registered professional engineer as defined in Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

Ronald D. Boyer, P.E.
NYS Professional Engineer No. 085831-1

I, Christopher McMahon, certify that I am currently a Qualified Environmental Professional as defined in Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER-10.

Christopher McMahon, CHMM
1.0 INTRODUCTION

1.1 General

This Interim Remedial Measures (IRM) Work Plan was prepared on behalf of GO Covenant LLC (the Applicant) for the property at 550 Tenth Avenue (Tax Block 1050, Lot 61) in the Clinton neighborhood of New York, New York (the Site). A Site Location Map is included as Figure 1.

The Site is an approximately 16,000-square foot parcel and is bordered by 10th Avenue to the west, West 41st Street to the north, West 40th Street to the south, and the active redevelopment of former Covenant House New York Wings B and C to the east. New York City Transit (NYCT) tunnels are located to the north of the site, below West 41st Street. In addition, Lincoln Tunnel entrance roads and access ramps for the nearby Port Authority Bus Terminal are located to the south of the site, beyond West 40th Street. The Site is currently occupied by Wing A of the Covenant House New York shelter for homeless youth, a parking lot, and construction field offices associated with the redevelopment of the former Wings B and C of the Covenant House New York facility (NYCOER OER Site No. 16TMP0060M, 16EH-N056M) located adjacent to the east of the Site; remediation of the adjacent parcel was completed in June 2020 and construction of the superstructure is ongoing.

This IRM Work Plan describes the procedures for the site preparation asbestos abatement and demolition activities of the existing eight-story building, which are necessary to prepare the Site for the completion of the anticipated remedial action. The final remedy will be detailed in the forthcoming Remedial Action Work Plan ( RAWP ), which will be submitted to the NYSDEC prior to implementation.

The scope of work to be completed as part of this IRM Work Plan (IRMWP) includes the following initial foundation construction activities:

- Site preparation asbestos abatement and demolition activities; and,
- Installation of foundation elements required for the planned affordable housing component of the project before statutory deadlines cease in June 2022.
No remedial activities are proposed as part of the work contained in this plan; however, contingencies are provided to address unforeseen contamination that may be discovered during the soil disturbance activities, including removal of grossly and/or petroleum-impacted soil hotspots and closure of any underground storage tanks (USTs) encountered during soil disturbance activities, in advance of implementation of a RAWP for the redevelopment of the Site. As this Site is applying to be entered into the NYSDEC BCP to further investigate and remediate the Site, this IRMWP is being submitted to ensure that the scope of work will be completed in accordance with the requirements of typical Brownfield Cleanup Agreements. The Work Plan was prepared in accordance with the process and requirements of the BCP and the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10). Work described herein will be coordinated with the NYSDEC and the New York State Department of Health (NYSDOH).

1.2 Site Description

The Site is located in the Clinton neighborhood of Manhattan, New York and is identified as Lot 61. The Site historically consisted of portions of former Lot 1 and Lot 61 until the tax lots were reapportioned in June 2020 to match the current proposed redevelopment extents. A Site Location Plan is provided as Figure 1. The Site is an approximately 16,000-square foot parcel and is bordered by 10th Avenue to the west, West 41st Street to the north, West 40th Street to the south, and the active redevelopment of former Covenant House New York Wings B and C to the east. New York City Transit (NYCT) tunnels are located to the north of the site, below West 41st Street. In addition, Lincoln Tunnel entrance roads and access ramps for the nearby Port Authority Bus Terminal are located to the south of the site, beyond West 40th Street. The Site is currently occupied by Wing A of the Covenant House New York shelter for homeless youth, a parking lot, and construction field offices associated with the redevelopment of the former Wings B and C of the Covenant House New York facility (NYCOER OER Site No. 16TMP0060M, 16EH-N056M) located adjacent to the east of the Site; remediation of the adjacent parcel was completed in June 2020 and construction of the superstructure is ongoing.
1.3 Proposed Development

The proposed future use of the Site will consist of demolishing the existing 8-story Covenant House building (Wing A) and associated cellar space, and constructing a new commercial office space for the adjacent Covenant House facility and a residential building above the commercial floors with an approximate footprint area of 14,000 square-feet. Excavation ranging from approximately 11.5 to 17.5 feet bsl (with deeper excavations ranging from 22.5 feet bsl to 26 feet bsl) will be completed for construction of the new building across the majority of the Site footprint. Portions of the Site will not require excavation of soil since the current basement slab is approximately the same elevation as the proposed bottom of excavation of the Site, and the existing 10-foot offset from 10th Avenue on the western side of the Site will remain undeveloped. Remediation of the Site beyond that which is described herein will be completed in accordance with the forthcoming RAWP subsequent to the IRM Site preparation activities.

1.4 Site Physical Conditions

1.4.1 Topography

According to the Boundary and Topographic Survey prepared by True North Surveyors, P.C. dated 15 September 2017, last revised 3 November 2020, the site slopes gently downward from the southwest (elevation el 25.1) to the northeast (elevation el 24.31). All elevations are North American Vertical Datum of 1988 (NAVD 88).

1.4.2 Site Geology

Based on the result of sub-surface investigations completed in 2017, 2018, and 2021 by Langan, site stratigraphy below the asphalt parking lot on the northern portion of the subject property consists of an approximately 9.5- to 20-foot thick layer of historic fill underlain by a silty sand unit followed by weathered mica schist rock.

The Site is underlain by historic fill to the depth of drilling refusal on presumed weathered mica schist rock (2.5 to 3.5 below basement floor slab) in LSB-5, LSB-7, and LSB-8. Drilling refusal was encountered slightly deeper below the basement slab in LSB-6, LSB-9, LSB-22A, and LSB-24, where a 3- to 3.5-foot thick layer of historic fill was underlain by silty sand
to the depth of drilling refusal which varied between 5- and 10.5-feet below the basement floor slab. Clay was also encountered in LSB-22A from 9 to 10.5 feet below basement floor slab. Fill between 8 and 13 feet thick underlain by silty sand was observed in LSB-5A and LSB-8A; refusal was not encountered at these locations. Historic fill was not observed in soil borings LSB-22, LSB-23, LSB-23A, and LSB-24A although drilling refusal on weathered mica schist rock was encountered between 5- and 6-feet below the basement slab at LSB-22 and LSB-23. Native material at these locations generally consists of silty sand. Based on the geotechnical investigation completed by Langan between January and February 2018, weathered mica schist was encountered between 24.5- and 34.9-feet below sidewalk level and competent mica schist was encountered between 28- and 45-feet below sidewalk level.

1.4.3 Hydrogeologic Conditions

As part of the 2018 and 2021 RIs, groundwater depth was measured to be between 12 and 15.5 feet below street level (bsl) within the onsite monitoring wells (LMW-8 through LMW-11). During the March 2020 Preliminary Geotechnical Investigation, groundwater was encountered between el 12.1 and el 12.5. Based on the measured depth to groundwater identified in the environmental and geotechnical investigations, groundwater is anticipated to flow to the west towards the Hudson River.

1.5 Site History

According to the Phase I ESA completed by TRC Engineers, Inc. (TRC) in September 2015, historical use and features of the subject property include two filling stations and one automobile repair shop. The presence of historic urban fill or buried structures was identified as a Recognized Environmental Condition (REC) due to the potential of impacts to the Site. Historical Site operations including two filling stations and one automobile repair shop were also identified as a REC due to the potential use of hazardous substances associated with these operations and the duration of the activities. The Phase I ESA identified that the Covenant House is registered with NYSDEC for Spill No. 0613314, which was reported in 2007 following the observation of oily water in an onsite excavation. Approximately 3,000 gallons of oily water were pumped out of the excavation and
no additional oily water infiltration was observed following the removal. The spill was administratively closed in 2009. A second spill was reported for the property, but associated with the 7 Line Subway Extension. According to the ESA, petroleum impacted soils were identified during drilling for the subway extension and Spill No. 04044424 was reported in 2004. Contaminated soil was reportedly removed and replaced with clean fill and the spill was administratively closed in 2005. Current and historical operations conducted at adjacent and nearby properties involving the use of ASTs, USTs, spills, and the generation and disposal of hazardous waste were also identified as an REC.

1.6 Previous Environmental Investigation Findings

The following environmental assessment and investigation reports have been prepared for the site, which are provided in Appendix A.

- Phase I Environmental Site Assessment prepared by TRC, dated 18 September 2015;
- Phase II Investigation Work Plan prepared by Langan, dated December 2019 (including the results of 2017 and 2018 Limited Phase II Investigations); and,

1.6.1 September 2015 Phase I Environmental Site Assessment, prepared by TRC

A Phase I Environmental Site Assessment (ESA) dated September 2015 was prepared by TRC for the Covenant House. The Phase I ESA results are discussed in detail in Section 1.5 above.

1.6.2 December 2019 Phase II Investigation Work Plan, prepared by Langan

A Phase II Investigation Work Plan dated December 2019 was prepared by Langan for GO Covenant LLC and was submitted to the NYCOER to satisfy the requirements of the E-Designation for hazardous materials that is associated with the Site. For the purposes of due diligence, to determine if the above identified AOCs could potentially impact the proposed site redevelopment plans, and to partially satisfy future NYCOER remedial investigation requirements a limited Phase II EI was completed within the
Site in November 2017 which included completion of six soil borings (LSB-1, LSB-2, and LSB-5 through LSB-8) and collection of six soil samples, and the installation of two temporary monitoring wells (TW-2 and TW-3) and collection of two groundwater samples. An additional due diligence investigation completed by Langan in December 2018 included the completion of four additional soil borings (LSB-21 through LSB 24) and collection of four additional soil samples, installation of three permanent monitoring wells (LMW-8 through LMW-10) and collection of three groundwater samples, and installation of three soil vapor points (LSV-9 through LSV-11) and collection of three soil vapor samples. Each of these investigations were incorporated into the May 2021 Remedial Investigation Report.

The scope of work for the RI presented in the Phase II Investigation Work Plan consisted of:

- A limited ground-penetrating radar (GPR) survey within the vicinity of soil boring locations to investigate the location of subsurface utilities;

- Advancement of eight soil borings (LSB-2A, LSB-5A, LSB-8A, LSB-9A, and LSB-21A through LSB-24A) and collection of a minimum of 12 soil samples (including one duplicate sample);

- Collection of four groundwater samples (including one duplicate sample) from existing monitoring wells LMW-8 through LMW-10; and

- Installation of one soil vapor sampling point (LSV-12) and collection of two soil vapor samples (including one duplicate sample).

1.6.3 May 2021 Remedial Investigation Report, prepared by Langan

A Remedial Investigation Report (RIR) dated May 2021 was prepared by Langan for GO Covenant LLC. The RI was completed to investigate potential impacts to the soil and groundwater at the site associated with the RECs as identified in the Phase I ESA. GO Covenant LLC performed the following due diligence scope of work in 2017, 2018, and 2019:
1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);

2. Completed two geophysical surveys in the vicinity of drilled locations to identify the potential presence of unidentified underground storage tanks and underground utilities;

3. Installed 11 soil borings across the Site and collected 11 soil samples, in addition to 2 duplicate soil samples, for chemical analysis from the soil borings to evaluate soil quality;

4. Installed 3 permanent groundwater monitoring wells and 2 temporary groundwater monitoring wells within the Site and collected 5 groundwater samples, in addition to 2 duplicate groundwater samples, for chemical analysis to evaluate groundwater quality; and,

5. Installed 3 sub-slab soil vapor probes at the Site and collected 3 soil vapor samples, in addition to 1 duplicate soil vapor sample, for chemical analysis.

GO Covenant LLC performed the following scope of work in 2021 in accordance with the NYCOER approved Phase II Work Plan dated December 2019 to supplement the previously completed investigations and fill data gaps for meeting NYCOER RI requirements:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);

2. Completed a geophysical survey in the vicinity of drilled locations to identify the potential presence of unidentified underground storage tanks and underground utilities;

3. Installed 7 soil borings across the Site, and collected 12 soil samples, in addition to 1 duplicate soil sample, for chemical analysis from the soil borings to evaluate soil quality;

4. Installed 1 groundwater monitoring well within the Site and collected 3 groundwater samples, in addition to 1 duplicate
groundwater sample, for chemical analysis to evaluate groundwater quality;

5. Installed 1 soil vapor probe at the Site and collected 1 soil vapor sample, in addition to 1 duplicate soil vapor sample, for chemical analysis.

The results of the RI have identified that the Site is underlain by an approximately 9.5- to 20-foot thick layer of historic fill underlain by a silty sand unit followed by weathered mica schist rock. Based on the results of the RI, this historic fill material is impacted with concentrations of PAHs and metals above the Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted-Residential Restricted Use SCOs and pesticides above the Unrestricted Use SCOs in one sample. Perfluorooctanesulfonic acid (PFOS) was detected in the sample collected from LSB-2A from 0 to 2 feet bsl at 10.7 micrograms per kilogram (µg/kg) exceeding the NYSDEC January 2021 Unrestricted Use SCO Guidance Value of 0.88 µg/kg.

The results of the RI have identified that groundwater at the Site was impacted with PAHs and metals above the NYCRR Part 703.5 and NYSDEC Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (collectively referred to as SGVs). PFOS (67.5 ng/l) and perfluorooctanoic acid (PFOA) (45.4 ng/l) were detected above the NYSDEC January 2021 Guidance Values in LMW-11.

The results of the RI have identified that soil vapor at the site was impacted petroleum-related VOCs (BTEX) within the four soil vapor samples ranged from 1.83 µg/m³ to 12.3 µg/m³. Additionally, chlorinated VOCs were also detected including carbon tetrachloride (max. 0.286 µg/m³), methylene chloride (max. 11 µg/m³), tetrachloroethylene (PCE) (max. 4.1 µg/m³), and trichloroethylene (TCE) (max. 1.2 µg/m³).
2.0 SUMMARY OF INTERIM REMEDIAL MEASURES

This IRM Work Plan consists of the following tasks:

1. The completion of asbestos abatement and demolition of the existing eight-story building;

2. Installation of a foundation footer in the northern part of the Site as part of the initial foundation construction;

3. Continuous screening of soil/fill disturbed during installation of foundation elements;

4. Work Zone and Perimeter Air Monitoring for Dust, Vapor and Nuisance Odors; and,

5. Submission of a Construction Completion Report (CCR) documenting activities completed in accordance with this IRMWP.

In addition to the above activities, the following contingent measures have also been included in the event that these conditions are encountered during soil disturbance activities:

1. Contingent excavation and off-site disposal of grossly and/or petroleum-impacted soil identified during soil disturbance and/or in the vicinity of any unanticipated USTs;

2. Contingent excavation and removal of any unanticipated USTs encountered during soil disturbance activities; and,

3. Contingent collection of post-excavation soil end-point samples from any impacted soil removal areas or UST removal excavation areas in accordance with applicable NYSDEC regulations.

The IRM described herein will be performed in accordance with applicable federal, state, and city regulations. A construction health and safety plan (CHASP) is provided as Appendix B.
2.1 Objectives and Rationale

The objective of the IRM Work Plan is to provide appropriate measures to complete the required asbestos abatement and demolition of the existing eight-story building and the installation of a foundation elements for the proposed future development within the parameters and requirements of typical BCAs. All activities that will result in soil disturbance will be completed in accordance with requirements of the Construction Health and Safety Plan (CHASP) and air monitoring requirements of Section 2.4.9 of this IRMWP, in a manner to prevent exposure of potential impacts to site workers and the surrounding community.

2.2 Interim Remedial Measures Program

2.2.1 Demolition of Current Building

GO Covenant LLC has filed an application for building demolition with the NYC Department of Buildings. Prior to full building demolition, the abatement of asbestos containing materials within the building will be completed. Full demolition of the buildings will be completed following the asbestos abatement activities and the issuance of the corresponding documentation to the NYCDEP that the abatement activities are complete in accordance with applicable law and regulations.

2.2.2 Site Preparation

Site preparation measures will be completed by the Contractor prior to the implementation of the IRM and will include, but not be limited to, the establishment of work zones, mobilization of support facilities, construction of decontamination facilities, and implementation of site security measures (i.e., erection of security fencing around the Site and staging areas). The Contractor will maintain soil erosion control and sediment control measures prior to and during work operations described in the IRMWP.

The Contractor will ensure that all necessary permits are obtained prior to the commencement of any task included in the proposed IRM.

Prior to intrusive activities, Dig Safely New York (811) will be contacted by the Contractor a minimum of three business days in advance of the work.
Dig Safely New York will be informed of the nature of the work and the intent to excavate at the Site.

### 2.2.3 Installation of Foundation Footer

The foundation of the future building will serve as part of the final remedy as an element of the site-wide cover system. As part of the interim remedial activities, one foundation footer will be installed within the northern portion of the Site. Soil that is disturbed during the installation of the foundation footer will be managed in accordance with the soils/materials management procedures detailed in Section 2.4 of this Work Plan.

### 2.2.4 Community Air Monitoring Plan

Community air monitoring will be conducted in compliance with the NYSDOH Generic CAMP outlined below.

The CAMP will include real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work area when ground-intrusive work is in progress. Continuous monitoring will be required for all ground-intrusive work. Ground-intrusive work includes, but is not limited to, soil/fill excavation and handling and utility trenching. Periodic monitoring for VOCs may be required during non-intrusive work such as the collection of soil samples. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location and taking a reading prior to leaving a sample location.

CAMP monitoring of total VOC levels will be conducted using PIDs, and monitoring for particulates will be conducted using particulate sensors equipped with filters that can detect airborne particulates less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during ground-intrusive work by a field engineer, scientist, or geologist under the supervision of the RE. The work zone is defined as the general area in which machinery is operating in support of remediation. A portable PID will be used to monitor the work zone and for periodic monitoring of total VOC levels during work such as soil sampling. The Site perimeter will be visually monitored for fugitive dust emissions.
The following actions will be taken based on total VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work will resume with continued monitoring.

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

- If the total VOC level is above 25 ppm at the perimeter of the hot zone, work will be shut down until the cause of the VOC vapors has been addressed.

The following actions will be taken based on dust levels measured or visual dust observations:

- If the downwind particulate level is 100 µg/m³ greater than background level for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 levels do not exceed 150 µg/m³ above the background level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 µg/m³ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the
downwind PM10 concentration to within 150 µg/m³ of the background level and in preventing visible dust migration.

Sustained concentrations of VOCs or PM10 will be reported to the NYSDEC and NYSDOH Project Managers and included in the daily report. In addition, a map showing the location of the downwind and work zone CAMP stations will be included in the daily report.

2.2.5 Dust, Vapor and Nuisance Odor Control Plan

Dust, odor, and nuisance control will be accomplished by the remediation contractor as described in this section.

2.2.5.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used on a routine basis (if needed) will include application of foam suppressants or tarps over the odor or VOC source areas, if encountered. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Applicants’ RE, who is responsible for certifying the Final Engineering Report (FER). Application of odor controls is the responsibility of the Remedial Contractor.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using non-PFAS foams to cover exposed odorous soils or PFAS containing foams that will be remediated immediately after use. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (a) direct load-out of soils to trucks for off-Site disposal; (b) use of chemical odorants in spray or misting systems; and, (c) use of staff to monitor odors in surrounding neighborhoods.
Although not anticipated, where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

2.2.5.2 Dust Control Plan

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

- Dust suppression will be achieved through the use of a dedicated water distribution system or on-Site water truck for road wetting, or an alternate source with suitable supply and pressure for use in dust control.

- Stockpiles shall be maintained in accordance with Section 2.4.2.

- Gravel will be used on roadways to provide a clean and dust-free road surface.

- On-Site roads will be limited in total area to minimize the area required for water spraying.

2.2.5.3 Other Nuisances

A plan for rodent control will be developed and used by the remediation contractor during Site preparation (including clearing and grubbing) and during remedial work.

A plan for noise control will be developed and used by the remediation contractor during Site preparation and remedial work and will conform, at a minimum, to the NYCDEP noise control standards and the requirements of the Restrictive Declaration.

In addition to all of these controls, the Site will be subject to a Restrictive Declaration including traffic, noise, dust and air emission requirements and controls upon the financial closing.
2.3 Interim Remedial Measures Oversight

The Remediation Engineer (RE), Ronald Boyer, P.E. of Langan, will oversee implementation of the IRM. The RE is responsible for documenting that the activities completed as part of this IRM Work Plan are performed in accordance with their intended objectives. The documentation collected will be provided to the NYSDEC as part of the Construction Completion Report (CCR) described below in Section 3.2. A field engineer/scientist/geologist, under the supervision of the RE, will provide full-time oversight during initial foundation construction activities that will result in soil disturbance as part of the implementation of the IRM Work Plan. Work conducted in accordance with this IRM Work Plan will be properly documented in daily field reports, monthly BCP progress reports, and in the CCR.

