

**Project: South Battery Park City Resiliency Project:
Wagner Park / Museum of Jewish Heritage
Site Work Construction Services Project
(the “Project”) Request for Proposals (“RFP”)**

Date: June 21, 2022

**RE: Addendum #7
of Pages: 156**

REVISIONS TO RFP:

- 1) The following new or revised Project Specification documents are hereby formally incorporated into the RFP’s Exhibit B-1 – Construction Documents (Project Drawings & Specifications):
 - Specifications Table of Contents (“TOC”) – Attachment #1: The updated content, compared to the content included in the version of the TOC page included as part of the RFP’s Exhibit B-1 – Construction Documents (Project Drawings and Specifications), is yellow-highlighted in this corrected version of such TOC (only one change was made, to add new Specification #017419A).
 - New Specification #017419A | Specifications for Handling, Transportation, and Disposal of Potential and Identified Contaminated Hazardous Materials – Attachment #2.
 - Revised Specification #012100 | Allowances – Attachment #3: The revised content, compared to the content included in the version of Specification #012100 of the RFP’s Exhibit B-1 – Construction Documents (Project Drawings & Specifications), is yellow-highlighted in this updated version of such Specification only one change was made, on Page 012100-3).
- 2) The following new reference documents (collectively, the “Plans”) are hereby formally incorporated into the RFP’s Exhibit B-2 – Supporting Documents (Informational Purposes):
 - Draft Construction Health and Safety Plan – Attachment #4.
 - Draft Remedial Action Plan – Attachment #5.

By signing the line below, I am acknowledging that all pages of this Addendum #7 have been received, reviewed and understood, and will be incorporated into the Proposal submitted. This document must be attached to the Proposal for consideration.

Print Name (Above)

Signature (Above)

Date (Above)

Number of pages received: _____ <fill in>

Distributed to: All prospective Proposers

[NO FURTHER TEXT ON THIS PAGE]

ATTACHMENT #1
SPECIFICATIONS TABLE OF CONTENTS
Revised Compared to Exhibit B-1 of RFP

(ATTACHED)

TABLE OF CONTENTS

Bid Set Package 2 Submittal

*Specifications provided are for both packages 2 and 3 covering elements which may be in both packages, or only in one.

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General Conditions

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ATTACHMENT #2
NEW SPECIFICATION #017419A –
SPECIFICATIONS FOR HANDLING, TRANSPORTATION,
AND DISPOSAL OF POTENTIAL AND IDENTIFIED
CONTAMINATED HAZARDOUS MATERIALS

(ATTACHED)

SECTION 017419A – SPECIFICATIONS FOR HANDLING, TRANSPORTATION, AND DISPOSAL OF POTENTIAL AND IDENTIFIED CONTAMINATED HAZARDOUS MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. DRAFT Remedial Action Plan, AECOM, April 2022
- B. DRAFT Construction Health & Safety Plan, AECOM, April 2022
- C. 017419 Construction and Demolition Waste Management and Disposal
- D. 013526 Safety and Health Requirements
- E. 310000 Earthwork
- F. 312500 Erosion and Sediment Controls

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. In-Situ and Ex-Situ Soil Sampling and Analysis for Waste Disposal Parameters
 - 2. Handling, Transporting, and Disposal of Non-Hazardous, Contaminated Soils
 - 3. Handling, Transporting, and Disposal of Hazardous Soils
 - 4. Health and Safety
 - 5. Removal, Treatment, and Discharge/Disposal of Contaminated Water
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 - 7. Sampling, Testing, and Reporting Requirements for Imported Materials
 - 8. Appendix A: NYCDEP Limitations for Discharge to Sewer
 - 9. Appendix B: Applicable Regulations
 - 10. Appendix C: Definitions

IN-SITU AND EX-SITU SOIL SAMPLING AND ANALYSIS FOR WASTE DISPOSAL PARAMETERS

WORK TO INCLUDE

A. Description

The work will consist of collecting and analyzing representative samples of soil to be excavated in-situ and/or ex-situ from stockpiles for parameters that are requested by disposal facilities. Sampling must be conducted in accordance with this specification and the approved RAP. typically requested by the disposal facilities to determine if the soil to be excavated is suitable for reuse, or to be hauled off-site for disposal purposes as contaminated and/or hazardous soil.

B. Sampling and Laboratory Analysis

1. Sampling and analysis must be conducted in accordance with approved RAP and CHASP and to the extent required to be accepted at an approved disposal facility. All information regarding the sampling and analysis of must be compiled by the Contractor and provided to the Engineer and/or BPCA for future regulatory reporting. Required information and documentation must include the following:
 - a. Project information
 - b. Description of sample collection methodology for soil to be excavated and soil which appears to contain unknown contaminants based on field observation
 - c. Type of analyses
 - d. Sample preservation and handling
 - e. Training and experience of the personnel who will collect the samples
 - f. Equipment Decontamination
 - g. Analytical laboratory's name, address, New York State Department of Health's ELAP certification number, and telephone number
 - h. Map of the project area
 - i. Sample location plan
 - j. Chain of Custody
2. The Contractor's HASP must identify actual and potential hazards associated with planned sampling field activities and stipulate appropriate health and safety procedures, so as to minimize field personnel exposures to physical, biological, and chemical hazards that may be present in the sampling media. The HASP must include, at a minimum, the following information:
 - a. Project information
 - b. Description of work to be performed
 - c. Names of responsible health and safety personnel
 - d. Worker training
 - e. Job hazard analysis

- f. Confined Space Entry Plan (if applicable)
 - g. Personal monitoring (if applicable)
 - h. Community Air Monitoring Plan (CAMP in accordance with the approved RAP and CHASP)
 - i. Personnel Protection Equipment (PPE)
 - j. Decontamination
 - k. Safety rules
 - l. Spill prevention and control, dust control, vapor/odor suppression procedures
 - m. Identification of nearest hospital and route
 - n. Emergency Incident Reporting
- 3. The Contractor or subcontractor/subconsultant must collect one (1) grab and one (1) composite sample per 500 cubic yards of soil to be excavated in-situ and/or ex-situ from stockpiles or as specified by the disposal facilities and in accordance with the approved RAP.
- 4. The quality of the data from the sampling program is the Contractor's responsibility. The Contractor must furnish all qualified personnel, materials, equipment, and instruments necessary to carry out the sampling. Unless directed otherwise, all sampling procedures must follow the NYSDEC sampling guidelines and protocols and the approved RAP. All sampling must be conducted by a qualified person trained in sampling protocols using standard accepted practices for obtaining representative samples.
- 5. Each grab and composite sample must be analyzed for all parameters required by disposal facilities accepting contaminated and/or hazardous soil.
- 6. All sample containers must be marked and identified with legible sample labels, which must indicate the project name, sample location and/or container, the sample number, the date and time of sampling, preservatives utilized and other information that may be useful in determining the character of the sample. Chain-of-custody must be tracked from laboratory issuance of sample containers through laboratory receipt of the samples.
- 7. The Contractor must maintain a bound sample logbook. The Contractor must provide the Engineer access to it at all times and must turn it over to the Engineer in good condition at the completion of the work. The following information, at a minimum, must be recorded to the log:
 - a. Sample identification number
 - b. Sample location
 - c. Field observation
 - d. Sample type
 - e. Analyses
 - f. Date/time of collection
 - g. Collector's name

- h. Sample procedures and equipment utilized
 - i. Date sent to laboratory and name of laboratory
- 8. The Engineer reserves the right to direct the Contractor to conduct alternative sampling in lieu of the parameters described herein, if the situation warrants. The substitute sampling parameters will be of equal or lesser monetary value than those described in herein, as determined by industry laboratory pricing standards.
- 9. Only dedicated sampling equipment may be used to collect these samples. All equipment involved in field sampling must be decontaminated before being brought to the sampling location and must be properly disposed after use.
- 10. The Contractor or subcontractor/subconsultant must prepare a Field Sampling Results Report (FSRR), tabulate the analytical results, and compare the data to the applicable NYSDEC Part 375.6 Soil Cleanup Objectives, and TCLP for Hazardous Waste published in RCRA and 6 NYCRR Part 371, or 40 CFR Section 261. If the soil is to be disposed of in a disposal facility outside of the State of New York, the soil sampling data must also be compared to the applicable regulatory criteria established by the state in which the disposal facility is located. The FSSR, with the tabulated tables and laboratory analytical data, must be submitted to the Engineer for review and approval prior to any soil reuse or disposal activities.
- 11. Soils exceeding any of the RCRA hazardous waste characteristic criteria meet the legal definition of hazardous waste (rather than non-hazardous contaminated soils) and must be transported or disposed of under the section Handling, Transporting and Disposal of Hazardous Soils in this specification. All analyses must be done by a laboratory that has received approval from the ELAP for the methods to be used. The Contractor must specify the laboratory in the C+DWM Plan.

HANDLING, TRANSPORTING, AND DISPOSAL OF NON-HAZARDOUS, CONTAMINATED SOILS

A. General

This work will consist of the handling, transportation, and disposal of contaminated soils. The materials covered by this specification are soils that are contaminated with petroleum or chemical products but cannot be classified as RCRA hazardous waste. For the purpose of this specification, soil will be defined as any material excavated and pavement base (concrete and/or asphalt).

Soil to be excavated can be classified as non-contaminated, contaminated, or RCRA hazardous soil. Non-contaminated soils are defined as soils not exhibiting any of the following characteristics.

- a. Exceedances of New York State Department of Environmental Conservation (NYSDEC) Part 375-6 Restricted Commercial Soil Cleanup Objectives (SCOs) for street work, Restricted Residential SCOs for work areas in parkland, or Residential SCOs for housing projects.
- b. Elevated Photo-Ionization Detector (PID) readings subsequently confirmed by laboratory analysis and showed exceedances of applicable SCOs.
- c. Visual evidence of contamination, such as the presence of staining, -discoloration.
- d. Petroleum and/or chemical odors, subsequently confirmed by laboratory analysis and showed exceedances of applicable SCOs.
- e. Physical evidence of coal ash, municipal solid waste, construction and demolition debris, or dredged spoils.

Contaminated soils are defined as soils exhibiting one or more of the above characteristics. Contaminated soils must be handled, transported, and disposed of in accordance with – Handling, Transporting, and Disposal of Non-Hazardous Contaminated Soils included in this specification.

Hazardous soils are defined as soils showing exceedances of Toxicity Characteristic Leaching Procedure (TCLP) Regulatory Levels for Hazardous Waste published in Resource Conservation and Recovery Act (RCRA), 6 New York Codes, Rules, and Regulations (NYCRR) Part 371, or 40 Code of Federal Regulations (CFR) Section 261. Hazardous soils must be handled, transported, and disposed of in accordance with the specifications of this section.

This entire specification covers the handling, transportation, and disposal of contaminated soils and hazardous soils only. Non-contaminated soil can be reused at the project site, provided it meets other contract requirements and the provisions of the requirements in the DRAFT Remedial Action Plan (AECOM, April 2022) and 6 NYCRR Part 360.12 and 360.13.

The Contractor must ensure that all operations associated with the handling, sampling, loading, transportation, and disposal of contaminated soils are in compliance with all applicable Federal, State, and City statutes and regulations.

The Contractor must supply all equipment, material and labor required to conduct the specified work of this Item. The Contractor must document the excavation, handling, transportation, and disposal of contaminated soils.

No soil disturbance is permitted at the site without formal approval of the RAP and CHASP by NYCDEP.

B. Request for Approval of Subcontractors

The Contractor, or a subcontractor/subconsultant, such as an independent Environmental Consultant and the waste hauler, is not permitted to start work until approved by the Engineer. If the Contractor performs work using a subcontractor/subconsultant prior to approval, the Contractor will not be paid for the work performed by that subcontractor/subconsultant and the Contractor may be subject to sanctions including, but not limited to, initiation of default proceedings.

Documentation must be provided by the Contractor or subcontractor/subconsultant including but not limited to legal identity, project reference list, Corporate Health and Safety Plan (HASp), waste transporter permits, Occupational Safety and Health Administration (OSHA) 10 certification, Hazardous Waste and Emergency Response (HAZWOPER) certification, etc., in accordance with the provisions of this specification and the CHASP.

C. Sampling and Analysis

Prior to the performance of soil sampling, the Contractor will review the RAP and prepare to conduct all sampling in accordance with the provisions of the RAP. The Contractor must conduct sampling and analysis of the impacted soils as specified under this specification – In-Situ and Ex-Situ Soil Sampling and Analysis for Waste Disposal Parameters and the RAP. The laboratory results must be forwarded to the Engineer for review prior to off-site disposal.

D. Construction and Demolition Waste Management Plan

In accordance with specification 017419 Construction and Demolition Waste Management and Disposal, the Contractor will prepare the Construction and Waste Management Plan At least 45 days prior to the commencement of work, the Contractor must submit to the Engineer for review a Construction and Demolition Waste Management Plan (C+DWM Plan). The (C+DWM Plan), RAP, and CHASP must be approved by the Engineer and/or NYC DEP prior to the Contractor beginning any soil excavation work. The (C+DWM Plan) must conform with the approved RAP and, at a minimum, consist of:

1. The Contractor's procedures for identifying contaminated soils during excavation, including the specific model and manufacturer of intended organic vapor monitoring equipment and calibration procedures to be used. It should also include the training and experience of the personnel who will operate the equipment.
2. The Contractor's procedures for safely handling contaminated soils. The procedures must include personnel safety and health as well as environmental protection considerations.
3. For the proposed laboratory for analysis of representative soil samples, provide the following: (a) name, (b) address, (c) telephone number, and (d) New York State Department of Health's (NYSDOH) Environmental Laboratories Accreditation Program

(ELAP) status.

4. Identification of the Contractor's proposed waste transporter(s) (hauler). This information must include:
 - a. Name and Waste Transporter Permit Number
 - b. Address
 - c. Name of responsible contact for the waste transporter
 - d. Telephone number for the contact
 - e. All necessary permit authorizations for each type of waste transported
 - f. Previous experience in performing the type of work specified herein
5. The name and location of the facility where an off-site scale is located. The Contractor must outline or reference where the procedures on controlling trucks leaving the work site and en-route to the off-site scale or disposal facility are outlined.
6. All staging/stockpiling areas (if stockpiling areas are intended and available), or alternate procedures that will be used. Alternate procedures may include, but are not limited to, agreements from the intended disposal facilities to accept boring data and/or analytical data previously obtained during the site characterization so that materials may be directly loaded into vehicles for shipment to the disposal facility.
7. A backup facility must be provided, should the staging/stockpile areas become unavailable, insufficient in area or presented by some other unforeseen difficulty.
8. Identification of the Contractor's two proposed Treatment Storage or Disposal (TSD) facilities for contaminated soils (primary and back-up) for final disposal of the soils. Both primary and backup TSD facilities must be currently state-licensed disposal facilities approved to receive contaminated soil. The information required for each facility must include:
 - a. General Information
 - (1) Facility name and the State identification number
 - (2) Facility location
 - (3) Name of responsible contact for the facility
 - (4) Telephone number for contact
 - (5) Signed letter of agreement to accept waste as specified in this contract. The letter must indicate agreement to handle and accept the specified estimated quantities and types of material during the time period specified in the project schedule and any time extension as deemed necessary.
 - (6) Unit of measure utilized at disposal facility for costing purposes
 - b. A listing of all permits, licenses, letters of approval, and other authorizations to operate, which are currently held and valid for the proposed facility.
 - c. A listing of all permits, licenses, letters of approval, and other authorizations to operate which have been applied for by the proposed facility but not yet granted

or issued.

- d. The Contractor must specify and describe the disposal/containment unit(s) that the proposed facility will use to manage the waste. The Contractor must identify the capacity available in the units and the capacity reserved for the subject waste.
 - e. The Contractor must provide the date of the proposed facility's last compliance inspection.
 - f. A list of all active (unresolved) compliance orders (or agreements), enforcement notices, or notices of violations issued to the proposed facility must be provided. The source and nature of the cause of violation must be stated, if known.
9. Description of all sampling and field/laboratory analyses that will be needed to obtain disposal facility approval.

CONSTRUCTION DETAILS

A. Material Handling

Excavated materials must be handled by the Contractor in accordance with this specification, the approved RAP, and specifications 017419 Construction and Demolition Waste Management and Disposal Plan and 310000 Earthwork. Any discrepancies between the documents must defer to the most conservative approach or if an alternative approach is requested it must be approved by the Engineer.

1. Immediately after excavation of non-hazardous contaminated soil the Contractor must:
 - a. Load material directly onto trucks/tankers/roll offs for disposal off site; or
 - b. If interim stockpiling is required, it should be done in accordance with specification 017419 and the approved RAP. Contaminated soils must be stockpiled separately from uncontaminated and hazardous soil at locations approved by the Engineer, meeting all required Federal, State and Local stipulations. Stockpiles must be at least 800 feet away from any sensitive receptors, such as schools, daycare center, hospitals, nursing homes, etc., and at least 100 feet away from any water body.
2. Institute appropriate procedures and security measures to ensure the protection of site personnel and the public from contaminated materials as described in the approved RAP, CHASP, (C+DWM Plan), Site HASP, and the specification 013526 Safety and Health Requirements.
3. Any soil encountered that appears to contain unknown contaminants (based on visual, odor, or other observation), or that vary substantially from the material originally identified must be segregated in stockpiles and the Engineer promptly notified so the Contractor or subcontractor/subconsultant can collect soil samples for analysis. Construct stockpiles to the same requirements as stated in subsection (A)(1)(b) above.
4. Provide any dewatering that is necessary to complete the work. Contaminated water must be handled and disposed of in accordance with the approved RAP, Removal, Treatment and Discharge/Disposal of Contaminated Water section of this specification and specification 310000 Earthwork.
5. Provide and operate field organic vapor test equipment, a photoionization detector (PID)

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or a flame ionization detector (FID), to detect general organic vapor levels at intervals of approximately 50 cubic yards of soil excavated, when visual or odor observations indicate the material may substantially differ from the soil previously excavated and in accordance with the provisions of the approved RAP.

B. Off-Site Transportation to Disposal Facility

1. General

- a. The Contractor must perform these activities in accordance with the approved RAP.
- b. The Contractor must furnish all labor, equipment, supplies, and incidental costs required to transport contaminated material from the work area to the off-site disposal facility, and any other items and services required for transporting contaminated material for disposal at an off-site facility.
- c. The Contractor will be responsible for tracking all materials and vehicles from the site to the off-site scale.
- d. The Contractor must submit to the Engineer the certified tare and gross weight slips for each load received at the accepted facility which must be attached to each returned manifest. These documents must be maintained and kept with project field records.
- e. Contaminated soils must be delivered to the disposal or treatment facility within 30 calendar days after excavation.
- f. The Contractor must coordinate the schedule for truck arrival and material deliveries at the job site to meet the approved project schedule.
- g. The Contractor must inspect all vehicles leaving the project site to ensure that contaminated soils adhering to the wheels or undercarriage are removed prior to the vehicle leaving the site.
- h. The Contractor must obtain letters of commitment from the waste haulers and the TSD facility to haul and accept shipments.
- i. The Contractor must provide waste profile forms to the Engineer for review and approval before transporting contaminated soil to the approved TSD facility.

2. Hauling

- a. The Contractor must coordinate manifesting, placarding of shipments, and vehicle decontamination. All quantities must be measured and recorded upon arrival at the disposal facility. If any deviation between the two (2) records occurs, the matter is to be reported immediately to the Engineer and to be resolved by the Contractor to the satisfaction of the Engineer.
- b. The Contractor will be held responsible, at its own cost for any and all actions necessary to remedy situations involving material spilled in transit or mud and dust tracked off-site.
- c. The Contractor must ensure that trucks are protected against contamination by properly covering and lining them with polyethylene sheeting or by

decontaminating them prior to and between acceptances of loads. Trucks with loaded contaminated soil must be covered securely with tarps before leaving the project site to prevent generation of airborne dust during hauling.

- d. The Contractor will be responsible for inspecting the access routes for road conditions, overhead clearance, and weight restrictions.
- e. The Contractor must only use the transporter(s) identified in the approved C+DWM Plan and the approved RAP.
- f. The Contractor must develop, document, and implement a policy for accident prevention.
- g. The Contractor must not combine contaminated materials from other projects with material from this project.
- h. No material will be transported until approval by the Engineer is obtained.

3. Off-Site Disposal

- a. The Contractor must use only the disposal facility(ies) identified in the approved C+DWM (017419) for the performance of the work. A revised C+DWM or an addendum to the original approved C+DWM must be submitted to the Engineer for review and approval and incur the costs for any use of substitutions or additions of disposal facility.
- b. The Contractor must be responsible for acceptance of the materials at an approved facility, for ensuring that the facility is properly permitted to accept the stated materials, and for ensuring that the facility provides the stated treatment and/or disposal services.
- c. The Engineer reserves the right to contact and visit the TSD facility and regulatory agencies to verify the agreement to accept the stated materials and to verify any other information provided.
- d. In the event that the identified and approved facility ceases to accept the stated materials, or the facility ceases operations, it is the Contractor's responsibility to locate an alternate approved and permitted facility(ies) for accepting materials. The alternate facility(ies) must be approved in writing by the Engineer in the same manner and with the same requirements as for the original facility(ies). The contractor must incur the costs and procure the facility(ies) without causing delays to the project.
- e. The Contractor must obtain manifest forms and complete the shipment manifest records required by the appropriate regulatory agencies for verifying the material and quantity of each load in unit of volume and weight. Copies of each manifest must be submitted to the Engineer within four (4) business days following shipment, and within three (3) business days after notification of receipt of the facility. The signed manifests must be maintained and kept with the project field records. Any manifest discrepancies must be reported immediately to the Engineer and be resolved by the Contractor to the satisfaction of the Engineer.

4. Equipment and Vehicle Decontamination

- a. The Contractor must design and construct a portable decontamination station to be used to decontaminate equipment and vehicles that have been used to handle contaminated soil in accordance with the approved CHASP.
- b. Water generated during the decontamination process must be disposed of in accordance with the section Removal, Treatment and Discharge/Disposal of Contaminated Water in this specification and the approved RAP.

HANDLING, TRANSPORTING, AND DISPOSAL OF RCRA HAZARDOUS SOILS

WORK TO INCLUDE

A. General

Based on the results of previous Phase I and Phase II Environmental Site Assessments, the presence of RCRA Hazardous Waste soil is not anticipated. However, this work may consist of the handling, transportation, and disposal of hazardous soils, which are defined as soils showing exceedances of TCLP for Hazardous Waste published in RCRA, 6 NYCRR Part 371, or 40 CFR Section 261. Hazardous soil can also be contaminated soils, but must be handled, transported, and disposed of as hazardous soil, in accordance with the specifications herein. For the purpose of this specification, soils will be defined as any materials excavated beneath pavement or from the surface in unpaved areas.

The Contractor must ensure that all operations associated with the handling, sampling, loading, transportation, and disposal of hazardous materials are in compliance with the applicable Federal, State, and Local statutes and regulations and the approved RAP and CHASP. The Contractor must supply all equipment, material and labor required to conduct the specified work under this section.

The Contractor must document the excavation, handling, sampling, and testing, transportation, and disposal of hazardous soils. The Battery Park City Authority (BPCA) must be listed in the disposal documents as the waste generator.

For any equipment that handles RCRA Hazardous Soils, the Contractor must decontaminate all equipment prior to its removal from the exclusion zone as detailed in the section Health and Safety included in this specification. Water generated during the decontamination process must be disposed of in accordance with the section Removal, Treatment and Discharge/Disposal of Contaminated Water in this specification.

No soil disturbance activities are permitted prior to formal approval of the draft RAP and draft CHASP (AECOM, April 2022) by NYCDEP.

B. Material Handling Plan:

Excavated materials must be handled by the Contractor in accordance with this specification, the approved RAP, and specifications 017419 Construction and Demolition Waste Management and Disposal Plan and 310000 Earthwork. Any discrepancies between the documents must defer to the most conservative approach or if an alternative approach is requested it must be approved by the Engineer. In accordance with specification 017419 the Contractor will prepare a C+DWM Plan to be approved by the Engineer. The C+DWM Plan must include procedures for handling contaminated and potentially RCRA Hazardous soils and those procedures must comply with the provisions in the approved RAP and CHASP. At a minimum, the C+DWM Plan must consist of:

1. The Contractor's procedures for identifying hazardous soils during excavation, including the specific model and manufacturer of intended organic vapor monitoring equipment and calibration procedures to be used. It should also include the training and experience of the personnel who will operate the equipment.

2. The Contractor's procedures for safely handling hazardous soils or soils which have not yet been tested but are believed to be potentially hazardous. The procedures must include personnel safety and health as well as environmental protection considerations.
3. Name, address, NYSDOH ELAP status and telephone number of the proposed laboratory for analysis of representative soil samples.
4. Identification of the Contractor's proposed waste transporter(s). This information must include:
 - a. Name and Waste Transporter Permit Number
 - b. Address
 - c. Name of responsible contact for the waste transporter
 - d. Telephone number for the contact
 - e. All necessary permit authorizations for each type of waste transported
 - f. Previous experience in performing the type of work specified herein
5. The name and location of the facility where an off-site scale is located. The Contractor must outline the procedures on controlling trucks leaving the work site and en-route to the off-site scale.
6. All staging/stockpiling areas (if stockpiling areas are intended and available), or alternate procedures that will be used. Alternate procedures may include, but are not limited to, agreements from the intended disposal facilities to accept boring data and/or analytical data previously obtained during the site characterization so that materials may be directly loaded into vehicles for shipment to the disposal facility.
7. A backup facility must be provided, should the staging/stockpile areas become unavailable, insufficient in area or not be present by some other unforeseen difficulty.
8. Identification of the Contractor's two proposed Treatment Storage or Disposal (TSD) facilities for hazardous soils (primary and back-up) for final disposal of the hazardous soils. Both primary and backup TSD facilities must be currently USEPA or State-approved RCRA TSD facilities for hazardous soils. The information required for each facility must include:
 - a. General Information
 - (1) Facility name and the USEPA identification number
 - (2) Facility location
 - (3) Name of responsible contact for the facility
 - (4) Telephone number for contact
 - (5) Signed letter of agreement to accept waste as specified in this contract. The letter must indicate agreement to handle and accept the specified estimated quantities and types of material during the time period specified in the project schedule and any time extension as deemed necessary.
 - (6) Unit of measure utilized at disposal facility for costing purposes

- b. A listing of all permits, licenses, letters of approval, and other authorizations to operate, which are currently held and valid for the proposed facility.
 - c. A listing of all permits, licenses, letters of approval, and other authorizations to operate which have been applied for by the proposed facility but not yet granted or issued.
 - d. The Contractor must specify and describe the disposal/containment unit(s) that the proposed facility will use to manage the waste. The Contractor must identify the capacity available in the units and the capacity reserved for the subject waste.
 - e. The Contractor must provide the date of the proposed facility's last compliance inspection under RCRA.
 - f. A list of all active (unresolved) compliance orders (or agreements), enforcement notices, or notices of violations issued to the proposed facility must be provided. The source and nature of the cause of violation must be stated, if known.
9. Description of all sampling and field/laboratory analyses that will be needed to obtain disposal facility approval.

MATERIALS

1. The Contractor must provide containers as specified in the USDOT regulations.
2. The Contractor must provide polyethylene sheeting, which is to be placed under (20 mil. thickness minimum) and over (10 mil. thickness minimum) soil piles.
3. The Contractor must assure that the waste transporter's appropriate choice of vehicles and operating practices are fitted to prevent spillage or leakage of contaminated material during transportation.
4. The Contractor must provide, install, and maintain any temporary stockpiling or loading facilities on site as required until completion of material handling activities.

CONSTRUCTION DETAILS

A. Material Handling

1. Immediately after excavation of hazardous soil (if it occurs) the Contractor must:
 - a. Load material directly onto drums/trucks/tankers/roll offs for disposal off site. Containers must be labeled as hazardous soil while being held for disposal; or
 - b. If interim stockpiling is required, it should be done in accordance with specification 017419 and the approved RAP. Hazardous soils must be stockpiled separately from uncontaminated and contaminated soil at an off-site location approved by the Engineer or secured on-site by the Contractor, meeting all required Federal, State and Local stipulations. Stockpiles must be labelled as hazardous soil and situated at least 800 feet away from any sensitive receptors, such as schools, daycare center, hospitals, nursing homes, etc., and at least 100 feet away from any water body.
2. Institute appropriate procedures and security measures to ensure the protection of site personnel and the protection of the public from hazardous soils as described in the approved C+DWM Plan and Site HASP.

3. Any soil encountered that appears to contain unknown contaminants (based on visual, odor, or other observation), or that vary substantially from the material originally identified must be segregated from other materials in stockpiles or left in-situ for further characterization. Construct stockpiles to the same requirements as stated in subsection (A)(1)(b) above.
4. Provide any dewatering that is necessary to complete the work. Contaminated water must be disposed of in accordance with the section Removal, Treatment and Discharge/Disposal of Contaminated Water in this specification, the approved RAP, and specification 310000 Earthwork.
5. Provide and operate field organic vapor test equipment, a PID or an FID, to detect general organic vapor levels at intervals of approximately 50 cubic yards of soil excavated, when visual or odor observations indicate the material may substantially differ from the soil previously excavated and/or as directed by the independent Environmental Consultant.

B. Off-Site Transportation to Disposal Facility

1. General

- a. The Contractor must furnish all labor, equipment, supplies, and incidental costs required to transport contaminated material from the work area to the off-site disposal facility, and any other items and services required for transporting hazardous material for disposal at an off-site facility.
- b. The Contractor is responsible for obtaining the USEPA hazardous waste generator identification number for the project. The application must be submitted to the Engineer for review and approval prior to submission to USEPA. The Contractor must prepare the annual hazardous waste report for the project and submit to the NYSDEC and USEPA.
- c. The Contractor will be responsible for tracking all material/vehicles from the site to the off-site scale and to the approved disposal facility.
- d. The Contractor must provide to the Engineer certified tare and gross weight slips for each load received at the accepted facility which must be attached to each returned manifest. These documents must be maintained and kept with project field records.
- e. RCRA Hazardous soils (if they occur) must be delivered to the disposal or treatment facility within 30 calendar days after excavation.
- f. The Contractor must coordinate the schedule for truck arrival and material deliveries at the job site to meet the approved project schedule.
- g. The Contractor must inspect all vehicles leaving the project site to ensure that hazardous soils adhering to the wheels or undercarriage are removed prior to the vehicle leaving the site.
- h. The Contractor must obtain letters of commitment from the waste haulers and the TSD facility to haul and accept shipments.
- i. The Contractor must provide waste profile forms to the Engineer for review and approval before transporting hazardous soil to the approved TSD facility.

2. Hauling

- a. The Contractor must coordinate manifesting, placarding of shipments, and vehicle decontamination. All quantities must be measured and recorded upon arrival at the disposal facility. If any deviation between the two records occurs, the matter is to be reported immediately to the Engineer and to be resolved by the Contractor to the satisfaction of the Engineer.
- b. The Contractor will be responsible, at its own cost for any and all actions necessary to remedy situations involving material spilled in transit or mud and dust tracked off-site.
- c. The Contractor must ensure that trucks are protected against contamination by properly covering and lining them with polyethylene sheeting or by decontaminating them prior to and between acceptances of loads. Trucks with loaded contaminated soil must be covered securely with tarp before leaving the project site to prevent generation of airborne dust during hauling.
- d. The Contractor will be responsible for inspecting the access routes for road conditions, overhead clearance, and weight restrictions.
- e. The Contractor must only use the transporter(s) identified in the approved C+DWM Plan for the performance of work. Only a transporter with a current Part 364 Waste Transporter Permit from NYSDEC may transport hazardous soil. A revised C+DWM Plan or an addendum to the original approved C+DWM Plan must be submitted to the Engineer for review and approval at the cost of the Contractor for any use of substitute or additional transporters.
- f. The Contractor must develop, document, and implement a policy for accident prevention.
- g. The Contractor must not combine hazardous materials from other projects with material from this project.
- h. No material will be transported until approval by the Engineer is obtained.

3. Off-Site Disposal

- a. The Contractor must use only the disposal facility(ies) identified in the approved C+DWM Plan for the performance of the work. A revised C+DWM Plan or an addendum to the original approved C+DWM Plan must be submitted to the Engineer for review and approval at the Contractor's cost for any use of substitutions or additions of disposal facility.
- b. The Contractor will be responsible for acceptance of the materials at an approved facility, for ensuring that the facility is properly permitted to accept the stated materials, and for ensuring that the facility provides the stated treatment and/or disposal services.
- c. The Engineer reserves the right to contact and visit the TSD facility and regulatory agencies to verify the agreement to accept the stated materials and to verify any other information provided.
- d. In the event that the identified and approved facility ceases to accept the stated

materials, or the facility ceases operations, it is the Contractor's responsibility to locate an alternate approved and permitted facility(ies) for accepting materials. The alternate facility(ies) must be approved in writing by the Engineer in the same manner and with the same requirements as for the original facility(ies). The cost for this will be incurred by the Contractor without delay to the project.

- e. The Contractor must obtain manifest forms and complete the shipment manifest records required by the appropriate regulatory agencies for verifying the material and quantity of each load in unit of volume and weight. Copies of each manifest must be submitted to the Engineer within four (4) business days following shipment, and within three (3) business days after notification of receipt of the facility. The signed manifests must be maintained and kept with the project field records. Any manifest discrepancies must be reported immediately to the Engineer and be resolved by the Contractor to the satisfaction of the Engineer.
 - f. The Contractor must submit all results and weights to the Engineer in accordance with approved RAP.
 - g. The Contractor is responsible to pay all fees associated with the generation and disposal of all excavated hazardous waste. These fees include, but are not limited to, the New York State Department of Finance and Taxation (DFT) quarterly fees for hazardous waste and the NYSDEC annual hazardous waste regulatory fee program. The Contractor must submit a copy of proof of payment to the Engineer.
4. Equipment and Vehicle Decontamination
- a. The Contractor must design and construct a portable decontamination station to be used to decontaminate equipment and vehicles that have been used to handle contaminated soil.
 - b. Water generated during the decontamination process must be disposed of in accordance with the section Removal, Treatment, and Discharge/Disposal of Contaminated Water in this specification and 017419 Construction and Demolition Waste Management and Disposal.

HEALTH AND SAFETY

WORK TO INCLUDE

Health and Safety Requirements

A. Scope of Work

It is the Contractor's responsibility to stage and conduct the Contractor's work in a safe manner. The Contractor must implement a Health and Safety Plan (HASP) for contaminated/hazardous soil intrusive activities as set forth in OSHA Standards 1910.120 and 1926.650-652. The Contractor must ensure that all workers have at a minimum hazard awareness training. The Contractor must segregate contaminated work area in secured exclusion zones. These zones must limit access to Contractor personnel specifically trained to enter the work area. The exclusion zone must be set up to secure the area from the public and untrained personnel. The project health and safety program will apply to all construction personnel including persons entering the work area. In addition, the Contractor must protect the public from on-site hazards, including subsurface contaminants associated with on-site activities. The HASP must be signed off by a Certified Industrial Hygienist, reviewed and approved by the Engineer, and conform with the draft CHASP (AECOM, April 2022) and specification 013526 Safety and Health Requirements.

Work must include, but not be limited to:

1. Implementation of a baseline medical program.
2. Providing safety equipment and protective clothing for site personnel, including maintenance of equipment on a daily basis; replacement of disposable equipment as required; decontamination of clothing, equipment, and personnel; and providing all other health and safety measures.
3. Providing, installing, operating, and maintaining on-site emergency medical first aid equipment as specified in this section.
4. Providing, installing, operating, maintaining, and decommissioning all equipment and personnel decontamination facilities specified within this section, including, but not limited to, the decontamination pad, decontamination water supply, decontamination water collection equipment and all other items and services required for the implementation of the health and safety requirements for which pay items are not provided elsewhere in this Contract.
5. Provide the minimum health and safety requirements for excavation activities as specified in the draft CHASP (AECOM, April 2022).
6. Implement and enforce a HASP: The HASP as presented in these specifications is dynamic with provisions for change to reflect new information, new practices, or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The HASP will also address measures for community protection, accident prevention, personnel protection, emergency response/contingency planning, air monitoring, odor control and hazardous chemicals expected on site. Providing a Confined Space Entry Program as defined in the Occupational Safety and Health Act, Confined Space Entry Standard, 29 CFR 1910.146.

B. Environmental Health and Safety Monitoring

The LiRo Group will be the entity responsible for air monitoring and community air monitoring. The Contractor or subcontractor/subconsultant are responsible for obtaining all permits and perform all field screening, soil and water sampling, and health and safety services in accordance with the requirements specified in the approved RAP and CHASP.

1. If conditions within the exclusion zone are deemed hazardous, then the Contractor and its independent Environmental Consultant must ensure that all personnel working within identified exclusion zones and/or involved (direct contact) with the handling, storage or transport of hazardous and contaminated materials must have completed a minimum of forty (40) hours of Health and Safety Training on Hazardous Waste Sites in accordance with 29 CFR 1910.120(e). The training program must be conducted by a qualified safety instructor. If conditions in the exclusion zone are deemed to be non-hazardous, the independent Environmental Consultant must provide site specific training.
2. The Contractor must ensure that on-site management and supervisors directly responsible for or who supervise employees engaged in hazardous waste operations must receive the training specified in above and at least eight (8) additional hours of specialized training on managing such operations at the time of job assignment.

C. Submittals

1. The LiRo Group must submit all air monitoring and community air monitoring data to the engineer. A logbook or field logs must be maintained during all air monitoring activities. The logbook or field logs must be available to the Engineer at all times during construction and the logbook or field logs must be submitted to the Engineer at the conclusion of the project.
2. The Contractor must submit a written HASP, as specified herein, to the Engineer for review and approval. The Contractor must make all necessary revisions required by the Engineer and resubmit the HASP to the Engineer for acceptance. Start-up work for the project will not be permitted until written acceptance has been issued by the Engineer. The HASP must also conform with the health safety requirements in the approved RAP and CHASP.
3. Daily safety logs must be maintained by the Contractor and must be submitted to the Engineer either on request or on completion of the work. Training logs must be maintained by the Contractor and submitted to the Engineer either on request or on completion of the work.
4. A closeout report must be submitted by the Contractor to the Engineer upon completion of the work within the defined exclusion zones. This report must summarize the daily safety and monitoring logs and provide an overview of the Contractor's performance regarding environmental and safety issues. The report must carefully document all areas where contamination has been found including pictures, addresses of locations, and potential sources.
5. Accident Reports: All accidents, spills, or other health and safety incidents must be reported to the Engineer.

D. Health and Safety Plan

The HASP must comply with OSHA regulations 29 CFR 1910.120/1926.65. This document must at a minimum contain the following:

1. Description of work to be performed
2. Site description
3. Key personnel
4. Worker training procedures
5. Work practices and segregation of work area
6. Hazardous substance evaluation
7. Hazard assessment
8. Personal and community air monitoring procedures and action levels
9. Personal protective equipment
10. Decontamination procedures
11. Safety rules
12. Emergency procedures
13. Spill prevention and control, as well as spill reporting procedures
14. Dust control, vapor/odor suppression procedures
15. Identification of the nearest hospital and route
16. Confined space procedures
17. Excavation safety procedures

REMOVAL, TREATMENT, AND DISCHARGE/DISPOSAL OF CONTAMINATED WATER

WORK TO INCLUDE

A. General

This work must consist of the proper removal and disposal of all contaminated groundwater and decontamination water generated during construction operations. The Contractor must be solely responsible for the proper disposal or discharge of all contaminated water generated at the job site. The Contractor will have the option of treating water on-site for discharge to the sewer system or removing contaminated water for off-site disposal. The Contractor must be responsible to choose a method compatible to the construction work and confirm with the requirements specified in the draft RAP and CHASP (AECOM, April 2022), specification 310000 Earthwork, and 312500 Erosion and Sediment Controls.

The Contractor is responsible to obtain all permits; perform all water sampling, testing; and provide ancillary services related to dewatering and water treatment. The Contractor must at a minimum provide documentation to the Engineer demonstrating the minimum requirements as set forth below:

- a. If conditions within the exclusion zone are deemed hazardous, then the Contractor or it's subcontractor/subconsultant must ensure that all personnel working within identified exclusion zones and/or involved (direct contact) with the handling, storage or transport of hazardous and contaminated material must have completed a minimum of forty (40) hours of Health and Safety Training on Hazardous Waste Sites in accordance with 29 CFR 1910.120(e). The training program must be conducted by a qualified safety instructor.
- b. The Contractor must ensure that on-site management and supervisors directly responsible for or who supervise employees engaged in hazardous waste operations must receive the training specified in above and at least eight (8) additional hours of specialized training on managing such operations at the time of job assignment.

The Contractor must document all operations associated with the handling, sampling treatment, and disposal of contaminated water, and ensure that they are in compliance with applicable Federal, State and Local statutes and regulations, specification 310000 Earthwork, 312500 Erosion and Sediment Controls, and the approved RAP and CHASP.

The Contractor must supply all labor, equipment, transport, plant, material, treatment, and other incidentals required to conduct the specified work of this section.

If water will be disposed of into the sewer system, the Contractor must ensure the water handled/treated to comply with the New York City Department of Environmental Protection (NYCDEP) Sewer Effluent Limit concentrations prior to discharge. The Contractor is responsible for providing settling or filtering tanks and any other apparatus required by NYCDEP. Alternatively, the Contractor can provide a plan for transport and disposal at an off-site waste disposal facility.

CONSTRUCTION DETAILS

For each disposal method the Contractor proposes to utilize (disposal to sewer or off-site disposal), the following information must be obtained and documented in paragraphs A and B below, as appropriate.

B. On-site treatment and discharge into New York City sewers.

1. Regulations: The Contractor must comply with all applicable regulations. This includes but may not be limited to:
 - a. Title 15-New NYCDEP Sewer Use Regulations.
2. Permits: The Contractor is solely responsible to obtain all necessary and appropriate Federal, State and Local permits and approvals. The Contractor will be responsible for performing all and any system pilot tests required for permit approval. This includes but may not be limited to:
 - a. Industrial waste approval for the New York City sewer system.
 - b. Groundwater discharge permit for the New York City sewer system (NYCDEP Division of Sewer Regulation and Control), if discharge to sewer exceeds 10,000 gallons per day.
 - c. The Contractor must comply with NYSDEC State Pollutant Discharge Elimination System (SPDES) Permit Number GP-0-10-001, General Permit for Stormwater Discharges.
 - d. Wastewater quality control application, NYCDEP.
3. Documentation for this portion of the work must include the following at a minimum:
 - a. Identification and design of Contractor's proposed treatment to assure that the water meets the NYCDEP sewer use guidelines prior to discharge to the sewer, including identification of all materials, procedures, settling or filtering tanks, filters and other appurtenances proposed for treatment and disposal of contaminated water.
 - b. The name, address, and telephone number of the contact for the Contractor's proposed chemical laboratory, as well as the laboratory's certifications under Federal, State, or non-governmental bodies.
 - c. The name, address, and telephone number of the contact for the Contractor's proposed subcontractor/subconsultant performing any of the tasks in this section.
 - d. Copies of all submitted permit applications and approved permits the Contractor have received.
4. Materials

The Contractor must supply all settling or filtering tanks, pumps, filters, treatment devices and other appurtenances for treatment, temporary storage, and disposal of contaminated water. All equipment must be suitable for the work described herein.
5. Execution
 - a. The Contractor is solely responsible for disposal of all water, in accordance with

all Federal, State and Local regulations.

- b. The Contractor is solely responsible for any treatment required to assure that water discharged into the sewer is in compliance with all permits and Federal, State and Local statutes and regulations.
- c. The Contractor is solely responsible for the quality of the water disposed of into the sewers.
- d. The Contractor is responsible for sampling and testing of water for the NYCDEP Sewer Effluent Limit concentrations. The quality of the data is the Contractor's responsibility. Any sampling and testing must be conducted and paid in accordance with Sampling and Testing of Contaminated Water in this specification.
- e. The Contractor will be responsible to maintain the discharge rate to the sewer such that all permit requirements are met, the capacity of the sewer is not exceeded, and no surcharging occurs downstream due to the Contractor's actions. Dewatering by means of well points or deep wells will not be allowed in the Boroughs of Brooklyn or Queens where the rate of pumping exceeds forty-five (45) gallons per minute unless the appropriate permit has been secured from the NYSDEC.
- f. Disposal of Treatment Media
 - (1) The Contractor will be responsible for disposal or recycling of treatment media in accordance with all Federal, State and Local regulations.
 - (2) The Contractor must provide the Engineer with all relevant documentation concerning the disposal of treatment media, including manifests, bills of lading, certificates of recycling or destruction and other applicable documentation.

C. Off-Site Disposal

- 1. Regulations: The Contractor must conform to all applicable Federal, State and Local regulations pertaining to the transportation, storage, and disposal of any hazardous and/or non-hazardous materials as listed in Attachment 2.
- 2. The following must be submitted to the Engineer prior to initiating any off-site disposal:
 - a. Name and waste transporter permit number
 - b. Address
 - c. Name of responsible contact for the waste transporter
 - d. Any and all necessary permit authorizations for each type of waste transported
 - e. Previous experience in performing the type of work specified herein

General information for each proposed treatment/disposal facility and at least one backup treatment/disposal facility

 - a. Facility name and USEPA identification number
 - b. Facility location

- c. Name of responsible contact for the facility
- d. Telephone number for contact
- e. Unit of measure utilized at facility for costing purposes
- f. A listing of all permits, licenses, letters of approval and other authorizations to operate, which are currently held and valid for the proposed facility as they pertain to receipt, and management of the wastes derived from this Contract.
- g. A listing of all permits, licenses, letters of approval and other authorizations to operate which have been applied for by the proposed facility but not yet granted or issued. Provide dates of application(s) submitted. Planned submittals must also be noted.
- h. The Contractor must specify and describe the disposal/containment unit(s) that the proposed facility will use to manage the waste and provide dates of construction and beginning of use, if applicable. Drawings may be provided. The Contractor must identify the capacity available in the units and the capacity reserved for the subject waste.
- i. The Contractor must provide the date of the proposed facility's last compliance inspection.
- j. A list of all active (unresolved) compliance orders, agreements, enforcement notices or notices of violations issued to the proposed facility must be submitted. The source and nature of the cause of violation must be stated, if known. If groundwater contamination is noted, details of the facility's groundwater monitoring program must be provided.
- k. Description of all sampling and field/laboratory analyses that will be needed to obtain disposal facility approval.

3. Materials

All vessels for temporary storage and transport to an off-site disposal facility must be as required in DOT regulations.

4. Execution

a. General

- (1) The Contractor must organize and maintain the material shipment records/manifests required by Federal, State and Local laws. The Contractor must include all bills of lading, certificates of destruction, recycling or treatment and other applicable documents.
- (2) The Contractor must coordinate the schedule for truck arrival and material deliveries at the job site to meet the approved project schedule. The schedule must be compatible with the availability of equipment and personnel for material handling at the job site.
- (3) The Contractor must inspect all vehicles leaving the project site to ensure that contaminated liquids are not spilling and are contained for transport.
- (4) The Contractor must obtain letters of commitment from the waste haulers and

the treatment, disposal, or recovery facility to haul and accept shipment. The letter must indicate agreement to handle and accept the specified estimated quantities and types of material during the time period specified in the project schedule and any time extension as deemed as necessary.

- (5) The Contractor must verify the volume of each shipment of water from the site.
- (6) The Contractor is responsible for sampling and testing of water for off-site disposal. The quality of the data is the Contractor's responsibility. Any sampling and testing must be conducted and paid in accordance with the section Sampling and Testing of Contaminated Water in this specification, 310000 Earthwork, and the approved RAP and CHASP.
- (7) The Contractor is responsible for any additional analyses required by the TSD facility, and for the acceptance of the water at an approved TSD facility.

b. Hauling

- (1) The Contractor must not deliver waste to any facility other than the TSD facility(ies) listed on the shipping manifest.
- (2) The Contractor must coordinate manifesting, placarding of shipments, and vehicle decontamination. All quantities must also be measured and recorded upon arrival at the TSD facility(ies). If any deviation between the two records occurs, the matter is to be reported immediately to the Engineer and must be resolved by the Contractor to the satisfaction of the Engineer.
- (3) The Contractor will be responsible for any and all actions necessary to remedy situations involving material spilled in transit or mud and dust tracked off-site. This cleanup must be accomplished at the Contractor's expense.
- (4) The Contractor will be responsible for inspecting the access routes for road conditions, overhead clearance, and weight restrictions.
- (5) Only a transporter with a current Part 364 Waste Transporter Permit from NYSDEC may transport this material.
- (6) The Contractor must develop, document, and implement a policy for accident prevention.
- (7) The Contractor must not combine waste materials from other projects with material from this project.
- (8) The Contractor must obtain for the BPCA a hazardous waste generator identification number and will sign the manifest as the generator, if necessary.
- (9) No material must be transported until approved by the Engineer.

c. Disposal Facilities

- (1) The Contractor must use only the TSD facility(ies) identified in the C+DWM Plan for the performance of the work. Substitutions or additions must not be permitted without prior written approval from the Engineer, and, if approved, must be at the Contractor's cost and without causing delays to the project.

- (2) The Contractor will be responsible for acceptance of the material at an approved TSD facility, for ensuring that the facility is properly permitted to accept the stated material, and that the facility provides the stated storage and/or disposal services.
- (3) The Engineer reserves the right to contact and visit the disposal facility and regulatory agencies to verify the agreement to accept the stated material and to verify any other information provided. This does not in any way relieve the Contractor of the Contractor's responsibilities under this Contract.
- (4) In the event that the identified and approved facility ceases to accept the stated materials, or the facility ceases operations, it is the Contractor's responsibility to locate an alternate approved and permitted facility(ies) for accepting materials. The Contractor is responsible for making the necessary arrangements to utilize the facility(ies), and the alternate facility(ies) must be approved in writing by the Engineer in the same manner and with the same requirements as for the original facility(ies). This must be done at the Contractor's cost and without causing delays to the project.

d. Equipment and Vehicle Decontamination

- (1) The Contractor must design and construct a portable decontamination station to be used to decontaminate equipment and vehicles exiting the exclusion zone.

SAMPLING AND TESTING OF CONTAMINATED WATER

WORK TO INCLUDE

A. Description

The work will consist of sampling and testing of potentially contaminated groundwater, surface runoff within the excavated area and all contaminated water generated during the decontamination process. Work must be conducted in accordance with this specification, the approved RAP, and 310000 Earthwork specification.

B. Sampling and Testing

1. The Contractor is responsible, at a minimum, for sampling and testing of contaminated water for the NYCDEP Sewer Effluent Limit concentrations as listed in Attachment 1, and in accordance with the approved RAP and CHASP, as specified in this specification. The quality of the data is the Contractor's responsibility. Any additional testing required by the Federal, State and/or disposal facilities must be included in the bid price of this Item.
2. All sampling and testing must be conducted by a person trained in sampling protocols using accepted standard practices and/or the NYSDEC sampling guidelines and protocols.
3. All sample containers must be marked with legible sample labels which must indicate the project name, sample location and/or container, the sample number, the date and time of sampling, preservatives utilized, how the sample was chilled to 4 degrees Celsius, and other information that may be useful in determining the character of the sample.
4. Chain-of-custody must be tracked from laboratory issuance of sample containers through receipt of the samples.
5. The Contractor must maintain a bound sample logbook. The Contractor must provide the Engineer access to it at all times and must turn it over to the Engineer in good condition at the completion of the work. The following information, as a minimum, must be recorded to the log:
 - a. Sample identification number
 - b. Sample location
 - c. Field observation
 - d. Sample type
 - e. Analyses
 - f. Date/time of collection
 - g. Collector's name
 - h. Sample procedures and equipment used
 - i. Date sent to laboratory/name of laboratory
6. Only dedicated sampling equipment may be used to collect these samples. All equipment involved in field sampling must be decontaminated before being brought to the site and must be properly disposed of after use.

7. Samples must be submitted to the Contractor's laboratory within the holding times for the parameters analyzed.
8. All analyses must be done by a laboratory that has received approval from the NYSDOH's ELAP for the methods to be done. The Contractor must specify the laboratory in the WHP.
9. Analytical results for water discharged to the sewer and for off-site disposal must be submitted to the Engineer no later than five (5) days after sample collection.
10. The Engineer reserves the right to direct the Contractor to conduct alternative sampling in lieu of the parameters described above if the situation warrants. The substitute sampling parameters will be of equal or lesser monetary value than those described above, as determined by industry laboratory pricing standards.

SAMPLING, TESTING, AND REPORTING REQUIREMENTS FOR IMPORTED MATERIALS

WORK TO INCLUDE

A. Description

This work will consist of identifying facilities that supply materials to be used for ground filling and or embankments. This material includes but it is not limited to imported soil, gravel, and recycled aggregate for use below pavement, at the ground surface, and to be used as embankment fill for project areas that will be raised in elevation. The work described in this section must be conducted in accordance with this specification and approved RAP. The imported material requirements discussed in this section are required and supersede imported material requirements in specification 310000 Earthwork as it relates to the material's chemical properties. Any deviation from the requirements of this section requested by the Contractor must be approved by the Engineer prior to implementation.

B. Sampling and Laboratory Analysis

1. The Contractor or their environmental consultant will be responsible for testing the material to be imported. The testing parameters are specified herein and in the draft RAP.
2. The testing must be conducted at the source facility.
3. The testing must be conducted in accordance with DER-10 "Testing for Imported Soil" and include:
 - a. Target Compound List (TCL) Volatile Organic Compounds (VOCs) by EPA Method 8260
 - b. TCL SemiVolatile Organic Compounds (SVOCs) by EPA Method 8270
 - c. Include Polyfluoroalkyl Substances (PFAS) analytes
 - d. Pesticides by EPA Method 8081
 - e. PCBs by EPA Method 8082
 - f. Target Analyte List (TAL) Metals
4. All laboratory testing must be conducted by a New York State Environmental Laboratory Approved Program (ELAP) certified laboratory.
5. Source testing data must be available for every 250 cubic yards of material to be imported.
6. If the contractor requires recycled concrete aggregate (RCA) be imported for use as fill, it may only come from a facility permitted or registered with NYSDEC.
 - a. RCA is not suitable as a clean cover material or for permanent placement at the ground surface.
7. If any material arrives at the site exhibiting any indications of contamination (via visual, olfactory, or other observations) the material will be rejected for placement on the site and will be returned to the source facility at the Contractor's cost and without causing project delays.

C. Reporting

1. Once the source material is tested and all data received and compared to NYSDEC Part 375 Soil Cleanup Objectives (SCOs).
2. All laboratory results should be incorporated into a clean fill report to be submitted to the Engineer for review.
3. The report should also include the following information
 - a. Name of the facility and state identification number
 - b. Facility location
 - c. Name of responsible contact for the facility.
 - d. Telephone and email for the contact.
 - e. A cover letter from the facility specifying the type of soil or other material being imported, date of testing, and the quantity of material tested.
 - f. Unit of measure for the quantity of material being imported.
4. The clean fill report will be submitted by the Engineer to NYCDEP for their approval.
5. No material will be imported to the site without formal approval of NYCDEP.
6. If the project requires additional material to be imported that was not included in the previous clean fill report, the Contractor or their consultant will prepare an additional clean fill report to be submitted to the Engineer for their review and approval. The Engineer will submit the clean fill report to NYCDEP for their formal approval.