2.4 Soil/Materials Management

Soil/materials management activities specific to the handling as well as transportation/disposal materials generated during IRMWP are described in this section. A Langan representative will monitor and document handling of material exported from the Site that is transported and disposed of in accordance with applicable laws and regulations. Excavated material will be screened by visual and olfactory methods and with a PID, to identify if soil is impacted with VOCs. Excavated material will be stockpiled onsite.

It is reasonably anticipated that historic fill impacted with SVOCs, pesticides, and metals above Unrestricted Use and/or Restricted-Residential Restricted Use SCOs will be encountered during IRM activities. Historic fill material and petroleum impacted material, if encountered, will be managed separately to avoid comingling.

2.4.1 Construction and Demolition Debris (C&D) Material Load Out

Generated C&D materials will be handled, transported and disposed of in accordance with local, state (including 6 NYCRR Part 361-5.4) and federal regulations. Exported loads will be transported by licensed haulers in accordance with appropriate local, state and federal regulations, including 6 NYCRR Part 364.
2.4.2 Soil Screening Methods

Visual, olfactory, and instrumental soil screening will be performed using a PID equipped with a 10.6 electron volt (eV) bulb that will be calibrated daily. Soil screening will take place during excavation and invasive work performed as part of the interim remedy and development-related construction including, but not limited to, excavating for foundation construction. Visibly impacted material will be segregated and placed on polyethylene sheeting for off-Site disposal.

2.4.3 Soil Stockpiles

If excavation is to occur that will requiring the stockpiling of material, soil stockpile areas will be constructed for staging of excavated material, and/or grossly-impacted material that is not directly loaded into trucks for off-site disposal, in accordance with applicable federal and state laws and regulations, including regulations governing hazardous and solid waste. Separate stockpile areas will be constructed to avoid co-mingling materials of different waste streams. All stockpile areas will meet the following minimum requirements:

- Excavated soil stockpiled above a different waste stream will be placed onto a minimum 8-mil low-permeability liner of sufficient strength and thickness to prevent puncture during use – different waste streams will be segregated in separate stockpile areas;

- Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner;

- Stockpiles will be covered upon reaching their capacity (i.e., about 1,000 cubic yards) until ready for loading. Stockpiles that have not reached their capacity, whether active or inactive, will be covered at the end of each workday.

- Stockpiles at or above sidewalk grade will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from any rainwater that has drained off the soils and to mitigate the potential for surface water run-off;
Stockpiles will be inspected at a minimum once each week and after every storm event and any deficiencies will be promptly addressed – any damaged tarps or coverings will be promptly replaced; and,

Results of inspections will be recorded in a logbook to be maintained at the Site and made available for inspection by NYSDEC upon request.

### 2.4.4 Documentation Sampling

If grossly and/or petroleum-impacted materials are encountered during IRM excavation or a UST is encountered/removed, post-exavagation soil samples will be collected in accordance with the requirements of CP-51. Specifically, sidewall samples will be collected at a frequency of one per 30 liner-feet of excavation and one base sample per 900 square-feet of excavation area. For any excavation area where documentation soil sampling is required no less than five samples (four sidewall samples and one base sample) will be collected plus required quality assurance/quality control (QA/QC) samples.

Documentation samples will be collected from areas with the greatest apparent contamination as evidenced by odors, staining, and/or PID readings.

Samples will be analyzed for CP-51 List VOCs and SVOCs and compared to the CP-51 Table 2 Soil Cleanup Levels for Gasoline Contaminated Soils or Table 3 Soil Cleanup Levels for Fuel Oil Contaminated Soil and the 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs, depending on the contents of the USTs. A Quality Assurance Project Plan is included as Appendix C.

### 2.4.5 Waste Liquid Management

During previous environmental investigations, groundwater was observed at depths ranging from 12 to 15.5 feet below street level (bsl). IRM excavation may occur at these depths. If needed, liquids to be removed from the Site, including stormwater and dewatering fluids, will be handled, transported and disposed of in accordance with applicable local, state, and
federal regulations. Discharge of liquids into the New York City sewer system will be addressed through an approved NYCDEP permit and conform to pre-treatment stipulations of that permit. Dewatering fluids not suitable for discharge to the NYCDEP sewer system may be collected, characterized, and managed off-site.

Untreated dewatering fluids will not be recharged back to the land surface or subsurface of the Site.

2.4.6 Material Excavation and Load Out

The Applicant and its contractors are solely responsible for safe execution of ground-intrusive and other remedial work performed under this IRMWP. The Applicant and its contractors are solely responsible for the identification of utilities and/or easements that might be affected by the work conducted under this IRMWP.

Installation of the foundation footer will require excavation of the hazardous lead-impacted soil in the northern portion of the Site. Hazardous material is not suitable for reuse and therefore must be disposed of to a permitted facility capable of accepting hazardous materials. Loaded vehicles leaving the Site will be appropriately lined (as needed), securely covered, manifested, and placarded in accordance with the appropriate federal, state, and local requirements, including applicable transportation requirements (i.e., New York State Department of Transportation [NYSDOT] and NYCDOT requirements). Trucks hauling historic fill material will not be lined unless free liquids are present or the material is grossly impacted.

Additionally, the Applicant and its contractor will set up an outbound-truck inspection station close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and clean water will be utilized for the removal of soil from vehicles and equipment, as necessary. Measures will be taken to ensure that all egress points for truck and equipment transport from the site will be kept clean of project related soils.
fill and debris. Locations where vehicles enter or exit the Site will be inspected daily for evidence of off-Site sediment tracking.

The Applicant and associated parties preparing the remedial documents submitted to New York State, and the parties performing this work, are responsible for the safe performance of ground-intrusive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations).

Mechanical processing of historic fill and contaminated soil on-Site is prohibited unless otherwise approved by NYSDEC.

UST removal contractors (if necessary) will provide the appropriate permits, certifications, and written commitments from disposal facilities to accept the material generated from the UST removal contingency included in this IRM.

2.4.7 Material Transport Off-Site

Non-hazardous and hazardous soil/fill will be handled, transported and disposed by a licensed hauler in accordance with applicable 6 NYCRR Part 360, General Provisions and 6 NYCRR Part 364, Waste Transporter Permits regulations and other applicable federal, state and local regulations. The trucking entrance will be determined prior to the initiation of the remedy. All trucks loaded with Site materials exit the vicinity of the Site using only approved truck routes.

Truck routes are shown on Figure 3. Trucks will be prohibited from excessive stopping and idling in the neighborhood outside of the Site.

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

To the extent possible, queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be minimized.

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.

### 2.4.8 Material Off-Site Disposal

A waste characterization study was performed for soil intended for off-Site disposal. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results will be reported in the CCR. Data available for excavated material to be disposed of at a given facility will be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

Disposal facilities will be determined at a later date and will be reported to the NYSDEC Project Manager prior to off-Site transport and disposal of excavated material. Soil/fill/solid waste excavated and removed from the Site will be handled, transported and disposed in accordance with local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC’s Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

The following documentation will be obtained and reported by the RE or QEP for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms to applicable laws:

a. A letter from the RE, QEP, or BCP Applicant to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of all chemical data for the material being transported (including waste characterization data).
b. A letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material.

These documents will be included in the CCR.

Non-hazardous historic fill material and contaminated soil transported off-Site will be handled, at a minimum, as a solid waste per 6 NYCRR Part 360. Historic fill and contaminated soil excavated from the Site are prohibited from being disposed of at Part 360 Registration Facilities (also known as Soil Recycling Facilities).

Soil that is contaminated but non-hazardous and is being removed from the Site may be sent to a permitted Part 360 landfill. This material is prohibited from being sent or redirected to a Part 360-15 Registration Facility.

The CCR will include an accounting of the destination of material removed from the Site during implementation of the remedy, including excavated soil, contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of each material type must also include records and approvals for receipt of the material. This information will also be presented in a table to be included in the CCR.

A “Bill of Lading” system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the CCR. Hazardous wastes derived from the Site, if any, will be stored, transported, and disposed of in compliance with applicable local, state, and federal regulations.

Appropriately licensed haulers, in compliance with applicable local, state, and federal regulations, will be used to transport the material removed from this Site.
2.5 **Contingent IRM Work Plan Activities**

The potential exists that unforeseen structures or impacts that would require immediate action by the RE may be encountered during implementation of the IRM. In order to address this potential, the following section provides contingency measures for addressing petroleum impacted or otherwise grossly impacted material and USTs should they be encountered during soil disturbance activities.

2.5.1 **Petroleum and/or Grossly-Impacted Soil Removal**

Petroleum and/or grossly-impacted material (i.e., areas of heavily stained and/or odorous soil observed during soil disturbance activities) identified as result of the above identified screening, will either be excavated to the extent necessary to remove the impacted material or, should the impacts be determined to not provide a significant threat to human health or the environment, the location of any impacted material will be properly documented to allow for inclusion in the forthcoming remedial action. Grossly-impacted soil that cannot be removed due to structural concerns or other impediments will be further investigated during the forthcoming remedial action in accordance with the approved remedial action work plan. Any grossly impacted materials will be segregated, stockpiled and properly characterized prior to off-site disposal as detailed in Section 2.4.

If required and to the extents possible, during removal of any petroleum and/or grossly-impacted materials, the excavation areas will be screened and inspected for the presence of impacts to the surrounding soils using a photoionization detector (PID). The QEP will determine when the extents of these impacts have been properly removed based on screening results and will complete documentation sampling in accordance with the requirements defined in Section 2.4.4. As groundwater was determined to be located between approximately 12- and 15.5-feet below sidewalk level, contingent measures for the interim remediation of petroleum impacted groundwater are provided in Section 2.4.5.
2.5.2 Underground Storage Tank (UST) Removal Contingency Plan

While it is not anticipated that USTs will be encountered during IRM activities, if they are encountered or grossly impacted soil is encountered that may be associated with tanks at the Site, their removal and closure may be necessary. If so, removal of the tanks and impacted soil will be completed in accordance with NYSDEC CP-51 Soil Cleanup Guidance and other applicable NYSDEC UST closure requirements.

During UST removal all excavation areas will be screened and inspected for the presence of petroleum-impacts to the surrounding soils. Any petroleum-impacted materials encountered during UST removal activities will be addressed in accordance with the measures identified in Section 2.4.6.

Following removal of any UST(s), affidavits of closure will be submitted to the FDNY, and PBS registration/de-registration applications will be submitted to NYSDEC.

2.6 Construction Health and Safety Plan

The RE prepared a site-specific CHASP for the IRM, which is included as Appendix B. The CHASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and personal protective equipment (PPE) requirements. The CHASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65). The CHASP includes, but is not limited to, the following components listed below:

- Organization and Identification of key personnel;
- Training requirements;
- Medical surveillance requirements;
- List of site hazards;
- Excavation safety;
- Work zone descriptions and monitoring procedures;
- Personal safety equipment and protective clothing requirements;
- Decontamination requirements;
- Standard operating procedures;
- Contingency Plan; and
- Material Safety Data Sheets.

2.7 Notification

The NYSDEC will be notified at least 10 days prior to commencement of IRM-related work. A preconstruction meeting will be coordinated between the RE, the Remediation Contractor, and the NYSDEC. This meeting must be coordinated prior to the implementation of this IRM Work Plan.

3.0 REPORTING

Upon completion of the IRM, a CCR will be prepared and submitted to the NYSDEC. The RE responsible for certifying all reports will be an individual licensed to practice engineering in the State of New York. Ron Boyer, P.E. of Langan will have this responsibility. Should Mr. Boyer become unable to fulfill this responsibility, another suitably qualified New York State professional engineer will take his place. All project reports will be submitted to the NYSDEC electronically as PDFs. Laboratory analytical data for documentation samples will be submitted in an electronic data deliverable (EDD) format that complies with the NYSDEC’s electronic data warehouse standards.

3.1 Daily Reports

Daily reports will be prepared for the project file and for review by the NYSDEC and NYSDOH Project Managers by the end of each day. Daily reports will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and remediation waste exported from the site;
- References to map for site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP results, including STEL exceedances; and,
- 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 IRM Work Plan or other sensitive or time critical information; however, such conditions will also be included in the daily reports. Emergency conditions and changes to the IRM Work Plan will be addressed directly to the NYSDEC Project Manager via personal communication. If site conditions warrant, the RE may request to change from daily to weekly reports that include the above information.

3.2 Construction Completion Report

A CCR will be submitted to the NYSDEC Project Managers within 120 days of completing the interim remedial action. The CCR will document the implementation of the IRM. The CCR will be incorporated into and referenced in the FER for the site when issued. The CCR will provide the following information:

1. The RE will certify that:
   a. The remedial work conformed to the IRM Work Plan;
   b. Dust, odor, and vapor control measures were implemented during invasive work and conformed with the IRM Work Plan with any deviations noted in the report; and
   c. Remediation waste was transported and disposed in accordance with the IRM Work Plan.

2. Description of any problems encountered and their resolutions;

3. Description of changes in the IRM from the elements provided in the IRM Work Plan and associated design documents and the reasons for them;

4. Description of the deviations from the approved IRM Work Plan;

5. Listing of waste streams, quantity of materials disposed, and where they were disposed;

6. List of the remediation standards applied to the remedial actions;
7. Documentation NYSDEC Petroleum Bulk Storage PBS database registry and closure;

8. Affidavits of closure submitted to FDNY for all USTs;

9. A summary of all residual impacted material left on the site;

10. A tabular summary of all sampling results and all material characterization results and other sampling and chemical analysis performed as part of the IRM;

11. Written and photographic documentation of all work performed under this Work Plan;

12. Copies of all the submitted progress reports;

13. Certifications, manifests, and bills of lading for excavated materials transported off-site;

14. An accounting of the destination of all material removed from the site, including excavated impacted soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids; and,

15. Documentation associated with disposal of all material must also include records and approvals for receipt of the material.

4.0 SCHEDULE

The table below presents an estimated schedule for the proposed IRM and reporting. If the schedule changes, it will be updated and submitted to NYSDEC.

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Notes:

1. World topographic basemap is provided through Langan’s Esri ArcGIS software licensing and ArcGIS online.
Adjacent Development Site
NYCOER No. 16EH-N056M

Notes:
1. Property boundary digitized from basemap and measurements provided on the New York City Digital Tax Map maintained online by the Department of Finance.
3. Excavation extents obtained from the draft drawing "SK-SOE-01.00 Early Foundation Excavation at Column 11", dated 13 April 2021.
5. Remediation of Tax Lot 1 (Phase 1) was completed in June 2020.

Legend:
- Tax Lot 61 Proposed Redevelopment Extents (Phase 2)
- Tax Lot 1 Redevelopment Extents (Phase 1)
- Historical Use of Concern
- Existing Building Outline
- Excavation to el 11.5 NAVD88 (corresponding to approximately 13 feet below sidewalk level).

SCALE IN FEET

© 2012 Langan
Directions:
1. Head west on West 41st Street towards 10th Avenue.
2. Turn Left onto Lincoln Tunnel/I-495 West Approach Ramp.
3. Bear Right onto Lincoln Tunnel/I-495 West
4. Leave Manhattan via the Lincoln Tunnel to New Jersey.
APPENDIX A

Previous Reports
(submitted under separate cover)
APPENDIX B

Construction Health and Safety Plan
ENVIROMENTAL HEALTH AND SAFETY PLAN

Client: GO Covenant LLC

Project: Environmental Oversight and UST Removal Contingency During Demolition Work

Location: 550 Tenth Avenue, New York, NY

Chemical Hazards: Volatile organic compounds (VOCs), Polycyclic aromatic hydrocarbons (PAHs), Metals, Pesticides, Perfluoroalkyl substances (PFAS)

Prepared By: Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.

Version: 1

Date: May 2021

Client Contact: Bryan Kelly (212) 716-2502
Langan Project Manager (PM): Amanda Forsburg (973) 560-4900
Langan Health & Safety Manager (HSM): Tony Moffa, CHMM (215) 491-6545
Langan Health and Safety Officer (HSO): Field Personnel
WorkCare: 1-888-449-7787
Langan Incident/Injury Hotline: (973) 560-4699

LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, D.P.C. (LANGAN), AND LANGAN SUBCONTRACTORS, DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION BY A TRAINED HEALTH AND SAFETY SPECIALIST.
APPROVALS

By signature, the personnel identified below hereby acknowledge that they have reviewed this Construction Health and Safely Plan (CHASP) and agree to comply with the requirements contained therein as well as the applicable provisions of 29 CFR Parts 1910 and 1926. The undersigned also acknowledge and accept that this CHASP is the project CHASP for the site work described in the Remedial Action Plan (RAP). Furthermore, in reviewing and accepting this CHASP, as currently written, the undersigned agree that to the best of their knowledge, this CHASP adequately identifies the activities and hazards associated with work at this site and describes the appropriate and necessary precautions and protections for site workers required by the applicable OSHA statutes and regulations.

[Signature]
5/27/21
LANGAN Project Manager - PM (Amanda Forsburg)

[Signature]
LANGAN Health and Safety Manager (Tony Moffa, CHMM)

[Signature]
LANGAN Health and Safety Officer – HSO
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1.0 INTRODUCTION

1.1 Purpose and Policy

This Construction Health and Safety Plan (CHASP) has been developed to comply with the regulations under Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120(b)(4), Hazardous Waste Operations and Emergency Response. It addresses foreseeable activities associated with the site work activities to be conducted at 550 Tenth Avenue located in New York, New York (see Figure 1). This CHASP establishes personnel protection standards and mandatory safety practices and procedures. Additionally, it assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted at known or suspected hazardous waste sites.

Langan personnel involved with inspection of site work activities which involve the displacement of soil and/or material or dewatering of excavations during the proposed development shall comply with the requirements of this CHASP. All Langan personnel engaged in onsite activities will read this document carefully and complete the Safety Briefing Form (Attachment A), a copy of which will be provided to Langan’s Project files. Contractors and subcontractors conducting construction-related activities which will disturb or displace soil in the identified AOC are required to develop and follow their own HASP which must be equal or more stringent than the Langan CHASP. Contractors and subcontractors are responsible for their own workers Health and Safety and providing a safe working environment in accordance with all applicable federal, state and local requirements. Each Subcontractor will have a designated Site Health and Safety Manager who will be responsible for ensuring that the designated procedures are implemented in the field. Personnel who have any questions or concerns regarding implementation of this plan are encouraged to request clarification from the Langan Project Manager. Langan field personnel must follow the designated health and safety procedures, be alert to the hazards associated with working close to vehicles and equipment, and use common sense and exercise reasonable caution at all times.
This CHASP covers construction related field activities which have the potential to disturb and/or displace contaminated fill material, demolition debris, petroleum impacted material that may be encountered around potential USTs, and previously identified historic fill material containing elevated levels of SVOCs, pesticides and metals. These activities include, but are not limited to building demolition; excavation, moving and grading of the historic fill material; and excavation/handling of petroleum impacted material within the vicinity of the UST(s), if encountered.

This CHASP was prepared in accordance with the following documents and/or guidelines:

- Occupational Safety and Health Administration (OSHA) regulations for hazardous site workers (29 CFR 1910.120 and 29 CFR 1926); and,

Langan’s Health and Safety Program and Safe Operating Procedures support this site-specific CHASP.

The level of protection and the procedures specified in this CHASP represent the minimum health and safety requirements to be observed by site personnel engaged in the referenced inspection of construction related activities. Unknown conditions may exist, and known conditions may change. Should an employee find himself or herself in a potentially hazardous situation, the employee will immediately discontinue the hazardous procedures(s) and either personally effect appropriate preventative or corrective measures, or immediately notify the Health and Safety Officer or the Langan Project Manager of the nature of the hazard. In the event of an immediately dangerous or life threatening situation, the employee always has "stop work" authority. Any necessary revision to the Health and Safety procedures will be recorded in the Field Procedure Change Authorization Form (Attachment B), and will require authorization from the Langan Health and Safety Officer and Project Manager.

THE ULTIMATE RESPONSIBILITY FOR THE HEALTH AND SAFETY OF THE INDIVIDUAL EMPLOYEE RESTS WITH THE EMPLOYEE AND HIS OR HER COLLEAGUES. Each employee is responsible for exercising the utmost care and good judgment in protecting his or her own health and safety and that of fellow employees. Should any employee observe a potentially unsafe condition or
situation, it is the responsibility of that employee to immediately bring the observed condition to the attention of the appropriate health and safety personnel as designated above and to follow-up the verbal notification by completing the Unsafe Conditions and Practices Form provided in Attachment C, a copy of which will be provided to the Langan Health and Safety Officer.

"Extenuating" circumstances such as budget or time constraints, equipment breakdown, changing or unexpected conditions, never justify unsafe work practices or procedures. In fact, the opposite is true. Under stressful circumstances all project personnel must be mindful of the potential to consciously or unconsciously compromise health and safety standards, and be especially safety conscious. **ALL SITE PERSONNEL ARE EXPECTED TO CONSIDER "SAFETY FIRST" AT ALL TIMES.**

1.2 Site Description

The Site is located in the Clinton neighborhood of Manhattan, New York and is identified as Lot 61. The Site historically consisted of portions of former Lot 1 and Lot 61 until the tax lots were reapportioned in June 2020 to match the current proposed redevelopment extents. A Site Location Plan is provided as Figure 1. The Site is an approximately 16,000-square foot parcel and is bordered by 10th Avenue to the west, West 41st Street to the north, West 40th Street to the south, and the active redevelopment of former Covenant House New York Wings B and C to the east. New York City Transit (NYCT) tunnels are located to the north of the site, below West 41st Street. In addition, Lincoln Tunnel entrance roads and access ramps for the nearby Port Authority Bus Terminal are located to the south of the site, beyond West 40th Street. The Site consists of Wing A of the Covenant House New York shelter for homeless youth, a parking lot, and construction field offices associated with the redevelopment of the former Wings B and C of the Covenant House New York facility (NYCOER OER Site No. 16TMP0060M, 16EH-N056M) located adjacent to the east of the Site; remediation of the adjacent parcel was completed in June 2020 and construction of the superstructure is ongoing.
1.3 **Scope of Work**

The site work activities which will require the oversight by Langan personnel include the following tasks:

- **Task 1** – Oversight and air monitoring during demolition-related excavation activities for the existing eight-story building and associated cellar space;

- **Task 2** - Excavation/handling of non-hazardous contaminated soil/fill and excavation/handling and off-site disposal hazardous lead-impacted soil/fill

- **Task 3** – Installation of a foundation footer in the northern part of the Site as part of the initial foundation construction;

- **Task 4** - Excavation/handling of petroleum impacted material within the vicinity of USTs, if encountered; and,

- **Task 5** - Soil sample collection, as needed.

Details of the scopes of work to be completed in each of the work areas for this project are provided within the May 2021 Interim Remedial Measures Work Plan (IRMWP).

The proposed future use of the Site will consist of demolishing the existing 8-story Covenant House building (Wing A) and associated cellar space, and constructing new commercial office space for the adjacent Covenant House facility and a residential building above the commercial floors with an approximate footprint area of 14,000 square-feet. Excavation ranging from approximately 11.5 to 17.5 feet bsl (with deeper excavations ranging from 22.5 feet bsl to 26 feet bsl) will be completed for construction of the new building across the majority of the Site footprint. Portions of the Site will not require excavation of soil since the current basement slab is approximately the same elevation as the proposed bottom of excavation of the Site, and the existing 10-foot offset from 10th Avenue on the western side of the Site will remain undeveloped. Remediation of the remainder of the site will be completed in accordance with the forthcoming RAWP subsequent to the IRM demolition of the on-site structures.
During implementation of the scope of work included in the May 2021 IRMWP, all soils excavated or disturbed at the site will be screened for evidence of impacts associated with historical site use, the presence of USTs, or historic fill. Excavated materials exhibiting evidence of impacts will be transported off site for disposal at an approved facility. Personnel conducting activities that will contact the impacted historic fill, petroleum impacted material or impacted groundwater shall abide to the provisions of this CHASP.

2.0 PROJECT TEAM ORGANIZATION AND RESPONSIBILITIES

This section specifies the Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) Project Organization.

2.1 Langan Project Manager

The Langan Project Manager (PM) is Amanda Forsburg. The PM responsibilities include:

Responsibilities:

- Prepares and organizes the background review of site conditions, the site HASP, and the field team.
- Obtains permission for site access and coordinates activities with appropriate officials.
- Briefs the field team on their specific assignments.
- Coordinates with the Health and Safety Officer (HSO) to ensure that health and safety requirements are met.
- Serves as the liaison with public officials.
- Ensuring that this HASP is developed and approved prior to on-site activities.
- Ensuring that all the tasks in the project are performed in a manner consistent with Langan’s comprehensive Health and Safety Program for Hazardous Waste Operations and this HASP.
2.2 Health and Safety Manager (HSM)

The Langan Corporate Health and Safety Manager (HSM) is Tony Moffa. His responsibilities include:

- Serving as a resource in the development and implementation of HASPs;
- Assist in reviewing results of Jobsite Safety Inspections;
- Assisting site Health and Safety Officer (HSO) with development of the HASP, updating HASP as dictated by changing conditions, jobsite inspection results, etc.;
- Maintaining all records on personnel (medical evaluation results, training and certifications, accident investigation results, etc.).

2.3 Health and Safety Officer (HSO)

The Langan Health and Safety Officer (HSO) will be identified prior to the start of field work. The HSO responsibilities include:

- Participating in the development and implementation of this HASP;
- Conducting Jobsite Safety Inspections (Attachment H) and correcting any shortcomings in a timely manner;
- Helping to select proper PPE (Personal Protective Equipment) and periodically inspecting it;
- Ensuring that PPE is properly stored and maintained;
- Controlling entry into and exit from the contaminated areas or zones of the site;
- Confirming each team member’s suitability for work based on a current physician’s recommendation;
- Monitoring the work parties for signs of stress, such as heat stress, fatigue, and cold exposure;
- Monitoring site hazards and conditions;
- Knowing (and ensuring that all site personnel also know) emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department;
- Resolves conflicting situations which may arise concerning safety requirements and working conditions.
- Conducting daily tailgate meetings to review applicable JSAs as well as check-in with site personnel.
• Reporting any health and safety concerns during implementation of the tasks listed above to the Langan Project Manager and the Engineer of Record for the IRMWP.

3.0 HAZARDS ANALYSIS

This section presents all assessment of the general, chemical, physical and biological hazards that may be encountered during the tasks specified under this CHASP (Section 1.3). A detail on types of potential contaminants of concerns Langan anticipates to encounter at different locations during the intrusive investigation is listed in Tables 1 and 2 of this CHASP.

3.1 General Hazard Assessment

A general hazard assessment was conducted for the required field work described in Section 1.3 and the following potential hazards have been identified:

• Inhalation of volatile contaminants;
• Inhalation of semi volatile organic compounds (SVOCs) with low volatilization potential;
• Skin and eye contact with contaminants;
• Ingestion of contaminants;
• Inhalation of dusts impacted with SVOCs and metals;
• Physical hazards associated with the use of heavy equipment;
• Excavation hazards;
• Tripping hazards;
• Noise exposure;
• Heat stress (depending on weather conditions);
• Cold exposure (depending on weather conditions);
• Flammable hazards;
• Electrical hazards; and,
• Use of personal protective equipment.

These hazards are further described in the task-by-task hazard analysis in Table 3. Specific chemical, physical and biological hazards are discussed below.
Mitigation and controls will include as needed work procedures, work/rest regimen, dust control measures, personal protective equipment, and respiratory protection as appropriate.

3.2 Chemical Exposure Hazards

The following chemical hazard evaluation for the proposed site development activities is based on the previous environmental investigation of the site. The evaluation has been conducted to identify chemicals/materials that potentially may be present at the site, and to ensure that work activities, personnel protection, and emergency response are consistent with the specific contaminants that potentially could be encountered.

3.2.1 Specific Chemical Hazards Previously Detected at the Site

Potential contaminants that may be encountered while conducting site investigation activities include VOCs, SVOCs, pesticides, and metals commonly associated with historic urban fill. Hazardous concentrations of lead and perfluoroalkyl substances (PFAS) have also been detected in soil on site. Table 1 lists Contaminants of Concern and potentially affected media. Exposure limits for potential contaminants that might be encountered in the field are listed in Table 2.

3.2.2 Chemical Hazard Exposure Routes

Potential hazards and their exposure routes include:

- Inhalation of organic vapors due to the presence of volatile organic compounds in soil, groundwater, or soil vapor, and from diesel-powered equipment and minimal volatilization potential related to the presence of SVOCs in soil.

- Inhalation of dust impacted with SVOCs or metals associated with soil borings and soil sampling activity.

- Inadvertent ingestion of potentially toxic substances via hand to mouth contact or deliberate ingestion of materials inadvertently contaminated with potentially toxic materials such as metals.
- Dermal exposure and possible percutaneous (skin) absorption of certain lipophilic (readily absorbed through the skin) SVOCs.

- Skin and eye contact with contaminants at the site and decontamination activities.

Exposure limits and health effects of selected chemicals are in Table 2. The probability of exposure for each task is outlined in Table 3.

### 3.2.3 Control of Exposure to Chemical Hazards

To protect potentially exposed personnel the following procedures and protocols will be adopted and used as needed: work procedures will be adhered to, work zones will be established, dust control will be utilized, respirators (if required) and personal protective equipment will be worn, area air monitoring will be conducted during times of disturbance of the impacted fill material and strict personnel decontamination procedures will be followed.

### 3.3 Physical Hazards

#### 3.3.1 Temperature Extremes

**Hot Temperatures**

Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE, in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke. If onsite workers exhibit the signs of heat exhaustion or heat stroke, they should seek immediate medical attention.

**Cold Temperatures**

Workers may be exposed to the hazard of working in a cold environment. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia, as well as slippery surfaces, brittle equipment, poor judgment, and unauthorized procedural changes. In order to prevent frostbite, hypothermia, trench foot and immersion foot, the workers are responsible for dressing warmly in layers with thick socks, gloves, and appropriate head and face gear. Upon the onset of discomfort due to the cold, onsite workers should take regular five to ten minute
breaks to warm up inside nearby buildings and to drink warm fluids. Please note that the NYCDEP statute prohibits idling an engine for more than three minutes (one-minute if adjacent to a school). This statue includes the use of a vehicle for the purpose of warming up employees. As such, all contractors and employees shall identify a place to warm up in advance. If discomfort continues and the onsite workers start to exhibit the signs of frostbite, hypothermia, trench foot or immersion foot, they should seek immediate medical attention.

3.3.2 Noise and Air Resources

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps and generators. Hearing protection is required and shall be used in designated areas of the site as indicated by the posted signs.

3.3.3 Hand and Power Tools

In order to complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Hand and power tools will be inspected prior to use. Proper personal protective equipment shall be worn while utilizing hand and power tools. Ground Fault Circuit Interrupters (GFCIs) are required for all portable electric tools.

3.3.4 Slips, Trips, and Falls

Working in and around the site will pose slip, trip and fall hazards due to equipment, piping, slippery surfaces that may be oil covered, or from surfaces that are wet from rain or ice. Potential adverse health effects include falling to the ground and becoming injured or twisting an ankle. Good housekeeping at the site must be maintained at all times.

3.3.5 Fire and Explosion

Prior to starting all excavation work, a review of appropriate New York City maps will be conducted to identify potential hazards. The possibility of encountering fire and explosion hazards exists from underground utilities and gases. Therefore, all excavation equipment must be grounded.
3.3.6 Material Handling

Manual lifting of heavy objects may be required. Failure to follow proper lifting techniques can result in back injuries and strains. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted work time, and long treatment and recovery periods.

Whenever possible, heavy objects must be lifted and moved by mechanical devices rather than by manual effort. The mechanical devices will be appropriate for the lifting or moving task and will be operated only by trained and authorized personnel. Objects that require special handling or rigging will only be moved under the guidance of a person who has been specifically trained to move such objects, such as a Master Rigger or equivalent. Lifting devices, including equipment, slings, ropes, chains, and straps, will be inspected, certified, and labeled to confirm their weight capacities. Defective equipment will be taken out of service immediately and repaired or destroyed.

The wheels of any trucks being loaded or unloaded, and/or parked on an incline, will be chocked to prevent movement. If applicable, outriggers will be extended on a flat, firm surface during operation. The lift and swing path of a crane/equipment will be watched and maintained clear of obstructions. Personnel will not pass under a raised load, nor will a suspended load be left unattended. Personnel will not be carried on lifting equipment, unless it is specifically designed to carry passengers.

All reciprocating, rotating, or other moving parts will be guarded at all times. Accessible fire extinguishers will be made available in all mechanical lifting devices. All material must be stored in tiers, racked, blocked, or otherwise secure to prevent sliding, falling, or collapse. All loads/material will be verified to be secure before transportation.

3.3.7 Confined Space/Excavation Hazards

Personnel entry into trenches or unshored (e.g., lagging) excavations within the designated areas of concern will not be permitted. No other confined spaces are known to exist on Site. If entry into trenches or
excavations is required, all work will stop until the CHASP has been revised to address the new hazards.

3.3.8 Working Near Equipment

Personnel working in the immediate vicinity of heavy equipment (e.g., excavators, loaders, etc.) may encounter physical hazards resulting from contact with equipment. Field personnel should be aware of the presence of these hazards at all times and take appropriate action to avoid them. Due to the limited ability to communicate when wearing respiratory protection, the risk is increased. Workers must be careful to communicate with heavy equipment operators regarding their location, and should maintain a safe distance from operating equipment at all times. Prior to working around equipment, the site personnel will review appropriate hand signals with the operator.

Equipment will be equipped with back up alarms.

3.3.9 Electrical Safety

Personnel may utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Ground Fault Circuit Interrupters (GFCIs) are required for all portable electric tools.

3.3.10 Utilities

Prior to the start of any intrusive work, the location of above-ground and underground utilities and other structures will be completed by the contractor/subcontractor responsible for completing construction activities.

3.3.11 Vehicular Traffic

Portions of site activities (load in and load out) will be conducted in the street so vehicular and pedestrian traffic will be present. Appropriate precautions to protect the on-site workers and civilians should be used including the use of cones and traffic vests as appropriate.
3.4 Biological Hazards

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals and insects. As the potential for exposure to blood borne pathogens during site investigation is anticipated to be low, a Blood Borne Pathogen Exposure Plan (BBPEP) is not required. A BBPEP will be prepared if site operation requires its implementation.

3.4.1 Animals

During site operations, animals such as dogs, cats, pigeons, mice, and rats may be encountered. Workers shall use discretion and avoid all contact with animals. Bites and scratches from dogs and cats can be painful and if the animal is rabid, the potential for contracting rabies exists. Contact with rat and mice droppings may lead to contracting hantavirus. Inhalation of dried pigeon droppings may lead to psittacosis. Cryptococcosis and histoplasmosis are also diseases associated with exposure to dried bird droppings but these are less likely to occur in this occupational setting.

3.4.2 Insects

Insects, including bees, wasps, hornets, mosquitoes, spiders, and ticks may be present at the site. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. In addition, mosquito bites may lead to St. Louis encephalitis or West Nile encephalitis.

3.4.3 Wound Care

A source of occupational exposure may occur when an employee gives First Aid and or CPR to an individual who had infectious blood. The occupational exposure occurs when there is the possibility for an employee’s eyes, mucous membranes, non-intact skin (i.e., cut and abraded skin) to come into contact with potentially infectious materials from another employee. If an accident were to occur where First Aid would need to be administered, the person administering the First Aid will presume that any wounds and materials used are contaminated with BBP and should wear the appropriate PPE to prevent contact with these materials. Additionally, should the use of First Aid materials and or clothing
that was potentially contaminated with BBP be encountered these materials should be properly containerized and transported to the nearest hospital for proper disposal.

3.5 Task Hazard Analysis

The tasks to be completed during the proposed site work activities, as summarized in Section 1.3, are listed in Table 3 with a Hazard Analysis for each task.

4.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

4.1 Levels of Protection

PPE must protect workers from the specific hazards they are likely to encounter on site. Selection of the appropriate PPE must take into consideration: (1) identification of the hazards or suspected hazards; (2) potential exposure routes; and, (3) the performance of the PPE construction (materials and seams) in providing a barrier to these hazards. Based on anticipated site conditions and the proposed work activities to be performed at the Site, Level D Protection will be used. The upgrading/downgrading of these levels of protection will be based on continuous air monitoring results as described in Section 5.0. The decision to modify standard PPE will be made by the HSO after conferring with the Langan Project Manager. The levels of protection are described below.

- **Level D Protection**
  a. Safety glasses with side-shields or chemical splash goggles
  b. Safety boots/shoes (toe-protected)
  c. Hard hat
  d. Long sleeve work shirt and work pants
  e. Nitrile gloves
  f. Hearing protection (as needed)
  g. Reflective traffic vest
• **Level D Protection (Modified)**
  a. Safety glasses with side-shields or chemical splash goggles
  b. Safety boots/shoes (toe-protected)
  c. Disposable chemical-resistant boot covers
  d. Coveralls (polycoated Tyvek or equivalent to be worn when contact with wet contaminated soil, groundwater, or non-aqueous phase liquids is anticipated)
  e. Hard hat
  f. Long sleeve work shirt and work pants
  g. Nitrile gloves
  h. Hearing protection (as needed)
  i. Reflective traffic vest

• **Level C Protection**
  a. Full face-piece, air-purifying, cartridge*-equipped, NIOSH-approved respirator [*combo cartridge P100/OV/CL/HC/SD/CD/HS (escape)]
  b. Inner (latex) and outer (nitrile) chemical-resistant glove
  c. Chemical-resistant safety boots/shoes (toe-protected)
  d. Disposable chemical-resistant boot covers
  e. Hard hat
  f. Long sleeve work shirt and work pants
  g. Coveralls (Tyvek or equivalent, poly-coated Tyvek will be worn when contact, or anticipated contact with wet contaminated soils, groundwater, and/or non-aqueous phase liquids (NAPL) is anticipated)
  h. Hearing protection (as needed)
  i. Reflective traffic vest

The action levels used in determining the necessary levels of respiratory protection and upgrading to Level C are provided in Table 4. The written Respiratory Protection Program is maintained by the HSM. The monitoring procedures and equipment are outlined in Section 5.0.
4.2 **Respirator Fit-Test**

All Langan employees and subcontractors performing site work who could be exposed to hazardous substances at the work site are in possession of a full face-piece, air-purifying respirator and have been successfully quantitatively fit-tested within the past year. Quantitative fit-test records are maintained by the HSM.

4.3 **Respirator Cartridge Change-Out Schedule**

Respiratory protection is required to be worn when certain action levels (Table 2) are reached. A respirator cartridge change-out schedule has been developed in order to comply with 29 CFR 1910.134. The respirator cartridge change-out schedule for this project is as follows:

- Cartridges shall be removed and disposed of at the end of each shift, when cartridges become wet or wearer experiences breakthrough, whichever occurs first.
- If the humidity exceeds 85%, then cartridges shall be removed and disposed of after 4 hours of use.

Respirators shall not be stored at the end of the shift with contaminated cartridges left on. Cartridges shall not be worn on the second day, no matter how short the time period was the previous day they were used.

5.0 **AIR QUALITY MONITORING AND ACTIONS LEVELS**

5.1 **Monitoring During Site Operations**

Atmospheric air monitoring results are used to provide data to determine when exclusion zones need to be established and when certain levels of personal protective equipment are required. For all instruments there are Site-specific action level criteria which are used in making field health and safety determinations. Other data, such as the visible presence of contamination or the steady state nature of air contaminant concentration, are also used in making field health and safety decisions. Therefore, the HSO may establish an exclusion zone or require a person to wear a respirator even though atmospheric air contaminant concentrations are below established CHASP action levels.
During site work involving disturbance of historic fill material, real time air monitoring will be conducted. A photoionization detector (PID) and/or flame ionization detector (FID) will be used to monitor concentrations of VOCs at personnel breathing-zone height. Dust monitoring will be accomplished with an aerosol monitor. Air monitoring will be the responsibility of the HSO or designee. Air monitoring will be conducted approximately every 30 minutes during ground intrusive activities in the AOC on the project site. All manufacturers’ instructions for instrumentation and calibration will be available onsite.

Subcontractors’ air monitoring plans must be equal or more stringent as the Langan plan.

An air monitoring calibration log is provided in Attachment D of this CHASP.

5.1.1 Volatile Organic Compounds

Monitoring with a PID, such as a MiniRAE 2000 (10.6v) or equivalent will occur during intrusive work outlined in the November 2019 IRM. Colormetric Indicator Tubes for benzene may be used as backup for the PID, if measurements remain above background monitor every 2 hours. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (odors, visible gases, etc.) since the last measurement. If VOC levels are observed above 5 ppm for longer than 5 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the workzone every 30 minutes in addition to the employee breathing zone. Instrument action levels for monitored gases are provided in Table 4.

5.1.2 Dust

During invasive procedures which have the potential for creating airborne dust, such as excavation of dry soils, a real time airborne dust monitor such as a Mini-Ram should be used to monitor for air particulates. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (appearance of visible dust) since the last measurement. If dust levels are observed to be greater than 0.100 mg/m³ or visible dust is observed for longer than 15 minutes or if the site PPE is upgraded to Level C, the HSO...
will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for dust monitoring are provided in Table 4.

5.2 Monitoring Equipment Calibration and Maintenance

Instrument calibration shall be documented and included in a dedicated safety and health logbook or on separate calibration pages of the field book. All instruments shall be calibrated before and after each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

All instruments shall be operated in accordance with the manufacturers’ specifications. Manufacturers’ literature, including an operations manual for each piece of monitoring equipment will be maintained on site by the HSO for reference.