ATTACHMENT 1: NYCDEP LIMITATIONS FOR DISCHARGE TO SEWER

**NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTEWATER TREATMENT**

Limitations for Effluent to Sanitary or Combined Sewers

Parameter¹	Daily Limit	Units	Sample Type	Monthly Limit
Non-polar material ²	50	mg/l	Instantaneous	---
pH	5-11	SU's	Instantaneous	---
Temperature	< 150	Degree F	Instantaneous	---
Flash Point	> 140	Degree F	Instantaneous	---
Cadmium	2	mg/l	Instantaneous	---
	0.69	mg/l	Composite	---
Chromium (VI)	5	mg/l	Instantaneous	---
Copper	5	mg/l	Instantaneous	---
Lead	2	mg/l	Instantaneous	---
Mercury	0.05	mg/l	Instantaneous	---
Nickel	3	mg/l	Instantaneous	---
Zinc	5	mg/l	Instantaneous	---
Benzene	134	ppb	Instantaneous	57
Carbon tetrachloride	---	---	Composite	---
Chloroform	---	---	Composite	---
1,4 Dichlorobenzene	---	---	Composite	---
Ethylbenzene	380	ppb	Instantaneous	142
MTBE (Methyl-Tert-Butyl-Ether)	50	ppb	Instantaneous	---
Naphthalene	47	ppb	Composite	19
Phenol	---	---	Composite	---
Tetrachloroethylene (Perc)	20	ppb	Instantaneous	---
Toluene	74	ppb	Instantaneous	28
1,2,4 Trichlorobenzene	---	---	Composite	---
1,1,1 Trichloroethane	---	---	Composite	---
Xylenes (Total)	74	ppb	Instantaneous	28
PCB's (Total) ³	1	ppb	Composite	---
Total Suspended Solids (TSS)	350 ⁴	mg/l	Instantaneous	---
CBOD ⁵	---	---	Composite	---
Chloride ⁵	---	---	Instantaneous	---
Total Nitrogen ⁵	---	---	Composite	---
Total Solids ⁵	---	---	Instantaneous	---

1. All handling and preservation of collected samples and laboratory analyses of samples must be performed in accordance with 40 C.F.R. pt. 136. If 40 C.F.R. pt. 136 does not cover the pollutant

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in question, the handling, preservation, and analysis must be performed in accordance with the latest edition of “Standard Methods for the Examination of Water and Wastewater.” All analyses must be performed using a detection level less than the lowest applicable regulatory discharge limit. If a parameter does not have a limit, then the detection level is defined as the least of the Practical Quantitation Limits identified in NYSDEC’s Analytical Detectability and Quantitation Guidelines for Selected Environmental Parameters, December 1988

2. Analysis for **non-polar materials** must be done by USEPA method 1664 Rev. A. Non-Polar Material will mean that portion of the oil and grease that is not eliminated from a solution containing N-Hexane, or any other extraction solvent the USEPA will prescribe, by silica gel absorption.
3. Analysis for PCBs is required if **both** conditions listed below are met:
 - a. if proposed discharge $\geq 10,000$ gpd;
 - b. if duration of a discharge > 10 days.

Analysis for PCBs must be done by USEPA method 608 with MDL= ≤ 65 ppt. PCB’s (total) is the sum of PCB-1242 (Arochlor 1242), PCB-1254 (Arochlor 1254), PCB-1221 (Arochlor 1221), PCB-1232 (Arochlor 1232), PCB-1248 (Arochlor 1248), PCB-1260 (Arochlor 1260) and PCB-1016 (Arochlor 1016).
4. For discharge $\geq 10,000$ gpd, the TSS limit is 350 mg/l. For discharge $< 10,000$ gpd, the limit is determined on a case-by-case basis.
5. Analysis for Carbonaceous Biochemical Oxygen Demand (CBOD), Chloride, Total Solids and Total Nitrogen are required if proposed discharge $\geq 10,000$ gpd.

ATTACHMENT 2: APPLICABLE REGULATIONS

Applicable regulations include, but are not limited to:

1. 49 CFR 100 to 179 - DOT Hazardous Materials Transport and Manifest System Requirements
2. 6 NYCRR 375-6 - NYSDEC Remedial Program Soil Cleanup Objectives
3. 6 NYCRR 360-1 NYSDEC Solid Waste Management Facilities
4. 6 NYCRR 364- Waste Transporter permits
5. Local restrictions on transportation of waste/debris
6. 40 CFR 260 to 272 - Hazardous Waste Management (RCRA)
7. 6 NYCRR 371 - Identification and Listing of Hazardous Wastes
8. 6 NYCRR 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
9. 6 NYCRR 373-1 - Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements
10. 6 NYCRR 376 - Land Disposal Restrictions
11. Posted weight limitations on roads or bridges
12. Transportation Skills Programs, Inc. 1985 - Hazardous Materials and Waste Shipping Papers and Manifests
13. Other local restrictions on transportation of waste/debris
14. Occupational Safety and Health Administration (OSHA), Standards and Regulations, 29 CFR 1910 (General Industry)
15. OSHA 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response
16. OSHA Safety and Health Standards 29 CFR 1926 (Construction Industry)
17. OSHA 29 CFR 1910.146 Confined Space Entry Standard
18. Standard Operating Safety Guidelines, USEPA Office of Emergency and Remedial Response Publication, 9285.1-03
19. NIOSH / OSHA / USCG / USEPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1986)
20. U.S. Department of Health and Human Services (DHHS) "NIOSH Sampling and Analytical Methods," DHHS (NIOSH) Publication 84-100
21. ANSI, Practice for Respiratory Protection, Z88.2 (1980)
22. ANSI, Emergency Eyewash and Shower Equipment, Z41.1 (1983)
23. ANSI, Protective Footwear, Z358.1 (1981)
24. ANSI, Physical Qualifications for Respirator Use, Z88.6 (1984)
25. ANSI, Practice for Occupational and Educational Eye and Face Protection, Z87.1 (1968)
26. Water Pollution Control Federation "Manual of Practice No. 1, Safety in Wastewater Works"

27. NFPA No. 327 "Standard Procedures for Cleaning and Safeguarding Small Tanks and Containers"
28. Occupational Safety and Health Act Confined Space Entry Standard 29 CFR 1910.146.87
29. Department of Transportation 49 CFR 100 through 179
30. Department of Transportation 49 CFR 387 (46 FR 30974, 47073)
31. Environmental Protection Agency 40 CFR 136 (41 FR 52779)
32. Environmental Protection Agency 40 CFR 262 and 761
33. Resource Conservation and Recovery Act (RCRA)
34. Any transporter of hazardous or non-hazardous materials must be licensed in the State of New York and all other states traversed in accordance with all applicable regulations.

ATTACHMENT 3: DEFINITIONS

Clean Fill Report: A report presenting the facilities that material (soil or fill) will be imported to the project, the analytical data indicating the material is appropriate for placement at the site, and listing the quantities be imported.

Contaminated Groundwater and Decontamination Fluids: Groundwater within the excavation trench or decontamination water that contains regulated compounds above the NYCDEP Discharge to Sewer Effluent limits.

Disposal or Treatment Facility: A facility licensed to accept either non-hazardous regulated waste or hazardous waste for either treatment or disposal.

Exclusion Zone: Work area that will be limited to access by Contractor personnel specifically trained to enter the work area only. The exclusion zone will be set up to secure the area from the public and untrained personnel. The project health and safety program will apply to all construction personnel including persons entering the work area.

Hazard Assessment: An assessment of any physical hazards that may be encountered on a work site.

Hazardous Soils: Soils that exhibit any of the characteristics of a hazardous waste, namely ignitability, corrosivity, reactivity, and toxicity, as defined in 6 NYCRR Part 371, Section 371.3 and 40 CFR Section 261.

Hazardous Substance Evaluation: An evaluation of the possible or known presence of any hazardous substances that may be encountered on a job site. This evaluation is included in the Health and Safety Plan and will include the identification and description of any hazardous substances expected to be encountered. Material Safety Data Sheets (MSDS) will be included for each substance.

Health and Safety Plan: A plan employed at a work site that describes all the measures that will be taken to assure that all work is conducted in a safe manner, and that the health of the workers and the public will be insured.

Imported Material: Any material imported to the site for placement beneath pavement, for embankments, or as clean surface cover.

Material Handling Plan: A plan outlining the methods that will be employed to handle, transport, and dispose of contaminated materials.

Non-Hazardous Contaminated Soils: Soils which exhibit a distinct chemical or petroleum odor or exhibit elevated photoionization detector readings but are not classified as hazardous waste under 6 NYCRR Part 371, Section 371.3 and 40 CFR Section 261.

New York State Health Department's Environmental Laboratory Approval Program: A program by which the state of New York approves and accredits environmental testing laboratories.

PCBs: Polychlorinated biphenyls are a group of toxic compounds commonly used as a coolant in transformers and other electrical components.

Photoionization Detector: A handheld instrument used to measure volatile organic compounds in air. The instrument ionizes the organic molecules through the use of an ultraviolet lamp.

RCRA Hazardous Waste Characteristics: Characteristics of a material which may indicate the material is hazardous. These include ignitability corrosivity, reactivity, and toxicity.

Total Petroleum Hydrocarbons: An analytical procedure used to determine the total amount of petroleum compounds in a material.

ATTACHMENT #3
SPECIFICATION #012100 – ALLOWANCES
Revised Compared to Exhibit B-1 of RFP

(ATTACHED)

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise BPCA of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At BPCA request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.4 SUBMITTALS

- A. Submit proposals, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 ALLOWANCES

- A. Allowances shall cover cost to the Contractor for furnishing OR furnishing and installing items specified in 3.3 Schedule of Allowances. Items furnished but not installed will be delivered to a location at the project site or within Battery Park City as directed by the construction manager and will be paid for on a direct cost basis. Items furnished and installed will be paid for on a direct cost basis for the equipment and materials. Labor for the installation will include hourly rates plus overhead and profit. Installation is considered to be the permanent mounting of the item and any work required to make the item fully operational.

1.7 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to BPCA, after installation has been completed and accepted.
 - 1. If requested by construction manager, prepare unused material for storage by BPCA when it is not economically practical to return the material for credit. If directed by Construction manager, deliver unused material to BPCA storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1 – Disposal of Hazardous Material: include an allowance of \$50,000 for disposal of hazardous material by qualified subcontractor to be approved by BPCA. This item shall not be used to compensate the Contractor for any work assumed or identified as part of the Contract Documents. Any unused Allowance will not be paid to the Contractor.
- B. Allowance No. 2 – Salvage Allowance: include an allowance of \$100,000 for costs attributed to site inventory quantity discrepancies between available salvage material identified on the drawings and in specification Section 024200.2 Site Material Salvaging and available salvage material identified by the Contractor. This allowance will also cover the supply of new materials to replace materials anticipated for salvage and reuse due to breakage during salvaging operations that exceeds loss factors indicated on the drawings. This allowance will also cover the costs associated with salvaging site materials or furnishings not indicated on the Contract Documents but as directed by BPCA or Construction Manager. Any unused Allowance will not be paid to the Contractor.
- C. Allowance No. 3 – Owner Requested Signage – include an allowance of \$100,000 for cost attributed associated with furnishing and installing signage including associated structural supports, foundations, lighting, etc. The allowance will include furnishing all labor, materials, equipment, and incidental expenses necessary to install owner requested signs. This item shall not be used to compensate the Contractor for any work assumed or identified as part of the Contract Documents. Any unused Allowance will not be paid to the Contractor.
- D. Allowance No. 4 – Field Order Allowance- include an allowance of \$3,000,000 for work as directed by the Owner and/or Construction Manager. This item shall not be used to compensate the Contractor for any work assumed or identified as part of the Contract Documents. Any work under this Allowance will be agreed upon by all parties in accordance with the Contract. Any unused Allowance will not be paid to the Contractor.

END OF SECTION 012100

ATTACHMENT #4
DRAFT CONSTRUCTION HEALTH AND SAFETY PLAN
(ATTACHED)



June 15, 2022

Timothy L. Gallagher
Senior Project Manager
Mayor's Office of Environmental Coordination
100 Gold Street
New York, NY 10038

Rohit T. Aggarwala
Commissioner

**Re: South Battery Park City Resiliency Project
Block 16, Lot 10, and portions of Block 16, Lot 3 and Block 3, Lot 1
CEQR # 21BPC001M**

Angela Licata
*Deputy Commissioner
Sustainability*

59-17 Junction Blvd.
Flushing, NY 11373

Tel. (718) 595-4398
alicata@dep.nyc.gov

Dear Mr. Gallagher:

The New York City Department of Environmental Protection, Bureau of Sustainability (DEP) has reviewed the April 2022 Draft Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) prepared by AECOM on behalf of Battery Park City Authority (applicant) for the above referenced project. It is our understanding that the South Battery Park City Resiliency (SBPCR) Project is being designed to provide flood risk reduction within the Project Area for the current 100-year flood, inclusive of increased intensity and frequency of rainfall, coastal surge, and predicted sea level rise. The SBPCR Project boundary for the flood alignment spans from 1st Place and the Museum of Jewish Heritage, through Wagner Park, across Pier A Plaza, and then along the north side of the Battery Bikeway in The Battery to higher ground near the intersection of Battery Place and State Street. The flood alignment is composed of many different integrated features, such as flip-up deployable gates, glass-topped floodwalls, buried floodwalls underneath terraced slopes, exposed floodwalls, and bermed floodwalls. To meet projected design flood elevations for coastal surge, Wagner Park would be elevated 10 to 12 feet, and the buried floodwall would be constructed beneath the raised park. Additionally, an existing Wagner Park Pavilion Building will be demolished and a new one constructed.

The April 2022 RAP proposes the on-site reuse of soil in accordance with the provisions of New York State Department of Environmental Conservation (NYSDEC) 6 NYCRR Part 360.13; the excavation, transportation and off-site disposal of soil in accordance with applicable federal, state, and local regulations; import of materials to be used for excavation backfill or embankment; if any underground storage tanks are encountered, the tanks will be removed and disposed of in accordance with NYSDEC regulations; stockpiled soil will be placed on poly sheeting and covered with sheeting; stormwater pollution prevention measures; erosion and sediment controls measures; dust control; air monitoring; liquids including dewatering fluids will be handled and disposed in accordance with local, state, and federal regulations; and construction of an engineered cap across the entire site, consisting of paved

surfaces, building slab, or a minimum of 2 feet of verified and approved clean soil cap with vegetation (a clean fill report will be submitted for DEP review and approval prior to import to the site). The CHASP addresses worker and community health and safety during construction.

Based upon our review of the submitted documentation, we have the following comments and recommendations to OEC:

CHASP

- OEC should instruct the applicant that the names and phone numbers of the Project Manager, Site Supervisor, Site Safety Officer and Alternate Site Safety Officer should be included when they are appointed, prior to the start of any construction activities.
- OEC should instruct the applicant to include an accident and injury report form.

DEP finds the April 2022 RAP and CHASP for the proposed project acceptable, as long as the aforementioned information is incorporated into the CHASP. OEC should instruct the applicant that at the completion of the project, a Professional Engineer (P.E.) certified Remedial Closure Report should be submitted for DEP review and approval for the proposed project. The P.E. certified Remedial Closure Report should indicate that all remedial requirements have been properly implemented (i.e., transportation/disposal manifests for removal and disposal of soil in accordance with applicable local, state, and federal laws and regulations; two feet of DEP approved certified clean fill/top soil capping requirement in any landscaped/grass covered areas not capped with concrete/asphalt, etc.).

Future correspondence and submittals related to this project should include the following CEQR # **21BPC001M**. If you have any questions, you may contact Scott Davidow, P.G. at (718) 595-7716.

Sincerely,



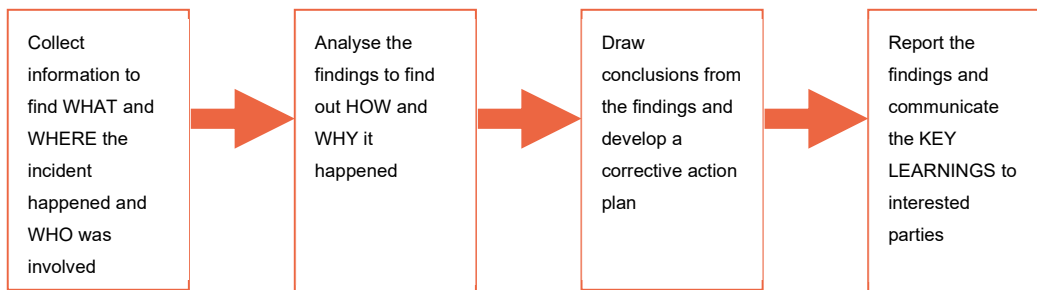
Wei Yu
Deputy Director, Hazardous Materials

c: R. Weissbard
S. Davidow
T. Estes
M. Wimbish
H. Semel - OEC

Incident Investigation Report

Instructions:

1. This report is to be completed in line with the requirements set out in the [Emergency Preparedness and Incident Response Procedure](#). Refer to Appendix 4 for completing the investigation.
2. Please attach the following to the different appendices:
 - a. Timeline of events in Appendix 1.
 - b. Original incident form in Appendix 2.
 - c. Any relevant photos in Appendix 3.
3. Completed form to be stored in the project folder.



Incident Details	
Incident Number:	
Incident Type:	Incident Status: <input type="text" value="Select."/>
Region/Business Line:	Project:
Incident Date: <input type="text" value="Click or tap to enter a date."/>	Incident Time:
Actual Severity: <input type="text" value="Select."/> (Low, Medium or High)	Potential Severity: <input type="text" value="Select."/> (Low, Medium or High)

Who was involved? (employee, contractor (managed or unmanaged), 3rd party?)

Brief Description (approx. 150 characters)

Client Notification		
Client notified? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	Name	
	Contact No.	

Investigative Team			
Name	Role	Organisation	Contact Details

Add more rows as required

Detailed Description			
Timeline attached?	<input type="checkbox"/> (Appendix 1)	Original incident form attached?	<input type="checkbox"/> (Appendix 2)
Details:			

Details of Injuries/Damage/Impact (nature and extent of injuries/damage)

Immediate Action Taken

Applicable Risk Management Items				
Risk assessment tool in use at the time of the event				
Risk Register <input type="checkbox"/>	Safety Plan <input type="checkbox"/>	SWMS/JHA <input type="checkbox"/>	Step Back <input type="checkbox"/>	Other <input type="checkbox"/> Please list: Click to enter text.
Has the risk/hazard register been updated to reflect this incident?			Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is there an existing procedure to control this event?		Yes <input type="checkbox"/> No <input type="checkbox"/>	List:	
Was this procedure in use at the time of the incident?		Yes <input type="checkbox"/> No <input type="checkbox"/>		

Findings (see Appendix 4)
Absent/Failed Defences
Individual or Team Factors
Task/Environmental Conditions
Organisational Factors

Corrective Actions			
Action Reference No.	Recommendations	Person Responsible	Completion Date

Add more rows as required

Key Learnings

Reviewed by		
Regional SHE&W Manager:		
Name	Signature	Click or tap to enter a date. Date
High Actual/Potential Incidents Only		
Regional Managing Director:		
Name	Signature	Click or tap to enter a date. Date

Appendix 1 Events and Conditions Timeline

Those referenced:

Person	Abbreviation	Role	Office

Add more rows as required

Project Timeline:

Date/Time	Event	Comments
Pre-Event		
		1.
		2.
		3.
		4.
During Event		
		5.
		6.
		7.
		8.
Post Event		
		9.
		10.
		11.
		12.

Appendix 2 Copy of Incident Notification Form (electronic or manual form)

<insert here>

Appendix 3 Photos

<insert here>

Appendix 4 Working Sheet

The following tables outline categories applicable to this incident.

ABSENT OR FAILED DEFENCES					
Defences are those factors that are designed to detect and protect the overall system from the results of human or technical failures, that is, they are the "last minute" protection measures designed to avoid or mitigate and outcome.					
Check question:		Does the item describe the equipment, work process, control measure, detection system, and procedure or attribute which normally prevents this Event or limits the consequences?			
Questions:		Event Facts:		Questions:	
<u>DF01</u>	Protection systems?	<input type="checkbox"/> Absent/Failed	<input type="checkbox"/> N/A	<u>DF05</u>	PPE?
<u>DF02</u>	Warning systems?	<input type="checkbox"/> Absent/Failed	<input type="checkbox"/> N/A	<u>DF06</u>	Safety Device Ops?
<u>DF03</u>	Guards or barriers?	<input type="checkbox"/> Absent/Failed	<input type="checkbox"/> N/A	<u>DFD7</u>	ADF Other?
<u>DF04</u>	Escape systems?	<input type="checkbox"/> Absent/Failed	<input type="checkbox"/> N/A		

INDIVIDUAL / TEAM ACTIONS					
These are the errors or violations that led directly to the event. They are typically associated with personnel having direct contact with the equipment, such as operators or maintenance personnel. They are always committed 'actively' (someone did or didn't do something) and have a direct relation with the event.					
Check question:		Does the item tell you about an error or violation of a standard or procedure made in the presence of a hazard?			
Questions:		Event Facts:		Questions:	
<u>IT01</u>	Supervision?	<input type="checkbox"/> Error/Violation	<input type="checkbox"/> N/A	<u>IT07</u>	Horseplay?
<u>IT02</u>	Operating Authority?	<input type="checkbox"/> Error/Violation	<input type="checkbox"/> N/A	<u>IT08</u>	Materials Handling?
<u>IT03</u>	Operating speed?	<input type="checkbox"/> Error/Violation	<input type="checkbox"/> N/A	<u>ITD9</u>	Hazard Recog. Perception?
<u>IT04</u>	Equipment use?	<input type="checkbox"/> Error/Violation	<input type="checkbox"/> N/A	<u>IT10</u>	Risk Mgmt.
<u>IT05</u>	PPE Use?	<input type="checkbox"/> Error/Violation	<input type="checkbox"/> N/A	<u>IT11</u>	Other (please list below)
<u>IT06</u>	Procedural Compliance?	<input type="checkbox"/> Error/Violation	<input type="checkbox"/> N/A	List: Click to enter text.	


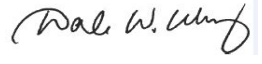

TASK/ENVIRONMENTAL CONDITIONS					
<p>These are the conditions in existence immediately prior or at the time of the event. These are the conditions that directly influence human and equipment performance in the workplace. These are the circumstances under which the errors and violations took place and can be embedded in task demands, the work environment, individual capabilities and human factors.</p>					
<p>Check question: <i>Does this item describe something about the task demands, work environment, individual capabilities or human factors that promoted errors / violations or undermined the effectiveness of system's defences?</i></p>					
Questions:		Event Facts:		Questions:	
HF01	Complacency/Attitude Motivation	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW01	Task Analysis/Take Two	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF02	Drugs/Alcohol Influence	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW02	Work Procedures	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF03	Fatigue	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW03	Permit to Work (Avail/Suit.)	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF04	Time/Production Pressures	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW04	Routine/Non-routine Task	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF05	Peer Pressure	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW05	Tools/Equipment/Materials	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF06	Physical/Mental Capability	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW06	Training	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF07	Physical/Mental Stress	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW07	Housekeeping	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF08	Distraction/ Pre-occupation	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW08	Weather Conditions	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF09	Competency/Experience/Skill	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW09	Congestion, Access	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF10	Inadequate communications	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW10	Surface Gradient/Conditions	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF11	Tolerance of Violations	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW11	Lighting	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF12	Change of Routine	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW12	Temperature	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF13	Other Human Factor	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW13	Noise	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A
HF14	Task Planning/ Preparation	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A	TW14	Gas, Dust, Chemical or Fumes	<input type="checkbox"/> Contributor <input type="checkbox"/> N/A

ORGANISATIONAL/ SYSTEM FACTORS					
<p>These are the underlying organisational factors which produce the task / environmental conditions that affect performance in the workplace. These may include fallible management decisions, processes and practices.</p>					
<p>Check question: <i>Does this contributing factor identify a standard organisational factor present before the incident and which:</i></p> <p>a. <i>produced adverse task/environmental conditions, or allowed them to go unaddressed;</i></p> <p>b. <i>promoted or passively tolerated errors or violations;</i></p> <p>c. <i>undermined or removed the system defences?</i></p>					
Questions:		Event Facts:		Questions:	
OS01	Hardware	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A	OS07	Maintenance Management	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A
OS02	Training	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A	OS08	Design	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A
OS03	Organisational Structure	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A	OS09	Risk Management	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A
OS04	Communication	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A	OS10	Management of Change	<input type="checkbox"/> Contributing <input type="checkbox"/> N/A
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Draft Construction Health and Safety Plan

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Appendix C	Chemical Safety Data Sheets (SDS)
Appendix D	SOPs – Cold Stress, Heat Stress, Wildlife, Plants and Insects
Appendix E	Instrument Calibration Sheet and Air Monitoring Data Sheet

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1. Introduction

This Construction Health and Safety Plan (CHASP) has been prepared by AECOM for general guidance and compliance with federal and state health and safety requirements for the South Battery Park City Resiliency Project (SBCPR) on behalf of the Battery Park City Authority (BPCA). The SBCPR project would provide flood protection for portions of Battery Park City including Wagner Park, Pier A Plaza and The Battery. The flood alignment is composed of multiple different integrated features such as flip-up deployable gates (flip-up deployables), glass-topped floodwalls, buried floodwalls underneath terraced slopes, exposed floodwalls, and bermed floodwalls. The term “flood alignment” is used to differentiate the combination of flood control measures represented by the SBPCR Project from a traditional freestanding flood wall for risk reduction. In addition, interior drainage improvements are proposed for the SBPCR Project, including the isolation of the existing underground sewer manholes and connected chambers.

To meet projected design flood elevations (DFE)s for coastal surge, Wagner Park would be elevated 10 to 12 feet, and the buried floodwall would be constructed beneath the raised park, maximizing the amount of protected open space within the park, while maintaining views to the waterfront. The buried floodwall also allows users to fully occupy the lawn, garden, and public park, in contrast to a traditional floodwall design which would bisect the space. Additionally, an existing Wagner Park Pavilion Building will be demolished and a new one constructed. The location of the proposed Pavilion (the Pavilion) would be similar to the existing structure, but with a slightly smaller footprint and elevated approximately 11 to 12 feet above ground level and set back closer to Battery Place. The new Pavilion would have three (3) levels: a ground, first and second level.

The Project Area covers multiple properties from 1st place and the Museum of Jewish Heritage, through Robert F. Wagner Park across Pier A Plaza, and then along the north side of the Battery Bikeway in the Battery to higher ground near the intersection of State Street and Battery Place.

1.1 Scope and Applicability of the Site Health and Safety Plan

The purpose of the CHASP is to outline best management practices and procedures, including equipment to be utilized by the construction contractors during construction. The goal of these practices is to guide the contractors throughout the duration of construction to protect the health and safety of all on-site personnel and nearby public.

This document will establish minimum standards and levels of protection that will be used by on-site personnel while performing various construction tasks and all activities that disturb existing site soil/fill and/or dewatering.

This CHASP is based on safety standards set by various agencies including:

- 29 CFR Part 1910.120 (Occupational Safety Health Administration (OSHA)) and 40 CFR Part 311 (United States Environmental Protection Agency (USEPA))
- OSHA/National Institutes Of Safety and Health (NIOSH)/USEPA/United States Coast Guard (USCG)) Occupational Health and Safety Guidelines
- USEPA, Office of Emergency and Remedial Response, Standard Operating Safety Guides
- NIOSH/OSHA Pocket Guide to Chemical Hazards
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values

All work outlined in this CHASP is subject to the NYCDEP-approved Remedial Action Plan (RAP) prepared

by AECOM for the Site. This CHASP is not intended to address potential mechanical or structural safety concerns, such as shoring and bracing of excavations, and does not replace or supersede any OSHA regulation and/or local and state construction codes or regulations.

All contractors and subcontractors are required to develop their own health and safety related procedures and programs required for work activities that include the minimum standards included in this CHASP. All employees who work on the

construction of the project that involves potential exposure to chemicals and/or contamination will receive a copy of this CHASP for their review/use and will sign an acknowledgement form confirming they have reviewed this plan. A copy of this form is attached to this plan in Appendix A. Health and safety requirements for visitors are included in this CHASP.

1.2 Visitors

All visitors entering the Project Area will be required to sign in upon entering and leaving the site. All visitors will comply with all OSHA requirements relevant to the task they have been assigned including, but not limited to, personal protective equipment (PPE), training, medical monitoring, and respiratory protection. Visitors who are not compliant with the provisions of this CHASP will be required to leave the restricted work areas of the site and all non-compliance incidents will be recorded in a logbook. Restricted work areas are defined as work areas with potential chemical exposures which include all ground intrusive activities.