5.3 Determination of Background Levels

Background (BKD) levels for VOCs and dust will be established prior to intrusive activities within the AOC at an upwind location. A notation of BKD levels will be referenced in the daily monitoring log. BKD levels are a function of prevailing conditions. BKD levels will be taken in an appropriate upwind location as determined by the HSO.

Table 4 lists the instrument action levels.

6.0 COMMUNITY HEALTH AND SAFETY CONSIDERATIONS

Community air monitoring will be conducted in compliance with the NYSDOH Generic CAMP outlined below.

The CAMP will include real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work area when ground-intrusive work is in progress. Continuous monitoring will be required for all ground-intrusive work. Ground-intrusive work includes, but is not limited to, soil/fill excavation and handling and utility trenching. Periodic monitoring for VOCs may be required during non-intrusive work such as the collection of soil samples. “Periodic” monitoring during sample collection might
reasonably consist of taking a reading upon arrival at a sample location and taking a reading prior to leaving a sample location.

CAMP monitoring of total VOC levels will be conducted using PIDs, and monitoring for particulates will be conducted using particulate sensors equipped with filters that can detect airborne particulates less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during ground-intrusive work by a field engineer, scientist, or geologist under the supervision of the RE. The work zone is defined as the general area in which machinery is operating in support of remediation. A portable PID will be used to monitor the work zone and for periodic monitoring of total VOC levels during work such as soil sampling. The site perimeter will be visually monitored for fugitive dust emissions.

The following actions will be taken based on total VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work will resume with continued monitoring.

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

- If the total VOC level is above 25 ppm at the perimeter of the hot zone, work will be shut down.

The following actions will be taken based on dust levels measured or visual dust observations:

- If the downwind particulate level is 100 µg/m³ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 levels do not exceed 150 µg/m³ above the background level and provided that no visible dust is migrating from the work area.
If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 µg/m³ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

Sustained concentrations of VOCs or PM10 will be reported to the NYSDEC and NYSDOH Project Managers and included in the daily report. In addition, a map showing the location of the downwind and upwind CAMP stations will be included in the daily report.

7.0 WORK ZONES AND DECONTAMINATION

7.1 Site Control

Work zones are intended to control the potential spread of contamination throughout the site and to assure that only authorized individuals are permitted into potentially hazardous areas.

Any person working in an area where the potential for exposure to site contaminants exists will only be allowed access after providing the HSO with proper training and medical documentation.

**Exclusion Zone (EZ)** - All activities which may involve exposure to site contaminants, hazardous materials and/or conditions should be considered an EZ. Decontamination of field equipment will also be conducted in the Contaminant Reduction Zone (CRZ) which will be located on the perimeter of the EZ. The EZ and the CRZ will be clearly delineated by cones, tapes or other means. The HSO may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the HSO allowing adequate space for the activity to be completed, field members and emergency equipment.

7.2 Contamination Control

7.2.1 Personnel Decontamination Station

Personal hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure.
7.2.2 Minimization of Contact with Contaminants

During completion of all site activities, personnel should attempt to minimize the chance of contact with contaminated materials. This involves a conscientious effort to keep "clean" during site activities. All personnel should minimize kneeling, splash generation, and other physical contact with contamination as PPE is intended to minimize accidental contact. This may ultimately minimize the degree of decontamination required and the generation of waste materials from site operations.

Field procedures will be developed to control over spray and runoff and to ensure that unprotected personnel working nearby are not affected.

7.2.3 Personnel Decontamination Sequence

Decontamination will be performed by removing all PPE used in EZ and placing it in drums/trash cans at the CRZ. Baby wipes shall be available for wiping hands and face. Drums/trash cans will be labeled by the field crews in accordance with all local, state, and federal requirements. Management plans for contaminated PPE, tools and Investigative Derived Waste (i.e., soil cutting) are provided below.

7.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination and wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment. If the injured person can be moved, he/she will be decontaminated by site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury), provisions shall be made to ensure that emergency response personnel will be able to respond to the victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exist, such as with open excavation, this area will be covered with polyethylene sheeting to eliminate any potential inhalation hazards. All emergency personnel are to be immediately informed of the injured person's condition, potential contaminants, and provided with all pertinent data.
7.2.5 Hand-Held Equipment Decontamination

Hand-held equipment includes all monitoring instruments as stated earlier, samples, hand tools, and notebooks. The hand-held equipment is dropped at the first decontamination station to be decontaminated by one of the decontamination team members. These items must be decontaminated or discarded as waste prior to removal from the CRZ.

To aid in decontamination, monitoring instruments can be sealed in plastic bags or wrapped in polyethylene. This will also protect the instruments against contaminants. The instruments will be wiped clean using wipes or paper towels if contamination is visually evident. Sampling equipment, hand tools, etc. will be cleaned with non-phosphorous soap to remove any potentially contaminated soil, and rinsed with deionized water. All decontamination fluids will be containerized and stored on-site pending waste characterization sampling and appropriate off-site disposal.

7.2.6 Heavy Equipment Decontamination

All heavy equipment and vehicles arriving at the work site will be free from contamination from offsite sources. Any vehicles arriving to work that are suspected of being impacted will not be permitted on the work site. Potentially contaminated heavy equipment will not be permitted to leave the EZ unless it has been thoroughly decontaminated and visually inspected by the HSO or his designee.

7.3 Communications

The following communications equipment will be utilized as appropriate.

- Telephones - A cellular telephone will be located with the HSO for communication with the HSM and emergency support services/facilities.
- Hand Signals - Hand signals shall be used by field teams, along with the buddy system. The entire field team shall know them before operations commence and their use covered during site-specific training. Typical hand signals are the following:
### 8.0 MEDICAL SURVEILLANCE

All personnel who will be performing field work involving potential exposure to toxic and hazardous substances will be required to have passed an initial baseline medical examination, with annual follow-up medical exams thereafter, consistent with 29 CFR 1910.120(f). Medical evaluations will be performed by, or under the direction of, a physician board-certified in occupational medicine. Results of medical evaluations are maintained by the HSM.

### 9.0 EMERGENCY RESPONSE PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures that are addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures. In case of emergency, in addition to 911 the Langan Incident/Injury Hotline (973-560-4699) should be called as soon as possible.

#### 9.1 Responsibilities

**9.1.1 Health and Safety Officer (HSO)**

The HSO is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The HSO is responsible for ensuring the HSM are notified of all incidents, all injuries, near misses, fires, spills,
releases or equipment damage. The HSO is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the HSM can notify OSHA within the required time frame.

9.1.2 Emergency Coordinator

The HSO or their designated alternate will serve as the Emergency Coordinator. The Emergency Coordinator is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. They are also responsible for ensuring the HSM are notified of all incidents, all injuries, near misses, fires, spills, releases or equipment damage. The Emergency Coordinator is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized.

The Emergency Coordinator shall locate emergency phone numbers and identify hospital routes prior to beginning work on the sites. The Emergency Coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator is responsible for implementing the Emergency Response Plan.

9.1.3 Site Personnel

Project site personnel are responsible for knowing the Emergency Response Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a site emergency. Project site personnel, including all subcontractors will be trained in the Emergency Response Plan.

9.2 Communications

Once an emergency situation has been stabilized or as soon as practically possible, the HSO will contact the Langan Incident/Injury Hotline (973-560-4699) and Project Manager of identify any emergency situation.
9.3 Local Emergency Support Units

In order to be able to deal with any emergency that might occur during investigative activities at the site, Attachment E will be available in the field vehicles and provided to all personnel conducting work within the EZ.

Figure 2 shows the hospital route map. Outside emergency number 911 and local ambulance should be relied on for response to medical emergencies and transport to emergency rooms. Due to traffic congestion that is prevalent in the New York metropolitan area, alternate hospital routes will need to be considered. The Emergency Coordinator will determine the appropriate route based on time of day and traffic patterns. Changes in the referenced primary facilities shall be documented with the CHASP Field Change Authorization Request Form (Attachment B).

The Emergency Phone Numbers listed are preliminary. Upon mobilization, the HSO shall verify all numbers and document the changes in the Site Logbook. Any changes shall also be documented with the CHASP Field Change Authorization Request Form.

A hospital route map is provided as Figure 2.

9.4 Pre-Emergency Planning

Langan will communicate directly with administrative personnel from the emergency room at the hospital in order to determine whether the hospital has the facilities and personnel needed to treat cases of trauma resulting from any of the contaminants expected to be found on the site. Instructions for finding the hospital will be posted conspicuously in the site office and in each site vehicle.

9.5 Emergency Medical Treatment

The procedures and rules in this CHASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the HSO on site immediately. First-aid equipment will be available on site at the following locations:

- First Aid Kit: Vehicles
- Emergency Eye Wash: Vehicles
During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

Personnel with current first aid and CPR certification will be identified.

Only in non-emergency situations will an injured person be transported to the hospital by means other than an ambulance.

**Nearest hospital:** Mount Sinai West: Emergency Room
1000 10th Avenue
New York, NY 10019
(212) 523-6800
*(directions from site to hospital found on Figure 2)*

9.6 **Non-Emergency Medical Treatment**

In case of injury to personnel, which is not a medical emergency the employee will contact WorkCare at (1-888-449-7787). WorkCare provides access 24 hours / 7 days a week to experienced occupational health nurses and physicians who confer with employees at the onset of a work-related injury or illness. WorkCare will provide over the phone injury treatment or direct employees to medical treatment by third party provider, if appropriate.

9.7 **Emergency Site Evacuation Routes and Procedures**

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs as a result of the site investigation activities, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, the Langan Project Manager will be verbally notified immediately. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the nearest intersection to be accounted for and to receive further instructions.
9.8 **Fire Prevention and Protection**

In the event of a fire or explosion, procedures will include immediately evacuating the site and notification of the Langan Project Manager of the investigation activities. Portable fire extinguishers will be provided at the work zone. The extinguishers located in the various locations should also be identified prior to the start of work. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

9.8.1 **Fire Prevention**

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials.
- Storage of flammable liquids and gases away from oxidizers.
- Shutting off engines to refuel.
- Grounding and bonding metal containers during transfer of flammable liquids.
- Use of UL approved flammable storage cans.
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities.

The person responsible for the control of fuel source hazards and the maintenance of fire prevention and/or control equipment is the HSO.

9.9 **Significant Vapor Release**

Based on the proposed tasks, the potential for a significant vapor release is low. However, if a release occurs, the following steps will be taken:

- Move all personnel to an upwind location. All non-essential personnel shall evacuate.
- Upgrade to Level C Respiratory Protection.
- Downwind perimeter locations shall be monitored for volatile organics.
- If the release poses a potential threat to human health or the environment in the community, the Emergency Coordinator shall notify the Langan Project Manager.
- Local emergency response coordinators will be notified.
9.10 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet (MSDS) will be followed, when necessary.

SKIN AND EYE: Use copious amounts of soap and water from eye-wash kits and portable hand wash stations.

CONTACT: Wash/rinse affected areas thoroughly, then provide appropriate medical attention. Skin shall also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs. Affected items of clothing shall also be removed from contact with skin.

Providing wash water and soap will be the responsibility of each individual contractor or subcontractor on-site.

9.11 Decontamination During Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or omitted. The HSO 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 on site, a plastic barrier placed between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, 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 or injuries, the normal decontamination procedures will be followed.
9.12 Incident Reporting

Once first aid and/or emergency response needs have been met, the following parties are to be contacted:

- WorkCare (1-888-449-7787)
- Langan Incident/Injury Report Hotline (973-560-4699)
- Langan Project Manager, Amanda Forsburg (973-560-4900) or Steve Ciambruschini (973-560-4900)
- Langan Health and Safety Manager, Tony Moffa (215-491-6500)
- The employer of any injured worker who is not a Langan employee

For emergencies involving personal injury and/or exposure including near-misses, the HSO or designee will complete and submit an Incident Report form (Attachment F) within 24 hours. If the employee involved is not a Langan employee, his employer shall receive a copy of the report.

9.13 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work will continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds).
- Limited visibility (fog).
- Potential for electrical storms.
- Earthquakes.
- Other major incidents.
Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The HSO will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

9.14 Spill Control and Response

All small spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining proper waste characterization and the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. All spill containment materials will be properly disposed. An exclusion zone of 50 to 100 feet around the spill area should be established depending on the size of the spill.

All contractor vehicles shall have spill kits on them with enough material to contain and absorb the worst-case spill from that vehicle. All vehicles and equipment shall be inspected prior to be admitted on site. Any vehicle or piece of equipment that develops a leak will be taken out of service and removed from the job site.

The following seven steps shall be taken by the Emergency Coordinator:

1. Determine the nature, identity and amounts of major spills.
2. Make sure all unnecessary persons are removed from the spill area.
3. Notify the HSO immediately.
4. Use proper PPE in consultation with the HSO.
5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosion-proof equipment to contain or clean up the spill (diesel-only vehicles, air-operated pumps, etc.)
6. If possible, try to stop the leak with appropriate material.
7. Remove all surrounding materials that can react or compound with the spill.
In addition to the spill control and response procedures described in this CHASP, Langan personnel will coordinate with the designated project manager relative to spill response and control actions. Notification to the Project Manager must be immediate and, to the extent possible, include the following information:

- Time and location of the spill.
- Type and nature of the material spilled.
- Amount spilled.
- Whether the spill has affected or has a potential to affect a waterway or sewer.
- A brief description of affected areas/equipment.
- Whether the spill has been contained.
- Expected time of cleanup completion. If spill cleanup cannot be handled by Langan’s on-site personnel alone, such fact must be conveyed to the Project Manager immediately.

Langan shall not make any notification of spills to outside agencies. The client will notify regulatory agencies as per their reporting procedures.

### 9.15 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on site:

- Industrial first aid kit.
- Fire extinguishers (one per site).

### 9.16 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers.
- Refilling medical supplies.
- Recharging eyewashes and/or showers.
- Replenishing spill control supplies.
10.0 TRAINING

10.1 General Health and Safety Training

Completion of an initial 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training program (or its equivalent) as detailed in OSHA’s 29 CFR 1910.120(e) is required for all employees who will perform work in areas where the potential for a toxic exposure exists. Annual 8-hour refresher training is also required to maintain competencies to ensure a safe work environment.

10.2 Site-Specific Training

Prior to commencement of site activities, all field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the site operations. It will include a documented verbal review of the entire CHASP and all the provisions within the CHASP document. Should any new employees arrive on-site, they will also be given a documented full CHASP review – or one that address the appropriate tasks that remain at the time of the new employee’s arrival.

10.3 Onsite Safety Briefings

Project personnel and visitors will participate in documented daily on-site health and safety briefings (“Tailgate Talks”) led by the HSO to assist site personnel in safely conducting their work activities. The briefings will include information on operations to be conducted that shift, changes in work practices or changes in the site’s environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity for the work crews to be updated on monitoring results. Prior to starting any new activity, a training session will be held for crew members involved in the activity. The Safety Briefing form (Attachment A) can be used to facilitate this effort.
10.4 Hazard Communication

All material brought on-site will be in the appropriate containers and will be properly labeled. The SDS for unleaded gasoline, diesel fuel, and hydraulic fluid are attached. Langan’s written Hazard Communication program, in compliance with 29 CFR 1910.1200, is maintained by the HSM.

11.0 RECORDKEEPING

The following is a summary of required health and safety logs, reports and recordkeeping.

11.1 Field Change Authorization Request

A field change authorization request is to be completed for requesting a change to this CHASP (Attachment B). Any changes to the work to be performed that is not included in the CHASP will require an Addendum that is approved by the Langan Project Manager and Langan HSM to be prepared. Approved changes will be reviewed with all field personnel at a safety briefing.

11.2 Medical and Training Records

Copies or verification of training (40-hour, 8-hour, supervisor, site-specific training, documentation of three-day OJT, and respirator fit-test records) and medical clearance for Site work and respirator use will be maintained in the office and available upon request. Records for all subcontractor employees must also be available upon request. All employee medical records will be maintained by the HSM.

11.3 Onsite Log

A log of personnel on site each day will be kept by the HSO or designee.

11.4 Daily Safety Meetings (“Tailgate Talks”)

Completed Safety Briefing forms will be maintained by the HSO.
11.5 Exposure Records

All personal monitoring results, laboratory reports, calculations and air sampling data sheets are part of an employee exposure record. These records will be maintained by the HSO during site work. At the end of the project they will be maintained according to 29 CFR 1910.1020.

11.6 Hazard Communication Program/SDS

Safety Data Sheets (SDS) have been obtained for applicable substances and are included in this CHASP (Attachment G). Langan’s written Hazard Communication program, in compliance with 29 CFR 1910.1200, is maintained by the HSM in Parsippany, New Jersey.

11.7 Documentation

Employees are required to contact WorkCare at 1-888-449-7787 to document incidents/injuries which are not medical emergencies. Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan Incident/Injury Hotline at 1-800-952-6426 or 973-560-4699 and the client representative to report the incident or near miss. A written report must be completed and submitted to the client representative within 24 hours of the incident. For emergencies involving personnel injury and/or exposure, employee will complete and submit the Langan Incident/Injury Report to the Langan Corporate Health and Safety Manager as soon as possible following the incident. Accidents will be investigated in-depth to identify all causes and to recommend hazard control measures.
12.0 FIELD PERSONNEL REVIEW

This form serves as documentation that field personnel have been verbally given a full CHASP review by Langan personnel, and understand the provisions of this EHS Plan. It is maintained on site by the HSO as a project record.

Each field team member shall sign this section after Site-specific training is completed and before being permitted to work onsite.

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<td>Contaminant Of Concern</td>
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# TABLE 1
## SUSPECTED CONTAMINANTS OF CONCERN
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#### NEW YORK, NEW YORK

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<tr>
<td>Perfluorooctanoic Acid (PFOA)</td>
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Wangen.com//data/PARdata/A100674401/Project Data_Discipline/EnvironmentalReports_/Phase 2 (100674402)/2021-05 - BCP-IRMWPAppendix B - CHASPTablesHASP TABLE 1 - Contaminants of Concern.doc
**TABLE 2**

SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS

550 10TH AVENUE
NEW YORK, NEW YORK

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<thead>
<tr>
<th>Chemical</th>
<th>Permissible Exposurelimit</th>
<th>IDLH Limit</th>
<th>Exposure Routes</th>
<th>Exposure Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,4 Trimethylbenzene</td>
<td>--</td>
<td>--</td>
<td>Inhalation, ingestion, skin and/or eye contact</td>
<td>Irritation eyes, skin, nose, throat; respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)</td>
</tr>
<tr>
<td>1,3,5 Trimethylbenzene</td>
<td>--</td>
<td>--</td>
<td>Inhalation, ingestion, skin and/or eye contact</td>
<td>Irritation eyes, skin, nose, throat; respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)</td>
</tr>
<tr>
<td>Acetone</td>
<td>1000 ppm</td>
<td>2500 ppm</td>
<td>Inhalation, ingestion, skin and/or eye contact</td>
<td>Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis</td>
</tr>
<tr>
<td>Benzene</td>
<td>1 ppm</td>
<td>50 ppm</td>
<td>Inhalation, Skin Absorption, Ingestion, skin and/or eye contact</td>
<td>Irritate eyes, skin, nose; respiratory system; giddiness; head, nausea, staggered gait; fatigue, anorexia, lassitude; dermatitis; bone marrow depression; [carcinogenic]</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100 ppm</td>
<td>800 ppm (10% LEL)</td>
<td>Inhalation, Ingestion, skin and/or eye contact</td>
<td>Irritate eyes, skin, mucous membrane ;headache, dermatitis; narcosis, coma</td>
</tr>
<tr>
<td>Isopropylbenzene</td>
<td>50 ppm</td>
<td>900 ppm (10% LEL)</td>
<td>Inhalation, Skin Absorption, Ingestion, skin and/or eye contact</td>
<td>Irritation eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma</td>
</tr>
<tr>
<td>n-Propylbenzene</td>
<td>--</td>
<td>--</td>
<td>Inhalation, Skin Absorption, Ingestion, skin and/or eye contact</td>
<td>May cause respiratory irritation. Fatal if swallowed and enters air ways. Can cause lung damage. May depress activity.</td>
</tr>
</tbody>
</table>
### TABLE 2
**SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS**

**550 10TH AVENUE**  
**NEW YORK, NEW YORK**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Permissible Exposure Limit</th>
<th>IDLH Limit</th>
<th>Exposure Routes</th>
<th>Exposure Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naphthalene</td>
<td>10 ppm</td>
<td>250 ppm</td>
<td>Inhalation, Skin Absorption, Ingestion, skin and/or eye contact</td>
<td>Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in urine), renal shutdown; dermatitis, optical neuritis, corneal damage</td>
</tr>
<tr>
<td>Xylenes</td>
<td>100 ppm</td>
<td>900 ppm</td>
<td>Inhalation, Skin Absorption, Ingestion, skin and/or eye contact</td>
<td>Irritate eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corn vacuolization; anorexia, nausea, vomit, abdominal pain; dermatitis</td>
</tr>
<tr>
<td>Toluene</td>
<td>200 ppm</td>
<td>500 ppm</td>
<td>Inhalation, Skin Absorption, Ingestion, skin and/or eye contact</td>
<td>Irritate eyes, nose; fatigue, weakness, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation; nervousness, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage; mucous membrane; narcosis, coma</td>
</tr>
<tr>
<td>Anthracene</td>
<td>0.2 mg/m³</td>
<td>80 mg/m³</td>
<td>Inhalation, Skin Absorption, Ingestion</td>
<td>Irritate eyes, skin, upper respiratory system, cough</td>
</tr>
<tr>
<td>Fluoranthen</td>
<td>0.2 mg/m³</td>
<td>80 mg/m³</td>
<td>Inhalation, Skin Absorption, Ingestion</td>
<td>Irritate eyes, skin, upper respiratory system, cough</td>
</tr>
<tr>
<td>Phenanthrene</td>
<td>0.2 mg/m³</td>
<td>80 mg/m³</td>
<td>Inhalation, Skin Absorption, Ingestion</td>
<td>Irritate eyes, skin, upper respiratory system, cough</td>
</tr>
<tr>
<td>Pyrene</td>
<td>0.2 mg/m³</td>
<td>80 mg/m³</td>
<td>Inhalation, Skin Absorption, Ingestion</td>
<td>Irritate eyes, skin, upper respiratory system, cough</td>
</tr>
</tbody>
</table>
# TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
550 10TH AVENUE
NEW YORK, NEW YORK

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Permissible Exposure Limit</th>
<th>IDLH Limit</th>
<th>Exposure Routes</th>
<th>Exposure Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel Fuel / Fuel Oils</td>
<td>--</td>
<td>--</td>
<td>Inhalation, ingestion, skin and/or eye contact</td>
<td>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)</td>
</tr>
<tr>
<td>Pesticides</td>
<td>1 mg/m³</td>
<td>500 mg/m³</td>
<td>Inhalation, skin absorption, ingestion, skin and/or eye contact</td>
<td>Irritation eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]</td>
</tr>
<tr>
<td>Lead</td>
<td>0.050 mg/m³</td>
<td>100 mg/m³</td>
<td>Inhalation, ingestion, skin, and/or eye contact</td>
<td>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</td>
</tr>
<tr>
<td>Arsenic</td>
<td>0.010 mg/m³</td>
<td>5 mg/m³</td>
<td>Inhalation, skin absorption, skin and/or eye contact, ingestion</td>
<td>Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin [potential occupational carcinogen]</td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td>5 mg/m³</td>
<td>250 mg/m³</td>
<td>Inhalation, Ingestion, Skin and/or Eye Contact</td>
<td>Irritation eyes, skin; lung fibrosis (histologic)</td>
</tr>
<tr>
<td>Chemical</td>
<td>Permissible Exposure Limit</td>
<td>IDLH Limit</td>
<td>Exposure Routes</td>
<td>Exposure Symptoms</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------</td>
<td>------------</td>
<td>-------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Chromium</td>
<td>1 mg/m³</td>
<td>250 mg/m³</td>
<td>Inhalation, ingestion, skin and/or eye contact</td>
<td>Irritation eyes, skin; lung fibrosis (histologic)</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.1 mg/m³</td>
<td>10 mg/m³</td>
<td>Inhalation, skin absorption, ingestion, skin and/or eye contact</td>
<td>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</td>
</tr>
<tr>
<td>Copper</td>
<td>1 mg/m³</td>
<td>100 mg/m³</td>
<td>Inhalation, ingestion, skin and/or eye contact</td>
<td>Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; anemia</td>
</tr>
<tr>
<td>Nickel</td>
<td>1 mg/m³</td>
<td>10 mg/m³</td>
<td>Inhalation, ingestion, skin and/or eye contact</td>
<td>Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]</td>
</tr>
</tbody>
</table>

---

No exposure limits listed in the NIOSH Pocket Guide to Chemical Hazards dated November 2010.
<table>
<thead>
<tr>
<th>Task</th>
<th>Potential Risk</th>
<th>Description</th>
<th>Control Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Lifting equipment</td>
<td>Improper lifting/carrying of equipment and materials</td>
<td>Follow safe lifting and general material handling</td>
</tr>
<tr>
<td>1, 2, 3, 4</td>
<td>Noise</td>
<td>Loud sounds caused by the machines during drilling, or excavation</td>
<td>Wear proper PPE (hearing protection)</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Working near heavy machinery</td>
<td>Close proximity to drill rig and/or construction equipment</td>
<td>Be aware of surroundings, wear safety vest and hard hat</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Slips, trips, and falls</td>
<td>Any number of injuries from slips, trips, and falls in carrying out these tasks</td>
<td>Good housekeeping at site, constant awareness and focus on the task</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Inhalation of Dust</td>
<td>Breathing in visible dust from earthwork using drills or excavators</td>
<td>Wear proper PPE, monitor air for dust concentrations, use dust suppression techniques</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Inhalation of Volatiles</td>
<td>Breathing in volatiles from earthwork using drills or excavators causing dust</td>
<td>Wear proper PPE, monitor air for volatile concentrations, use dust suppression techniques</td>
</tr>
<tr>
<td>1, 2, 3, 4</td>
<td>Utilities</td>
<td>Hitting utility lines during drilling and or excavating</td>
<td>Use proper mark out of underground utilities before beginning earthwork</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Skin contact with contaminated material</td>
<td>Material falls on skin; gets in eye</td>
<td>Wear proper PPE; follow safe work practices</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Ingestion of contaminated material</td>
<td>Material falls on skin; gets into mouth</td>
<td>Wear proper PPE; follow safe work practices</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Skin and eye contact with contaminated material</td>
<td>Material falls on skin; gets in eye</td>
<td>Wear proper PPE; follow safe work practices</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Heat Stress</td>
<td>Stress or exhaustion related to high temperatures</td>
<td>Hydrate and rest as needed</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Cold Stress</td>
<td>Stress or exhaustion related to low temperatures; hypothermia</td>
<td>Wear proper PPE; follow safe work practices</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Bites and stings</td>
<td>Bee stings, ticks, snake bites</td>
<td>Wear proper PPE, be watchful, follow safe work practices</td>
</tr>
<tr>
<td>1, 2, 3, 4, 5</td>
<td>Lacerations and abrasions</td>
<td>Many opportunities working with hand tools</td>
<td>Inspect equipment being used for sharp edges, wear proper PPE; follow safe work practices</td>
</tr>
</tbody>
</table>
## TABLE 4
**INSTRUMENTATION ACTION LEVELS**

**550 10TH AVENUE**
**NEW YORK, NEW YORK**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Action Level</th>
<th>Level of Protection / Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID</td>
<td>Background to 5 ppm</td>
<td>Level D/No respirator; no further action required</td>
</tr>
</tbody>
</table>
|                             | > 5 ppm for > 5 minutes | 1. Temporarily discontinue all activities and evaluate potential causes of the excessive readings. If these levels persist and cannot be mitigated (i.e., by slowing drilling or excavation activities), contact HSO to review conditions and determine source and appropriate response action.   
|                             |                       | 2. If PID readings remain above 5 ppm, temporarily discontinue work and upgrade to Level C protection.    
|                             |                       | 3. If sustained PID readings fall below 1 ppm, downgrading to Level D protection may be permitted          |
| Total Dust Aerosol Monitor | > 0.100 mg/m above BKD (steady state condition) at perimeter of AOC zone for 15-minutes or visible dust. | Stop Work / Implement dust control / Continue dust monitoring if dust levels are less than 150 mg/m3 |
|                             | > 0.150 mg/m3 above BKD (following dust suppression measures) | Stop Work / implement dust control, continue work once levels are <150 mg/m3 |
|                             | >5 mg/m               | Level C                                                                                                 |

**Notes:**

1. 1 ppm level based on OSHA Permissible Exposure Limit (PEL) for benzene.
2. 5 ppm level based on OSHA Short Term Exposure Limit (STEL) maximum exposure for vinyl chloride for any 15 minute period.
3. 150 ppm level based on NIOSH Immediately Dangerous to Life and Health (IDLH) for tetrachloroethylene.
<table>
<thead>
<tr>
<th>Level D:</th>
<th>No respirator required.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level C:</td>
<td>Half-face, Air Purifying Respirator (APR) with combination HEPA (dusts, fumes, aerosols) and organic vapor cartridges. The respirator will be NIOSH-approved.</td>
</tr>
<tr>
<td>Level C - supplemental by task</td>
<td>Fullface, Air Purifying Respirator (APR) with combination HEPA (dusts, fumes, aerosols), acid gas, organic vapor cartridges. The respirator will be NIOSH-approved.</td>
</tr>
</tbody>
</table>

**Respiratory Protection:**

**Personal Protective Clothing:**

<table>
<thead>
<tr>
<th>Level D:</th>
<th>Hard-hat, traffic vest (if working on or adjacent to the roadway), long sleeve work shirt &amp; work pants of natural fibers, safety glasses or goggles, steel-toed boots, hearing protection (if needed), nitril inner gloves and leather outer gloves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level D - supplemental PPE by task</td>
<td>Tyvek disposal suit</td>
</tr>
<tr>
<td>Level C:</td>
<td>Chemically resistant outer boots and Chemical resistant Tyvek disposal suite.</td>
</tr>
</tbody>
</table>
FIGURES
Notes:
1. World topographic basemap is provided through Langan's
   Esri ArcGIS software licensing and ArcGIS online.

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and
Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan
Emergency Route to Mount Sinai West (Phone # (212) 523-6800):
1. Head northwest on West 41st St. towards 10th Ave.
2. Turn right at the 1st cross street onto 10th Ave.
3. Continue onto Amsterdam Ave.
4. Turn right onto West 60th St.
5. Turn right onto Columbus Ave.
6. Turn right onto West 59th St.
7. Emergency Room entrance will be on the left.

MAP REFERENCE: Google Maps
ATTACHMENT A

Health and Safety Briefing Statement
# HEALTH AND SAFETY BRIEFING STATEMENT

The following personnel were present at a pre-job safety briefing conducted at __________(time) on ________________ (date) at ______________________________(location), and have read this Health and Safety Plan for the above Site and are familiar with its provisions:

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Fully charged ABC class fire extinguisher available on Site? __________
Fully stocked First Aid Kit available on Site? __________
All project personnel advised of location of nearest phone? __________
All project personnel advised of location of designated medical facility? __________

Name of Field Team Leader or Site Safety Officer

Signature ___________________________ Date ___________________________
ATTACHMENT B

Field Procedures Change Authorization Form
ATTACHMENT B

FIELD PROCEDURES CHANGE AUTHORIZATION FORM

Section to be changed: ____________________________________________________________

Duration of Authorization Requested Date: ________________________________

   ______ Today only

   ______ Duration of Task

   ______ Other

_______________________________________________________________________________

Description of Procedures Modification:

_______________________________________________________________________________

_______________________________________________________________________________

_____________________________________________________________________________

Justification:

_____________________________________________________________________________

_____________________________________________________________________________

Person Requesting Change Verbal Authorization Received From:

Name Name

Title

Signature

Approval:

_____________________________________________________________________________

_____________________________________________________________________________

_____________________________________________________________________________
ATTACHMENT C

Unsafe Conditions and Practices Form
ATTACHMENT C

UNSAFE CONDITIONS AND PRACTICES FORM

DESCRIPTION OF CIRCUMSTANCES REGARDING UNSAFE CONDITION OR PRACTICE:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

IS THIS CONDITION EXISTING OR POTENTIAL? ____________________________________________

REPORTED TO: _________________________________________________________________

REPORTED BY: _________________________________________________________________

DATE REPORTED: _______________________________________________________________

COMMENTS: _____________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________
ATTACHMENT D

Calibration Log
## ATTACHMENT D

**PROJECT:**

**DATE:**

### CALIBRATION LOG

<table>
<thead>
<tr>
<th>Time</th>
<th>Inst Type</th>
<th>Inst #</th>
<th>Media</th>
<th>Initial Reading</th>
<th>Span #</th>
<th>Calib Reading</th>
<th>Performed By:</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>
ATTACHMENT E

Emergency Notification Numbers
ATTACHMENT E

EMERGENCY NOTIFICATION NUMBERS

The following list provides names and telephone numbers for emergency contact personnel.

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>CONTACT</th>
<th>TELEPHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York City Police</td>
<td></td>
<td>911</td>
</tr>
<tr>
<td>New York City Fire</td>
<td></td>
<td>911</td>
</tr>
<tr>
<td>Mt. Sinai West</td>
<td></td>
<td>(212) 523-6800</td>
</tr>
<tr>
<td>Langan Incident/Injury Hotline</td>
<td></td>
<td>1-800-952-6426 or (973)560-4699</td>
</tr>
<tr>
<td>Langan Project Manager</td>
<td>Amanda Forsburg</td>
<td>973-560-4574</td>
</tr>
<tr>
<td>National Response Center</td>
<td></td>
<td>800-424-8802</td>
</tr>
<tr>
<td>Center for Disease Control</td>
<td></td>
<td>404-488-4100</td>
</tr>
<tr>
<td>CHEMTREC</td>
<td></td>
<td>800-424-9300</td>
</tr>
<tr>
<td>TSCA HOTLINE</td>
<td></td>
<td>202-554-1404</td>
</tr>
<tr>
<td>RCRA HOTLINE</td>
<td></td>
<td>800-424-9346</td>
</tr>
<tr>
<td>CDC</td>
<td></td>
<td>(DAY) 404-452-4100 (NIGHT) 404-329-2888</td>
</tr>
<tr>
<td>BUREAU OF ALCOHOL, TOBACCO &amp; FIREARMS</td>
<td></td>
<td>800-424-9555 202-566-7777</td>
</tr>
<tr>
<td>NATIONAL RESPONSE CENTER</td>
<td></td>
<td>800-424-8802</td>
</tr>
<tr>
<td>PESTICIDE INFORMATION SERVICE</td>
<td></td>
<td>800-424-9346</td>
</tr>
<tr>
<td>BUREAU OF EXPLOSIVES, A.A. RAILWAYS</td>
<td></td>
<td>202-835-9500</td>
</tr>
<tr>
<td>FEDERAL EXPRESS - HAZARDOUS MATERIAL INFO</td>
<td></td>
<td>901-922-1666</td>
</tr>
</tbody>
</table>
ATTACHMENT F

Accident / Incident Report Form
ATTACHMENT F

INCIDENT REPORT

LANGAN EMPLOYEE EXPOSURE/INJURY INCIDENT REPORT
(Submit a Separate Report for Each Employee and/or Incident)

Date: __________________________

Employee’s Name: ____________________________________________________________
Employee No: __________________________

Sex: M _____ F _____ Age: ______

Region: __________________________________________ Location: __________________________

Project: __________________________________________ Project No: __________________________

Incident: __________________________________________________________________________

Type: Possible Exposure _________ Exposure _________ Physical Injury _________

Location: __________________________________________________________________________

Date of Incident: __________________________ Time of Incident: __________________________

Date of Report Incident: __________________________

Person(s) to Whom Incident was Reported: ____________________________________________

Weather Conditions During Incident: Temperature _________ Humidity _________

Wind Speed and Direction: __________________________ Cloud Cover: __________________________

Clear: __________________________________________ Precipitation: __________________________

Materials Potentially Encountered: ____________________________________________________

Chemical (give name of description - liquid, solid, gas, vapor, fume, mist):

____________________________________________________________________________________

____________________________________________________________________________________

Radiological: ________________________________________________________________________

Other: _______________________________________________________________________________
Nature of the Exposure/Injury: (State the nature of the exposure/injury in detail and list the parts of the body affected. Attach extra sheets if necessary).

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

____________________


Did you receive medical care?  Yes ______  No ______  If so, when _______________________

Where? On-Site ________________  Off-Site ________________

By Whom:  Name of Paramedic: _______________________________________________________

Name of Physician: _________________________________________________________________

Other: ______________________________________________________________________

If Off-Site, name facility (hospital, clinic, etc): __________________________________________

_____________________________________________________________________________________

Length of stay at the facility?____________________________________________________________

Was the Site Safety Officer contacted?  Yes ______  No ______  When? __________

Was the Corporate Health and Safety Officer contacted?  Yes ______  No ______

If so, who was the contact?_______________________________________________________________

Did the exposure/injury result in permanent disability?  Yes ______  No ______

If so, explain:__________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

Has the employee returned to work?  Yes ______  No ______

List the names of other persons affected during this incident:

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________
List the names of persons who witnessed the exposure/injury incident:


Possible cause of the exposure/injury incident:


What was the name and title of the field team leader or immediate supervisor at the site of the incident?


Was the operation being conducted under an established Health and Safety Plan?
Yes __________  No __________  If yes, attach a copy.  If no, explain


Describe protective equipment and clothing used by the employee:


Did any limitations in safety equipment or protective clothing contribute to or affect exposure? If so, explain:


What was the employee doing when the exposure/injury occurred? (Describe briefly as Site Reconnaissance, Site Characterization, or Sampling, etc.):


Where exactly on site or off site did the exposure/injury occur?
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

How did the exposure/injury occur? (Describe fully what factors led up to and/or contributed to the incident):
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Name of person(s) initiating report, job title, phone number:
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

__________________________________________________  _____________________________
Employee Signature                                      Date

__________________________________________________  _____________________________
Site Safety Officer Signature or Field Team Leader Signature  Date
ATTACHMENT G

Safety Data Sheets
(SDS)
All Langan Field Personnel Completing This Work Plan Are To Have Real Time Accessibility To Material Safety Data Sheet (MSDs) or Safety Data Sheet (SDSs) Through Their Smart Phone.

The link is [http://www.msds.com/](http://www.msds.com/)
The login name is “drapehead”
The password is “2angan987”

If You Are Unable To Use the Smart Phone App, You Are To Bring Printed Copies of the MSDs/SDSs to the Site
ATTACHMENT H

Jobsite Safety Inspection Checklist
## ATTACHMENT H - JOBSITE SAFETY INSPECTION CHECKLIST

**Client:** _____________________________                             **Inspection Date:** ____________________________

**Site:** _______________________________                            **Inspector:** _____________________________

**Employees:** _______________________________________________________________________________________________________

**Notes:**
________________________________________________________________________________________________________________________
_______________________________________________________________________________________________________________________________
_______________________________________________________________________________________________________________________________
_______________________________________________________________________________________________________________________________

Check one of the following: **A:** Acceptable **NA:** Not Applicable **D:** Deficiency

<table>
<thead>
<tr>
<th>A</th>
<th>NA</th>
<th>D</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

### GENERAL
- Appropriate PPE being worn by Langan employees and subcontractors?
- Air monitoring instruments calibrated daily and results recorded on the Daily Instrument Calibration check sheet?
- Air monitoring readings recorded on the air monitoring data sheet/field log book?
- Incident reporting procedures known?
- Site security an issue?
- Vehicle/pedestrian traffic issue?
- Adequate size/type fire extinguisher supplied?
- Evidence that drilling operator is responsible for the safety of his rig.
- First Aid kit available?

### PERSONAL PROTECTIVE EQUIPMENT
- Eye Protection?
- Head protection?
- Safety Shoes?
- Safety vests?
- Hand protection?
- Other?
- Deficiencies??

### HOUSEKEEPING
- Work area kept clean/tidy to minimize potential hazards?
- Waste being disposed of quickly and properly
- Adequate lighting for job?
- Portable water available?

### HAND TOOLS
- Are tools in good condition and properly used? (INSPECT)
- Are proper tools being used?
- Are tools safety stored when not in use?
- Have tools been inspected prior to use?
- Are employees familiar with using tools?
- Is additional PPE required for tools? Available?

### POWER TOOLS
- Are tools in good condition and properly used? (INSPECT)
- Are tools properly grounded?
- Safety guards in place and used correctly?
- Competent instruction / supervision?
- Cords include in inspection?
### HAZWOPER

- Employees have current 40-hr./8-hr./Supervisor HAZWOPER training?
- Project staff medically cleared to work in hazardous waste sites and fit-tested to wear respirators, if needed?
- Respiratory protection readily available?
- Subcontract workers have current 40-hr./8-hr./Spvsr. HAZWOPER training, as appropriate?
- Subcontract workers medically cleared to work on site, and fit-tested for respirator wear?
- Subcontract workers have respirators readily available?

### HEALTH & SAFETY PLAN

- HASP available on site for inspection?
- Health & Safety Compliance agreement (in HASP) appropriately signed by Langan employees and subcontractors?
- Hospital route map with directions posted on site?
- Emergency Notification List posted on site?
- Personnel trained in CPR/First Aid on site?
- MSDSs readily available, and all workers knowledgeable about the specific chemicals and compounds to which they may be exposed?
- Project site safe practices ("Standing Orders") posted?
- Health & Safety Incident Report forms available?
- Decontamination procedures being followed as outlined in HASP?