All workers who require entry to a restricted work area will undergo a safety briefing prior to entering which will identify potential hazards. The safety briefing will also include direction about identifying hazards, provide information on how to perform work with minimal risk to health and safety, provide information on the use or the limitation of safety related equipment, and provide instruction on emergency procedures. The Site Safety Officer (SSO) or their designee will be charged with ensuring all visitors and workers have had the required site safety training. A copy of a typical safety meeting documentation form is provided in Appendix B.

1.3 Project Scope of Work

This CHASP covers construction-related field activities which have the potential to disturb, contaminated soils, involve dewatering, or have the potential to aerosolize dust particulates. These activities include:

- Building demolition and pavement removal activities
- Site excavation activities for construction of below grade flood protection barriers or new utilities
- Material import activities to raise the elevation of selected parts of the Project Area

2. Identification of Health and Safety Personnel

The contractor will be charged with designating a Site Safety Officer (SSO) who will be responsible with implementing and documenting compliance with this CHASP. They will be trained to meet the OSHA requirements specified in 29 CFR Part 1910. The SSO will have full stop-work authority which they will exercise if they identify an imminent safety hazard. If the SSO is absent for any reason they will designate a qualified replacement that has reviewed this CHASP and the (RAP) for this project.

Prior to the start of construction, the SSO will record the following key personnel, their responsibilities, and record the chain of command as established by on-site personnel. The personnel will also be specifically identified in this CHASP which will be re-issued at that time to reflect the following information:

Title	Responsibilities	Phone #	Email
Project Manager			
Site Supervisor			
Site Safety Officer			
Alternate Site Safety Officer			

**Include all other key members*

The SSO (or designee) will be responsible for the following safety related activities:

1. Establish site work zones
2. Determining the protection levels and equipment required to ensure the safety of personnel
3. Ensure that all personnel in the work zone are wearing proper PPE
4. Evaluating on-site conditions (i.e., weather and chemical hazard information)
5. Make recommendations to the project manager and/or the field coordinator regarding protection levels or modifications to planned work for safety related considerations
6. Monitoring for compliance with the required safety procedures
7. Notifying emergency authorities (police, fire and ambulance) as needed including the number of site workers, their location/task, and any/all chemical storage at the site that may have the potential to impact emergency responders
8. Ensuring that all personnel have been trained in proper site safety procedures and the use of PPE, and have read and signed the Acknowledgement Forms provided in Appendix D
9. Conducting daily briefings as necessary
10. Halting work if necessary
11. Ensuring strict adherence to the CHASP
12. Reviewing personnel medical monitoring participation and health and safety training.

3. Hazard Assessment

3.1 Summary

The project scope of work will include intrusive activities that will disturb contaminated soil and groundwater. Known contaminants of concern (COCs) at the Site include pesticides, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), chloroform, and metals. The presence of these contaminants has been attributed to historic/urban fill or historical site operations/activities.

3.2 Physical Hazards

Project employees may be exposed to physical hazards associated with the use of heavy equipment during construction activities. Other physical hazards may include:

- Heavy car and truck traffic
- Falling or flying objects
- Noise levels exceeding 90 DBA
- Getting caught or pinched in moving parts of equipment
- Slips, trips, and falls
- Hazards associated with all heavy machinery
- Hazards associated with excavation
- Hazards associated with on-Site vehicles

The Site SSO will conduct initial and periodic inspections to hazards and implement corrective actions as necessary including hazard elimination (if possible), mitigation (use of PPE or other safety equipment), and good housekeeping practices. Other best practices to be encouraged on-site include:

- Staying out of the range of motion of moving equipment
- Making eye contact with machine operators when entering a work zone
- Avoid wearing loose clothing near moving or rotating equipment
- Use of PPE appropriate with the task or work area

3.3 Chemical Hazards

Contaminants detected in soil and groundwater at the Site are known to include pesticides, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), chloroform, and metals. Safety Data Sheets (SDS) for these contaminants that may be encountered during construction activities are included in Appendix C

3.4 Fire and Explosion Hazard

No known fire or explosion hazards are anticipated during construction activities. A utility survey will be conducted prior to intrusive activities to identify the location of subsurface utilities. If a fire or explosion hazard is identified during construction, work will be halted until the hazard has been eliminated. During work stoppage, monitoring will be conducted in the work area and work will not continue until monitoring indicates levels are below the following:

Parameter	Action Levels
Explosive Levels	$\geq 10\%$ of the LEL in the work area perimeter breathing zone
PID Reading	>1 unit above background (sustained in work area perimeter breathing zone for 15 minutes)

Oxygen	<19.5% or >23.5% by volume in the work area perimeter breathing zone
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3.5 Environmental Hazards

Hazards related to the work environment have the potential to impact on-site workers. They include the following:

Weather: If electrical storm activity appears to be within the immediate area, operations will be discontinued, and personnel will seek shelter in a building or a rubber-tired vehicle. Work will not resume until electrical activity has not been observed for a minimum of 30 minutes.

Heat Stress: The risk of heat stress is directly influenced by the weather, type of activity, and the amount of PPE worn. PPE can add bulk weight, restrict the body's ability to cool itself via evaporation, convection, and radiation and increases the amount of energy needed to complete a task. On days of extreme heat or if a task requires high energy output while wearing restrictive PPE, additional measures including frequent breaks and increased fluid intake will be encouraged by the SSO to reduce the risk of heat stress. Additional information regarding heat stress symptoms and preventative measures are included as Appendix D.

Cold Stress: Personnel working outdoors for even a short time during winter months have an increased risk of cold stress. Cold stress risks include frostbite and hypothermia. Exposed parts of the body and extremities including the face, fingers, toes, and ears are the most likely to be affected. On days of extreme cold, warming breaks can be taken to mitigate the risk of cold stress. Additional information regarding cold stress symptoms and preventative measures are included in Appendix D.

Noise: The use of heavy or energized equipment and hand tools creates the potential for exposure to noise levels above OSHA guidelines. All project personnel will wear hearing protection sufficient for their task when working on the site. Audiometric examinations will be conducted as part of the medical monitoring program.

Other Potential Environmental Hazards: Poisonous plants (e.g. poison ivy), snakes, ticks, bees, and other insects, wild mammals, and pigeons may be encountered during construction. All project employees will be required to follow the protective measures listed in Appendix D.

3.6 Utilities

Underground utilities will be present in the vicinity of proposed construction activities. A utility survey will be conducted prior to initiating construction activities. New York 811 (One Call – 800-272-4480) will also be contacted. This work will be done a minimum of 2 weeks prior contractor mobilization to the site.

4. Personnel Training Requirements

In accordance with OSHA's standard covering hazardous waste operations and emergency response (29 CFR Part 1910.120), all personnel who will be working on-site will be trained in accordance with the standard. In addition, all personnel will participate in a medical surveillance program. Copies of training certifications and proof of participation in a medical surveillance program will be maintained by the SSO.

4.1 Pre-Assignments and Annual Refresher Training

All project personnel who may be required to perform work, defined as hazardous waste operation in 29 CFR Part 1910.120(a), that expose or potentially expose workers to hazardous substances and health hazards must have completed the initial 40-hour training. If the 40-hour training was completed more than 12 months prior to the project start-up, then an additional 8-hour refresher training must have been provided to the employee. Proof of this training is required, and training records will be maintained by the SSO.

4.2 Site Supervisors Training

Consistent with OSHA 29 CFR 1910.120(e)(4), individuals designated as Site supervisors will have completed an additional eight hours of specialized training.

4.3 Respirator Fit Testing and Training

All project employees who may be required to use respiratory protection will be required to participate in a respirator training program, which covers respirator selection, fit testing, cleaning, maintenance, and storage of respirators.

The respiratory protection for this project should be selected based on the following criteria:

- The nature of the contaminant (i.e. gas, vapor, mist, dust or fume)
- The warning properties of known or suspected contaminants (i.e. odor, taste, irritation)
- The permissible exposure limits
- The potential for immediately dangerous to life or health (IDLH) conditions in the work zones
- Quality estimates of contaminant concentrations in work zone air
- Air Monitoring results
- The nature of the work being performed for which respiratory protection is being required

4.4 Training and Briefing Topics

All project personnel, including subcontractors and visitors, will be briefed on project specific health and safety hazards that may be encountered during daily safety meetings. Personnel will also be given the opportunity to review this CHASP. Daily safety meeting topics may include:

- Review of task specific hazards
- Appropriate task-specific PPE
- Personal and/or equipment decontamination
- Emergency procedures.

5. PERSONNEL PROTECTIVE EQUIPMENT (PPE) TO BE USED

Whenever potential chemical exposures or physical hazards cannot be eliminated or mitigated by engineering controls or work practices, worker protection may be controlled through the use of PPE.

5.1 Levels of Protection

The level of protection selected is based on the following evaluation:

- The type of chemical substance, its toxicity, and its known concentration in the ambient air
- Potential for exposure to substances in air, splashing of liquids, or other direct contact with hazardous materials based on the task being performed
- Knowledge of chemicals being used or stored on-site
- Monitoring results, as described in Section 7 of this CHASP

If a situation occurs where the chemical or physical hazard are not known or defined, the level of protection will be based on professional judgement until the hazards can be better defined.

5.2 Level A Personnel Protective Equipment

Level A PPE provides the greatest level of skin, respiratory, and eye protection. If Level A conditions are encountered, all personnel will be evacuated from the area and the situation will be reviewed with the SSO.

The specific PPE for this level of protection must consist of the following:

- NIOSH and/or Mine Safety Health Association (MSHA) approved pressure demand full face self-contained breathing apparatus (SCBA), or positive pressure demand supplied air respirator with escape SCBA
- Hooded chemical resistant clothing
- Chemical resistant outer gloves
- Chemical resistant inner gloves
- Chemical resistant outer boots
- Inner boots with steel toe and shank
- Hard Hat
- Two-way radio (optional, if the situation warrants)
- Long cotton underwear (optional during cold weather)

5.3 Level B Personnel Protective Equipment

Level B provides the highest level of respiratory protection and a lesser level of skin protection as compared to Level A. If Level B conditions are encountered, all personnel will be evacuated from the area and the situation will be reviewed with the SSO.

The specific PPE for this level of protection must consist of the following:

- NIOSH and/or MSHA approved pressure demand full face SCBA, or positive pressure demand supplied air respirator with escape SCBA
- Hooded chemical resistant clothing
- Chemical resistant outer gloves
- Chemical resistant inner gloves
- Chemical resistant outer boots

- Inner boots with steel toe and shank
- Hard Hat
- Two-way radio (optional, if the situation warrants)
- Long cotton underwear (optional during cold weather)

5.4 Level C Personnel Protective Equipment

Level C is necessary when the concentrations and the type of airborne contaminants are known and the criteria for using air purifying respirators are met, and/or the chemical hazards are unknown.

The specific PPE for this level of protection must consist of the following:

- NIOSH and/or MSHA approved full face air purifying respirator equipped with dual cartridges for protection against chemical vapors, dusts, mists, or fumes
- Chemical resistant clothing (such as coveralls, two-piece chemical splash suit, disposable chemical resistant coveralls)
- Chemical resistant outer gloves
- Inner chemical resistant gloves
- Chemical resistant outer boots
- Inner boots with steel toe and shank
- Hard Hat
- Two-way radio (optional, if the situation warrants)
- Long cotton underwear (optional during cold weather)

5.5 Level D Personnel Protective Equipment

Level D PPE consists of the following:

- Disposable or non-disposable coveralls (when handling waste or product)
- Safety glasses
- Chemical resistant gloves
- Safety boots with steel toe and shank, and chemical resistant soles
- Hard Hat (when working around heavy equipment or equipment above shoulder level)
- Hearing protection (as necessary)

5.6 Reassessment of Protection Program

The level of protection provided by the PPE selection may be upgraded or downgraded by the SSO based on changes in Site conditions and/or the findings of air monitoring. If a change in the scope-of-work occurs, hazards will be reassessed. Some changes that result in the need for reassessment include:

- Start of a new phase of work
- Change in job tasks during a work phase
- Changes in season/weather
- When temperature extremes or individual medical considerations limit the effectiveness of the PPE
- When contaminants other than those previously identified are encountered
- Change in ambient levels of contaminants, as determined by on-Site monitoring

- Changes in the scope-of-work that affects the degree of, or potential for contact with, contaminated materials

5.7 Work Duration

Before workers begin work, particularly in Level C protection or higher, the anticipated duration of work should be established. Several factors limiting the duration of work include:

- Air supply consumption (SCBA use)
- Suit/ensemble permeation and penetration rates of chemicals
- Ambient temperature and weather conditions (heat stress, cold stress)
- Capacity/ability of personnel to work in PPE

The SSO will be responsible to select the level of protection necessary for each task.

5.8 Specific Levels of Protection Planned

Level D PPE is anticipated for the duration of the project.

6. MEDICAL SURVEILLANCE REQUIREMENTS

6.1 Baseline of Pre-Assignment Monitoring

All project personnel required to potentially work in restricted areas will participate in a Medical Surveillance Program and will undergo a baseline medical examination in accordance with 29 CFR 1910.120(f). Documentation of monitoring and any health-related restrictions will be provided to the SSO.

6.2 Periodic Monitoring

Periodic medical monitoring will be conducted as follows:

- All project personnel will undergo a medical examination at least once every twelve months, unless the attending physician believes a longer interval (but not greater than biennially) is appropriate.
- A medical examination will also be conducted at the termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the previous six months.
- A medical examination will be conducted as soon as possible after an employee has developed signs or symptoms indicating possible overexposure to hazardous substances or other health hazards, or if the employee has been injured or exposed above the permissible exposure limits.
- A medical examination will be conducted on a more frequent basis if the attending physician determines it to be medically necessary.

6.3 Site Specific Medical Monitoring

No Site-specific medical monitoring is anticipated for this project.

7. Air Monitoring and Personnel Air Sampling

The location, frequency and type of monitoring for the identified project tasks will be assessed once the project begins and protocols will be set for the remainder of the project. Air monitoring will be conducted during all intrusive activities. The purpose of the air monitoring program includes the following methodology:

- Work areas and activities that require the use of engineering or work practice controls, or that requires the use of PPE
- To provide data to confirm that levels of PPE selected are adequate for the protection of workers
- Provides data for the documentation of employee exposures, or lack thereof
- Provides data to document that all necessary controls and precautions are being taken for the protection of the public and the environment
- Provides data to determine the need to implement emergency control procedures and contingency plans

The project SSO will be responsible for implementing the air-monitoring program. However, the actual air monitoring may be conducted by a health and safety technician. The individual will be trained in the operation, calibration, care and limitations of the instruments they will use to conduct the air monitoring program. This will include any air sampling equipment should it be utilized. The SSO will make sure appropriate air monitoring equipment is available at all times. Instrument calibration, instrument readings, serial numbers, and sample locations will be documented in a logbook.

7.1 Community Air Monitoring Program (CAMP)

A Community Air Monitoring Plan will be implemented during construction to provide a measure of protection for the downwind community (off-site receptors). The CAMP also serves to protect on-site workers from airborne contaminants that have the potential to be released during construction activities.

Direct reading survey instruments will be used to monitor for airborne contaminants and for concentrations of vapors and gases. Direct monitoring will include both workers breathing zone and ambient work zone air. At a minimum, the following air monitoring equipment will be used on this project:

- Photoionization Detector (PID) – equipped with a 11.7 eV lamp.
- Four-Gas Meter – equipped with Lower Explosive Limit (LEL), , Oxygen (O₂), Carbon Monoxide (CO), and Hydrogen Sulfide (H₂S) sensors.
- Aerosol Particulate Monitor – capable of reading particulates at 10 micrometers (PM-10)

The attached Table 1 describes the instrument application, the monitoring locations, the frequency of monitoring for this project, and action levels for VOCs and particulates. Appendix E contains an instrument calibration log and air monitoring data sheet for use during construction.

7.2 Personal Sampling

No personal sampling is proposed for this Site. Should areas of gross contamination be encountered or other unanticipated hazardous materials (such as asbestos), the SSO may determine the need for personal sampling.

7.3 Action Levels

The action levels presented on the attached Table 2 will be used to determine the level of PPE required. It is anticipated that all work will be performed in Level D protection.

8. Site Control Measures

Site controls measures are implemented to protect employees, the public, and the environment from hazards and exposures. These protective measures may include but are not limited to the following measures:

8.1 Buddy System

Most tasks during construction will be performed by one or more employees. At a minimum, no work will occur in known contaminated areas by a lone worker. A buddy or spotter will be used during work in contaminated areas who will be able to provide his/her partner with assistance; observe his/her partner for signs of chemical or heat exposure; periodically check the integrity of his/her partners PPE; and provide notification if emergency help is needed.

8.2 Site Communications Plan

The SSO and site supervisor or project manager will develop a site communications plan to respond to emergencies. The emergency alert communication will consist of verbal, mobile phone communications, and hand signals. The plan will include a chain of command for communication of an emergency.

A listing of emergency contacts is included as Section 10.

8.3 Work Zone Definitions

Three work zones will be established as outlined below:

The exclusion zone is defined as the area that is considered to be contaminated, potentially contaminated, or that could become contaminated. All project personnel who work in the exclusion zone are required to use the appropriate level of PPE for the task, as determined by the SSO. Exclusion zones are typically separated from the project area with fencing, caution tape, and/or traffic cones.

The contamination reduction zone serves as the buffer zone between the exclusion zone and the support zone. Materials and supplies are staged in this zone for the servicing of equipment and project personnel in the exclusion zone. All vehicles, equipment, and project personnel coming out of the exclusion zone will pass through the contamination reduction zone for decontamination. All protective clothing removed by employees coming out of the exclusion zone will be staged in this area for disposal.

The support zone is considered to be uncontaminated. The support zone will be clearly delineated so as to prevent active or passive contamination from the work Site. This area serves as the entry point for Site personnel, equipment, materials, and visitors.

9. DECONTAMINATION PLAN

9.1 Standard Operation Procedures for Minimizing Contact with Contamination

The following practices will be used to minimize contact with hazardous materials and/or contamination:

- Work practices that minimize contact with hazardous substances will be stressed (i.e. not walking through areas of obvious contamination; not directly touching potentially hazardous substances).
- Use of remote sampling, handling, and container opening techniques.
- Protect monitoring and sampling instruments by bagging, leaving openings in the bag sample ports and sensors that must contact potentially contaminated materials.

Wear disposable outer garments and use disposable equipment where appropriate.

9.2 Levels of Decontamination Protection Required for Personnel

All project personnel will be instructed to remove their contaminated work clothing in a specific area and deposit them into designated containers. In addition, the employees will be instructed to use the wash facilities provided before leaving the work area or exclusion zone.

9.3 Equipment Decontamination

All project equipment used for intrusive activities will be decontaminated prior to being moved out of a contaminated zone to another area of the site or off-site. The equipment decontamination will be done in the contamination reduction zone or a separate designated area.

Small equipment will be decontaminated by wiping or spraying the equipment with paper towels dipped in water and laboratory-grade detergent solution followed by a water rinse. Larger equipment will be steam cleaned. Water used for decontamination will be containerized in an appropriate vessel, characterized, and disposed off-site in accordance with all local, state, and federal regulations.

9.4 Disposition of Decontamination Waste

All contaminated clothing and water will be disposed at an authorized facility along with other project- derived wastes, as needed. All construction derived wastes will be handled in accordance with the procedures outlined in the New York State Department of Environmental Conservation (NYSDEC) DER- 10 / Technical Guidance for Site Investigation and Remediation. See the Remedial Action Plan for more information

10. EMERGENCY RESPONSE/CONTINGENCY PLAN

This section is designed to provide guidance in the event of an emergency. This plan is intended as a guide and cannot account for all scenarios.

A form to be used to document the safety meeting is included as Appendix B.

10.1 Pre-Emergency Planning

Pre-emergency planning starts with training for the task at hand. Certain types of training are required to work on the site including OSHA HAZWOPER which includes an emergency response section.

10.2 Chain of Command

The chain of command staff charged with emergency response tasks are discussed in Section 2 of this CHASP. Specific roles will be identified and documented prior to the start of construction. These roles will be re-emphasized during the daily safety briefings. The SSO has the overall authority for the implementation of emergency response procedures and all Site emergency actions. The SSO is also responsible for notifying the appropriate agencies, as outlined in Section 10.7 below.

10.3 Emergency Recognition and Prevention

- Preventing an emergency is the responsibility of all workers and visitors on-site. Following approved procedures, clear lines of communication, and use of PPE, and good housekeeping practices should be part of every workday. Other best practices will be enforced including prohibiting eating and smoking within the work area or exclusion zone. The following measures will also be enforced and monitored by the SSO: Prior to the start of each specific task, such as excavation, evacuation route(s) will be established and communicated with the project personnel during the initial safety meeting.
- To the extent possible, all sources of ignition will be kept away from the work area and fire extinguishers will be maintained on-Site.
- Absorbent materials, shovels, and containers will be kept on-Site to contain a spill or leak.
- Operations will be stopped when inclement or hazardous weather conditions pose a threat to the safety of project personnel or the environment. Examples of such hazardous conditions include treacherous weather conditions or limited visibility.
- Preventative measures will be used to minimize heat stress and cold exposure (see Appendix D).
- Preventative measures for contact with poisonous plants, animals, and insects will be followed (see Appendix D).
- Confined space entry procedures, as outlined in Section 11, will be followed

10.4 Evacuation Routes and Procedures/Safe Distances

In the event of an incident that could potentially expose Site personnel or the public to hazardous materials or conditions, the SSO will be responsible for initiating the following actions:

- Evacuate all personnel from any area on the Site where the potential for exposure exists to a safe area designated prior to the start of work
- Stop Site operations until the added risk is adequately assessed and corrective actions initiated
- Provide for the immediate medical treatment of any injured or exposed personnel
- Notify the appropriate agencies for response to the incident

In the event of an evacuation, safe distances and places of refuge will correlate to the wind direction, topography and type of incident. Personnel will be advised to move to an upwind location at least 300 yards from any fires and/or chemical releases and will be advised to continually monitor wind direction for changes. The SSO is responsible to account for all personnel at the refuge location. If moving upwind from these types of incidents is not possible without encountering the

incident and subsequent exposure potential, personnel will be advised to move cross wind or downwind to a distance necessary to be out of the path of smoke, odors, or releases.

10.5 Site Security and Control

Site security measures typically include fencing with locked gates, security personnel, limiting unauthorized personnel from entering the site, and video surveillance of site perimeters. The specific site controls to be employed at this site will be determined prior to the start of construction.

10.6 Emergency Decontamination Procedures

In the event of an emergency, decontamination procedures will be implemented based on the nature of the emergency. In the event of a medical emergency, decontamination will generally consist of the removal of the outer protective PPE. If the nature of the emergency includes chemical contamination, the victim will be washed/sprayed with water until first responders (police/fire/ambulance personnel) arrive. If the nature of the emergency does not allow other site personnel from getting near the victim until emergency response personnel arrive, decontamination may be postponed, but all emergency response personnel must be informed about any potential exposures to contamination.

10.7 Emergency Contacts and Emergency Communications

Emergency communications will be implemented by the SSO. An emergency contact list is shown below and can be revised and/or updated at any time during the duration of construction. An emergency contact list should also be posted on-site in easily viewable areas.

<u>Organization</u>	<u>Phone Number</u>
Ambulance	911
Police Department	911
Fire Department	911
Hospital*:	New York Presbyterian Lower Manhattan Hospital Emergency Department 83 Gold Street New York, NY 10038 Phone: (212) 312-5070

* Hospital location and directions are provided as Figure 1

Poison Control Center	(800) 222-1222
Chemtrec (chemical information resources)	(800) 262-8200
National Response Center	(800) 424-8802
NYSDEC Hotline	(800) 457-7362
Project Manager (TBD)	(xxx) xxx-xxxx

10.8 Emergency Medical Treatment

In the event of an injury, all personnel will assemble at the decontamination area. If the injured person is immobile, one or more persons will remain nearby to provide the necessary first aid. If medical assistance is required, the SSO will summon the appropriate assistance and arrange for the transportation of the injured to the hospital.

In the event of a chemical exposure, the following will be initiated depending on the nature of the exposure:

- Skin/Eye Contact: Wash exposed skin immediately and flush the affected area for at least 15 minutes. Transport to medical facility.
- Inhalation: Get to fresh air, artificial respiration as necessary, transport to medical facility.
- Ingestion: Transport to medical facility immediately.

The nearest hospital to the project Site area is listed in Section 10.7. The directions to the hospital are depicted on Figure 1.

10.9 Fire or Explosion Emergency Response Procedures

The best way to prevent a fire or explosion is to eliminate possible ignition sources in the vicinity of flammable or explosive materials. That is not always possible based on the work being performed. Typical ignition sources on construction sites include; sparking tools, electric and combustion engines/motors, open flames, static spark, and high heat. These tools and ignition sources should not be used around flammable materials. Smoking will be prohibited on-site.

In the event of fire or explosion, all personnel will be evacuated to the designated assembly area or to a safe area as directed by the SSO. The SSO or their designee will contact emergency personnel.

10.10 Spill or Leaks Response Procedures

In the event of a spill or release of a potentially hazardous material, the following procedures will be implemented:

- Administer first aid (if it is safe to do so) or obtain emergency medical assistance if necessary
- Warn others of the hazard
- If possible and safe to do so, stop the spill or release at the source
- Deploy containment equipment (sorbents) and initiate cleanup activities - for example, if the spill or release is in an unpaved area, the contaminated material can be excavated, segregated, and staged for characterization and off-site disposal in accordance with the RAP
- Notify the SSO and Project Manager

Contact NYSDEC to report a spill (1-800-457-7362). They will request information including your name and affiliation; the location of the spill; the estimated volume; date and time of release; actions taken to address the spill; and what if any media was impacted. Request and record the spill number in the field notebook.

11. CONFINED SPACE ENTRY PROCEDURES

It is not anticipated that site personnel will be required to enter or work in confined spaces. If it is determined during construction that entering or working in a confined space is necessary, only appropriately trained personnel will perform such tasks and will do so in accordance with the procedures outline in this section.

11.1 Confined Space Entry

Confined spaces refer to a space which, by design, has limited openings for entry and exit; has unfavorable natural ventilation which could contain or produce dangerous atmospheres; and which is not intended for continuous occupancy. Confined spaces can include, but are not limited to, storage tanks, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, and pipelines.

11.2 Permit Required Confined Space

A permit required confined space is a confined space with one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere
- Contains or formerly contained a material that has the potential for engulfing an entrant
- Has an internal configuration in which an entrant could become entrapped or asphyxiated by inwardly converging walls
- Contains any other recognized serious safety or health hazard

Personnel are not permitted to enter any permit-required confined space unless specific authorization and training is provided.

11.3 Non-Permit Required Confined Space

A non-permit required confined space is a confined space that meets the definition of a confined space but does not meet the requirements for a permit-required confined space.

Potential hazards associated with confined space entry may include an oxygen deficient atmosphere (less than 19.5% oxygen), high vapor concentrations, or physical entrapment. Initial hazard assessment of potentially confined spaces shall include:

- Assessment of entrapment
- Air Monitoring for vapors and oxygen levels (see Section 7, action levels)
- A ladder must be used for access and egress of any pit or trench greater than 3 feet deep

Personnel are not permitted to enter a confined space without specific authorization and the appropriate training.

11.4 Confined Space Observer

If entry into a non-permit confined space is required, a trained person capable of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions will remain on the outside of the confined space and will remain in communication with those working inside. Confined space entry work will not be conducted without specific authorization from the AECOM Project Manager.

12. Spill Containment Program

If a spill or release occurs on-site during construction, personnel will notify the SSO who will direct response activities including containment and notifications up the chain of command or to emergency response agencies if necessary.

The SSO will direct designated employees to initiate containment and cleanup activities if possible and safe to do so. The SSO will determine if evacuation is required. The SSO will ensure that areas affected by the release any substances or equipment to be used to initiate containment or cleanup are appropriate to be used in that area or with the substance that has been released. All wastes generated in response to a spill will be disposed of in accordance with all local, state, and federal regulations and the RAP.