### UNDERGROUND UTILITY

- Mark outs of underground utilities done prior to initiating any subsurface activities?
- Underground utilities located and authorities contacted before digging?
- Visually observed mark-outs?
- Is subsurface work within three feet of underground utilities?
  - Is so, is or was soft dig techniques used?
  - Drilling performed in areas free from underground utilities?

### EXCAVATION / TRENCH

- Are excavations/trenches over 5 feet deep sloped, shored or a trench box used?
- Operations supervised by a Competent Person?
- Is Competent Person preforming daily inspections of excavation/trench?
- Adequate barricades in place?
- Have underground utilities been identified?
- Ladders / means of egress in trench with 25-foot of every worker?
- Has PE designed or approved protective system?
- Excavated material and other objects placed more than 2 feet away from excavation edge?
- Public protected from exposure to open excavation?

### CONFINED / PERMIT-ENTRY CONFINED SPACE

- People entering the excavation regarding it as a permit-required confined space and following appropriate procedures?
- Confined space entry permit is completed and posted?
- All persons knowledgeable about the conditions and characteristics of the confined space?
- All persons engaged in confined space operations have been trained in safe entry and rescue (non-entry)?
- Full body harnesses, lifelines, and hoisting apparatus available for rescue needs?
- Attendant and/or supervisor certified in basic first aid and CPR?
- Confined space atmosphere checked before entry and continuously while the work is going on?
- Results of confined space atmosphere testing recorded?
- Evidence of coordination with off-site rescue services to perform entry rescue, if needed?

### ELECTRICAL SAFETY

- Equipment at least 10 feet from overhead power lines?
- Is equipment grounded?
- GFCI used and tested where required?
- Are extension cords rated for this work being used and are they properly maintained?
- Electrical dangers posted at site?
<table>
<thead>
<tr>
<th>FLAMMABLE LIQUIDS</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Are flammable liquids used at site?</td>
<td></td>
</tr>
<tr>
<td>Are flammable liquids stored in appropriate containers?</td>
<td></td>
</tr>
<tr>
<td>Are flammable liquids kept away from combustion sources?</td>
<td></td>
</tr>
<tr>
<td>Do flammable liquid containers have warning labels?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>LADDERS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Are ladders used at site?</td>
<td></td>
</tr>
<tr>
<td>Were ladders inspected prior to use?</td>
<td></td>
</tr>
<tr>
<td>Are ladders in good working condition?</td>
<td></td>
</tr>
<tr>
<td>Are ladders secured to prevent slipping, sliding or falling?</td>
<td></td>
</tr>
<tr>
<td>Do side rails extend three feet above top of landing area?</td>
<td></td>
</tr>
<tr>
<td>Are top two steps of stepladders being used?</td>
<td></td>
</tr>
<tr>
<td>Is extension on ladder facing out?</td>
<td></td>
</tr>
<tr>
<td>Are ladders sufficient for task?</td>
<td></td>
</tr>
<tr>
<td>Are ladders sufficient for task?</td>
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</tbody>
</table>

Unsafe acts observed?
________________________________________________________________________________________________________________________________________
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________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________

Additional remarks
________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________
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Notes:
________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________
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________________________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________________________

Distribution: Project Manager - Name: ___________________________
Health & Safety Officer - Name: ____________________________
Health & Safety Manager- Name: ______

Anthony Moffa, CHMM

Q:\Other\HealthandSafety\GenericAppendixAJobsiteSafetyInspectionChecklist
GENERAL

- No smoking, eating, or drinking in this work zone.
- Upon leaving the work zone, personnel will thoroughly wash their hands and face.
- Minimize contact with contaminated materials through proper planning of work areas and decontamination areas, and by following proper procedures. Do not place equipment on the ground. Do not sit on contaminated materials.
- No open flames in the work zone.
- Only properly trained and equipped personnel are permitted to work in potentially contaminated areas.
- Always use the appropriate level of personal protective equipment (PPE).
- Maintain close contact with your buddy in the work zone.
- Contaminated material will be contained in the Exclusion Zone (EZ).
- Report any unusual conditions.
- Work areas will be kept clear and uncluttered. Debris and other slip, trip, and fall hazards will be removed as frequently as possible.
- The number of personnel and equipment in the work zone will be kept to an essential minimum.
- Be alert to the symptoms of fatigue and heat/cold stress, and their effects on the normal caution and judgment of personnel.
- Conflicting situations which may arise concerning safety requirements and working conditions must be addressed and resolved quickly by the site HSO.

TOOLS AND HEAVY EQUIPMENT

- Do not, under any circumstances, enter or ride in or on any backhoe bucket, materials hoist, or any other device not specifically designed to carrying passengers.
- Loose-fitting clothing or loose long hair is prohibited around moving machinery.
- Ensure that heavy equipment operators and all other personnel in the work zone are using the same hand signals to communicate.
- Drilling/excavating within 10 feet in any direction of overhead power lines is prohibited.
- The locations of all underground utilities must be identified and marked out prior to initiating any subsurface activities.
- Check to insure that the equipment operator has lowered all blades and buckets to the ground before shutting off the vehicle.
- If the equipment has an emergency stop device, have the operator show all personnel its location and how to activate it.
- Help the operator ensure adequate clearances when the equipment must negotiate in tight quarters; serve as a signalman to direct backing as necessary.
- Ensure that all heavy equipment that is used in the Exclusion Zone is kept in that zone until the job is done, and that such equipment is completely decontaminated before moving it into the clean area of the work zone.
- Samplers must not reach into or get near rotating equipment such as the drill rig. If personnel must work near any tools that could rotate, the equipment operator must completely shut down the rig prior to initiating such work. It may be necessary to use a remote sampling device.
APPENDIX C

Quality Assurance Project Plan
QUALITY ASSURANCE PROJECT PLAN

for

550 Tenth Avenue Redevelopment
New York, New York
NYSDEC BCP No. TBD

Prepared For:

Go Covenant LLC
432 Park Avenue South, 2nd Floor
New York, New York 10016

Prepared By:

Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C.
300 Kimball Drive
Parsippany, New Jersey 07054

May 2021
100674402
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LIST OF ATTACHMENTS

Attachment A  Resumes
Attachment B  Laboratory Reporting Limits and Method Detection Limits
Attachment C  Analytical Methods / Quality Assurance Summary Table
Attachment D  Sample Nomenclature

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IRMWP QAPP (2021-05-27) .docx
1.0 PROJECT DESCRIPTION

1.1 Introduction

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) has prepared this Quality Assurance Project Plan (QAPP) on behalf of GO Covenant LLC (the Applicant) for the property at 550 Tenth Avenue (Tax Block 1050, Lot 61) in the Clinton neighborhood of Manhattan, New York (the Site). A Site Location Map is included as Figure 1.

This QAPP specifies analytical methods to be used to ensure that data collected during the Interim Remedial Measures (IRM) are precise, accurate, representative, comparable, complete, and meet the sensitivity requirements of the project.

1.2 Project Objectives

The IRM Work Plan includes collection of documentation soil samples following UST and/or petroleum-impacted soil removal (if it is encountered). This QAPP addresses sampling and analytical methods that will be necessary in support of IRM activities. These objectives have been established in order to meet standards that will protect public health and the environment for the site.

1.3 Scope of Work

The specific scope of work covered in this QAPP includes any documentation sampling that will occur during implementation of the IRM Work Plan. The IRM Work Plan requires collection of documentation soil samples to assess potential residual contamination following excavation of petroleum-impacted soil, if encountered.

2.0 DATA QUALITY OBJECTIVES AND PROCESS

Data Quality Objectives (DQOs) are qualitative and quantitative statements to help ensure that data of known and appropriate quality are obtained during the project. The overall objectives are:

- To evaluate the quality of soil following excavation of petroleum impacts through the collection of documentation samples; and,
To adequately characterize excavated petroleum-impacted soil based on the sampling requirements of proposed soil disposal facilities.

DQOs for sampling activities are determined by evaluating five factors:

- Data needs and uses: The types of data required and how the data will be used after it is obtained.
- Parameters of Interest: The types of chemical or physical parameters required for the intended use.
- Level of Concern: Levels of constituents, which may require remedial actions or further investigations.
- Required Analytical Level: The level of data quality, data precision, and quality assurance/quality control (QA/QC) documentation required for chemical analysis.
- Required Detection Limits: The detection limits necessary based on the above information.

The quality assurance and quality control objectives for all measurement data include:

- Precision – an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Field sampling precision will be determined by analyzing coded duplicate samples and analytical precision will be determined by analyzing internal QC duplicates and/or matrix spike duplicates.

- Accuracy – a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern. For soil samples, accuracy will be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy will be assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), internal standards, laboratory method blanks, instrument calibration, and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks.

- Representativeness – expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is dependent upon the adequate design of the sampling program and will be satisfied by ensuring that the scope of work is followed and that specified
sampling and analysis techniques are used. Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory’s possession. This is accomplished by following all applicable methods, laboratory-issued standard operating procedures (SOPs), the laboratory’s Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.

- Completeness – the percentage of measurements made which are judged to be valid. Completeness will be assessed through data validation. The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested.

- Comparability – expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured using several procedures, including standard methods for sampling and analysis as documented in the QAPP, using standard reporting units and reporting formats, and data validation.

- Sensitivity – the ability of the instrument or method to detect target analytes at the levels of interest. The project manager will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

Implementation of the IRM Work Plan will be overseen by Langan for GO Covenant LLC. The environmental consultant will also arrange data analysis and reporting tasks. The analytical services will be performed by an Environmental Laboratory Approval Program (ELAP)-certified laboratory. Data validation services will be performed by approved data validation contractor(s).

For the required sampling as stated in the IRM Work Plan, sampling will be conducted by Langan, the analytical services will be performed by York Analytical Laboratories, Inc. of Stratford, Conn. (New York State Department of Health [NYSDOH] ELAP certification number 10854). Data validation services will be performed by Joe Conboy; résumé attached (Attachment A).
Key contacts for this project are as follows:

GO Covenant LLC
Bryan Kelly
Telephone: (212) 716-2502

Langan Project Manager:
Christopher McMahon
Telephone: (973) 560-4900

Langan Quality Assurance Officer (QAO):
Steve Ciambruschini
Telephone: (973) 560-4900

Langan Remedial Engineer:
Ron Boyer
Telephone: (973) 560-4900

Program Quality Assurance Monitor:
Amanda Forsburg
Telephone: (973) 560-4900

Data Validator:
Joe Conboy
Telephone: (215) 845-8985

Laboratory Representative:
York Analytical Laboratories, Inc.
Phil Murphy
Telephone: (203) 598-1371

4.0 QUALITY ASSURANCE OBJECTIVES FOR COLLECTION OF DATA

The overall quality assurance objective is to develop and implement procedures for sampling, laboratory analysis, field measurements, and reporting that will provide data of sufficient quality to evaluate soil impacts at the site. The sample set, chemical analysis results, and interpretations must be based on data that meet or exceed quality assurance objectives established for the site. Quality assurance objectives are usually expressed in terms of accuracy or bias, sensitivity, completeness, representativeness, comparability, and sensitivity of analysis. Variances from the quality assurance objectives at any stage of the investigation will result in the implementation of appropriate corrective measures and an assessment of the impact of corrective measures on the usability of the data.

Precision

Precision is a measure of the degree to which two or more measurements are in agreement. Field precision is assessed through the collection and measurement of field duplicates. Laboratory precision and sample heterogeneity also contribute to the uncertainty of field duplicate measurements. This uncertainty is taken into account during the data assessment process. For field duplicates, results less than 2x the
reporting limit (RL) meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 2X the RL, the acceptance criteria is a relative percent difference (RPD) of ≤50% (soil), and <30% (groundwater). RLs and method detection limits (MDL) are provided in Attachment B.

Accuracy
Accuracy is the measurement of the reproducibility of the sampling and analytical methodology. It should be noted that precise data may not be accurate data. For the purpose of this QAPP, bias is defined as the constant or systematic distortion of a measurement process, which manifests itself as a persistent positive or negative deviation from the known or true value. This may be due to (but not limited to) improper sample collection, sample matrix interferences, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques.

Accuracy in the field is assessed through the use of field blanks and through compliance to all sample handling, preservation, and holding time requirements. All field blanks should be non-detect when analyzed by the laboratory. Any contaminant detected in an associated field blank was evaluated against laboratory blanks (preparation or method) and evaluated against field samples collected on the same day to determine potential for bias.

Laboratory accuracy is assessed by evaluating the percent recoveries of MS/MSD samples, LCS/LCSDs, surrogate compound recoveries, internal standard responses and the results of method preparation blanks. MS/MSD, LCS/LCSD, internal standard responses and surrogate percent recoveries were compared to either method-specific control limits or laboratory-derived control limits. Sample volume permitting, samples displaying outliers should be reanalyzed. All associated method blanks should be non-detect when analyzed by the laboratory.

Completeness
Laboratory completeness is the ratio of total number of samples analyzed and verified as acceptable compared to the number of samples submitted to the fixed-base laboratory for analysis, expressed as a percent. Three measures of completeness are defined:

- Sampling completeness, defined as the number of valid samples collected relative to the number of samples planned for collection;
• Analytical completeness, defined as the number of valid sample measurements relative to the number of valid samples collected; and
• Overall completeness, defined as the number of valid sample measurements relative to the number of samples planned for collection.

Soil and groundwater data will meet a 90% completeness criterion. If the criterion is not met, sample results will be evaluated for trends in rejected and unusable data. The effect of unusable data required for a determination of compliance will also be evaluated.

**Representativeness**

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. Representativeness is dependent upon the adequate design of the sampling program and was satisfied by ensuring that the scope of work is followed and that specified sampling and analysis techniques are used. This is performed by following applicable standard operating procedures (SOPs) and this QAPP. All field technicians will be given copies of appropriate documents prior to sampling events and will be required to read, understand, and follow each document as it pertains to the tasks at hand.

Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory’s possession. This is performed by following all applicable EPA and standard methods, laboratory-issued SOPs, the laboratory’s Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.

**Comparability**

Comparability is an expression of the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and was satisfied by ensuring that the sampling plan is followed and that sampling is performed according to the SOPs or other project-specific procedures. Analytical data were comparable when similar sampling and analytical methods are used as documented in the QAPP. Comparability was controlled by requiring the use of specific nationally-recognized analytical methods and requiring consistent method performance criteria. Comparability is also dependent on similar quality assurance
objectives. Previously collected data were evaluated to determine whether they may be combined with contemporary data sets.

**Sensitivity**

Sensitivity is the ability of the instrument or method to detect target analytes at the levels of interest (e.g., at the NYSDEC Subpart 375-6 Soil Cleanup Objectives). The Project Manager will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection and QC acceptance limits that meet established performance criteria. Concurrently, the Project Manager will select the level of data assessment to ensure that only data meeting the project DQOs are used in decision-making.

Field equipment will be used that can achieve the required levels of detection for analytical measurements in the field. In addition, the field sampling staff will collect and submit full volumes of samples as required by the laboratory for analysis, whenever possible. Full volume aliquots will help ensure achievement of the required limits of detection and allow for reanalysis if necessary. The concentration of the lowest level check standard in a multi-point calibration curve will represent the reporting limit.

Analytical methods and quality assurance parameters associated with the sampling program are presented in Attachment C. The frequency of associated field blanks and duplicate samples will be based on the recommendations listed in DER-10 and as described in Section 5.3.2.

### 5.0 SAMPLE COLLECTION AND FIELD DATA ACQUISITION PROCEDURES

Soil sampling will be conducted in accordance with the established NYSDEC protocols contained in DER-10/Technical Guidance for Site Investigation and Remediation (May 2010). The following sections describe procedures to be followed for specific tasks.

#### 5.1 Field Documentation Procedures

Field documentation procedures will include summarizing field data in field books and proper sample labeling. These procedures are described in the following sections.
5.1.1 Field Data and Notes

Field notebooks contain the documentary evidence regarding procedures conducted by field personnel. Hard cover, bound field notebooks will be used because of their compact size, durability and secure page binding. The pages of the notebook will not be removed.

Entries were made in waterproof, permanent blue or black ink. No erasures will be allowed. Incorrect entries will be crossed out with a single strike mark and the change initialed and dated by the team member making the change.

Each entry will be dated. Entries will be legible and contain accurate and complete documentation of the individual or sampling team’s activities or observations made. The level of detail will be sufficient to explain and reconstruct the activity conducted. Each entry will be signed by the person(s) making the entry.

The following types of information will be provided for each sampling task, as appropriate:

- Project name and number;
- Reasons for being on-site or taking the sample;
- Date and time of activity;
- Sample identification numbers;
- Geographical location of sampling points with references to the site, other facilities or a map coordinate system. Sketches were made in the field logbook when appropriate;
- Physical location of sampling locations such as depth below ground surface;
- Description of the method of sampling including procedures followed, equipment used and any departure from the specified procedures;
- Description of the sample including physical characteristics, odor, etc.;
- Readings obtained from health and safety equipment;
• Weather conditions at the time of sampling and previous meteorological events that may affect the representative nature of a sample;

• Photographic information including a brief description of what was photographed, the date and time, the compass direction of the picture and the number of the picture on the camera;

• Other pertinent observations such as the presence of other persons on the site, actions by others that may affect performance of site tasks, etc.; and,

• Names of sampling personnel and signature of persons making entries.

Field records will also be collected on field data sheets including boring logs, which will be used for geologic and drilling data during soil boring activities. Field data sheets will include the project-specific number and stored in the field project files when not in use. At the completion of the field activities, the field data sheets will be maintained in the central project file.

5.1.2 Sample Labeling

Each sample collected will be assigned a unique identification number and placed in an appropriate sample container. Each sample container will have a sample label affixed to the outside with the date and time of sample collection and project name. In addition, the label will contain the sample identification number, analysis required and chemical preservatives added, if any. All documentation will be completed in waterproof ink. Sample nomenclature procedures are included in Attachment D.

5.2 Equipment Calibration and Preventative Maintenance

A photoionization detector (PID) will be used during the sampling activities to evaluate work zone action levels and screen soil samples. Field calibration and/or field checking of the PID will be the responsibility of the field team leader and the site HSO, and will be accomplished by following the procedures outlined in the operating manual for the instrument. At a minimum, field calibration and/or field equipment checking will be performed once daily, prior to use. Field calibration will be documented in the field notebook. Entries made into the
logbook regarding the status of field equipment will include the following information:

- Date and time of calibration
- Type of equipment serviced and identification number (such as serial number)
- Reference standard used for calibration
- Calibration and/or maintenance procedure used
- Other pertinent information

Equipment that fails calibration or becomes inoperable during use will be removed from service and segregated to prevent inadvertent utilization. The equipment will be properly tagged to indicate that it is out of calibration. Such equipment will be repaired and recalibrated to the manufacturer’s specifications by qualified personnel. Equipment that cannot be repaired will be replaced.

Off-site calibration and maintenance of field instruments will be conducted as appropriate throughout the duration of project activities. All field instrumentation, sampling equipment and accessories will be maintained in accordance with the manufacturer’s recommendations and specifications and established field equipment practice. Off-site calibration and maintenance will be performed by qualified personnel. A logbook will be kept to document that established calibration and maintenance procedures have been followed. Documentation will include both scheduled and unscheduled maintenance.

5.3 Sample Collection

5.3.1 Soil Samples

Soil samples will be visually classified and field screened using a PID to assess potential impacts from volatile organic compounds (VOCs) and for health and safety monitoring. Soil samples collected for analysis of VOCs will be collected using Terra Core® sampling equipment. For analysis of non-volatile parameters, samples will be homogenized and placed into glass jars. After collection, all sample jars will be capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they are transferred to the laboratory for analysis, in accordance with the procedures outlined in Section 5.4. Analysis and/or extraction and digestion of collected soil samples will meet the holding times required
for each analyte as specified in Attachment C. In addition, analysis of collected soil sample will meet all quality assurance criteria set forth by this QAPP and DER-10. The collection of soil samples for the analysis of per- and poly-fluoro alkyl substances (PFAS) is not anticipated.

5.3.2 Sample Field Blanks and Duplicates

Use of dedicated sampling equipment is planned; therefore, collection of field blanks is not anticipated. If the use of reusable sampling equipment is required, proper decontamination procedures will be employed (as further described in Section 5.7) and field blanks will be collected for quality assurance purposes at a rate of one per 20 investigative soil samples. If required, field blanks will be obtained by pouring laboratory-demonstrated analyte-free water on or through a decontaminated sampling device following use and implementation of decontamination protocols. The water will be collected off of the sampling device into a laboratory-provided sample container for analysis. Field blanks will be collected at a rate of one per 20 samples and will be analyzed for the complete list of analytes on the day of sampling. If less than 20 samples are collected during a particular sampling event, one field blank sample will be collected. Trip blanks will be collected at a rate of one per day if soil samples are analyzed for VOCs during that day.