The SSO will document the spill or release incident and, if necessary, initiate notification to NYSDEC in accordance with the steps outlined in Section 10.10. If NYSDEC notification is necessary, additional steps will be required after the initial notification. Additional information about next steps after initial spill reporting can be found in the Spill Guidance Manual on the NYSDEC website at the below web address: <https://www.dec.ny.gov/regulations/2634.html>

TABLES

TABLE 1
INSTRUMENT
APPLICATIONS AND
ACTION LEVELS

Instrument	Application	Monitoring Location	Frequency
PID with 11.7 eV lamp	Total Organic vapor detection excluding methane	Work area breathing zone	Continuous
Aerosol Particulate Monitor	Total particulate concentrations	Work area breathing zone and downwind of soil disruptive activities	Continuous
Four-Gas Meter	Monitoring of levels of combustible gases (lower explosive limit), oxygen and hydrogen sulfide gases	Work area in breathing zone, particularly within excavation	Continuous

PID: Photo-ionization detector (total organic vapor detection instrument)

Four-Gas Meter: Meter with multiple sensors in one instrument capable of detecting lower explosive limit, carbon monoxide, oxygen, and hydrogen sulfide

Contaminant of Concern	Action Level	Response Action
VOCs	>5 ppm	Work will be temporarily halted and monitoring continued until the organic vapor level decreases below background levels. Work activities may then resume
	>5 ppm over background but less than 25 ppm	Work will be halted and the source of the vapors identified. Corrective actions will be employed to abate the emissions while monitoring continues. Work can resume once the organic vapor level 200ft downwind of the exclusion zone or half the distance to the nearest receptor (but in no case less than 20ft) is below 5 ppm over background for the 15-minute time-weighted average.
	Exceeds 25 ppm	Work activities will be shut down and will not resume until the source of the emissions is abated and readings are less than 25 ppm over background levels.

Note: The ambient air concentration of total organic vapors at the downwind perimeter of the work area of exclusion zone for the 15-minute average, in parts per million (ppm)

TABLE 1
INSTRUMENT
APPLICATIONS AND
ACTION LEVELS

Contaminant of Concern	Action Level	Response Action
Particulates	Between 100 mcg/m ³ and 150 mcg/m ³	Dust suppression activities will be employed. Work will continue as long as levels are not 150 mcg/m ³ above the upwind level and no visible dust is migrating out of the work area(s).
	Exceeds 150 mcg/m ³	Work will be halted and work methods will be re-evaluated to determine the proper mitigation techniques. Work will resume when mitigation or elimination measures reduce the particulate concentration to within 150 mcg/m ³ of the upwind concentration and dust is not visibly migrating from the work area.

Table 2
Action Levels for Changes in Levels of Protection

Hazard Monitored	Tasks	Action Level	Response/Level of Protection
Organic/Inorganic gases and vapors (known contaminants) Organic/Inorganic gases and vapors (unknown contaminants) (Use PEL/TLV/REL criteria on Table 1 if contaminants are known)	Excavation and construction Excavation and construction	Chemical dependent according to PEL/TLV/REL Background (0-15 units* in ambient air) 15-50 units* in ambient air 50-500 units* in ambient air >500 units* above background	Consult standard references to toxicity data. Action level usually set at 50% of PEL/TLV/REL. When multiple chemicals are present, use lowest published exposure limit. LEVEL D LEVEL C: Personnel will use full-face air-purifying respirator with GME-H cartridges. LEVEL B: Personnel will exit the site if Level B respiratory equipment is required. LEVEL A: Personnel will exit the site if Level A respiratory equipment is required.
Explosive Atmosphere	Excavation and construction	<10% LEL 10-20% LEL >20% LEL	Work with caution. Continue monitoring. Work with extreme caution. Continuous monitoring required. Explosion hazard. Withdraw from area immediately. Note: Combustible gas readings may not be accurate in atmosphere with <19.5% oxygen.
Oxygen	Excavation	<19.5% 19-21% 21.5-25% >25%	Oxygen deficient atmosphere. Level B required. Continue work. Continue work with continuous monitoring. Use extreme caution under oxygen enhanced conditions. Fire potential. Withdraw from work area immediately. Consult a fire safety specialist
Particulates	Excavation and construction	<100 ug/m ³ above background (over 15 minutes) 100-150 ug/m ³ above background >150 ug/m ³ above background	Continue work. Continue work with dust suppression. Stop work and re-evaluate dust suppression techniques.

* = these units are not criteria but are to be used as guidelines only.

FIGURES

Figure 1

HOSPITAL MAP AND DIRECTIONS

From: South Battery Park Resiliency Project (SBPRP)
New York, NY

To: New York Presbyterian Lower Manhattan Hospital Emergency Department 83
83 Gold Street, New York, NY 10038
(212) 312-5070



9 min (1.3 miles)

via Water St

Some traffic, as usual



**Museum of Jewish Heritage – A Living
Memorial to the Holocaust**

36 Battery Pl, New York, NY 10280

↑ Head south on Battery Pl toward Battery Park City
Esplanade

0.3 mi

↘ Battery Pl turns right and becomes State St

0.2 mi

↑ Continue onto Water St

0.6 mi

↙ Turn left onto Fulton St

0.1 mi

↘ Turn right onto Gold St

Destination will be on the left

407 ft

**NewYork-Presbyterian Lower Manhattan
Hospital Emergency Department**

83 Gold St, New York, NY 10038

APPENDICES

Appendix A

CHASP Acknowledgement Form

Acknowledgement Form (CHASP)

By signing this form, the employee acknowledges they have reviewed this site -specific Construction Health and Safety Plan (CHASP) and agree to perform assigned tasks in accordance with the provisions of this plan

[illegible]

Appendix B

Daily Safety Meeting Form

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name:

Phone Number:

AECOM SH&E Rep. Name:

Phone Number:

Meeting Leader:

DCS Americas - This form may be replaced by the electronic Daily Tailgate Meeting Tool. Link - [Ecosystem Daily Tailgate Meeting App Site](#)

Date:	Project Name/Location:	Project Number:	
Today's Scope of Work:			
Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
1. Required Topics		2. Discuss if Applicable to Today's Work	
<p>Fitness for Duty requirements, all sign in / sign out</p> <p>Required training (incl. task specific) completed and current</p> <p>SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)</p> <p>Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting</p> <p>STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA</p> <p>Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition</p> <p>Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location</p> <p>Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all</p> <p>Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified</p> <p>Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public</p> <p>Required checklists/records available, understood (describe):</p> <p>Lessons Learned / SH&E improvements (describe):</p>		<p>Check <input checked="" type="checkbox"/> as reviewed or mark <input type="checkbox"/> as not applicable</p> <p>Biological/ Chemical / Electrical Hazards</p> <p>Ergonomics - Lifting, Body Position</p> <p>Lock Out/ Tag Out</p> <p>Short Service Employees - visual identifier and mentor/ oversight assignment</p> <p>Simultaneous/ Neighbouring Operations</p> <p>Slip/ Trip/ Fall Hazards</p> <p>Specialized PPE Needs</p> <p>Traffic Control</p> <p>Waste Management/ Decontamination</p> <p>Weather Hazards / Heat Stress / Cold Stress</p> <p>Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)</p> <p>Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):</p> <p>Other Topics (describe/attach):</p> <p>Client specific requirements (describe):</p>	
3. Daily Check Out by Site Supervisor			
Describe incidents, near misses, observations or Stop Work interventions from today:		Describe Lessons Learned/ Improvement Areas from today:	
<i>The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.</i>			
Site Supervisor Name	Signature	Date Time (at end of day / shift)	

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

Daily Tailgate Meeting (S3AM-209-FM5)

Revision 10 June 1, 2021

PRINTED COPIES ARE UNCONTROLLED. CONTROLLED COPY IS AVAILABLE ON COMPANY INTRANET.

All employees:

- **STOP WORK** if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

- * The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
- * The hazards & control measures associated with each task you are about to perform.
- * The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
- * That no tasks or work is to be performed without a hazard assessment.
- * Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

- * You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
- * You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
- * You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
- * You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

Appendix C

Chemical Safety Data Sheets (SDS)

Appendix D

SOPs – Cold Stress, Heat Stress, Wildlife, Plants and Insects

Cold Stress

S3AM-112-PR1

1.0 Purpose and Scope

- 1.1 To protect employees from the severest effects of cold stress (hypothermia) and cold injury and to identify exposures to cold working conditions under which it is believed nearly all employees can be repeatedly exposed without adverse health effects.
- 1.2 This procedure applies to all AECOM Americas based employees and operations, and any other entity and its personnel contractually required to comply with this document's content, working outdoors in damp and cool (below 50 degrees Fahrenheit [°F] or 10 degrees Celsius [°C]) conditions or anytime temperatures are below 32°F or 0°C.

2.0 Terms and Definitions

- 2.1 **Cold Stress** – The production of physiological effects due to cold temperatures and/or wind chill.
- 2.2 **Equivalent Chill Temperature (ECT)** – Also known as Wind Chill (see below).
- 2.3 **Frostnip** – Superficial cooling of tissues without cellular destruction.
- 2.4 **Frostbite** – Freezing of tissue, resulting in tissue destruction.
- 2.5 **Hypothermia** – Condition of reduced core body temperature to 95°F (35°C) resulting in loss of dexterity, loss of mental alertness, collapse, and possible death.
- 2.6 **Wind Chill** – The combined effect of air temperature and wind. Also expressed as "equivalent chill temperature" (ECT), wind chill is defined as heat loss resulting from the effects of air temperature and wind velocity upon exposed skin.

3.0 References

- 3.1 S3AM-003-PR1 SH&E Training
- 3.2 S3AM-128-PR1 Medical Screening & Surveillance Program
- 3.3 S3AM-208-PR1 Personal Protective Equipment
- 3.4 S3AM-314-PR1 Working Alone
- 3.5 S3AM-315-PR1 Working On or Near Water
- 3.6 S3AM-333-PR1 Marine Safety & Vessel Operations

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Manager

- Ensuring the safety of employees on their project sites, consistent with regulatory standards.
- Implement cold stress prevention measures as applicable at each work site.
- Develop/coordinate a work-warning regimen, as applicable.
- Confirm cold stress hazard assessments/evaluations were completed for the planned activities.
- Assign employees physically capable of performing the assigned tasks. Consider acclimation to cold weather when evaluating employee capability.

- Confirm employees are properly trained to recognize the symptoms of cold stress.

4.1.2 **Safety, Health and Environment (SH&E) Manager**

- Conduct/support cold stress assessments/evaluations.
- Conduct/support incident investigations related to potential cold stress-related illnesses.
- Assist project teams develop appropriate work-warming regimens.
- Provide cold stress awareness training.

4.1.3 **Supervisor**

- Identify the tasks that may be most impacted by cold stress and communicate the hazard to the assigned employees.
- Confirm that employees have been trained on the recognition of cold stress-related illnesses.
- Confirm that adequate supplies of warm fluids/drinks are readily available to employees.
- Confirm that a warm/sheltered rest area is available, as applicable.
- Conduct cold stress monitoring, as applicable.
- Implement the work-warming regimen.
- Confirm that first aid measures are implemented once cold stress symptoms are identified.
- Confirm that employees are physically capable of performing the assigned tasks and are not in a physically compromised condition.

4.1.4 **Employee**

- Observe each other for the early symptoms of cold stress-related illnesses.
- Maintain an adequate intake of available fluids.
- Report to work in a properly rested condition.
- Report all suspected cold stress-related illnesses.

4.2 **Requirements**

- 4.2.1 Carefully plan work anticipated to be performed in cool or cold conditions. If possible, heavy work should be scheduled during the warmer parts of the day or when the wind is most calm. Include costs in project budgets for specialized equipment and supplies needed to complete the field activities.
- 4.2.2 Staff working in extreme cold (wind chill or ECT below 10°F or -12°C) shall not work alone. The Buddy System shall be utilized to keep an eye on each other and to watch for signs of cold stress. Refer to *S3AM-314-PR1 Working Alone*. Watch for symptoms and signs of hypothermia
- 4.2.3 Monitor weather forecasts and weather conditions such as ambient temperature, wind speed, and precipitation. Use observations prior to entering and while in the field to ensure appropriate protections are in place:
- If possible, move the work to a warm location.
 - If possible and as applicable, erect shelters or screens around the work area.
 - If possible, heat the work area.
 - If possible, adjust schedule according to the cold conditions, work level and worker acclimatization.
 - Implement a work-warming regimen by taking breaks out of the cold. As applicable, consult *S3AM-112 ATT1 Temperature Thresholds* to determine wind chill and work-warming schedule.
 - Take frequent short breaks in warm dry shelters to allow your body to warm up. Limit time of exposure to the cold. If shelter is not readily available, consider supplying temporary shelters.

- Provide assistance to prevent body heat loss, such as:
 - Providing appropriate sources of heat (e.g. warm packs, portable heaters, etc.).
 - Use of insulating materials on equipment handles when temperatures drop below 30°F (-1°C).

4.2.4 All staff working in extreme cold or snow conditions should understand the following guidelines for preventing and detecting hypothermia and frostbite; refer to *S3AM-112-ATT2 Symptoms & Treatment*:

- Ensure appropriate PPE requirements are established and adhered to.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Because prolonged exposure to cold air or to immersion in cold water at temperatures even well above freezing can lead to dangerous hypothermia, whole-body protection shall be used.
- Eat high calorie snacks to help maintain body metabolism.
- Confirm extra blankets or sleeping bags are on-site.
- Drink plenty of warm liquids. It is easy to become dehydrated in cold weather.
- Avoid caffeine and alcohol, which can act as diuretics. Alcohol consumption, depending upon quantity, can dilate blood vessels enhancing body heat loss or constrict blood vessels decreasing heat delivery to extremities.
- NEVER IGNORE SHIVERING. Persistent or violent shivering is a clear warning that you are on the verge of hypothermia.
- If you experience frost bite or hypothermia, find shelter and warmth and contact a medical practitioner if symptoms persist, refer to *S3AM-128-PR1 Medical Screening & Surveillance*.

4.3 Training

Before they begin work in a cold environment, employees that might be exposed to cold stress will be informed of the potential for cold stress and how to prevent cold stress. Employees that have not had the training within the twelve prior months shall repeat the training before exposure to cold stress, refer to *S3AM-003-PR1 SH&E Training*. Employees potentially exposed to cold stress will receive training including, but not limited to:

- 4.3.1 Sources of cold stress, the influence of protective clothing, and the importance of acclimatization.
- 4.3.2 How the body loses heat.
- 4.3.3 Recognition of cold-related illness symptoms.
- 4.3.4 Cold stress preventative/corrective measures including, but not limited to:
 - Weather monitoring.
 - Proper eating and drinking practices.
 - Work-warming schedules and proper re-warming techniques.
 - Buddy system.
 - Safe cold work practices appropriate to the work that is to be performed.
 - Proper use of cold environment personal protective clothing.
- 4.3.5 The harmful effects of excessive alcohol consumption in a cold stress environment.
- 4.3.6 The hazards associated with unstable snow or ice build ups.
- 4.3.7 First aid procedures for symptoms related to cold stress.

4.4 Personal Protective Equipment (PPE)

Wearing the right clothing is crucial to avoiding cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, on the other hand, retains its insulation even when wet. Adequate insulating dry clothing will be required in air or wind chill temperatures below 40 °F (4.4°C)

All PPE will comply with the requirements of *S3AM-208-PR1 Personal Protective Equipment* and consider the following requirements:

- 4.4.1 Wear at least 3 layers of clothing to help prevent cold stress. It is important to preserve the air space between the body and the outer layer of clothing to retain body heat.
 - Wear a middle layer of down, wool, or similar materials to provide insulation.
 - Avoid cotton, especially blue jeans.
 - Wear an outer layer to break the wind and allow some ventilation (e.g., Gortex® or nylon)
 - Do not wear tight clothing. Loose clothing allows better ventilation.
- 4.4.2 Wear proper clothing, including head coverings and gloves or mittens for cold, wet, and windy conditions.
- 4.4.3 Wear a hat or hardhat liner. Up to 40 percent of body heat can be lost when the head is left exposed.
- 4.4.4 Use insulated footwear with adequate traction to prevent slips and falls.
- 4.4.5 Wear insulated boots or other insulated footwear, and insulated gloves to help reduce the chance of frostbite.
- 4.4.6 Keep a change of dry clothing available in case work clothes become wet.
- 4.4.7 Eye and face protection for employees employed outdoors in a snow and/or ice-covered terrain should be supplied.
 - Sunglasses (with UVA and UVB protection) and sunscreen should be used when there is a persistent combination of snow and direct sun.
 - Special safety goggles to protect against blowing ice crystals and ultraviolet light and glare (which can produce temporary conjunctivitis and/or temporary loss of vision) should be required when there is an expanse of snow coverage causing a potential eye exposure hazard.
 - Ensure face guards are used to protect skin in cold, windy conditions, including riding on an unshielded vehicle.

4.5 General Cold Stress Prevention Measures

- 4.5.1 In order to prevent hypothermia:
 - Wear appropriate clothing and PPE as determined by the weather conditions.
 - When active, ventilate excess heat by opening or removing outer layers of clothing to avoid sweating.
 - Start with the mitten or gloves, unless protection from ice, snow, or cold metal surfaces is needed.
 - Next remove head gear and neck wrappings.
 - Then coats/parkas should be opened at the waist and sleeves.
 - Finally, layers of clothing should be taken off.
 - When resting or tired, or colder conditions are encountered, add additional layers of clothing/ close outer layers in the reverse of the above order, or get out of the cold. Have a sweet drink but do not indulge in heavy eating.

- Garments worn to keep out rain and spray should also allow water vapor to escape.
- Take advantage of heat from the sun and stay out of the wind as much as possible.
- Have available emergency shelter providing protection from wind and rain and insulation from the ground.
- Replace wet clothing. If wet clothing cannot be replaced, then cover it with a layer of non-breathing material to prevent evaporation. Place an insulation layer over this non-breathing material.
- Get adequate rest; conserve energy.
- Get adequate nutrition to replenish energy stores; rest after meals.
- Drink adequate fluids to avoid dehydration.
- If any project / location staff member shows signs of hypothermia, stop and treat him/her.

4.5.2 In order to prevent frost bite:

- Dress to prevent hypothermia and protect the feet and hands.
- Avoid obstruction of circulation by, for example, tight boots or tightly fitting clothing.
- Avoid nicotine (particularly cigarettes) and do not consume alcohol.
- Keep ears and nose covered and out of the wind.
- Frostbite of the corneas of the eyes can be prevented by protective goggles.
- Adopt a "buddy system" of constantly watching the faces of others in the party for white skin tissue, which is evidence of frostbite (frostnip).
- Practice constant personal vigilance for signs of trouble in one's own fingers and toes; when in doubt, investigate thoroughly before it is too late.

4.5.3 Adequate, insulating dry clothing that will help maintain core temperatures above 96.8°F (37°C) shall be provided to employees if work is performed in air temperatures below 40°F (4.4°C). Wind chill cooling rate and the cooling power of air are critical factors. The higher the wind speed and the lower the temperature in the work area, the greater the insulation value of the protective clothing required.

4.5.4 An Equivalent Chill Temperature (ECT) chart relating the actual dry bulb air temperature and the wind velocity is presented in *S3AM-112-ATT1 Temperature Thresholds*. Unless unusual or extenuating circumstances exist, cold injury to other than hands, feet, and head is not likely to occur without the development of the initial signs of hypothermia. Superficial or deep local tissue freezing will occur only at temperatures below 32°F (0°C) regardless of wind speed. However, older employees, those with circulatory problems and those with previous cold injuries require special precautionary protection against cold injury. The use of extra insulating clothing and/or a reduction in the duration of the exposure period are among the special precautions that should be considered.

4.5.5 Continuous exposure of skin should not be permitted when the air speed and temperature results in an ECT of -25°F (-32°C) or below.

4.5.6 At air temperatures of 40°F (4.4°C) or less, it is imperative that employees who become immersed in water or whose clothing becomes wet be immediately removed from the cold environment, provided a change of clothing, and be treated for hypothermia.

4.5.7 If the air velocity at the job site is increased by wind, draft, or artificial ventilating equipment, the cooling effect of the wind should be reduced by shielding the work area or by wearing an easily removable windbreak garment.

4.5.8 Adequate protection, such as general ventilation, shall be incorporated into any warming shelter design to prevent carbon monoxide poisoning.

- 4.5.9 Operation of internal combustion or similar devices within warming shelters is prohibited.
- 4.5.10 If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work should be modified or suspended until adequate clothing is made available or until weather conditions improve.
- 4.5.11 Walking and working surfaces shall be cleared of ice and snow to prevent slips and falls.
- 4.5.12 Confirm that employees carry fire starter materials if working in remote areas.
- 4.5.13 Supplies such as PPE, fuels, enclosures, de-icing, traction aids, warm drinks, and batteries will be specified by the SH&E Manager and/or the Manager and made available. These supplies will be inspected at least weekly during cold weather projects and replaced when necessary.
- 4.6 Cold Stress Prevention Measures for the Hands
 - 4.6.1 Special protection of the hands is required to maintain manual dexterity for the prevention of accidents including, but not limited to the following:
 - If fine work is to be performed with bare hands for more than 10 to 20 minutes in an environment below 60°F (15°C), special provisions should be established for keeping the employees' hands warm. For this purpose, warm air jets, radiant heaters (fuel burner or electric radiator), or contact warm plates may be utilized. Metal handles of tools and control bars should be covered by thermal insulating material at temperatures below 30°F (-1° C).
 - If the air temperature falls below 60°F (15°C) for sedentary work, 40°F (4.4° C) for light work, or 20°F (-6°C) for moderate work, and fine manual dexterity is not required, employees should use gloves.
 - 4.6.2 To prevent contact frostbite, employees should wear anti-contact gloves:
 - When cold surfaces below 20°F (-6°C) are within reach, each employee should be warned to prevent inadvertent contact by bare skin.
 - If the air temperature is 0°F (-18°C) or less, employees should protect their hands with mittens or appropriate gloves. Machine controls and tools for use in cold conditions should be designed so that they can be handled without removing the mittens or gloves.
 - Ensure an adequate supply of dry gloves is available to replace wet gloves.
 - 4.6.3 Provisions for additional total body protection are required if work is performed in an environment at or below 40°F (4.4°C). The employees should wear cold protective clothing appropriate for the level of cold and physical activity.
 - 4.6.4 Additional Cold Stress Prevention Measures:

For work practices at or below 10°F (-12°C) ECT, the following will apply:

 - The employee should be under constant protective observation (buddy system or supervision).
 - The work rate should not be so high as to cause heavy sweating that will result in wet clothing. If heavy work is being performed, rest periods should be taken in heated shelters and opportunities to change into dry clothing should be provided.
 - New employees should not be required to work full time in the cold during the first days of employment until they become acclimated to the working conditions and required protective clothing. Refer to *S3AM-112-ATT1 Temperature Thresholds* for guidance.
 - The weight and bulkiness of clothing should be included in estimating the required work performance and weights to be lifted by the employee.
 - The work should be arranged in such a way that sitting still or standing still for long periods is minimized. Unprotected metal chair seats should not be used. The employee should be protected from drafts to the greatest extent possible.

- 4.6.5 Employees handling evaporative liquid (gasoline, alcohol, or cleaning fluids) at air temperatures below 40°F should take special precautions to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling. Special note should be taken of the particularly acute effects of splashes of “cryogenic fluids” or those liquids with a boiling point that is just above ambient temperature.
- 4.6.6 Trauma sustained in freezing or subzero conditions requires special attention, because an injured employee is predisposed to cold injury. Special provisions should be made to prevent hypothermia and freezing of damaged tissue in addition to providing for first aid treatment.

4.7 Hypothermia in Water

- 4.7.1 Loss of body heat to the water is a major cause of deaths in boating and working near water incidents. Often the cause of death is listed as drowning; however, the primary cause is often hypothermia. It should also be noted that alcohol lowers the body temperature around 2 to 3 degrees by dilating the blood vessels. Do not drink alcohol around cold water. The following table shows the effects of hypothermia in water:

WATER TEMPERATURE	EXHAUSTION	SURVIVAL TIME
32.5°F (0°C)	Under 15 minutes	Under 15 to 45 minutes
32.5 to 40°F (0 to 4°C)	15 to 30 minutes	30 to 90 minutes
40 to 50°F (4 to 10°C)	30 to 60 minutes	1 to 3 hours
50 to 60°F (10 to 16°C)	1 to 2 hours	1 to 6 hours
60 to 70°F (16 to 21°C)	2 to 7 hours	2 to 40 hours
70 to 80°F (21 to 27°C)	3 to 12 hours	3 hours to indefinite
Over 80°F (27°C)	Indefinite	Indefinite

- 4.7.2 Some points to remember when water is a potential hazard:

- Wear a personal flotation device when drowning is a potential hazard. Refer to *S3AM-315-PR1 Working On or Near Water*, and *S3AM-333-PR1 Marine Safety & Vessel Operations*.
- If the water is less than 50°F (10°C), wear a wet suit or dry suit for work in water (e.g., wading, or if a significant potential to fall in water exists).
- While in the water, do not attempt to swim unless to reach nearby safety. Unnecessary swimming increases the rate of body heat loss. Keep the head out of the water. This will increase survival time.
- Keep a positive attitude about rescue. This will increase chances of survival.
- If there is more than one person in the water, huddling is recommended to conserve body heat.

- 4.7.3 If an employee or equipment is to work on ice and the water beneath the ice is or may be more than 3¼ feet (1m) deep at any point:

- Test the ice prior to commencing to ensure it will support the load to be placed on it. Ongoing testing may be necessary.
- If there is any risk of falling through the ice employees must wear personal protective equipment that will ensure buoyancy and protect against hypothermia at all times while on the ice.

4.8 Work-Warming Regimen

- 4.8.1 If work is performed continuously in the cold at an equivalent chill temperature (ECT) at or below 19°F (−7°C), heated warming shelters (tents, cabins, rest rooms, etc.) should be made available nearby. The employees should be encouraged to use these shelters at regular intervals; the frequency will depend on the severity of the environmental exposure. Refer to *S3AM-112-ATT1 Temperature Thresholds* for guidance.

- 4.8.2 The onset of heavy shivering, minor frostbite (frostnip), the feeling of excessive fatigue, drowsiness, irritability, or euphoria are indications for immediate return to the shelter.
- 4.8.3 When entering the heated shelter, the outer layer of clothing should be removed and the remainder of the clothing should be loosened to permit sweat evaporation or a change of dry work clothing provided.
- 4.8.4 A change of dry work clothing should be provided as necessary to prevent employees from returning to the cold environment with wet clothing.

5.0 Records

- 5.1 Exposure assessments will be documented in the location's files.

6.0 Attachments

- 6.1 [S3AM-112-ATT1 Temperature Thresholds](#)
- 6.2 [S3AM-112-ATT2 Symptoms & Treatment](#)

Heat Stress

S3AM-113-PR1

1.0 Purpose and Scope

- 1.1 Establishes a Heat Illness Prevention Program to guide employees in preventing heat illness, recognition of the symptoms of heat stress-related illnesses and in taking the appropriate corrective action.
- 1.2 This procedure applies to all AECOM Americas-based employees and operations and any other entity and its personnel contractually required to comply with this document's content.

2.0 Terms and Definitions

- 2.1 **Acclimated** – Employees who have developed physiological adaptation to hot environments characterized by increased sweating efficiency, circulation stability, and tolerance of high temperatures without stress. Acclimatization occurs after 7 to 10 consecutive days of exposure to heat and much of its benefit may be lost if exposure to hot environments is discontinued for a week.
- 2.2 **Chemical Protective Clothing (CPC)** – Apparel that is constructed of relatively impermeable materials intended to act as a barrier to physical contact of the Employee with potentially hazardous materials in the workplace. Such materials include Tyvek® coveralls (all types) and polyvinyl chloride coveralls and rain suits.
- 2.3 **Heat Cramps** – A form of heat stress brought on by profuse sweating and the resultant loss of salt from the body.
- 2.4 **Heat Exhaustion** – A form of heat stress brought about by the pooling of blood in the vessels of the skin and in the extremities.
- 2.5 **Heat Rash** – A heat-induced condition characterized by a red, bumpy rash with severe itching.
- 2.6 **Heat Stress** – The combination of environmental and physical work factors that constitute the total heat load imposed on the body.
- 2.7 **Heat Stroke** – The most serious form of heat stress, which involves a profound disturbance of the body's heat-regulating mechanism.
- 2.8 **Sunburn** – Caused by unprotected exposure to ultraviolet radiation present in sunlight that is damaging to the skin (Refer to *S3AM-121-PR1 Non-Ionizing Radiation*). The injury is characterized by red painful skin, blisters, and/or peeling.
- 2.9 **Unacclimated** – Employees who have not been exposed to hot work conditions for one week or more or who have become heat-intolerant due to illness or other reasons.

3.0 References

- 3.1 S3AM-003-PR1 SH&E Training
- 3.2 S3AM-004-PR1 Incident Reporting, Notifications & Investigation
- 3.3 S3AM-010-PR1 Emergency Response Planning
- 3.4 S3AM-121-PR1 Non-Ionizing Radiation
- 3.5 S3AM-208-PR1 Personal Protective Equipment
- 3.6 S3AM-209-PR1 Risk Assessment & Management

4.0 Procedures

4.1 Roles and Responsibilities

4.1.1 Managers

- Evaluate the need for heat illness prevention measures and incorporate as appropriate into the Safe Work Plan or Task Hazard Analysis.
- Allocate sufficient resources for the management of heat illness in the field including the provision of water, a shaded break area, and sufficient schedule to allow for breaks.

4.1.2 Safety, Health and Environment (SH&E) Manager

- Provide heat illness awareness training.
- Assist in developing appropriate work-rest schedules.
- Conduct/support incident investigations related to potential heat stress-related illnesses.

4.1.3 Supervisor

- Identify those tasks that may be most impacted by heat stress and communicate the hazard to the assigned Employees.
- Confirm that Employees have been trained on the recognition of heat illness.
- Confirm that this procedure, along with any applicable Safe Work Plan and/or Task Hazard Analysis (and heat exposure control plan that may be contained therein) are made available to affected Employees.
- Confirm that adequate supplies of appropriate fluids are readily available to Employees.
- Confirm that a proper rest area is available.
- Conduct heat illness monitoring, as applicable.
- Implement the work-rest schedule.
- Confirm that first aid measures are implemented once heat stress symptoms are identified.
- Confirm personnel are physically capable of performing the assigned tasks and are not in a physically compromised condition.
- Report all suspected heat illnesses.

4.1.4 Employee

- Observe each other for the early symptoms of heat illnesses.
- Maintain an adequate intake of available fluids.
- Be familiar with heat stress hazards, predisposing factors, and preventative measures.
- Report to work in a properly vested and hydrated condition.
- Report all suspected heat stress-related illnesses.

4.2 Restrictions

- 4.2.1 The Buddy System is required when working in high heat conditions; Employees shall not work alone.
- 4.2.2 Employees shall not be exposed to levels exceeding those specified for the given work level and work-rest regimen as listed in *S3AM-113-ATT1 Heat Stress – Temperature Thresholds*.
- 4.2.3 Clothing corrections shall be applied in accordance with the tables provided in *S3AM-113-ATT1 Heat Stress – Temperature Thresholds*.

4.3 Exposure Controls

4.3.1 It shall be determined whether Employees are or may be exposed to hazardous heat levels. The Supervisor shall:

- Conduct a heat stress assessment to determine the potential for hazardous exposure of Employees. Assessment shall include, but not limited to:
 - Ambient temperature.
 - Amount of sunshine (cloudy, clear). Refer to *S3AM-121-PR1 Non-Ionizing Radiation* additional direction concerning ultraviolet radiation exposures.
 - Other radiant heat sources (e.g. motor, fire, etc.).
 - Humidity.
 - Air flow.
 - Amount or type of physical labor being performed,
 - Physical condition of the Employees (e.g., acclimated/not)
 - Protective clothing in use.
 - Referral to *S3AM-113-ATT1 Heat Stress – Temperature Thresholds* to assist in determining whether hazardous heat exposures may exist.
- If potential for hazardous exposure is identified, the Supervisor shall develop and implement a heat stress exposure control plan within the Safe Work Plan and/or Task Hazard Analysis. Refer to *S3AM-209-PR1 Risk Assessment & Management*.

4.3.2 If Employees are or may be exposed, the Supervisor shall implement engineering controls (e.g., shelters, cooling devices, etc.) to reduce the exposure of Employees to levels below those specified for the given work level and work-rest regimen as listed in *S3AM-113-ATT1 Heat Stress – Temperature Thresholds*.

4.3.3 If engineering controls are not practicable, the Supervisor shall reduce the exposure of Employees to levels below those listed in *S3AM-113-ATT1 Heat Stress – Temperature Thresholds* by providing administrative controls, including a work-rest cycle or personal protective equipment, if the equipment provides protection equally effective as administrative controls.

4.3.4 If Employees are or may be exposed, the Supervisor shall provide and maintain an adequate supply of cool, fresh, potable water close to the work area for the use of a heat exposed Employee. Water shall be provided (paid) by the project or program; if Employees purchase their own drinking water because water is not otherwise available on site, they shall be reimbursed.

4.3.5 If an Employee shows signs or reports symptoms of heat stress or strain, they shall be removed from the hot environment and treated by an appropriate first aid attendant on site, if available, or by a physician, refer to *S3AM-113-ATT2 Heat Stress – Symptoms & Treatment* for more specifics.

4.4 Heat Stress Planning

4.4.1 Heat stress can be a significant site hazard, especially for Employees wearing CPC. To prepare for emergency response planning, refer to *S3AM-010-PR1 Emergency Response Planning* procedure.

4.4.2 The project and site-specific heat related risks shall be identified. Appropriate prevention and control measures shall be developed and documented in the project's SH&E Plan or included as a supplement to the SH&E Plan (e.g., *S4[DCS]AM-113-FM1 Heat Illness Prevention Plan – DCS Americas*) and the Task Hazard Assessments (THA). Refer to the *S3AM-209-PR1 Risk Assessment & Management* procedure.

4.4.3 The heat a worker is exposed to may be a combination of air temperature, radiant heat, and humidity. The WBGT (wet-bulb globe thermometer) is a useful index of the environmental

contribution to heat stress. Because WBGT is only an index of the environment, the contributions of work demands, clothing, and state of acclimatization shall also be accounted for, as described in the following steps.

- Monitor ambient temperatures and conduct heat stress monitoring in accordance with the location specific SH&E Plan. Revise the heat stress monitoring and controls if there are any reports of discomfort due to heat stress.
- Monitor temperatures in each unique environment in which workers perform work (e.g., take WBGT measurements inside truck cabs for truck drivers, and take separate WBGT measurements in the outdoor area where field employees work, etc.). Follow manufacturer's instructions on proper use of the WBGT.
- Determine if individual workers are acclimatized or un-acclimatized. Full heat acclimatization requires up to 3 weeks of continued physical activity under heat-stress conditions similar to those anticipated for the work. Its loss begins when the activity under those heat-stress conditions is discontinued, or when there is a sustained increase in temperatures of 10 °F (5.6 °C) or more, and a noticeable loss occurs after 4 days. A worker can be considered acclimatized for the purpose of this procedure when they have been exposed to the site conditions (including level of activity) for 5 of the last 7 days.
- Determine the approximate workload of each worker or group of workers. The following examples (Table 1) can be used for comparison:

Table 1
Examples of Activities within Workload Categories

Categories	Example Activities
Resting	Sitting quietly
	Sitting with moderate arm movements
Light	Sitting with moderate arm and leg movements
	Standing with light work at machine or bench while using mostly arms
	Using a table saw
	Standing with light or moderate work at machine or bench and some walking about
Moderate	Scrubbing in a standing position
	Walking about with moderate lifting or pushing
	Walking on level at 3.5 miles/hr (6 km/hr) while carrying 6.6 lbs (3kg) weight load
Heavy	Carpenter sawing by hand
	Shoveling dry sand
	Heavy assembly work on a non-continuous basis
	Intermittent heavy lifting with pushing or pulling (e.g., pick-and-shovel work)
Very Heavy	Shoveling wet sand

- Determine the approximate proportion of work within an hour during a typical shift. Typically, the initial work schedule will be 60 minutes of work per hour (100 percent work) with a small break in the morning and afternoon, as appropriate, and a 30-minute lunch break mid-day.
- For workers wearing cloth coveralls (e.g., Nomex fire resistant clothing), add 3 to the measured WBGT. For impermeable clothing, such as Tyvek or Saranex, the WBGT procedures cannot be used. For these situations, workers should begin physiological monitoring as soon as the temperature in the work area exceeds 70°F (21°C).
- Use the collected information to develop appropriate work to rest schedules as detailed in *S3AM-113-ATT1 Heat Stress – Temperature Threshold*. Work-rest schedules and water provision shall be documented in the applicable SH&E Plan or supplementary Health Illness Prevention Plan and may be additionally documented using logs such as *S3AM-113-FM2 Daily Heat Illness Prevention Log*.

- 4.4.4 Given the work demands (light, moderate, heavy or very heavy), heat of the work environment, and such aspects as PPE in use, workload will be adjusted appropriately to allow for proper acclimation.
- This is the process by which the body "gets used to" hot work environments. This is achieved by slowly increasing workloads.
 - New and returning Employees (absent one week or more) who have not had time to acclimatize may be more susceptible to heat related illnesses, even in seemingly low risk heat exposures.
 - All Employees shall be allowed time to acclimatize in the event of a heat wave. All Employees assigned to a new process with additional heat exposures shall be allowed to acclimatize.
 - Minimize workload and gradually increase as tolerance is built up. Allow for more frequent breaks.
 - While acclimatization normally takes approximately 5 to 7 days, heightened monitoring of these Employees will be maintained for the first 14 days.
- 4.4.5 Employees shall be instructed in the recognition of heat stress symptoms, the first aid treatment procedures for severe heat stress, and the prevention of heat stress injuries. Employees shall be encouraged to immediately report any heat stress that they may experience or observe in fellow Employees. Supervisors shall use such information to adjust the work-rest schedule to accommodate such problems.
- 4.4.6 Wherever possible, a designated break area should be established in an air-conditioned space, or in shaded areas where air conditioning is impractical. The break area should be equipped to allow Employees to loosen or remove protective clothing, and sufficient seating should be available for all Employees. During breaks, Employees shall be encouraged to drink plenty of water or other liquids, even if not thirsty, to replace lost fluids and to help cool off. Cool water should be available at all times in the break area, and in the work area itself unless hygiene/chemical exposure issues prevent it.
- 4.5 Symptoms and Treatment
- 4.5.1 Refer to *S3AM-113-ATT2 Heat Stress – Symptoms & Treatment*.
- 4.5.2 Employees who exhibit ANY signs of significant heat stress (e.g., profuse sweating, confusion and irritability, pale, clammy skin) shall be relieved of all duties at once, made to rest in a cool location, and provided with large amounts of cool water.
- 4.5.3 Severe heat stress (heat stroke) is a life-threatening condition requiring immediate emergency medical care (e.g., call 911). Anyone exhibiting symptoms of heat stroke (slurred speech, unconsciousness, etc.) shall be taken immediately to the nearest medical facility. Steps shall be taken to cool the person during transportation (clothing removal, wet the skin, air conditioning, etc.).
- 4.6 Prevention
- 4.6.1 Requirements for working in extreme heat may be triggered by regulatory established criteria (e.g. CAL/OSHA requires high heat procedures when temperature equals or exceeds 95°F) or as a result of a hazard analysis assessing various contributory factors (refer to *S3AM-113-ATT1 Heat Stress – Temperature Thresholds*). Employees working in extreme heat or sun should understand and apply the following guidelines for preventing and detecting heat exhaustion and heat stroke.
- When possible, begin hydrating at least three days prior to working in high heat conditions.
 - Review the heat stress exposure control plan within the SH&E Plan, and/or Task Hazard Analysis.
 - If the supervisor is not immediately available confirm a reliable method of communication is in place to allow for contact with supervision. In the absence of cellular reception, a satellite phone or similar device may be required.

- Take frequent short breaks in areas sheltered from direct sunlight; eat and drink small amounts frequently.
- Try to schedule work for the coolest part of the day, early morning and evening.
- Avoid strenuous physical activity outdoors during the hottest part of the day.
- Avoid sudden changes of temperature. Refer to *S3AM-113-ATT1 Heat Stress – Temperature Thresholds*.
- Air out a hot vehicle before getting into it.
- Obtain medical direction if taking diuretics during hot weather (a lower dose may be necessary).
- When working in heat, drink 1 quart of water per hour of work.
- Avoid caffeine and alcohol as they increase dehydration.
- Monitor urine frequency and color to detect dehydration. Refer to the *S3AM-113-ATT3 Dehydration Chart*.
- The Buddy System is required when working in high heat conditions to enable effective communication and cross-observation for indications of heat stress.
- Initiate emergency response procedures when necessary, including contacting emergency medical services as appropriate and in accordance with the Emergency Response Plan.

4.6.2 Personal Protective Equipment

- Review the *S3AM-208-PR1 Personal Protective Equipment* procedure.
- Wear a hat and light-colored, loose-fitting clothing to reflect the sun.
- Apply sunscreen to exposed skin (SPF 30 or greater, follow directions on label).
- Wear sunglasses with UV protection.
- Pack extra water to avoid dehydration (try freezing water in bottles overnight to help keep the water cooler for longer during the day).

4.7 Work-Rest Schedule Practices

- 4.7.1 Intake of fluid will be increased beyond that which satisfies thirst, and it is important to avoid "fluid debt," which will not be made up as long as the individual is sweating.
- Two 8-ounce glasses of water should be taken prior to beginning work, then up to 32 ounces (1 quart) per hour during the work shift; fluid replacement at frequent intervals is most effective.
 - The best fluid to drink is water; liquids like coffee or soda do not provide efficient hydration and may increase loss of water.
 - If commercial electrolyte drinks (e.g., Gatorade) are used, the drink should be diluted with water, or 8 ounces of water should be taken with each 8 ounces of electrolyte beverage.
- 4.7.2 Additional salt is usually not needed and salt tablets should not be taken.
- 4.7.3 Fluids for drinking should be cool and fresh, but not cold.
- 4.7.4 Breaks will be taken in a cool, shaded location, and any impermeable clothing should be opened or removed.
- A relatively cool, shaded area shall be provided for breaks when working in hot environments. For hazardous waste sites, the rest area should be located in the support zone adjacent to the contamination reduction zone, situated so that part of it is in the decontamination area so workers can take breaks without going through full decontamination.

- If shade is not available, shaded areas shall be constructed. This same type of canopy can be set up to shade personnel performing various types of work in hot weather.
- Cooling measures other than shade (e.g., misting, air-conditioned break areas, air conditioned vehicles, etc.) can be used in lieu of shade provided it can be demonstrated that they are at least as effective in cooling employees.
- Employees should have access to these rest areas at break times and at any other time when suffering from heat illness or believing a preventive recovery period is needed.

4.7.5 Dry clothing or towels should be available to minimize chills when taking breaks.

4.7.6 Manual labor will not be performed during breaks, other than paperwork or similar light tasks.

4.7.7 Other controls that may be used include:

- Scheduling work at night or during the cooler parts of the day (6 am–10 am, 3 pm–7 pm).
- Erecting a cover or partition to shade the work area.
- Auxiliary cooling - wearing cooling devices beneath protective garments, but over any underclothing.
 - If cooling devices are worn, only physiological monitoring will be used to determine work activity.
 - These vests typically provide cooling via one of two methods: the use of ice or other frozen media, or the use of a vortex cooler. Each method has its advantages and disadvantages.
 - The frozen media vest requires a means for freezing the media, and the media (usually water or "blue ice") will melt, requiring replacement.
 - The vortex cooler tends to cool more uniformly. Instead of frozen media, this vest uses the expansion of compressed air to cool the wearer. The drawback is the compressed air requirement, but this is negated when the wearer is already using an airline respirator supplied by a compressor. A vortex cooler should not be supplied from air cylinders, as this will draw down the cylinders rapidly.
- Auxiliary cooling should be considered when the following conditions exist:
 - Ambient temperature over 80°F (26°C).
 - Workers are wearing impermeable garments (i.e., Tyvek, Saranex, Chemrel, etc.).
 - It is desirable to have long work shifts with minimum interruption.

4.8 Evaluating the Work-Rest Schedule's Effectiveness

4.8.1 Once a work-rest schedule is established, the Supervisor shall continually evaluate its effectiveness through observation of Employees for signs/symptoms of heat stress. Have workers assess themselves and their body's reaction to the heat and work conditions (self-assessment), and report any signs or symptoms of heat illness. These can include nausea or dizziness, heat cramps, extreme thirst, or very dark urine.

4.8.2 Measurement or physiological monitoring of each Employee's vitals (e.g., pulse, blood pressure, and temperature) can provide additional information in determining if the schedule is adequate. Refer to *S3AM-113-ATT1 Heat Stress – Temperature Thresholds* for additional guidance on when physiological monitoring should be conducted.

4.8.3 Frequency of physiological monitoring is increased or decreased depending upon such factors as worker fitness, acclimatization, temperature of the work environment, type of PPE, etc.

Based on the results of the physiological monitoring and on the workers' self-assessments, the work period may be adjusted as follows:

- The work period may be increased (generally, by 5- to 10-minutes intervals, up to a maximum of 4 hours) if the results of the first 2 hours of the physiological monitoring and the workers' self-assessments indicate that workers are recovering adequately (see below), and on the judgment of the SH&E Manager.
 - The work period shall be decreased if the results of the physiological monitoring and the workers' self-assessment indicate that workers are NOT recovering adequately (see below).
- 4.8.4 If physiological monitoring is conducted, the Employee and/or the SH&E Manager (or appropriate designate) shall measure and record body temperature and pulse rate as described below.
- 4.8.5 Monitor body temperature to determine if Employees are adequately dissipating heat build-up. Ear probe thermometers which are adjusted to oral temperature (aural temperature) are convenient and the preferred method of measurement. Determine work/rest regimen as follows:
- Measure oral body temperature at the end of the work period. Oral body temperatures are to be obtained prior to the employee drinking water or other fluids.
 - If temperature exceeds 99.6°F (37.5°C), shorten the following work period by 1/3 without changing the rest period.
 - If, at the next rest period, temperature still exceeds 99.6°F (37.5°C), the worker should not be allowed to continue work until repeated temperature measurements are in the acceptable range (i.e., less than 99.6°F). Do not leave the worker alone during the recovery time. Watch for signs of heat illness and be prepared to implement emergency response as necessary.
 - Do not allow a worker to wear impermeable PPE when his/her oral temperature exceeds 100.6°F (38.1°C).
- 4.8.6 At the start of the workday each Employee's baseline pulse rate (in beats per minute [bpm]) is determined by taking a pulse count for 15 seconds and multiplying the result by four or by using an automated pulse count device. Pulse rates can then be measured at the beginning of each break period and two minutes thereafter to determine if the rest period allows for adequate recovery.
- Take the radial (wrist) pulse as early as possible in the rest period and determine the worker's heart rate in beats per minute. The heart rate is determined by counting the pulse for ten seconds and multiplying the number by 6 to get the beats per minute. Record this as P1.
 - Wait 2 minutes and repeat the pulse measurement. Record this as P2.
 - If P1 is greater than or equal to 110 beats per minute (bpm) and if (P1 – P2) is less than or equal to 10 bpm (indicating that workers are not recovering adequately), shorten the next work cycle by 1/3 without changing the rest period.
 - At the next rest period, if P1 is still equal to or greater than 110 bpm, and if (P1 – P2) is still less than or equal to 10 bpm, shorten the following work cycle by 1/3 without changing the rest period.
 - At the third rest period, if P1 is still equal to or greater than 110 bpm and (P1 – P2) is still less than or equal to 10 bpm, the worker should not be allowed to continue work until repeated pulse measurements are in the acceptable range (i.e., P1 is less than 110 bpm and (P1 – P2) is greater than 10 bpm). Do not leave the worker alone during the recovery time. Watch for signs of heat illness and be prepared to implement emergency response as necessary.
- 4.8.7 Use of an automated or similar blood pressure device will be used to assess each Employee's blood pressure at the beginning and end of each break period to determine if the rest period allows adequate cooling by applying the following criteria:
- If the blood pressure of an Employee is outside of 90/60 to 150/90, then the Employee will not be allowed to begin or resume work; extend the break period by at least five minutes, at the end of which blood pressure rates will be re-measured and the end-of-break criteria again applied.

4.8.8 All physiological monitoring of heat stress will be documented using *S3AM-113-FM1 Heat Stress Monitoring Log*.

4.9 Training

4.9.1 Employees and their Supervisors that may be exposed to the hazard will be trained and oriented to the hazard and the controls prior to work commencing.

4.9.2 Those Employees, including Supervisors, potentially exposed to heat stress will receive training, refer to the *S3AM-003-PR1 SH&E Training* procedure. Training will include, but is not limited to:

- Sources of heat stress (environmental and personal), influence of protective clothing, and importance of acclimatization;
- How the body handles heat and acclimatization;
- Recognition of heat-related illness symptoms;
- Preventative/corrective measures including, but not limited to;
 - Employees will be informed of the harmful effects of excessive alcohol consumption in the prevention of heat stress.
 - All Employees will be informed of the importance of adequate rest and proper diet in the prevention of heat stress.
- First aid procedures for heat stress-related illnesses; and
- Immediate reporting of any heat-related incident (injury, illness, near-miss), refer to the *S3AM-004-PR1 Incident Reporting, Notifications & Investigation* procedure.

5.0 Records

5.1 None

6.0 Attachments

6.1 [S3AM-113-ATT1 Heat Stress - Temperature Thresholds](#)

6.2 [S3AM-113-ATT2 Heat Stress - Symptoms & Treatment](#)

6.3 [S3AM-113-ATT3 Dehydration Chart](#)

6.4 [S3AM-113-FM1 Heat Stress Monitoring Log](#)

6.5 [S3AM-113-FM2 Daily Heat Illness Prevention Log](#)

6.6 [S3\[DCS\]AM-113-FM1 Heat Illness Prevention Plan – DCS Americas](#)

Wildlife, Plants & Insects

S3AM-313-PR1

1.0 Purpose and Scope

- 1.1 Communicates the requirements and precautions to be taken by AECOM employees to protect against the biological hazards associated with insects, arachnids, snakes, poisonous plants, and other animals referred to herein collectively as “biological hazards”.
- 1.2 This procedure applies to all AECOM Americas-based employees and operations and any other entity and its personnel contractually required to comply with this document’s content.

2.0 Terms and Definitions

- 2.1 **Field Work** – Any activity conducted at a site that contains brush, overgrown grass, leaf litter, poisonous plants, or is located near mosquito breeding areas and includes work in structures where animals might exist that harbor fleas or ticks or where spiders and mites could be present. Field work includes, but is not limited to, Phase I, Phase II, Operations Monitoring & Maintenance, biological surveys, and other work that meets the definition of field work.
- 2.2 **Poisonous** – Capable of harming or killing by or as if by poison; toxic or venomous.
- 2.3 **Phase I Environmental Site Assessment** – Investigation of real property to determine the possibility of contamination, based on visual observation and property history, but no physical testing. Under new Environmental Protection Agency regulations that went into effect on November 1, 2006, a Phase I, as it is called for short, will be mandatory for all investors who wish to take advantage of Comprehensive Environmental Response, Compensation, and Liability Act defenses that will shield them from liability for future cleanup, should that prove necessary. The new Phase I rules, called “All Appropriate Inquiry” or AAI, also require more investigation than previously mandated. Investors can expect to see dramatic price increases over prior experiences.
- 2.4 **Phase II Environmental Site Assessment** – Investigation of real property through physical samplings and analyses to determine the nature and extent of contamination and, if indicated, a description of the recommended remediation method.

3.0 References

- 3.1 RS2-001-PR1 Firearms Standard
- 3.2 S3AM-004-PR1 Incident Reporting, Notifications & Investigation
- 3.3 S3AM-008-PR1 Fitness for Duty
- 3.4 S3AM-113-PR1 Heat Stress
- 3.5 S3AM-208-PR1 Personal Protective Equipment
- 3.6 S3AM-209-PR1 Risk Assessment & Management

4.0 Procedure

- 4.1 Roles and Responsibilities
 - 4.1.1 **Managers / Supervisors**
 - Responsible for managing field work.

- Work with employees to see that a Task Hazard Analysis (THA) for the work to be conducted has been performed prior to the beginning of the field work and that it includes an assessment of potential biological hazards.
- Implement control measures at the location to reduce the potential for employees to be exposed to injuries and illnesses from biological hazards while working.
- If the exposures cannot be eliminated or managed with engineering controls, approve the use and cost of Personal Protective Equipment (PPE) and protective repellents and lotions and confirm that exposed employees have and use these products.

4.1.2 **SH&E Manager**

- Confirm training and guidance is provided to employees consistent with this procedure.
- During the performance of site visits, assess the precautions being taken against biological hazards for compliance with this procedure.
- Assist AECOM personnel in identifying hazards and selecting appropriate control measures.
- As applicable, review and approve relevant SH&E Plans for locations that have biological hazards.

4.1.3 **Employees**

- Participate in required training related this procedure.
- Participate in the development of THAs for the task, identify control measures to limit exposure and request PPE, repellents, and protective lotions identified by this procedure.
- Update the applicable THA when a new, unaccounted for biological hazard is identified. Employee shall stop work to identify appropriate elimination or control measures (and obtain any necessary guidance) before continuing work.
- Obtain approval from Managers and/or Supervisors to purchase selected PPE prior to purchasing.
- Implement the precautions appropriate to prevent exposure to the hazardous wildlife, insects and plants.
- Observe requirements for reporting (e.g. tick bites, skin irritations, etc.) as detailed within the procedure and attachments.

4.2 Training

4.2.1 Employees shall be trained to recognize organisms that represent a threat in the regions in which they work – experienced field staff shall provide on the job training to assist staff with hazard recognition.

4.2.2 Employees shall be properly trained to the anticipated tasks and the associated required PPE.

4.3 Overview

4.3.1 The procedures discussed below are detailed because these hazards have historically posed the most significant risk to AECOM employees. Note that this discussion is not a fully encompassing list of hazards. As part of the SH&E Plan and THA developed by the AECOM personnel, in accordance with *S3AM-209-PR1 Risk Assessment & Management*, additional consideration shall be given to other biological hazards.

4.3.2 Departments of Public Health local to the worksite, as well as the Centers for Disease Control (CDC) can serve as a resource for identifying biological hazards not discussed in this procedure.

4.3.3 If additional biological hazards are identified, employees should stop work and contact the SH&E Manager to discuss the hazards and identify effective control measures. Those control measures shall be implemented at the location prior to restarting work.

4.4 Employee Sensitivity

- 4.4.1 Sensitivity to toxins generated by plants, insects and animals varies according to dosage and the ability of the victim to process the toxin; therefore, it is difficult to predict whether a reaction will occur, or how severe the reaction will be. Employees should be aware that there are a large number of organisms capable of causing serious irritations and allergic reactions. Some reactions will only erupt if a secondary exposure to sunlight occurs. Depending on the severity of the reaction, the result can be severe scarring, blindness or even death.
- 4.4.2 Employees also need to consider whether they are sensitive to the use of insect repellents.