Duplicate soil samples will be collected and analyzed for quality assurance purposes. Duplicate samples will be collected at a frequency of 1 per 20 investigative soil samples and will be submitted to the laboratory as “blind” samples. If less than 20 samples are collected during a particular sampling event, one duplicate sample will be collected.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be taken at a frequency of one pair per 20 field samples. If less than 20 samples are collected during a particular sampling event, one MS/MSD sample will be collected. These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes.
5.4 Sample Containers and Handling

Certified, commercially clean sample containers will be obtained from the analytical laboratory. The laboratory will also prepare and supply the required field blank sample containers and reagent preservatives. Sample containers, including the field blank containers, will be placed in plastic coolers by the laboratory. These coolers will be received by the field sampling team within 24 hours of their preparation in the laboratory. Prior to the commencement of field work, Langan field personnel will fill the plastic coolers with regular ice only in Ziploc® bags (or equivalent) to maintain a temperature of 4°C ±2°C.

Samples collected in the field for laboratory analysis will be placed directly into the laboratory-supplied sample containers. Samples will then be placed and stored on-ice in laboratory provided coolers until shipment to the laboratory. The temperature in the coolers containing samples and associated field blanks will be maintained at a temperature of 4°C ±2°C while on-site and during sample shipment to the analytical laboratory.

Possession of samples collected in the field will be traceable from the time of collection until they are analyzed by the analytical laboratory or are properly disposed. Chain-of-custody procedures, described in Section 5.9, will be followed to maintain and document sample possession. Samples will be packaged and shipped as described in Section 5.6.

5.5 Sample Preservation

Sample preservation measures will be used in an attempt to prevent sample decomposition by contamination, degradation, biological transformation, chemical interactions and other factors during the time between sample collection and analysis. Preservation will commence at the time of sample collection and will continue until analyses are performed. Should chemical preservation be required, the analytical laboratory will add the preservatives to the appropriate sample containers before shipment to the office or field. Samples will be preserved according to the requirements of the specific analytical method selected, as shown in Attachment C.
5.6 Sample Shipment

5.6.1 Packaging

Sample containers will be placed in plastic coolers. Regular ice only in Ziploc® bags (or equivalent) will be placed around sample containers. Cushioning material will be added around the sample containers if necessary. Chains-of-custody and other paperwork will be placed in a Ziploc® bag (or equivalent) and placed inside the cooler and custody seals will be affixed to one side of the cooler at a minimum. If the samples are being shipped by an express delivery company (third-party courier, e.g., FedEx) then laboratory address labels will be placed on top of the cooler.

5.6.2 Shipping

Standard procedures to be followed for shipping environmental samples to the analytical laboratory are outlined below.

- All environmental samples will be transported to the laboratory from the site or Langan office by a laboratory provided courier under the chain-of-custody protocols described in Section 5.9. A third-party courier may be used if necessary.
- Prior notice will be provided to the laboratory regarding when to expect shipped samples. If the number, type or date of shipment changes due to site constraints or program changes, the laboratory will be informed.

5.7 Decontamination Procedures

Though not anticipated, decontamination procedures will be used if non-dedicated sampling equipment is utilized during the RI. Field sampling equipment that is to be reused will be decontaminated in the field in accordance with the following procedures:

1. Laboratory-grade glassware detergent and tap water scrub to remove visual contamination
2. Generous tap water rinse
3. Distilled/de-ionized water rinse
5.8 Residuals Management

Debris (e.g., paper, plastic and disposable PPE) will be collected in plastic garbage bags and disposed of as non-hazardous industrial waste. Debris is expected to be transported to a local municipal landfill for disposal. If applicable, residual solids (e.g., leftover soil cuttings) will be placed back in the borehole from which it was sampled. If gross contamination is observed, soil will be collected and stored in Department of Transportation (DOT)-approved 55-gallon drums in a designated storage area at the site. The residual materials stored in a designated storage area at the site for further characterization, treatment or disposal.

5.9 Chain of Custody Procedures

A chain-of-custody protocol has been established for collected samples was and will be followed during sample handling activities in both field and laboratory operations. The primary purpose of the chain-of-custody procedures is to document the possession of the samples from collection through shipping, storage and analysis to data reporting and disposal. Chain-of-custody refers to actual possession of the samples. Samples are considered to be in custody if they are within sight of the individual responsible for their security or locked in a secure location. Each person who takes possession of the samples, except for third-party shipping couriers, is responsible for sample integrity and safe keeping. Chain-of-custody procedures are provided below:

- Chain-of-custody will be initiated by the laboratory supplying the pre-cleaned and prepared sample containers. Chain-of-custody forms will accompany the sample containers.

- Following sample collection, the chain-of-custody form will be completed for the samples collected. The sample identification number, date and time of sample collection, analysis requested and other pertinent information (e.g., preservatives) will be recorded on the form. Entries will be made in waterproof, permanent blue or black ink.

- Langan field personnel will be responsible for the care and custody of the samples collected until the samples are transferred to another party, dispatched to the laboratory, or disposed. The sampling/Field Team Leader will be responsible for enforcing chain-of-custody procedures during field work.
• When the form is full or when all samples have been collected that will fit in a single cooler, the sampling/Field Team Leader will check the form for possible errors and sign the chain-of-custody form. Any necessary corrections will be made to the record with a single strike mark, dated, and initialed.

Samples will be packaged for shipment or pickup via courier to the laboratory with the appropriate chain-of-custody form. If applicable, a shipping bill will be completed for each cooler and the shipping bill number recorded on the chain-of-custody form. A copy of the form will be retained by the Langan sampling team for the project file, and the original will be sent to the laboratory with the samples. Bills of lading will also be retained as part of the documentation for the chain-of-custody records, if applicable. When transferring custody of the samples, the individuals relinquishing and receiving custody of the samples will verify sample numbers and condition and will document the sample acquisition and transfer by signing and dating the chain-of-custody form. This process documents sample custody transfer from the sampler to the analytical laboratory.

Laboratory chain-of-custody will be maintained throughout the analytical processes as described in the laboratory’s Quality Assurance Manual. The analytical laboratory will provide a copy of the chain-of-custody in the analytical data deliverable package. The chain-of-custody becomes the permanent record of sample handling and shipment.

5.10 Laboratory Sample Storage Procedures

The subcontracted laboratory will use a laboratory information management system (LIMS) to track and schedule samples upon receipt by the analytical laboratories. Any sample anomalies identified during sample log-in must be evaluated on individual merit for the impact upon the results and the data quality objectives of the project. When irregularities do exist, Langan must be notified to discuss recommended courses of action and documentation of the issue must be included in the project file.

For samples requiring thermal preservation, the temperature of each cooler will be immediately recorded. Each sample and container will be assigned a unique laboratory identification number and secured within the custody room walk-in coolers designated for new samples. Samples will be, as soon as practical,
disbursed in a manner that is functional for the operational team. The
temperature of all coolers and freezers will be monitored and recorded using a
certified temperature sensor. Any temperature excursions outside of acceptance
criteria (i.e., below 2°C or above 6°C) will initiate an investigation to determine
whether any samples may have been affected. Following analysis, the
laboratory’s specific procedures for retention and disposal will be followed as
specified in the laboratory’s SOPs and/or QA manual.

6.0 DATA REDUCTION, VALIDATION, AND REPORTING

6.1 Introduction

Data collected during the field investigation will be reduced and reviewed by the
laboratory QA personnel, and a report on the findings will be tabulated in a
standard format. The criteria used to identify and quantify the analytes will be
those specified for the applicable methods in the USEPA SW-846 and
subsequent updates. The data package provided by the laboratory will contain
all items specified in the USEPA SW-846 appropriate for the analyses to be
performed, and be reported in standard format.

The completed copies of the chain-of-custody records (both external and
internal) accompanying each sample from time of initial bottle preparation to
completion of analysis shall be attached to the analytical reports.

6.2 Data Reduction

The Analytical Services Protocol (ASP) Category B data packages and an
electronic data deliverable (EDD) will be provided by the laboratory after receipt
of a complete sample delivery group. The Project Manager will immediately
arrange for archiving the results and preparation of result tables. These tables
will form the database for assessment of the site contamination condition.

Each EDD deliverable must be formatted using a Microsoft Windows operating
system and the NYSDEC data deliverable format for EQuIS. To avoid
transcription errors, data will be loaded directly into the American Standard Code
for Information Interchange (ASCII) format from the LIMS. If this cannot be
accomplished, the consultant should be notified via letter of transmittal
indicating that manual entry of data is required for a particular method of
analysis. All EDDs must also undergo a QC check by the laboratory before
delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

6.3 Data Validation

Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of the QC sample results,
- Verification of the identification of sample results (both positive hits and non-detects),
- Recalculation of 10 percent of all investigative sample results, and
- Preparation of Data Usability Summary Reports (DUSR).

A DUSR will be prepared and reviewed by the QAO before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each SDG will follow. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard recovery results;
- MS and MSD results;
• Target compound identification;
• Chromatogram quality;
• Pesticide cleanup (if applicable);
• Compound quantitation and reported detection limits;
• System performance; and
• Results verification.

For each of the inorganic compounds, the following will be assessed:

• Holding times;
• Calibrations;
• Blank results;
• Interference check sample;
• Laboratory check samples;
• Duplicates;
• Matrix Spike;
• Furnace atomic absorption analysis QC;
• Inductively couple plasma (ICP) serial dilutions; and
• Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

• “U” - Not detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank;
• “UJ” - Not detected. Quantitation limit may be inaccurate or imprecise;
• “J” - Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method;
• “N” – Tentative identification. Analyte is considered present in the sample;
• “R” – Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample; and,
• No Flag - Result accepted without qualification.
7.0 QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS

7.1 Introduction

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the QAO. These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAO may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

7.2 System Audits

System audits may be performed by the QAO or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected or if the Project Manager requests, additional audits may occur.

7.3 Performance Audits

The laboratory may be required to conduct an analysis of Performance Evaluation samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

7.4 Formal Audits

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria.
Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management. Non-compliances will be logged, and documented through audit findings, which are attached to and are a part of the integral audit report. These audit-finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings.

8.0 CORRECTIVE ACTION

8.1 Introduction

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

8.2 Procedure Description

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.
All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and
- As required by USEPA SW-846, and subsequent updates, or by the NYSDEC ASP.

Project management and staff, such as field investigation teams, remedial response planning personnel, and laboratory groups, monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or contractor locations. Activities, or documents ascertained to be noncompliant with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 8.1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.
Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.
# CORRECTIVE ACTION REQUEST

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**TO: _________________________________________**

You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by ____________

**CONDITION:**

**REFERENCE DOCUMENTS:**

**RECOMMENDED CORRECTIVE ACTIONS:**

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**RESPONSE**

**CAUSE OF CONDITION**

**CORRECTIVE ACTION**

**(A) RESOLUTION**

**(B) PREVENTION**

**(C) AFFECTED DOCUMENTS**

**C.A. FOLLOWUP:**

CORRECTIVE ACTION VERIFIED BY: ____________________________ DATE: ____________
9.0 REFERENCES


USEPA, 1992a. CLP Organics Data Review and Preliminary Review. SOP No. HW-6, Revision #8, dated January 1992. USEPA Region II.


ATTACHMENT A

Resumes
Mr. Conboy has seven years of environmental chemistry, quality assurance, and environmental database management experience, with a current emphasis on validation of laboratory data for submittal to NJDEP via the New Jersey Data of Known Quality Protocols and to NYSDEC. Previous work experience includes performing validation of data for projects in USEPA Regions 2 and 3 while employing appropriate validation guidelines for each region, managing large data sets, updating appropriate regulatory limits, performing statistical evaluations, and preparing electronic data deliverables and report deliverables using the Earthsoft EQuIS database program, and acted as an intermediary between project managers, field staff, and laboratories. Mr. Conboy also has experience in field sampling techniques and maintains current OSHA HAZWOPER certification.

SELECTED PROJECTS

- 1400 Ferris, Bronx, NY – Completed validation of soil and groundwater data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOCs and SVOCs including 1,4-dioxane, and tangentially used based on professional judgment to perform validation of PFAS data.

- Broome Street Parking Lot, NY - Completed validation of waste characterization data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOCs, SVOCs, herbicides, PCBs, pesticides, metals including mercury, ignitability temperature, pH, reactive cyanide, reactive sulfide, cyanide, and hexavalent chromium. Toxicity characteristic leachate procedure extraction data for VOCs, SVOCs, herbicides, pesticides, metals, and mercury were also validated.

- 215 North 10th Street, Brooklyn, NY - Completed validation of soil and groundwater data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data.

- 35 Commercial Street, Brooklyn, NY - Completed validation of soil data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data, and tangentially used based on professional judgment to perform validation of PFAS data.

- Suffolk Street, Lower East Side, NY- Completed validation of soil, groundwater, and soil vapor data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II
guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, VOCs by USEPA TO-15, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data, and tangentially used based on professional judgment to perform validation of PFAS data.

- Managed a database for a confidential client containing 10+ years of environmental chemical data from multiple laboratories, requiring select data validation in accordance with New Jersey Data of Known Quality Protocols and identifying areas of delineation from historic field information. Once identified, NJDEP designated groundwater, surface water, soil, sediment, soil vapor, and custom screening criteria were researched and applied to each area, requiring individualized flagging for reporting.*

- Prepared the New Jersey Data of Known Quality Protocol Data Usability Evaluation and managed the database for a confidential client for a data set greater than 20 years old. A DUE or any validation effort was not prepared in the 20 years prior to current. This included data from variations of methods for volatile organic compounds, semivolatile organic compounds, total and dissolved metals, pesticides, herbicides, natural attenuation parameters, and per- and polyfluoroalkyl substances in multiple media.*

- Performed 200+ Stage 2a validations for a combined 87-acre USEPA designated Corrective Action site under the Resource Conservation and Recovery Act, including a quick-turn USEPA required PCB by soxhlet extraction investigation across multiple plants. Once a former train car painting facility, USEPA required a quick-turn PCB by soxhlet extraction soil investigation.

- Preparation of a quality assurance program for a confidential client in West Virginia. A quick turn QAPP was prepared in a service location new to the consultant, resulting in research into state requirements for data usability and auditing newly employed laboratories. The QAPP was understood to be prepared for groundwater only, but the client did not reveal the need for sediment and soil. Two QAPPs were submitted for review to governing agencies.*

- Used statistical software to determine a localized background upper confidence limit of chromium for a confidential client’s sand and gravel site. Validation was used to confirm laboratory procedures, and data was used in ProUCL calculations to compare to researched background chromium levels for Pennsylvania soils.*

- Prepared daily perimeter dust and air monitoring summaries and validation of low level mirex data for a confidential client’s superfund site. Low level mirex data was generated by university laboratories and subject to validation following national functional guidelines to aide in river clean-up, including sediment, surface water, and treatment system water matrices.*

*Project completed prior to employment at LANGAN.
1 year in the industry

Proposed Title: Field Technician

Ms. Monz is a data analyst with experience in database design, management and visualization using EarthSoft’s EQuIS™ database in support of environmental site characterizations for sites regulated under federal and state compliance programs. Her expertise includes integration of analytical databases and coordination with GIS users.

In her current role Dana, assists project teams with planning and implementation of project databases and data visualization. This includes coordinating with field staff and laboratories to define, workflows, SOPs and ensure the receipt of the proper deliverables for field and lab data; reviewing and managing project data and information using EQuIS™, Microsoft® Access, and Excel; generating data reports including tables, graphs, charts, and GIS compatible files; and generating and reviewing electronic data deliverables following project or agency specific formats.

SELECTED PROJECTS

**Gowanus Canal Northside, Brooklyn, NY** – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.

**2 Ingraham Street, Brooklyn, NY** – Data Analyst. Collected soil samples to investigate Areas of Concern (AOCs) established in the Supplemental Remedial Investigation Work Plan (SRIWP). Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a supplemental remedial investigation of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables, including sample summary tables and tag tables. Submitted data to NYSDEC.

**Willets Point, Brooklyn, NY** – Data Analyst. Coordinated with project team and determined appropriate sample nomenclature for the site, which contained multiple areas of concern. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Responsible for coordination with GIS team to get data from EQuIS into the site specific GIS web viewer. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.
DANA MONZ – FIELD TECHNICIAN

41 Kensico Drive, Mount Kisco, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Review NYSDEC Screening and Assessment of Contaminated Sediment (SACS) Freshwater Sediment Guidance Values and NYSDEC Part 703.5, Division of Water Technical and Operational Guidance Series (TOGs) (1.1.1) Class C criteria and load both sets to EQuIS database to use as comparison criteria for the analysis of data.

550 W 20th Street, New York, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for aPhase II Environmental Site Investigation. Review New York City Department of Environmental Protection (NYCDEP) Limitations for Effluent to Sanitary or Combined Sewers and load comparison criteria to EQuIS for analysis of DEP Effluent Discharge Sample. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.

EQuIS Management and NYSDEC deliverables – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS. Completed this work for the following projects:

- 82 King Street, New York, NY
- 416 Kent Avenue, Brooklyn, NY
- 420 Kent Avenue, Brooklyn, NY
- 702 Nostrand Avenue, Brooklyn, NY
- ABC Block 25, 4-40 44th Avenue, Long Island City, NY
- ABC Block 26, 5-25 46th Avenue, Long Island City, NY
- ABC Block 27, 5-46 46th Avenue, Long Island City, NY
- 335 Bond Street, Brooklyn, NY
- 29 53rd Street, Brooklyn, NY
- Kings Plaza Shopping Center, Brooklyn, NY
- DuPont Stauffer Landfill, Newburgh, NY
- 175-225 Third Street, New York, NY
- Silvercup West - NYPA, Queens, NY
- Greenpoint Marina, Brooklyn, NY
- 491 Wortman Avenue, Brooklyn, NY
- Gerard and 146th Street, The Bronx, NY
- 12 Franklin Street, Brooklyn, NY
- 27-01 Jackson Avenue, Long Island City, NY
- 627 Smith Street, Brooklyn, NY
- 561 Greenwich Avenue, New York, NY
- 23-10 Queens Plaza South, Long Island City, NY
- 473 President Street, Brooklyn, NY
- 4650 Broadway, New York, NY
- 2420 Amsterdam Avenue, New York, NY
- 10-37 Beach Street, New York, NY
- 538-544 Hudson Street, New York, NY
- 26-32 Jackson Avenue, Long Island City, NY
- 1095 Southern Boulevard, The Bronx, NY
- 432 Rodney Street, Brooklyn, NY
- 300 West 122nd, New York, NY
Ms. Forsburg has over nine years of experience that includes working on environmental projects, particularly investigation and remediation of environmental contamination. She has assisted in remedial investigations and has been involved in the collection of field data and assisted in the preparation of reports and other environmental regulatory documents for projects in New Jersey and New York.

Ms. Forsburg’s field experience includes investigation and remediation of contaminated sites including the collection of soil, groundwater, and air samples for environmental analysis, supervision of injections and remedial excavations, and the completion of air monitoring to ensure OSHA compliance on HAZWOPER sites. Office experience includes management of field investigation and remediation as well as completion of proposals, Phase I Environmental Site Assessments, remedial investigation reports, and remedial closure reports in support of these activities. Ms. Forsburg has worked on projects under regulatory oversight of the New Jersey Department of Environmental Protection (NJDEP), New York State Department of Environmental Conservation (NYSDEC), and New York City Office of Environmental Remediation (NYCOER).