4.5 Planning and Hazard Assessment

- 4.5.1 AECOM personnel shall confirm that the potential for exposure to specific biological hazards are assessed prior to the commencement of work and that the procedures specified by this procedure are integrated into the THA planning process and conveyed to employees conducting the field work. This information shall be communicated in the location-specific SH&E plan, the THA, pre-project kickoff meetings, and tailgate meetings at the location.
- 4.5.2 It is important to note that the precautions to be taken by employees to decrease the risk of exposure to biological hazards can directly increase the risk of heat-related illness due to thermal stresses. Therefore, heat stress monitoring and precautions shall be included as a critical component of the task-specific THA in accordance with *S3AM-511-PR1 Heat Stress*.
- 4.5.3 During the preparation of the location-specific SH&E plan and task specific THA, Managers, Supervisors, and employees shall determine what biological hazards might be encountered during the task or operations and shall prescribe the precautions to be taken to reduce the potential for exposure and the severity of resulting illnesses. Consideration will be given to conditions such as weather, proximity to breeding areas, host animals, and published information discussing the presence of the hazards.
- 4.5.4 It should be assumed that at least one of the biological hazards exists whenever working on undeveloped property. This can include insect activity any time that local temperatures exceed 40 degrees Fahrenheit (4.5 degrees Celsius) for a period of more than 24 hours. The stubble and roots of poisonous plants can be a hazard any time of year, including when some plants are dormant or mown.
- 4.5.5 The hazard assessments shall also consider the additional hazards posed by vegetative clearing such as the increased risk of coming in contact with poison ivy, oak or sumac and hazards associated with the use of tools and equipment to remove vegetation.
- 4.5.6 Employees in the field where biological hazards exist shall not enter the hazard areas unless they are wearing the appropriate protective clothing, repellents, and barrier creams specified below. If the hazard is recognized in the field but was not adequately assessed during the THA, the field staff shall stop work and not proceed until the THA has been amended and approved and protective measures implemented.
- 4.5.7 Employees who have severe allergic reactions are strongly recommended to notify their Manager, field Supervisor and co-workers of the potential for a reaction and demonstrate what medication they might need, where they keep it and how it is administered.
- 4.5.8 A decision flow chart and table for determining the potential for biological hazards in the Americas has been provided in *S3AM-313-ATT1 Biological Hazard Assessment Flow Chart*.

4.5.9 Restrictions:

- No firearms or weapons are allowed to be used without express permission by the Region Executive and Chief Resilience Officer, refer to the *RS2-001-PR1 Firearms Standard*.
- No weapons related work shall occur without an assessment that includes appropriate hazard control measures and training.

- Staff with life-threatening reactions shall not undertake work in areas infested with the allergen (e.g., wasps, poison ivy), unless precautions are met which satisfy a medical practitioner's requirements. Refer to *S3AM-008-PR1 Fitness for Duty*.

4.5.10 Precautions

- Be aware of the potential irritants in your area and know how to recognize them.
- Modify activities to avoid encounters (diurnal rhythms, seasonal rhythms).
- Avoid wearing perfume and cologne and strong smelling deodorants, lotions, soaps, and shampoos.
- When working in areas where there may be small insects that "hitchhike" (e.g., ticks, spiders, scorpions), it is recommended that clothes are turned inside out and shaken at the end of day; do not wear same clothes two days in a row.
- Staff should always be aware of where they are placing their hands, or where they are sitting in order to avoid contact with potential toxins. Avoid reaching into areas where visibility is limited.

4.6 Wildlife Hazards (Wild Animals, Reptiles and Birds)

4.6.1 Employees shall not work alone in areas where the risk of an encounter with dangerous wildlife is high. Wildlife handling shall only be completed under direct supervision of an experienced individual. Refer to the following work instructions for more specifics:

- *S3AM-313-ATT13 Alligators*
- *S3AM-313-ATT9 Large Carnivores & Ungulates*
- *S3AM-313-ATT10 Bear Safety*
- *S3AM-313-ATT11 Small Mammals*
- *S3AM-313-ATT12 Snakes & Scorpions*

4.7 Ticks, Spiders and other Insects

4.7.1 Insects for which precautionary measures should be taken include but are not limited to: mosquitoes (potential carriers of disease aside from dermatitis), black flies, wasps, bees, ticks, fire ants and European fire ants.

4.7.2 Employees with known allergies to insect stings should consult their personal physician for advice on any immediate medications that they should carry with them. Epi-pens¹ shall be carried at all times in the field by employees who are aware that anaphylactic shock is a possibility for them. AECOM highly recommends that employees with known allergies inform their co-workers of the allergy and the location of the medications they might carry for the allergy.

4.7.3 Habitat Avoidance, Elimination and/or Control

- The most effective method to manage worker safety and health is to eliminate, avoid and/or control hazards. Clearing the location of brush, high grass and foliage reduces the potential for exposure to biological hazards. Clearing will not eliminate the exposure to flying insects and there might be an increased exposure to ticks and spiders during the clearing process.
- Projects such as subsurface environmental assessment or remediation are often candidates for brush and overgrown grass to be cleared. In these instances, the Manager shall either request that the client eliminate vegetation, or request approval from the client to have vegetation clearing added to the scope of work.
 - It should be noted that vegetation clearance may unintentionally serve to spread noxious and poisonous plant materials around the site.

¹ *Epi-pens must be prescribed by a personal physician. Renew epi-pens on a regular schedule to ensure effectiveness and make sure your field companions know where it is and how to use it if you cannot self-administer the dose.*

- As applicable, measures should be taken to prevent spread, such as but not limited to, confirming equipment and materials are not placed on affected areas, and equipment is decontaminated after use and before removal from site.
- When work shall be conducted in areas that cannot or may not be cleared of foliage, personal precautions and protective measures shall be prescribed.
- Mosquitoes breed in stagnant water and typically only travel a quarter mile (less than half a kilometer) from their breeding site. Whenever possible, stagnant water should be drained to eliminate breeding areas. Managers and client site managers should be contacted to determine whether water can be drained and the most appropriate method for draining containers, containment areas, and other objects of standing water.
- If water cannot be drained, products similar to Mosquito Dunks® can be placed in the water to control mosquitoes. Once wet, the Mosquito Dunks® kill the immature, aquatic stage of the mosquito. The active ingredient is a beneficial organism that is lethal to mosquito larvae, but harmless to fish, humans, and other animals. Mosquito Dunks® provide long-term protection for 30 days or more.

4.7.4 Ticks

- Ticks can be encountered when walking in tall grass or shrubs. They crawl up clothing searching for exposed skin where they will attach themselves. The most serious concern is a possibility of contracting a disease.
- Data from the CDC indicates that tick-borne diseases have become increasingly prevalent. At the same time, tick repellents have become both safe and effective so it is possible to prevent the vast majority of bites and, therefore, most related illnesses. The use of permethrin is strongly advised.
- The most common and severe tick-borne illnesses in the U.S. are Lyme disease, Ehrlichiosis, and Rocky Mountain spotted fever. A summary table listing CDC informational resources for these diseases is provided in *S3AM-313-ATT2 Ticks* along with a listing of CDC information resources and maps showing the distribution of common tick-borne diseases in the U.S.
- When working in areas where ticks may occur, it is recommended that clothes are turned inside out and shaken at the end of day; do not wear the same clothes two days in a row.
- Employees should conduct a thorough full body tick check upon exiting the field. Shower within two hours of coming indoors to help wash away loose ticks. Clothes should be laundered in hot water or tumble dry clothes in a dryer on high heat for 10 minutes to kill ticks.
- To remove ticks that are embedded in skin, utilize a tick key. Alternatively use tweezers or fingers to carefully grasp the tick as close to the skin as possible and pull slowly upward, avoiding twisting or crushing the tick. Do not try to burn or smother the tick. Cleanse the bite area with soap and water, alcohol, or household antiseptic. Note the date and location of the bite and save the tick in a secure container such as an empty pill vial or film canister. A bit of moistened paper towel placed inside the container will keep ticks from drying out. Follow AECOM incident reporting guidelines to report the tick bite within 4 hours and notify the Manager or Supervisor.
- Familiarize yourself with the characteristic bulls-eye pattern of Lyme disease infection surrounding the bite. If you notice this type of pattern or rash resulting from a tick bite, immediately report the issue to your supervisor and follow the incident reporting requirements for your business group.
- If you experience symptoms such as fever, headache, fatigue, and a skin rash, you should immediately visit a medical practitioner as Lyme disease is treated easily with antibiotics in the early stages, but can spread to the heart, joints, and nervous system if left untreated.

4.7.5 Chiggers

- Chiggers are mite larvae, approximately ½ millimeter in size, and typically invisible to the naked eye. While chiggers are not known to carry infectious diseases, their bites and resulting rashes and itching can lead to dermatitis and a secondary infection.
- Chiggers are typically active from the last hard freeze in the winter or spring to the first hard freeze. They are active all year in the Gulf Coast and tropical areas.

4.7.6 Spiders

- Spiders can be found in derelict buildings, sheltered areas, basements, storage areas, well heads and even on open ground. Spiders can be found year round in sheltered areas and are often present in well heads and valve boxes.
- Most spider bites produce wounds with localized inflammation and swelling. The Black Widow and Brown Recluse spiders in the U.S. and others outside the U.S. inject a toxin that causes extensive tissue damage and intense pain.
- Additional information on spider identification can be found in attachment *S3AM-313-ATT3 Poisonous Spider Identification*.

4.7.7 Mosquitoes

- When a mosquito bites, it injects an enzyme that breaks down blood capillaries and acts as an anticoagulant. The enzymes induce an immune response in the host that results in itching and local inflammation. The tendency to scratch the bite sites can lead to secondary infections.
- CDC data indicates that mosquito-borne illnesses, including the strains of encephalitis, are a health risk. At least one of the Encephalitis strains listed below is known to exist in every area of the U.S. and in many other countries as well:
 - Eastern Equine encephalitis
 - Western Equine encephalitis
 - West Nile Virus
 - St. Louis encephalitis
 - La Crosse encephalitis
- Mosquitoes can transmit the West Nile Virus and other forms of encephalitis after becoming infected by feeding on the blood of birds which carry the virus.
- Most people infected with the virus experience no symptoms or they have flu-like symptoms. Sometimes though, the virus can cause severe illness, resulting in hospitalization and even death, so proper precautions should be taken. Consult a medical practitioner if you suspect you have West Nile Virus. Other diseases including Dengue Fever and Malaria are spread by mosquitoes in the sub-tropic and tropical parts of the world. See *S3AM-313-ATT4 Mosquito Borne Diseases* for information on the locations where mosquito borne diseases are known to be present.

4.7.8 Bees, Wasps and Hornets

- Wasps and bees will cause a painful sting to anyone if they are harassed. They are of most concern for individuals with allergic reactions who can go into anaphylactic shock. Also, instances where an individual is exposed to multiple stings can cause a serious health concern for anyone. These insects are most likely to sting when their hive or nest is threatened.
- Bees, hornets, and wasps may be found in derelict buildings, sheltered areas, behind covers or lids and even on open ground. Other protective measures are not normally effective against aggressive, flying insects. Be aware of the potential areas for these types of insects, approach these locations cautiously. Avoid reaching into areas where visibility is limited.
- If you see a nest in the area you are working in stop work. Contact the Manager or Site Supervisor for procedures to have the nest removed.

- If stung by a wasp, bee or hornet, notify a co-worker or someone who can help should you have an allergic reaction. Stay calm and treat the area with ice or cold water. Follow AECOM incident reporting guidelines to report the sting within 4 hours and notify the Manager or Supervisor immediately. Seek medical attention if you have any reactions to the sting such as developing a rash, excessive swelling or pain at the site of the bite or sting, or any swelling or numbness beyond the site of the bite or sting.

4.7.9 Fire Ants

- The fire ant (southern and western U.S.) and the European fire ant (northeastern U.S. and eastern Canada) is often very abundant where it is established. It is very aggressive and commonly climbs up clothing and stings unprovoked when it comes into contact with skin. Painful irritations will persist for an hour or more.

4.7.10 Personal Protective Equipment (PPE)

- Chemically-treated field clothing, full-length clothing, or Tyvek® coveralls.
- Gloves shall also be worn consistent with the recommendations of the site-specific SWP and/or THA to minimize hand exposure.
- Where ticks, chiggers, and spiders are presumed to exist, the Tyvek® or chemically treated clothing will be taped to the work boots.
- See *S3AM-313-ATT2 Ticks* for configuration of clothing for protection against ticks and insects.
- Application of insect repellent to clothing and/or exposed skin. Oil of lemon eucalyptus, DEET, and Permethrin have been recommended by the CDC for effective protection against mosquitoes that may carry the West Nile virus and related diseases.
- Note that DEET will reduce the effectiveness of Fire Resistance Clothing (FRC) and should not be applied to this clothing. If working in FRC, employees can use Permethrin as it has been shown not to reduce the effectiveness of FRC. Permethrin will need to be applied to FRC well in advance of the planned work. If permethrin is unavailable employees can apply DEET to their skin and let dry prior to putting FRC on.
 - Oil of Lemon Eucalyptus is a plant-based insect repellent on the market as Repel Lemon Eucalyptus. The products have been proven to be effective against mosquitoes, deer ticks, and no-see-ums for up to six hours. Derived from Oil of Lemon Eucalyptus, this non-greasy lotion or spray has a pleasant scent and is not known to be toxic to humans. The spray or lotions will be effective for approximately two to six hours and should be reapplied every two hours to sustain protection. Lemon Eucalyptus products cannot be applied to fire retardant clothing.
 - Permethrin is an insecticide with repellent properties registered with the Environmental Protection Agency and recommended by the CDC.
 - Permethrin is highly effective in preventing tick bites when applied to clothing, but is not effective when applied directly to the skin. Two options are available for Permethrin treatment of clothing worn during field work: 1) pre-treatment of fabric by the clothing manufacturer; or 2) manual treatment of their personal clothing using Permethrin spray in accordance with manufacturers recommendations. This will likely require treatment at home or the office prior to field mobilization. Caution should be used when applying Permethrin as it is highly toxic to fish and house cats. AECOM strongly recommends the first option (employees obtaining pre-treated clothing) to avoid the time required, potential risk, and housekeeping issues involved with manually treating the clothing with spray. Purchase pre-treated clothing in accordance with *S3AM-208-PR1 Personal Protective Equipment* and with the approval of your Supervisor or Manager.
 - The Permethrin pre-treatment is odorless and retains its effectiveness for approximately 25 washings. After 25 washings, the pre-treated clothing will be

considered no longer effective and removed from service. Clothing that has been manually treated by employees will be considered effective for five wash cycles.

- Also, use of clothing that has been pre-treated with Permethrin offers a reduction in the use and application of other insect repellents that shall be applied directly to the skin. Supervisor or Manager approval is required prior to purchase.
- If the employee opts not to utilize chemically pre-treated clothing while potentially exposed to insects, spiders and/or ticks, they shall either: 1) wear Tyvek® coveralls taped to the boots, or 2) wear full-length clothing consisting of long-legged pants and long-sleeved shirts treated with an insect repellent containing Permethrin, DEET, or an oil of lemon eucalyptus to their work clothing.
- Safety Data Sheets (SDS) for the repellents, lotions, and cleansers discussed in this Procedure are not required because the repellents, lotion, and clothing are consumer products used in the manner intended for the general public. Although not required, a SDS should be obtained for the products used and placed into the office SDS library and site-specific safety plan.

4.8 Poisonous Plants

4.8.1 Habitat Avoidance, Elimination and/or Control

- If poisonous plants are identified in the work area, employees will mark the plants using either flags or marking paint, and discuss what the specific indicator will be to signal to other employees to avoid the designated area. If employees decide to use ground-marking paint to identify poisonous plants, they should discuss this tactic with the Manager (and Client as appropriate) for approval.
- If removal of the plants is considered, it should be subcontracted to a professional landscaping service that is capable and experienced in removing the plant. If herbicides are considered for use, a discussion shall need to occur with the Manager (and Client as appropriate) to determine whether it is acceptable to apply herbicides at the work site. Application of herbicides may require a license.
- Employees shall not attempt to physically remove poisonous plants from the work area unless a clearing procedure, including PPE, is prepared in advance and approved by the SH&E Manager. The clearing procedure should be included in the SH&E Plan and THA and the required PPE specified.

4.8.2 Poisonous plants that employees should recognize and take precautions to avoid include: poison sumac, poison ivy (terrestrial and climbing), poison oak, giant hogweed² (or giant cow parsnip), wild parsnip, devil's club and stinging nettle. Many others are extremely poisonous to eat (e.g., poison hemlock; water parsnip) – do not eat anything that has not been identified. Refer to S3AM-313-ATT5 *Plants of Concern* for information on locations where some of these poisonous plants are found in the U.S.

- Of the toxic plants in the cashew family, poison ivy (*Rhus radicans*) is most widespread. It grows in a variety of forms such as a low sprawling shrub, dense ground cover, or a thick woody vine that grows high into the tree canopy. Poison oak (*Rhus diversiloba*) is typically a low shrub in drier soils. Both of these plants have leaves of three and white berries. Poison sumac (*Rhus vernix*) is a tall shrub that is less prolific in distribution. It grows in wet areas, has a compound leaf with a red leaf stem (rachis), and white berries. All of these plants possess urushiol oils in all parts of the plant. Touching the plant causes an itchy skin rash that can show up within 4-72 hours following contact. People have a wide range of reactions including swelling, itching, rash and bumps, patches or blisters.
- Uroshiol oil can also transfer onto clothing and equipment. The oil can remain active on surfaces for up to 5 years and can be transferred to your skin.

² Phytodermatiti producer: keep skin covered and wash well after exposure

- Wild parsnip is found throughout the U.S. and contains a poison that produces a rash similar to poison oak and ivy. Unlike poison oak and ivy, the active oil will not be present on unbroken leaves. See S3AM-313-ATT6 *Wild Parsnip Identification* for additional information and photos of wild parsnip.
 - Several plants in the carrot family contain toxic sap that causes severe dermatitis if it comes into contact with skin that is then exposed to sunlight. The most serious reaction is caused by the giant hogweed (*Heracleum mantegazzianum*), a plant that is spreading in southern Ontario and is also present in southwestern British Columbia. The plant is enormous, attaining up to 16 feet (5 meters) in height, which it does in one growing season. Contact causes painful blistering that can cause permanent disfigurement. It is to be avoided. Similar but less serious reactions can be caused by meadow parsnip (*Pastinaca sativa*) and cow parsnip (*Heracleum lanatum*). Meadow parsnip can be very abundant on disturbed sites.
 - Nettles, particularly stinging nettle (*Urtica dioica*) and wood nettle (*Laportea canadensis*) contain urticating hairs on the leaves and stems that cause sharp pain or itchiness on contact with skin. The irritation is immediate and normally lasts no more than an hour and there are no lasting consequences.
 - Some plants contain abundant stiff spines that can present a safety hazard, particularly if one is to fall into them. These include the cactus (*Opuntia spp.*), devils club (*Oplopanax horridum*), and prickly-ash (*Zanthoxylon americanum*).
- 4.8.3 A large number of plants are not harmful to touch but may contain poisonous berries or foliage that could cause serious complications or death if they are ingested. It goes without saying to not eat any berries or plants if you are unsure of their identity.
- Remember that in the fall and winter the hazard still exists in the form of stubble and roots.
- 4.8.4 Personal Protective Equipment (PPE)
- Employees conducting clearing, grubbing, or similarly disturbing work activities in areas where poisonous plants exist shall wear long-sleeve clothing or Tyvek® coveralls, and disposable cotton, leather or synthetic gloves. Employees shall not touch exposed skin (neck and face) with potentially contaminated gloves. Tyvek® and gloves worn to protect from exposure to poisonous plants shall be treated as contaminated, removed from the body in a manner that the contamination is not spread, and placed in plastic bags for disposal.
 - Personal clothing that has been exposed to poisonous plants shall be decontaminated with a poisonous plant cleanser such as Tecnu® or removed in a careful manner, bagged and washed separately from other clothing to remove urushiol.
 - Work boots will be decontaminated with either soap and water or a cleansing agent such as Tecnu® cleanser.
 - If foliage is being cleared and includes poisonous plants, exposed skin shall be treated with a dermal barrier cream such as Tecnu®'s Oak 'n Ivy Armor or Enviroderm's Ivy Block and either a full-face respirator or a half-face respirator (with goggles) fitted with a P-100 (HEPA) dust filter.
- 4.9 Bird Droppings and Biological Soil Hazards
- 4.9.1 Work in any area where pigeons or other flying animals (e.g. bats) may nest requires a written statement from the client which states the potential for, and extent of, accumulation of excrement on/in the structure from pigeons or other winged animals.
- 4.9.2 Substantial accumulations of droppings can pose physical and health risks as slippery surfaces (if wet) and if the material is disturbed and becomes airborne, it can be inhaled or ingested if personal hygiene practices are not implemented. Inhalation of airborne droppings can cause diseases such as histoplasmosis. Exposure to surfaces with bird droppings shall be safeguarded by implementing proper work practices, training employees for awareness and using PPE. See S3AM-313-ATT8 *Bird Droppings*.

- 4.9.3 Tularemia is a problem with contaminated soil in some locations. Tularemia is a disease of animals and humans caused by the bacterium *Francisella tularensis*. Rabbits, hares, and rodents are especially susceptible and often die in large numbers during outbreaks. Workers can contract Tularemia through tick and deer fly bites, but also through inhalation of contaminated aerosols or agricultural dusts. Check work areas for carcasses before disturbing the ground (e.g. mowing, brushing, grubbing, excavation, etc.).
- 4.10 Personal Hygiene and Body Checks
 - 4.10.1 Tick-borne diseases typically require that the tick be imbedded for four hours to begin disease transfer. The oils from poisonous plants can take up to 4 hours after exposure to penetrate the skin and react with the live proteins under the skin.
 - 4.10.2 It is recommended that exposed skin be checked frequently for the presence of ticks, insects, rashes, or discolorations. External clothing should also be checked for the presence of ticks and insects; these should be retained for identification and to determine if medical treatment is needed.
 - 4.10.3 Employees shall shower as soon as practical after working in the field and examine their bodies for the presence of ticks, insect bites, rashes, or swollen areas. If imbedded ticks are found, they should be removed using the technique described in *S3AM-313-ATT2 Ticks*.
- 4.11 Employees shall immediately notify their Manager or Supervisor of the presence of an imbedded tick, bee, wasp or hornet sting, other insect bite, rash, or any abnormal reaction. Reporting shall occur within 4 hours for a significant incident and 24 hours for all other SH&E incidents, and in accordance with *S3AM-004-PR Incident Reporting, Notifications & Investigation*.
- 4.12 The Manager or Supervisor shall forward the report to the SH&E Manager for follow up.

5.0 Records

None

6.0 Attachments

- 6.1 [S3AM-313-ATT1 Biological Hazard Assessment Flow Chart](#)
- 6.2 [S3AM-313-ATT2 Ticks](#)
- 6.3 [S3AM-313-ATT3 Poisonous Spider Identification](#)
- 6.4 [S3AM-313-ATT4 Mosquito Borne Diseases](#)
- 6.5 [S3AM-313-ATT5 Plants of Concern](#)
- 6.6 [S3AM-313-ATT6 Wild Parsnip Identification](#)
- 6.7 [S3AM-313-ATT7 Alligators](#)
- 6.8 [S3AM-313-ATT8 Bird Droppings](#)
- 6.9 [S3AM-313-ATT9 Large Carnivores & Ungulates](#)
- 6.10 [S3AM-313-ATT10 Bear Safety](#)
- 6.11 [S3AM-313-ATT11 Small Mammals](#)
- 6.12 [S3AM-313-ATT12 Snakes & Scorpions](#)

Appendix E

Instrument Calibration Sheet and Air Monitoring Data Sheet

Air Monitoring Instrument Calibration Log

Instrument Type (Type, Model No., Serial No. etc.)		
Temperature (if applicable)	Calibration Source	Results
Calibration Gas	Location (On-Site. Off-Site, Office, etc.)	
Lot or Batch #	Exp. Date	
Operator Initials	Date/Time	
Instrument Type (Type, Model No., Serial No. etc.)		
Temperature (if applicable)	Calibration Source	Results
Calibration Gas	Location (On-Site. Off-Site, Office, etc.)	
Lot or Batch #	Exp. Date	
Operator Initials	Date/Time	
Operator Initials	Date/Time	

ADDITIONAL NOTES:

SIGNATURE _____

AIR MONITORING LOG

DATE: _____

SSO or Designee: _____

[illegible]

aecom.com

ATTACHMENT #5
DRAFT REMEDIAL ACTION PLAN

(ATTACHED)



June 15, 2022

Timothy L. Gallagher
Senior Project Manager
Mayor's Office of Environmental Coordination
100 Gold Street
New York, NY 10038

Rohit T. Aggarwala
Commissioner

**Re: South Battery Park City Resiliency Project
Block 16, Lot 10, and portions of Block 16, Lot 3 and Block 3, Lot 1
CEQR # 21BPC001M**

Angela Licata
*Deputy Commissioner
Sustainability*

59-17 Junction Blvd.
Flushing, NY 11373

Tel. (718) 595-4398
alicata@dep.nyc.gov

Dear Mr. Gallagher:

The New York City Department of Environmental Protection, Bureau of Sustainability (DEP) has reviewed the April 2022 Draft Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) prepared by AECOM on behalf of Battery Park City Authority (applicant) for the above referenced project. It is our understanding that the South Battery Park City Resiliency (SBPCR) Project is being designed to provide flood risk reduction within the Project Area for the current 100-year flood, inclusive of increased intensity and frequency of rainfall, coastal surge, and predicted sea level rise. The SBPCR Project boundary for the flood alignment spans from 1st Place and the Museum of Jewish Heritage, through Wagner Park, across Pier A Plaza, and then along the north side of the Battery Bikeway in The Battery to higher ground near the intersection of Battery Place and State Street. The flood alignment is composed of many different integrated features, such as flip-up deployable gates, glass-topped floodwalls, buried floodwalls underneath terraced slopes, exposed floodwalls, and bermed floodwalls. To meet projected design flood elevations for coastal surge, Wagner Park would be elevated 10 to 12 feet, and the buried floodwall would be constructed beneath the raised park. Additionally, an existing Wagner Park Pavilion Building will be demolished and a new one constructed.

The April 2022 RAP proposes the on-site reuse of soil in accordance with the provisions of New York State Department of Environmental Conservation (NYSDEC) 6 NYCRR Part 360.13; the excavation, transportation and off-site disposal of soil in accordance with applicable federal, state, and local regulations; import of materials to be used for excavation backfill or embankment; if any underground storage tanks are encountered, the tanks will be removed and disposed of in accordance with NYSDEC regulations; stockpiled soil will be placed on poly sheeting and covered with sheeting; stormwater pollution prevention measures; erosion and sediment controls measures; dust control; air monitoring; liquids including dewatering fluids will be handled and disposed in accordance with local, state, and federal regulations; and construction of an engineered cap across the entire site, consisting of paved

surfaces, building slab, or a minimum of 2 feet of verified and approved clean soil cap with vegetation (a clean fill report will be submitted for DEP review and approval prior to import to the site). The CHASP addresses worker and community health and safety during construction.

Based upon our review of the submitted documentation, we have the following comments and recommendations to OEC:

CHASP

- OEC should instruct the applicant that the names and phone numbers of the Project Manager, Site Supervisor, Site Safety Officer and Alternate Site Safety Officer should be included when they are appointed, prior to the start of any construction activities.
- OEC should instruct the applicant to include an accident and injury report form.

DEP finds the April 2022 RAP and CHASP for the proposed project acceptable, as long as the aforementioned information is incorporated into the CHASP. OEC should instruct the applicant that at the completion of the project, a Professional Engineer (P.E.) certified Remedial Closure Report should be submitted for DEP review and approval for the proposed project. The P.E. certified Remedial Closure Report should indicate that all remedial requirements have been properly implemented (i.e., transportation/disposal manifests for removal and disposal of soil in accordance with applicable local, state, and federal laws and regulations; two feet of DEP approved certified clean fill/top soil capping requirement in any landscaped/grass covered areas not capped with concrete/asphalt, etc.).

Future correspondence and submittals related to this project should include the following CEQR # **21BPC001M**. If you have any questions, you may contact Scott Davidow, P.G. at (718) 595-7716.

Sincerely,



Wei Yu
Deputy Director, Hazardous Materials



c: R. Weissbard
S. Davidow
T. Estes
M. Wimbish
H. Semel - OEC

South Battery Park City Resiliency Project

Draft Remedial Action Plan

April 13, 2022

Quality information

Prepared by	Checked by	Verified by	Approved by
			
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Revision History

Revision	Revision date	Details	Authorized	Name	Position

Distribution List

# Hard Copies	PDF Required	Association / Company Name

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Figures

Figure 1 – Site Plan

1 Introduction

This Remedial Action Plan has been prepared by AECOM for the Battery Park City Authority (BPCA) to provide environmental support for the planned construction activities associated with the South Battery Park City Resiliency (SBPCR) Project. The SBPCR Project would provide flood protection for portions of Battery Park City including Wagner Park, Pier A Plaza and The Battery. The flood alignment is composed of multiple different integrated features such as flip-up deployable gates (flip-up deployables), glass-topped floodwalls, buried floodwalls underneath terraced slopes, exposed floodwalls, and bermed floodwalls. The term “flood alignment” is used to differentiate the combination of flood control measures represented by the SBPCR Project from a traditional freestanding flood wall for risk reduction. In addition, interior drainage improvements are proposed for the SBPCR Project, including the isolation of the existing underground sewer manholes and connected chambers.