Selected Projects

- NYSDEC Brownfield Redevelopment, Remedial Investigation and Remediation Action – 363 and 365 Bond Street, Brooklyn, NY
- NYSDEC Brownfield Redevelopment, Remedial Investigation – Fashion Outlets of Niagara Falls, NY
- NYSDEC Spills Redevelopment, Remedial Action – 540 West 26th Street, New York, NY
- NYSDEC Spills Redevelopment, Remedial Investigation and Remedial Action – 101 Murray Street, New York, NY
- NYSDEC Spills Redevelopment, Remedial Investigation and Remedial Action – 110 University Place, New York, NY
- NYSDEC Spills Redevelopment, Remedial Action, Lowe’s Home Centers, Kings Plaza Site Redevelopment – Brooklyn, NY
- NYSDEC Spills Remediation, Con Edison Soil Remediation - Bronx, NY
- NYSDEC Spills Remediation, Con Edison NAPL Monitoring and Removal, Various Sites – Manhattan, NY
- NYCOER E-Designation Remediation and Volunteer Cleanup Program Redevelopment, Remedial Investigation and Remedial Action – 400 Park Avenue South, New York, NY
- NYCOER E-Designation Remediation and Volunteer Cleanup Program Redevelopment, Remedial Investigation and Remedial Action – 540 West 53rd Street, New York, NY
- Remedial Action – 508 West 24th Street, New York, NY

Education

- B.A., Environmental Studies
  Bucknell University
- B.A., Environmental Geology
  Bucknell University

Professional Registration

- Certified Hazardous Materials Manager (CHMM)
- OSHA 29 CFR 1910.120 Certification (HAZWOPER)

Professional Affiliations

- New Jersey Society of Women Environmental Professionals (NJSWEP)
- Association of Environmental and Engineering Geologists – New York-Philadelphia Chapter Secretary
- Professional Women in Construction - New York Chapter Program Committee
- Alliance of Hazardous Materials Professionals New Jersey Chapter (AHMPNJ)
Amanda Forsburg, CHMM

NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 505 W 19th Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 53 West 53rd Street (MoMA Expansion), New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 525 West 52nd Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 412 Greenwich Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 508 West 24th Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 68 Charlton Street, New York, NY
NYCDEP Remediation, Remedial Investigation and Remedial Action – 225 East 39th Street, New York, NY
Sky View Parc Mixed-Use Construction, Sub-Slab Vapor Ventilation System Construction – Flushing, NY
Liberty Plaza Redevelopment Site, Remedial Investigation and Remedial Action – Randallstown, MD
Former Penick Corporation Facility RCRA Site, Remedial Investigation and Remedial Action – Montville, NJ
Former Pan Graphics Facility, Soil and Groundwater Remediation – Garfield, NJ
Former Pan Graphics Facility, Sediment Investigation and Cap Construction – Lodi, NJ
Former Flintkote Facility, Soil and Groundwater Investigation – East Rutherford, NJ
Interport Site, Impacted Soils Delineation and Remediation – Newark, NJ
Lowe’s Home Center Store, Sub-Slab Vapor Ventilation System O&M – Eatontown, NJ
Lowe’s Home Center Store, Sub-Slab Methane Gas Ventilation System O&M – Woodbridge, NJ
Lowe’s Home Center Store, Sub-Slab Vapor Barrier Construction – Rosedale, NY
Stop & Shop, Groundwater and Indoor Air Monitoring – Emerson, NJ
Stop & Shop, Methane Gas Ventilation System O&M – Raritan, NJ
Stop & Shop, Sub-Slab Vapor Ventilation System O&M – New Paltz, NY
Former First Aviation Services Facility, Groundwater Monitoring and Remediation, Teterboro, NJ
Phase I Environmental Site Assessments and Due Diligence Investigations, Various Sites – NJ and NY
Christopher McMahon, CHMM

Associate
Brownfield Redevelopment, Environmental Site Assessments, Site Investigation/Remedial Actions, Vapor Intrusion Investigations

15 years in the industry ~ 9 years with Langan

Mr. McMahon is a consulting geologist whose primary focus within his tenure at Langan has been in providing environmental support to redevelopment sites within the metropolitan New York area. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup, Voluntary Cleanup and Spill Programs, and New York City Office of Environmental Remediation E-Designated and New York City Voluntary Cleanup Program sites. These projects have included the completion of Phase I environmental site assessments, Phase II and remedial investigations, UST closures, NYSDEC closures and remedial excavation oversight for off-site disposal and/or treatment. Mr. McMahon also has significant field experience including implementation and management of all phases of environmental projects involving soil, sediment, groundwater, surface water, and soil vapor contamination including Phase I inspections, Phase II site investigations, Remedial Investigations, and Remedial Actions.

Many of these projects have included his oversight of remedial actions to clean up or mitigate hazardous waste sites in rural, urban, and industrial settings. These remedial action designs have included in-situ soil remedial injections, contaminated soil removal/disposal management plans, and soil vapor intrusion mitigation systems including advanced vapor barriers and sub-slab depressurization systems.

Selected Projects

NYSDEC Brownfield Redevelopment 363 and 365 Bond Street, Brooklyn, NY
NYSDEC Brownfield Redevelopment, Fashion Outlets of Niagara Falls, NY
NYSDEC Spills Redevelopment, 540 West 26th Street, New York, NY
NYSDEC Spills Redevelopment, 101 Murray Street, New York, NY
NYSDEC Spills Redevelopment, 110 University Place, New York, NY
NYSDEC Spills Redevelopment, Grant Park, Yonkers, NY
NYSDEC Spills Redevelopment, The Shops At Nanuet, Nanuet, NY
NYCOER E-Designation Remediation, 505 W 19th Street, New York, NY
NYCOER E-Designation Remediation, 53 West 53rd Street, New York, NY
NYCOER E-Designation Remediation, 525 West 52nd Street, New York, NY
NYCOER E-Designation Remediation, 412 Greenwich Street, New York, NY
NYCOER E-Designation Remediation, 508 West 24th Street, New York, NY
NYSDEC (Region 7) Site Remedial Investigation, Hillcrest, NY
Former Manufactured Gas Plant Site Remedial Investigation, Geneva, NY
NYSDEC (Region 2) Superfund Site Remedial Investigation, Jamaica, NY
NYSDEC (Region 5) Superfund Site Remedial Investigation, Whitehall, NY
Former Manufactured Gas Plant Site Investigation/Confidential Client, Mechanicville, NY
Remedial Investigation of Industrial Facility/Confidential Client, Batavia, NY
OGS Geotechnical Survey for Construction, Rome, NY

Education
B. A., Geology, State University of New York College at Potsdam
With Honors in Geology and Environmental Science

Professional Registration
Certified Hazardous Materials Manager (CHMM)
OSHA 29 CFR 1910.120 Certification for Hazardous Waste Operations and Emergency Response
OSHA Certification for Hazardous Waste Site Supervisor
Red Cross CPR & First Aid Training
Steven Ciambruschini, PG, LEP
Principal/Vice President
Environmental Site Assessments/Investigations,
Brownfield Remediation, UST Management

33 years in the industry ~ 28 years with Langan

Mr. Ciambruschini has over 30 years of experience in hydrogeologic and environmental investigations including management of environmental and geotechnical investigations relating to petroleum and chlorinated solvent spill sites, underground storage tank sites, manufactured gas plant sites, landfills, wastewater treatment facilities and industrial/commercial sites. His experience includes managing environmental compliance audits, remedial investigation, pre-acquisition due diligence and permitting assessment, feasibility studies and design, construction and operation of complex innovative remediation systems to treat, contain and recover contaminated soil and groundwater. These projects are managed under various NJDEP, PADEP, NYDEC, NYCDEP and CTDEP programs. Mr. Ciambruschini provides consultation to a diverse group of clients including private developers, utilities, retail and industrial facilities and is expert in assessing remediation options and funding options under various state and federal grant, loan and tax reimbursement programs including Brownfield programs.

Selected Projects

- Brodson Property, Montville NJ, (RCRA, NJDEP ACO Cleanup)
- Carroll Gardens, Brooklyn, NY (NY Brownfield, EPA Superfund, OER E-designated Site)
- Con Edision Appendix B Spill Sites - Various Locations, NY
- Former MGP Site, Brooklyn, NY (VCP Site)
- Extell Development, Hudson Yards, New York, NY (NYC E-designated, NYS Brownfield Site)
- Pan Graphics, Bergen County, NJ (ISRA, LSRP)
- New Jersey Turnpike General Environmental Services Contract, Various Sites, NJ
- Liberty Science Center, Jersey City, NJ ( EO 215)
- Blue Back Square, West Hartford, CT (UST, Transfer Act, Brownfield)
- Hershey, Act II Investigation (PA VCP)
- Hershey, Naugatuck, CT (CT Transfer Act)
- Halby Chemical Sites, Various Sites, DE (CERCLA)
- Unisys, Middletown CT, (CT Transfer Act, Brownfield)
- Ryder Rental, Various Sites in CT (CT Transfer Act)
- St. Marks Avenue, Brooklyn, NY (Vapor Mitigation)
- Pan Graphics, Lodi, NJ (Eco Risk Assessment, LSRP)

Education
M.S., Geology
Montclair State University

M.A., Environmental Science
Montclair University

B.S., Environmental Science
Cook College, Rutgers University

Professional Registration
Professional Geologist (PG) in NY, DE, KY

Licensed Environmental Professional (LEP) in CT

Underground Storage Tank License in NJ

Affiliations
National Ground Water Association

Association of Ground Water Scientists and Engineers

American Association of Petroleum Geologists

Environmental Professionals of Connecticut

American Bar Association (ABA)
ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits
# ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

<table>
<thead>
<tr>
<th>Method</th>
<th>Matrix</th>
<th>Analyte</th>
<th>MDL</th>
<th>RL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>VOC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>1,2,4-Trimethylbenzene</td>
<td>2.5</td>
<td>5</td>
<td>ug/kg</td>
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<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>1,3,5-Trimethylbenzene</td>
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<td>5</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>Benzene</td>
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<td>5</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8260C</td>
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<td>Naphthalene</td>
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<td>EPA 8260C</td>
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<td>Ethyl Benzene</td>
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<td>5</td>
<td>ug/kg</td>
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<td>EPA 8260C</td>
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<td>Isopropylbenzene</td>
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<td>5</td>
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<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>Methyl tert-butyl ether (MTBE)</td>
<td>2.5</td>
<td>5</td>
<td>ug/kg</td>
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<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>n-Butylbenzene</td>
<td>2.5</td>
<td>5</td>
<td>ug/kg</td>
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<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>n-Propylbenzene</td>
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<td>5</td>
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<td>EPA 8260C</td>
<td>Soil</td>
<td>p-Isopropyltoluene</td>
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<td>5</td>
<td>ug/kg</td>
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<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>sec-Butylbenzene</td>
<td>2.5</td>
<td>5</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>tert-Butylbenzene</td>
<td>2.5</td>
<td>5</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>Toluene</td>
<td>2.5</td>
<td>5</td>
<td>ug/kg</td>
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<tr>
<td>EPA 8260C</td>
<td>Soil</td>
<td>Xylenes, Total</td>
<td>7.5</td>
<td>15</td>
<td>ug/kg</td>
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## ATTACHMENT B
Laboratory Reporting Limits and Method Detection Limits

<table>
<thead>
<tr>
<th>Method</th>
<th>Matrix</th>
<th>Analyte</th>
<th>MDL</th>
<th>RL</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Acenaphthene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Acenaphthylene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Anthracene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
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<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Benzo(a)anthracene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Benzo(a)pyrene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Benzo(b)fluoranthene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Benzo(g,h,i)perylene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Benzo(k)fluoranthene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Chrysene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Dibenzo(a,h)anthracene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Fluoranthene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Fluorene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Indeno(1,2,3-cd)pyrene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Naphthalene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Phenanthrene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
<tr>
<td>EPA 8270D</td>
<td>Soil</td>
<td>Pyrene</td>
<td>20.9</td>
<td>41.7</td>
<td>ug/kg</td>
</tr>
</tbody>
</table>
ATTACHMENT C

Analytical Methods / Quality Assurance
Summary Table
## ATTACHMENT C
### ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE

<table>
<thead>
<tr>
<th>Matrix Type</th>
<th>Field Parameters</th>
<th>Laboratory Parameters</th>
<th>Analytical Methods</th>
<th>Sample Preservation</th>
<th>Sample Container Volume and Type</th>
<th>Sample Hold Time</th>
<th>Number of Samples to be Collected</th>
<th>Field Duplicate Samples</th>
<th>Equipment Blank Samples</th>
<th>Trip Blank Samples</th>
<th>Ambient Air Samples</th>
<th>MS/MSD Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Total VOCs via PID</td>
<td>CP-51 VOCs</td>
<td>EPA 8260C</td>
<td>Cool to 4°C</td>
<td>Two 40-ml VOC vials with 5 ml H₂O, one with MeOH or 3 Encore Samplers (separate container for % solids)</td>
<td>14 days, freeze at lab within 48 hours</td>
<td>TBD</td>
<td>1 per 20 samples (minimum 1)</td>
<td>1 per 20 samples, if needed (minimum 1, if needed)</td>
<td>1 per shipment of VOC samples</td>
<td>NA</td>
<td>1 per 20 samples (minimum 1)</td>
</tr>
<tr>
<td></td>
<td>CP-51 SVOCs</td>
<td>EPA 8270D</td>
<td>Cool to 4°C</td>
<td>4 oz. jar*</td>
<td>14 days extract, 40 days after extraction to analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- *can be combined in one or more 8 oz. jars
- mL = milliliter
- VOC = Volatile organic compound
- SVOC = Semi-volatile organic compound
- TBD = to be determined

PID = Photoionization detector

CP-51 = New York State Department of Environmental Conservation Commissioner’s Policy #51

EPA = U.S. Environmental Protection Agency

NA = Not applicable

⁰C = degree Celsius
ATTACHMENT D

Sample Nomenclature
INTRODUCTION

The Langan Environmental Group conducts an assortment of site investigations where samples (Vapor, Solids, and Aqueous) are collected and submitted to analytical laboratories for analysis. The results of which are then evaluated and entered into a database allowing quick submittal to the state regulatory authority (New York State Division of Environmental Conservation [NYSDEC]). In addition, Langan is linking their data management system to graphic and analytical software to enable efficient evaluation of the data as well as creating client-ready presentational material.

SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) is applicable to the general framework for labeling vapor, solid (soil) and aqueous (groundwater) samples that will be submitted for laboratory analysis. The nomenclature being introduced is designed to meet the NYSDEC EQuIS standard and has been incorporated into Langan software scripts to assist project personnel in processing the data. While this SOP is applicable to all site investigation; unanticipated conditions may arise which may require considerable flexibility in complying with this SOP. Therefore, guidance provided in this SOP is presented in terms of general steps and strategies that should be applied; but deviation from this SOP must be reported to the Project Manager (PM) immediately.

GENERAL SAMPLE IDENTIFICATION CONSIDERATIONS

Sample Labels
All sample ware must have a label. Recall that when you are using the Encore™ samples (see below); they are delivered in plastic lined foil bags. You are to label the bags:

![Encore sample](image)

All other samples containers including Terra Cores™ must be labeled with laboratory provided self-adhesive labels.

Quick Breakdown of Sample Format
The general format for sample nomenclature is:

\[ \text{Sample Name} / \text{Sample Type} / \text{Sample Location} \]

\[ \text{Example: SO1001 / Soil / Site X} \]

1Both Alpha and York laboratories permit the combining of the three Encore™ into a single bag. This may not be appropriate for all laboratories so please confirm with the labs themselves
**LLNN_ID**

Where

**LL** is a grouping of two (2) to four (4) letters signifying the sample media source.

In older nomenclature SOPs this portion of the sample identification is commonly referred to as the Sample Investigation Code

**NN** represents a two digit number identifying the specific sample location or sample sequence number

_ (underscore) is required between the sample lettering and numeric identification and additional modifying data that determines the date of sampling or the depth of the sample interval

**ID** is a modifier specific to the sample type media (depth of soil sample or date of groundwater sample)

**LL – Sample Investigation Code**

Langan has devised a list of two to four letters to insure a quick ability to identify the sample investigation.

<table>
<thead>
<tr>
<th>Code</th>
<th>Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Ambient Air</td>
</tr>
<tr>
<td>DS</td>
<td>Drum</td>
</tr>
<tr>
<td>EPB</td>
<td>Endpoint Location - Bottom (Excavation)</td>
</tr>
<tr>
<td>EPSW</td>
<td>Endpoint Location - Sidewall (Excavation)</td>
</tr>
<tr>
<td>FP</td>
<td>Free Product</td>
</tr>
<tr>
<td>IA</td>
<td>Indoor Air</td>
</tr>
<tr>
<td>IDW</td>
<td>Investigation Derived Waste (Soil Pile)</td>
</tr>
<tr>
<td>MW</td>
<td>Monitoring Well (Permanent)</td>
</tr>
<tr>
<td>SB</td>
<td>Soil Boring</td>
</tr>
<tr>
<td>SG</td>
<td>Staff Gauge (Stream Gauging)</td>
</tr>
<tr>
<td>SL</td>
<td>Sludge</td>
</tr>
<tr>
<td>SV</td>
<td>Soil Vapor Point</td>
</tr>
<tr>
<td>SVE</td>
<td>Soil Vapor Extraction Well</td>
</tr>
<tr>
<td>SW</td>
<td>Surface Water</td>
</tr>
<tr>
<td>TMW</td>
<td>Temporary Monitoring Well</td>
</tr>
<tr>
<td>TP</td>
<td>Test Pit (Excavated Material from Test Pit Not Associated With Sidewall or Bottom Samples)</td>
</tr>
<tr>
<td>WC</td>
<td>Waste Characterization Boring</td>
</tr>
<tr>
<td>COMP</td>
<td>Composite Sample</td>
</tr>
<tr>
<td>TB</td>
<td>Trip Blank (QA/QC Sampling – All Investigations)</td>
</tr>
<tr>
<td>FB</td>
<td>Field Blank (QA/QC Sampling – All Investigations)</td>
</tr>
<tr>
<td>DUP</td>
<td>Duplicate (QA/QC Sampling – All Investigations)</td>
</tr>
</tbody>
</table>

**NN – Numeric Identifier**

The two digit number that follows the sample investigation code (LL) identifies the specific sample based on the soil boring, monitoring well, endpoint or other location identification. For a subset of samples
where there is no specific location identifier, the two digit number is the sequence number for the sample submitted. For example, an aqueous sample from a monitoring well identified as MW-1 would have the sample investigation code of MW and the numeric identifier as 01. Note there is no hyphen. The same can be done for soil borings, a soil sample collected from soil boring 9 (SB-9) would be have the LLNN identification of SB09 (again, no hyphen).

Note however that there is a subset of samples related to laboratory analytical quality assurance, among these includes TB, FB, and DUP. On many investigations, the Scope will require multiple collections of these types of samples, therefore the numerical number represents the sequence sample count where the first sample is 01, the second sample is 02, and the third sample is 03 and so on.

_Underline_
The underscore is required. It separates the investigation code and numeric identifier from the modifier specific to the sample itself. Note that every effort should be made to insure that the underscore is clear on the sample label and chain of custody (COC).

**ID – Modifier Specific to Type Media**

Each sample investigation code and numeric identifier is further modified by an ID specific to the sample type media. In general, soil samples (soil borings or endpoint samples) use an ID that indicates the depth at which the sample was taken. Aqueous samples (groundwater or surface water samples) are identified by the date the sample was collected. Other types of samples including quality control (TB, FB, and DUP), Vapor samples (AA, IA, SV or SVE), other soil type samples (IDW, sludge, free product, drum, and others) are also identified by a date. The following rules apply to the ID when using sample depth or sample date.

*Sample Depth*

The sample depth must be whole numbers (no fractions) separated by a hyphen. Thus for a soil sample collected from the soil boring SB-1 from a depth of 6 feet to 8 feet, the sample would be identified as:

```
SB01_6-8
```

Unfortunately, the NYSDEC EQuIS system does not accept fractions. Therefore, if your sample interval is a fraction of a foot (6.5-7.5), round up to the larger interval (6-8).

*Sample Date*

The sample date is always in the format of MMDDYY. Note that the year is two digits. Thus for a groundwater sample collected on July 1, 2015 from the monitoring well MW-1, the sample would be identified as:

```
MW01_070115
```

**Special Cases**

There are a couple of specific sample types that require further explanation.

*Endpoint Sampling*

End point sidewall samples are sometimes modified by magnetic direction (N, S, E, and W). For example, the first sidewall endpoint sample from the north wall of an excavation at a depth of 5 feet would be written as:

```
EPSW01_N_5
```
Again, note that the N in the identification refers to north and is separated from the prefix investigation code/numeric identifier and ID modifier suffix by underscores.

**Vapor Extraction Well Sample**

As with the sidewall endpoint samples, the sample name is altered by inserting a middle modifier between the prefix and suffix of the sample name. The middle modifier is used to identify the source of the sample (inlet sample port, midpoint sample port or outlet sample port). For example the midpoint port of the vapor extraction well number 1 sampled on July 1, 2015 would be written as:

SVE01_MID_070115

**Matrix Spike and Matrix Spike Duplicate**

On occasion, a Langan investigation will collect a sample to be used to provide the lab with a site specific medium to spike to determine the quality of the analytical method. This special case of sampling requires additional information to be used in the sample name, specifically, a suffix specifying whether the sample is the matrix spike (MS) or the matrix spike duplicate (MSD). In the following example, the sample is collected from soil boring number 1 at a depth of 2-4 feet.

For the matrix spike sample:

SB01_2-4_MS

and for the matrix spike duplicate sample:

SB01_2-4_MSD

**Multiple Interval Groundwater Sampling**

Although not currently a common practice, low flow sampling facilitates stratigraphic sampling of a monitoring well. If the scope requires stratigraphic sampling then groundwater samples will be labeled with a lower case letter following the well number. For example, placing the pump or sampling tube at 10 feet below surface in MW01 on July 1, 2015 would require the sample to be labeled as:

MW01a_070115

While a second sample where the pump or tubing intake is placed at 20 feet would be labeled as:

MW01b_070115

Note that it is important that you record what depth the intake for each sample represents in your field notes; as this information is going to be critical to interpreting the results.