To meet projected design flood elevations (DFE)s for coastal surge, Wagner Park would be elevated 10 to 12 feet, and the buried floodwall would be constructed beneath the raised park, maximizing the amount of protected open space within the park, while maintaining views to the waterfront. The buried floodwall also allows users to fully occupy the lawn, garden, and public park, in contrast to a traditional floodwall design which would bisect the space. Additionally, an existing Wagner Park Pavilion Building will be demolished and a new one constructed. The location of the proposed Pavilion (the Pavilion) would be similar to the existing structure, but with a slightly smaller footprint and elevated approximately 10 to 12 feet above ground level and set back closer to Battery Place. The new Pavilion would have three (3) levels: a ground, first and second level.

1.1 Project Location and Current Use

The Project Area covers multiple properties from 1st place and the Museum of Jewish Heritage, through Robert F. Wagner Park across Pier A Plaza, and then along the north side of the Battery Bikeway in the Battery to higher ground near the intersection of State Street and Battery Place (Figure 1).

The purpose of the project is to reduce the flood risk within the Project Area and protect against a 100-year flood, inclusive of increased intensity and frequency of rainfall, coastal surge, and predicted sea level rise. increased storm intensity associated with climate change. It is one of three (3) resiliency projects being undertaken by BPCA to address flood risk reduction throughout Battery Park City’s ninety-two (92) acres. The other two projects are the Battery Park City Ball Fields and Community Center Resiliency Project, and the North/West BPC Resiliency Project. The SBPCR Project is also being designed with adaptability for the 2050 100-year storm event at such time as the North/West BPC Resiliency Project is completed and a tie-in between the two (2) projects is created

The SBPCR Project’s primary goal is risk reduction in the southern extremes of Battery Park City. This would be accomplished through implementation of integrated flood risk measures, while meeting the design criteria for a 100-year storm event, inclusive of increased intensity and frequency of rainfall, coastal surge and predicted sea level rise.

1.2 Site Geology and Hydrology

Based on observations made during the environmental boring program, soils to a depth of 30 feet below ground surface (bgs) generally consisted of brown fine sand with some silt, and trace gravel. Several borings exhibited poor sample recovery which was attributed to varying intervals of boulders and cobbles. Groundwater was generally observed between 9 and 11 feet bgs.

Based on information gathered during the geotechnical investigation (Oweis Engineering Inc., August 2021), fill materials were observed to depths between 15 and 19 feet bgs, other boring observations indicated fill materials may be present as deep as 38ft bgs, organic silts and clays were observed from the bottom of the fill material to the top of bedrock which was observed at depths ranging between 50 and 55 feet bgs. A copy of the geotechnical investigation is attached to this report in Appendix A.

1.3 Proposed Construction Plan

The proposed construction plan includes building demolition, building construction, excavation of material for construction of above and below grade floodwalls and gates, and elevating Wagner Park to allow its use to continue as open space (park land).

2 Prior Investigations

2.1 Phase I Environmental Site Assessment (ESA) (AECOM, September 2019)

AECOM performed a Phase I ESA of the subject property in accordance with the scope and limitations of ASTM Standard Practice Designation E 1527-13 for ESAs. The subject property is an irregularly shaped parcel located in a predominately residential and commercial neighborhood in the Battery Park section of Manhattan. The subject property is located to the south and west of Battery Place and approximately 200 feet southwest of the intersection of Battery Place and 2nd Place. According to the New York City Department of Finance (DOF), the subject property is designated as Block 16, Lot 10 (18 1st Place), and portions of Block 16, Lot 3 (401 South End Avenue) and Block 3, Lot 1 (10 Battery Park).

The Phase I covered the entire Project Area with the exception of locations along West Street between Battery Place and Albany Street. A change in the design following completion of the Phase I in 2019 now incorporates into the Project Area three existing subsurface regulator stations and four interceptor manholes to be part of the Near Surface Isolation (NSI) system. This system will aid in management of coastal storm surge. The NSI system generally consists of the installation of a gate within three existing regulator structures, and the retrofitting of four interceptor manholes.

Potential contamination sources from properties/locations within 1-mile of the Project Area were evaluated via a database search during the Phase I. Although the NSI retrofitting activities are not expected to involve excavation of, or generate potential exposure to, potentially contaminated materials outside of the structures themselves, to the extent required, any ground-intrusive work associated with upgrades to the NSI system will be done in accordance with the provisions of this RAP.

In preparation of the Phase I ESA, a site visit was conducted on June 14, 2019, which consisted of a visual inspection of the open space, pedestrian walkways, bike paths, and three buildings within the subject property. Two of the buildings are associated with the Museum of Jewish Heritage and the third building is the Wagner Park Pavilion. No visual evidence of underground storage tanks (e.g., vent pipes, fill ports), potable water wells, monitoring wells, clarifiers, dry wells, septic tanks, or leach fields was observed during the site visit. Gasoline service stations and dry cleaners were not observed in the immediate vicinity (approximately 500 feet) of the subject property. Other off-site sources of concern were not identified in the immediate vicinity.

The subject property, under the address Battery Park Pier and Pier A North River at The Battery, was identified on New York Spills (NY Spill) and the New York Aboveground Storage Tank (NY AST) databases. The NY Spills database indicates that there was evidence of apparent dumping of raw sewage into the Hudson River. The spill was closed in 1987. The NY Spills database also identified a discharge of oil from a street cleaning machine in 1996. This spill, which was identified as being 75 feet long by 2 feet wide, was closed in 2003. A former 2,500-gallon diesel fuel tank had been located on or near Pier A in 1962. The AST was removed in 2009. These database listings are not considered a recognized environmental condition (REC) with respect to the subject property.

A number of surrounding sites were identified in the environmental database search report. However, the majority of these sites were listed on non-contamination-related databases. Based on AECOM's review and analysis of the database listings, none of the surrounding sites would present a REC to the subject property, based on their distance (generally greater than 500 feet), regulatory status (i.e., regulatory closure, no violations found), media impacted (soil only), and/or topographical position relative to the subject property (i.e., down-gradient or cross-gradient).

The following REC was identified during the Phase I ESA:

- Due to the use of fill material from unidentified off-site sources during the construction of the subject property, the possibility exists for subsurface contamination on and in the immediate vicinity of subject property to be present.

Based on the above-described activities, no controlled RECs (CRECs) or historical RECs (HRECs) were identified in connection with the subject property. The following de minimis condition (DMC) was identified:

- Hydraulic fluid was observed to be leaking from an elevator motor located in the basement of the museum. The leak/stain was approximately two to three square feet and was observed to be on an intact concrete surface. Based on the limited extent, this leak/staining is considered a DMC.

2.2 Phase II Limited Site Investigation Report (AECOM, March 2022)

The Limited Phase II was performed based in part on the findings of the Phase I ESA (AECOM, September 2019). Activities included in the Phase II included:

- Underground utility clearance;
- Collection of environmental soil samples from seven of eleven borings advanced during the geotechnical drilling program; and
- Collection of grab groundwater samples from four of the geotechnical boring locations.

The results of the investigation indicated the following:

Soil analytical results were compared to the NYSDEC Part 375 unrestricted, residential, and commercial use SCOs. The results indicated that most exceedances of residential and commercial SCOs were limited to PAHs and metals consistent with the presence of historic or urban fill. Based on information gathered during site history research, this waterfront land was filled to create the subject property. One residential exceedance for the pesticide dieldrin was detected in the surficial soil sample at B-9 can be attributed to the use of pesticides. Other UU SCO pesticide exceedances were detected in the surficial soil samples with the exception of the duplicate sample at one location B-4 (18'20'). Pesticides were not detected in the parent sample suggesting cross contamination of the duplicate sample.

Ground water analytical results were compared to NYSDEC's Part 703 GQS (class GA) and/or the NYSDEC AWQSGV. The results indicated chloroform, hexachlorobutadiene, PAH compounds, PCBs, aluminum, and iron were detected above the AWQSGV. The presence of these compounds along with elevated detection limits on multiple analyses suggests that these exceedances are attributable to the elevated turbidity of the samples. Groundwater samples collected through temporary well points often have higher amounts of sediment which have a direct impact on the ability to analyze the sample. The groundwater results are not indicative of an environmental release that is impacting groundwater.

The soils and ground water appear to be non-hazardous contaminated material. Waste classification soil sampling also indicated that the contamination in soil is not hazardous as defined by the Resource Conservation and Recovery Act (RCRA). Since hazardous materials impacts have been identified, this Remedial Action Plan (RAP) has been developed to prevent exposure to such hazardous materials during construction activities.

Copies of the Phase I ESA and Phase II Limited Site Investigation are attached to this report in Appendix A.

3 Description of Construction Measures

The Limited Phase II Site Investigation indicated the presence of contamination in subsurface soil and groundwater above regulatory guidelines. The contaminants identified were primarily related to the historic/urban fill beneath the surface. The contaminants were detected at depths below grade that will be encountered during the construction of the Proposed Project.

The remedial and mitigation measures described in this section will be performed in accordance with all local, state, and federal laws. A site-specific Construction Health and Safety Plan (CHASP) has been prepared and will be implemented during construction for the purposes of protecting human health and/or the environment. The CHASP has been attached to this report in Appendix B.

Proposed construction measures in this Project include:

- During construction activities, all excavated material can be reused on-site if it meets the requirements of NYSDEC Part 360-13 regulations.
- If excavated material does not meet the requirements for reuse on-site and requires off-site disposal, sampling and analysis of the material as required by NYSDEC and the disposal facilities must be conducted;
- If excavated material is encountered that displays visual or olfactory indications of contamination, it must be appropriately segregated on-site;
- Import of materials to be used for excavation backfill or embankment will be performed in compliance with this plan and in accordance with all local, state, and federal laws. Imported material will be tested at the source facility and analytical data made available for review prior to the material being imported to the site;
- Stormwater pollution prevention measures must be implemented in accordance with all local, state, and federal laws;
- If underground storage tanks (USTs) are encountered (including any piping or apparatuses), it will be removed/closed in accordance with all applicable New York City and/or New York State Department of Environmental Conservation (NYSDEC) regulations;
- Management of any subsurface fluids (groundwater), if generated, in accordance with this plan and all local, state, or federal regulations;
- Management, removal and/or disposal of any hazardous building materials, including but not limited to, asbestos containing material (ACM), lead painted surfaces, or PCB containing materials in accordance with all local, state, or federal regulations.

3.1 Soil Excavations, Stockpiling, and Disposal

Soil excavations are proposed to allow for portions of the flood barrier that will be constructed below grade and for demolition of the existing Wagner Park Pavilion. It is currently estimated that a total of 34,288 cubic yards of soil and other demolition debris will be generated for disposal during construction. Since subsurface material is known to be contaminated, primarily from historic/urban fill, any material to be reused on-site must be reused in accordance with the provisions of 6 NYCRR Part 360.13 *Special requirements for pre-determined beneficial use of fill material*.

Should temporary stockpiling of excavated material be required, best management practices should be employed to assure that any contaminated material does not spread around the site from wind or precipitation events. All stockpiles will be placed on poly sheeting and covered with sheeting if left in place overnight. If stockpiles require longer staging on-site, additional controls including silt fencing may be necessary. The person or entity tasked with maintaining compliance with the RAP/CHASP will make the determination as to whether additional controls are necessary.

3.2 Off-Site Materials Transport

All material transported off-site will comply with this plan and all applicable local, state, and federal laws. Certain contaminated materials may have specific transportation requirements including but not limited to, covering the material on the truck prior to leaving site, placards, and manifests. All waste materials transported off-site will be hauled by licensed truckers in accordance with 6 NYCRR Part 364.

Prior to leaving the site, all vehicles will be inspected to ensure that any soil adhering to tires, undercarriage, or other surfaces is removed. Trucking routes will be evaluated prior to use to determine road conditions, overhead clearance, or weight restrictions. Truck routes will be designed to avoid, to the extent possible, hauling through residential areas and off-site truck idling while waiting to enter the site.

3.3 Excavated Materials Re-Use On-Site

If any material is to be reused on-site, it must be reused in accordance with the provisions of *6 NYCRR Part 360.13 Special requirements for pre-determined beneficial use of fill material*. Based on the provisions of Part 360.13, excavation material can be used as backfill for the excavation as long as it does not exhibit gross contamination (staining or odors). Any excavated material put back in the excavation must be covered with an engineered composite cap. An engineered cap, which is required across the entire site, consists of paved surface, building slab, or a minimum of 2 feet of verified and approved clean soil cap with vegetation. Excavated material may also be placed in other areas of the site with same provisions noted above as long as the area is of similar physical characteristics.

3.4 Materials Disposal Off-Site

Preliminary waste characterization sampling was performed during the Phase II Limited Site Investigation and indicated that the soil contamination in the subsurface was not characteristic of hazardous waste. However, additional waste characterization sampling will be required prior to disposal to meet the individual disposal facility requirements. All hazardous and non-hazardous contaminated soil material and other wastes that are disposed off-site will be documented via manifests and bills of lading and hauled by licensed waste haulers. Prior to any off-site contaminated soil disposal, each disposal facility will provide documentation in writing to the site owner or general contractor charged with soil disposal activities, stating they have reviewed the waste characterization testing for the material they will receive, have approved the material for receipt, and the quantity approved. A copy of the disposal facility permit to receive contaminated material must also be provided.

If excavated soil/fill material that cannot be reused on-site or meets the qualifications for unregulated disposal, i.e., analytical testing indicates the material meets the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (UU SCOs), or uncontaminated rock, it may qualify for recycling at a permitted facility. Prior to any off-site transport of the unregulated material, each recycling facility will provide documentation in writing to the site owner or general contractor charged with soil recycling activities, stating they have reviewed the waste characterization testing for the material they will receive, have approved the material for receipt, and the quantity approved. A copy of the recycling facility permit to receive material must also be provided.

Other hazardous materials such as asbestos, lead painted materials, or PCBs (if encountered) may also require regulated disposal in accordance with all local, state, and federal regulations.

3.5 Import of Backfill (Soil) from Off-Site Sources

All imported backfill materials will be characterized via analytical testing at the source facility. Analytical testing must be conducted in accordance with the requirements outlined below in Section 3.6. Each sourcing facility will provide documentation including analytical testing reports to be reviewed by the site owner or general contractor prior to being imported to the site. Additional requirements for material import are described in the following section.

3.6 Source Screening and Testing

All material intended for import to the site will be tested at the source facility by a qualified environmental professional (QEP) for, at a minimum, Target Compound List (TCL) VOCs by EPA Method 8260, SVOCs by EPA Method 8270, pesticides by EPA Method 8081, PCBs by EPA Method 8082, and Target Analyte List (TAL) metals analyses. In addition, testing for Polyfluoroalkyl Substances (PFAS) should be included with the TCL Semi-Volatiles analysis, as per DER-10 "Testing for Imported Soil", Appendix A, page 11 (September 15, 2020). All laboratory analyses will be conducted by a New York State Environmental Laboratory Approved Program (NYS ELAP) certified laboratory. The source facility should have testing data available for every 250 cubic yards of material to be imported. Once data is received it should be compared to NYSDEC 6 NYCRR Part 375 SCOs. Once the source material has been sampled and all data received and compared to Part 375 SCOs, it will be incorporated in to a clean fill report to be submitted to NYC DEP for review and approval. The report will also include a narrative description of source sampling activities and analytical results. No material will be imported to the site without approval of NYC DEP. If the material that arrives at the site exhibits any indications of contamination via visual,

olfactory, or photoionization detector (PID) inspection, the material will be rejected for placement on the site and will be returned to the source facility.

Should recycled concrete aggregate (RCA) be imported for use as fill, it may only be from a facility permitted or registered with NYSDEC. RCA is not suitable as a clean cover material. If another type of material is required for filling, but not placed at the surface during construction, it should be tested as specified above or be from a registered or permitted facility.

3.7 Fluids Management

All liquids including dewatering fluids will be handled and disposed in accordance with local, state, and federal regulations. If it is desired to discharge fluids to the New York City sewer system, approval must be sought and received by NYC DEP. Discharge to the sewer system requires analytical testing and dewatering fluids will require pre-treatment to meet discharge criteria. Pre-treatment generally involves a settling tank where sediment is allowed to settle out of the fluid prior to discharge. The sediment is then disposed of off-site in accordance with the steps outlined in Section 3.4. If fluids do not meet the requirements for discharge to the sewer system, they will be characterized for off-site disposal at a permitted facility.

As with disposal of contaminated soil/fill, all fluids to be transported off-site for disposal will require waste characterization analytical sampling based on the requirements of the receiving facility. The fluid disposal facility will provide documentation in writing that they have reviewed the characterization data and approve the fluid for disposal. A copy of their permit to receive the fluid will also be provided. All contaminated fluid will be transported by a hauler licensed to transport the material.

Discharge of dewatering or other fluids to surface waters (stream or river) is strictly prohibited without a State Pollutant Discharge Elimination System (SPDES) permit issued by NYSDEC.

3.8 Stormwater Pollution Prevention

Since more than 1-acre of land/soil will be disturbed during construction, and there are nearby surface waters that can be directly impacted by uncontrolled runoff, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared.

Erosion and sediment controls measures will be utilized during construction. Measures include silt fences, barriers, and hay bales which will be installed to surround the perimeter of the construction area during all ground disturbance. Erosion and sediment control measures will be inspected and maintained on a weekly basis or after any large precipitation event (> 1" of precipitation). Outfalls will also be regularly inspected to determine if erosion and sediment controls are functioning as protective measures as intended. Inspection results will be maintained in a logbook. Accumulated sediments will be removed from the fencing, barriers, or hay bales and managed in the same manner as excavated soils.

3.9 Odor Control

A number of measures will be employed to prevent or mitigate on and off-site nuisance odors that may occur during construction. Measures that may be implemented include, limiting the size of open excavations, shrouding open excavations with tarps, and utilizing odor suppressing foam on soil with odors. If an area or pocket of soil is uncovered that exhibits evidence of gross contamination including odors and the nuisance odors cannot be eliminated, direct loading of soil onto trucks for off-site disposal without stockpiling should be implemented. If nuisance odors persist or public complaints are received, work should be halted until the appropriate mitigation or elimination measures can be implemented.

3.10 Dust Control

Dust particulates may be generated during site demolition of the existing building, removal of existing pavement, and during soil excavations. In order to prevent prolonged dust exposures on and off-site above background levels, several mitigation measures will be utilized.

- Dedicated water spraying equipment for roads, excavation, and stockpile areas;
- Soil stockpile covers will be properly weighted so that they stay in place during non-working hours;
- Maintain diligent practices during dry and high wind conditions;

- Construction entrances and exits will be stabilized and dedicated workers will inspect trucks coming on and off-site to remove loose soil from truck tires, truck undercarriage, and truck surfaces to avoid tracking it off-site or allowing it to become aerosolized.

If for any reason the measures noted above do not prevent dust emissions, work will be halted to assess practices and develop corrective actions.

3.11 Community Air Monitoring Plan (CAMP)

Real-time air monitoring for VOCs and particulate levels will be conducted along the perimeter of the exclusion zone. Monitoring will be conducted during all ground intrusive activities and during all soil/fill or other regulated material handling. All readings will be recorded in a logbook and available for review by NYC DEP. Exceedances of action levels that occur during the workday will be corrected as they occur and recorded in a logbook. This CAMP has been prepared in accordance with Appendix 1A New York State Department of Health Generic Community Air Monitoring Plan contained within NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, May 3, 2010.

3.11.1 VOC Monitoring, Response Levels, and Actions

Monitoring for VOCs will be conducted at the downwind perimeter of the work area(s) during intrusive work. Upwind areas will be monitoring at the start of each workday and periodically during the workday to establish background levels. Monitoring equipment will be calibrated at the start of each day and be capable of data logging and calculating 15-minute time weighted average concentrations. The 15-minute average concentrations will be compared to the following action levels:

Contaminant of Concern	Action Level	Response Action
VOCs	>5 ppm	Work will be temporarily halted and monitoring continued until the organic vapor level decreases below background levels. Work activities may then resume
	>5 ppm over background but less than 25 ppm	Work will be halted and the source of the vapors identified. Corrective actions will be employed to abate the emissions will monitoring continues. Work can resume once the organic vapor level 200ft downwind of the exclusion zone or half the distance to the nearest receptor (but in no case less than 20ft) is below 5 ppm over background for the 15-min time-weighted average
	Exceeds 25 ppm	Work activities will be shut down and will not resume until the source of the emissions is abated and readings are less than 25 ppm over background levels.
Note: The ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone for the 15-minute average, in parts per million (ppm).		

3.11.2 Particulate Monitoring, Response Levels, and Actions

Monitoring for particulates will be conducted at the upwind and downwind work area perimeter. The particulate meters will be capable of real-time data logging and able to detect particulates at 10 micrometers in size. An audible or visual alarm should also be fitted to the equipment, so any exceedances of action levels is known immediately. Visual assessments of particulates in the air will also be monitoring throughout the workday. Particulate action levels and response actions are shown below:

Contaminant of Concern	Action Level	Response Action
Particulates	Between 100 mcg/m ³ and 150 mcg/m ³	Dust suppression activities will be employed. Work will continue as long as levels are not 150 mcg/m ³ above the upwind level and no visible dust is migrating out of the work area(s).
	Exceeds 150 mcg/m ³	Work will be halted and work methods will be re-evaluated to determine the proper mitigation techniques. Work will resume when mitigation or elimination measures reduce the particulate concentration to within 150 mcg/m ³ of the upwind concentration and dust is not visibly migrating from the work area.

3.12 Petroleum Storage Tank Closure

No known petroleum storage tanks were identified within the Project Area however, a REC identified in the September 2019 Phase I indicated that hydraulic fluid is used in an elevator motor. Depending on the design of the elevator, a hydraulic fluid reservoir may be present in the vicinity of the elevator. Should a tank be encountered, it should be managed in accordance with the steps identified in this section.

If any tanks are located during construction, (including piping and apertures), they will be cleaned, removed, and disposed of in accordance with all applicable local, state, and federal regulatory requirements. If encountered, tanks will be decommissioned in accordance with *NYSDEC Division of Spills and Responses Memorandum regarding permanent closure of Petroleum Storage Tanks (January 1987, modified December 2003)*. Additionally, to comply with 6 NYCRR Part 612.2, the existing State Petroleum Bulk Storage listing for the site should be updated to reflect the discovery and removal of any known or previously unknown tanks.

Tank removal activities including any associated petroleum contaminated soil removal must be documented in a Spill Closure Report and submitted to NYSDEC. The City of New York also requires gasoline tanks be reported to the New York City Fire Department. Typical tank removal procedures include the following:

- Open the fill cap or vent pipe and measure for the presence of product (oils). If present collect a sample to determine the tank contents. Depending on the facility chosen to receive the product in the tank, laboratory analysis may be required.
- Deliberately excavate around the tank to avoid puncturing it. Remove the contents of the tank; typically, via vacuum truck. Document disposal of tank contents in accordance with all local, state, or federal regulations.

- As the tank is uncovered, note the condition of the tank including the amount of corrosion and any holes or punctures.
- During these activities, air monitoring of the worker breathing zone should be conducted for the presence of toxic, flammable, or oxygen depletion. Monitoring equipment for these activities include PID, combustible gas indicator, and an oxygen meter.
- Inert any flammable vapors within the tank.
- Clean the tank of residual product/sludge.
- If tank entry is required for any personnel, work will be conducted in accordance with OSHA confined space requirements.
- Remove the tank and associate piping, clean the equipment, and document disposal of the tank equipment in accordance with all local, state, or federal regulations.
- If a spill of tank contents is observed, it will be reported to the NYSDEC Spill Hotline (800-457-7362).
- Once the tank is removed, observe the vicinity of the area for evidence of a spill in accordance with NYSDEC CP 51 Soil Cleanup Guidance.
- If soil contamination is observed, excavate and segregate the contaminated soil until field screening indicates that all grossly contaminated material has been removed.
- Collect end-point soil samples along the sidewall and floor of the excavation in accordance with the NYSDEC CP 51 Soil Cleanup Guidance.
- Photo document all procedures.
- A licenses tank installation and removal contractor must be present for tank removal activities.
- Documentation of all removal activities including photos, analytical results, disposal manifests, disposal facilities and their permits will be maintained and compiled for inclusion in a Tank Closure Report to be submitted to NYSDEC.

3.13 Hazardous Materials Mitigation Air Monitoring

The pavilion at South Battery Park was constructed in 1990's, so it is unlikely that there would have been asbestos containing materials (which were phased out in the early 1980's) or Lead Based Paint (which was phased out in the late 1970's) utilized in construction. As such, these items are not considered to be a concern with regard to demolition of the building.

However, prior to demolition a completed NYCDEP ACP-5 Form (Asbestos Assessment Report) will be submitted with the demolition permit package. This form, which is signed by a NYCDEP Certified Asbestos investigator, is needed to demonstrate to NYCDEP the building is free of asbestos.

Should previously unidentified ACM be encountered, all required abatement and monitoring will be conducted by a New York State Department of Labor Licensed Contractor and Project Monitor in accordance with 12 NYCRR Part 56.

4 Remedial Measures

4.1 Containment Techniques

Construction of the SBPCR Project will also establish a cap to prevent exposure to the residual contamination. The cap will include the following:

- The structures associated with the Museum of Jewish Heritage and other building slabs and foundations, existing pavement, etc. will remain and serve as a protective cap preventing contact with residual contaminated soil/fill;
- To meet projected DFEs for coastal surge, Wagner Park will be elevated 10 to 12 feet and the buried floodwall would be constructed beneath the raised park. The top two feet of soil will be clean fill;
- Areas of pedestrian and bike pathways will be paved impervious surfaces that also serve as a barrier between residual contamination and the public.

Once construction has been completed, the activities associated with removal/disposal and import of soil/fill material will be documented in a Remedial Closure Report (RCR). The report will be certified by a New York State Licensed Professional Engineer and submitted to NYC DEP.

4.2 Contingency Plan

A contingency plan has been developed to address previously unknown structures or contaminated media (soil, water, or impacted rock and concrete) during construction. During intrusive site activities, if a contamination source is discovered, it will be promptly addressed in accordance with this plan. Any petroleum spills will be reported to the NYS Spill Hotline. All findings will be documented in daily reports. Any unknown contamination sources found during construction will be investigated, including but not limited to, sampling of the media in accordance with NYSDEC CP 51 Soil Cleanup Guidance and in general accordance with NYSDEC Technical Guidance for Site Investigation and Remediation (DER 10).

5 Remedial Closure Report (RCR)

A RCR certified by a NYS-licensed PE will be prepared and submitted to NYC DEP at the conclusion of construction/remedial action defined in this RAP. The RCR will document that construction/remedial work was conducted in compliance with this plan. The RCR will include:

- All regulatory correspondence with agencies including, but not limited to NYCDEP or NYSDEC;
- Photographic documentation and daily reports;
- A description of any deviations from this plan (if they occur);
- A tabular summary of any end-point sampling results (if they occur);
- All analytical data reports for either investigation or waste characterization purposes;
- Documentation of all soil/fill or other hazardous materials disposal; including testing data, correspondence with disposal facilities, copies of any regulated material disposal manifests, quantities of material disposed, and copies of any regulated material disposal facility permits;
- Documentation of any soil/fill material imported to the site for use as fill or embankment material, including analytical testing, sieve testing, source facility(s), and quantities imported;
- As-built drawings for the site cover.

FIGURE 1 – Site Plan



Legend

	Project Area Sites	Flood Alignment		NSI Elements
	Study Area			Tidegate
				Isolation Valve
				
				
				

South Battery Park City Resiliency Project

Appendix A Document copies

A. Previous Due Diligence and Investigation Reports

Appendix B Document copies

B. Draft Construction Health and Safety Plan (CHASP)

Numbered copies

Number:	1	Copies to:	NYCDEP <Copy recipient 2> <Copy recipient 3>
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